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SIEMENS

MOTION CONTROL DRIVES

SINAMICS S210

Servo Drive System

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Catalog
D 32

Edition
February
2026

Next Generation

Siemens EcoTech

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Related catalogs

Motion Control Drives D 31.1
SINAMICS Converters for Single-Axis Drives
Built-In Units

PDF (E86060-K5531-A111-A5-7600)

Motion Control Drives D 31.2
SINAMICS Converters for Single-Axis Drives
Distributed Converters

PDF (E86060-K5531-A121-A4-7600)

Motion Control Drives D 31.5
SINAMICS Converters for Single-Axis Drives
SINAMICS G120X infrastructure converters for HVAC/Water/Wastewater

PDF (E86060-K5531-A151-A5-7600)

Motion Control Drives D 36.1
SINAMICS Converters for Single-Axis Drives
SINAMICS G220 built-in and wall-mounted units

PDF (E86060-K5536-A111-A6-7600)

Motion Control Drives D 37.1
SINAMICS S200 Servo drive system

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SINAMICS S120 D 21.3
Chassis Format Converter Units
Chassis-2 Format Converter Units
Cabinet Modules, Cabinet Modules-2
SINAMICS S150
Converter Cabinet Units
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Motion Control Drives D 21.4
SINAMICS S120, SINAMICS S220 and SIMOTICS

PDF (E86060-K5521-A141-A2-7600)

Motion Control Drives D 23.1
SINAMICS DCM series of converters
DC Converter, Control Module

PDF (E86060-K5523-A111-A4-7600)

SIMOTICS S-1FG1 D 41
Servo geared motors
Helical, Parallel shaft, Bevel and Helical worm geared motors

PDF (E86060-K5541-A101-A6-7600)

Motion Control Drives D 60
SIMOTICS E
Drive system for extra low voltage

PDF (E86060-K5560-A101-A2-7600)

Motion Control System PM 21
SIMOTION
Equipment for Production Machines

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Industrial Controls IC 10
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Low-Voltage Power Distribution and Electrical Installation Technology LV 10
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SIMATIC ST 70
Products for
Totally Integrated Automation

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SIMATIC HMI / PC-based Automation ST 80/ST PC
Human Machine Interface Systems
PC-based Automation

PDF (E86060-K4680-A101-D3-7600)

SITRAIN
Digital Industry Academy

www.siemens.com/sitrain

SiePortal
Information and Ordering Platform on the Internet

sieportal.siemens.com

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Combining the real and digital worlds ...
Transformation

Catalog
D 32

Edition
February
2026

MOTION CONTROL DRIVES

SINAMICS S210

Servo Drive System

siemens.com/d32

Dear Customer,

We are pleased to present you with the new edition of the Catalog D 32 · February 2026. The catalog provides a comprehensive overview of the SINAMICS S210 servo drive system and supersedes Catalog D 32 · January 2025.
The SINAMICS S210 servo drive system consists of a SINAMICS S210 servo converter, a SIMOTICS S servomotor and the associated MOTION-CONNECT connection technology as One Cable Connection (OCC) technology.
The single-axis AC/AC servo converter system stands out due to its high performance and dynamic response.
Besides updates and technical adjustments, the selection has been expanded for servo planetary geared motors with the precision gearboxes SP+ and TP+ and for the SIMOTICS S-1FT2 servo motors with additional forced ventilated versions.
In addition, SIMOTICS S-1FG1 servo geared motors can be operated with SINAMICS S210 servo converters.
The products listed in this catalog are also included in SiePortal. Please contact your local Siemens office for additional information.
Up-to-date information about SINAMICS S210 and matching SIMOTICS motors is available on the internet at:
www.siemens.com/sinamics-s210
You can access SiePortal online at: https://sieportal.siemens.com
Your personal contact will be happy to receive your suggestions and recommendations for improvement.
You can find your representative in our Personal Contact database at: www.siemens.com/automation-contact
We hope that you will often enjoy using Catalog D 32 · February 2026 as a selection and ordering reference document and wish you every success with our products and solutions.

With kind regards

Frank Golüke
Vice President
General Motion Control
Siemens AG, Digital Industries, Motion Control

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SINAMICS S210 Servo Drive System

Motion Control Drives

Catalog D 32 · February 2026

Supersedes:
Catalog D 32 · January 2025

Refer to SiePortal for current updates of this catalog:
https://sieportal.siemens.com

Please contact your local Siemens branch.

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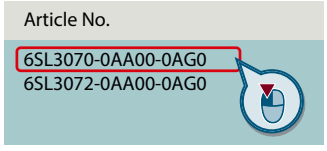
Click on an Article No. in the catalog PDF to call it up in SiePortal and to obtain all the information.



Or directly on the internet, e.g.
www.siemens.com/product_catalog_DIMC?6SL3070-0AA00-0AG0

The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with EN ISO 9001. The certificate is recognized by all IQNet countries.

System overview 1

SINAMICS S210 servo converters 2

SIMOTICS S servomotors and servo planetary geared motors for SINAMICS S210 3

MOTION-CONNECT connection systems 4

Engineering tools 5

Services and documentation 6

Appendix 7

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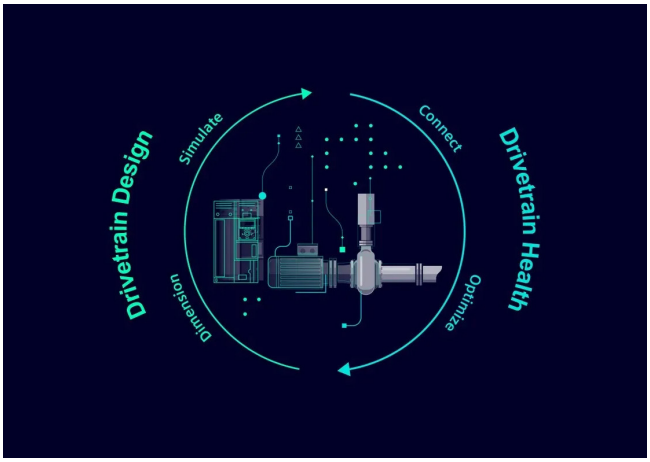
Motion beyond expectations

Drives move the industries. But how can they make them more efficient, more reliable and more sustainable – and exceed all expectations while they are doing it? Our answer: Siemens Xcelerator for Digital Drivetrain.

Digital solutions for Drivetrain Design and Drivetrain Health

Combine the real and the digital world to reach the next level of efficiency and sustainability in your drivetrain value chain: with suitable digital solutions for drivetrain design and drivetrain health.
Drivetrain Design:
Simplify and shorten the engineering steps to get faster and more efficiently from concept to the commissioned drive-train.
Drivetrain Health:
Reduce total cost of ownership for your equipment and machine park – energy, maintenance, downtime.



siemens.com/digital-drivetrain

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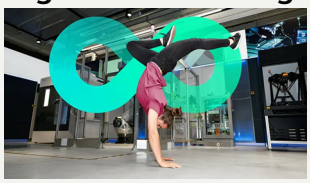
Digitalization along the drivetrain value chain



Dimension

Accurate in motion: Dimension your motors, gearboxes, and complete drivetrains digitally with greater precision – for greater reliability and energy efficiency.

Simulate

Faster in motion: Add the digital twin of the drivetrain to your machine simulation to speed up your design and engineering phases and to accelerate your time-to-market!

Connect

Data in motion: Acquire high-quality raw data and connect your entire drive-trains or machines to cloud or on-premise platforms – for a consistent and secure data flow.

Optimize

Better in motion: Analyze and visualize drivetrain and machine data in digital solutions and apps to identify optimization potentials and concrete actionable measures how to tap it.

Use cases for digital drivetrain technology

Condition monitoring for drivetrains

Healthy in motion: Gain valuable insights into your drivetrain to optimize maintenance, system availability, cost efficiency, and sustainability: Discover intelligent digital condition monitoring for your drivetrains!

Are your drivetrains fit enough for tough times?

The industries are expected to produce ever more efficiently, ever more sustainably and ever more cost-effectively. And if you can't do that, it's easier to be left behind by the competition. Use digitalization and the data from your motors and converters to optimize your competitiveness – and to keep your production in motion.

What if you consume too much electricity?

With digital solutions and digital drive technology, you can significantly reduce your share of this!

What if you waste too much energy?

Digitalization enables you to detect energy waste and impending system down-times at an early stage so that you can take counter-measures in due time!

What if your motors are incorrectly designed?

Digital tools make it quicker and easier to correctly design your drive components!

What if your drives fail unexpectedly?

With digital solutions, you can identify risks in your drivetrain at an early stage and react before a failure occurs.

"Our digital solutions transform your drivetrain value chain to the next level of efficiency and sustainability."

siemens.com/digital-drivetrain

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SINAMICS frequency converters

SINAMICS frequency converters – the ultimate solution for all drive applications. From low voltage to direct current (DC), our frequency converters meet your needs. With increased efficiency and versatility, take your applications to the next generation for a digital and sustainable future.

Driving next generation applications

When it comes to driving industry advancements, look no further than our SINAMICS frequency converters. They fuel the creation of innovative, next-generation applications that meet the unique needs of every industry.

From pumping and ventilating to moving, positioning, processing, and machining, our converters have you covered. Get ready to take your applications to new heights.

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Low voltage converters

Low voltage frequency converters are suitable for a huge range of applications. For example, if materials must be moved, processed, positioned, pumped or compressed. Variable-speed operation saves energy and also increases process quality and process availability.

Servo converters

These servo converters meet the highest dynamic requirements for single and multi-axis applications. The perfect solution for machine tools, packaging machines, continuous material handling, cranes, rolling mills, test stands, material handling, robotics and many other applications requiring high-precision, dynamic motion control.

DC converters

The dynamic performance, ruggedness, and cost-effectiveness of DC technology continue to make it the most cost-effective and proven drive solution for many applications today – with numerous advantages in terms of reliability, ease of use, and operational performance.

Accelerating the digital and sustainable transformation of industry

How can you make production more efficient? Accelerate your digital transformation? And become more sustainable?

The answer is our SINAMICS frequency converters. They are energy efficient, offer the versatility you need for any application, and drive your digital transformation by providing the data to continuously improve production efficiency and sustainability. Our converters offer you integrated safety and security features, efficient engineering and software tools as well as comprehensive lifecycle services. In other words: Everything you need to address the next generation of applications – today and tomorrow.

EFFICIENT

Implement energy-efficient applications easily, quickly, and safely with efficient motion control.

- Sustainable drive systems
- Efficient Motion Control solutions
- Drive System Services

VERSATILE

Drives equipped with tailored safety features to ensure optimal machine safety in a wide range of industrial applications.

- Safety and Security Integrated
- Drive applications
- Drives for any industry

FUTURE-PROOF

Efficient engineering, powerful software tools, and cloud and edge connectivity for greater transparency.

- Digitalization in drive technology
- Efficient drive engineering
- Drive Software for all applications

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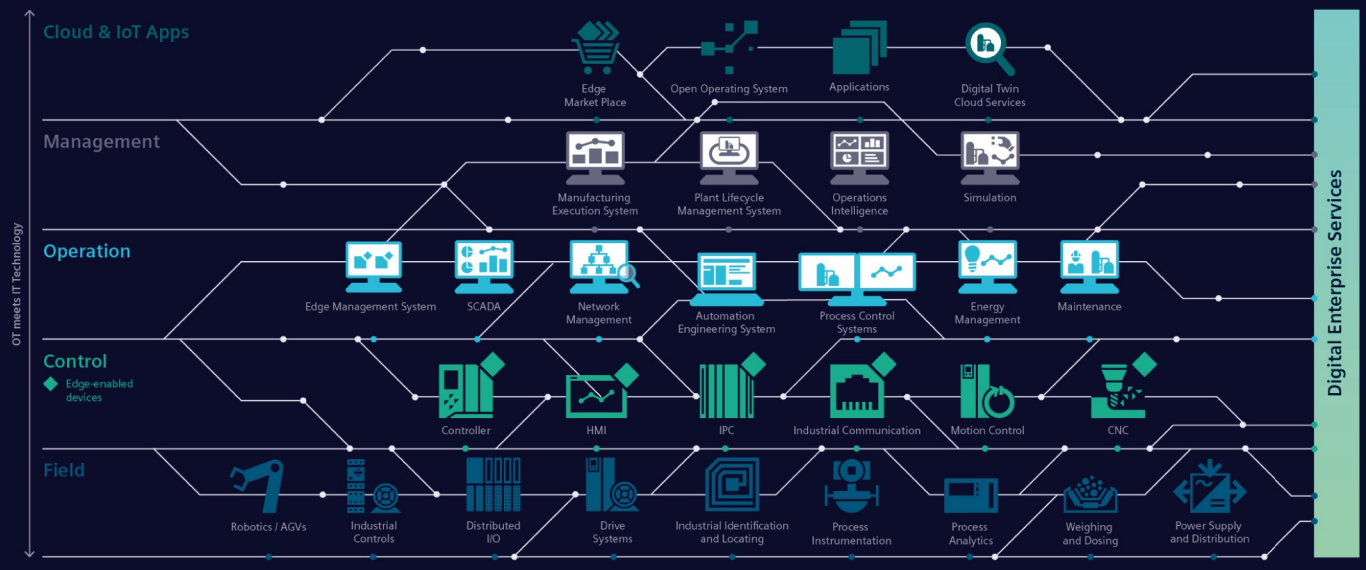
Totally Integrated Automation

Totally Integrated Automation (TIA) offers smart automation development, flexible machine concepts, transparent operation, and sustainable solutions that enable access to data to calculate and optimize the product carbon footprint. We are constantly improving and expanding TIA to be future-proof and adaptive to existing and upcoming challenges.

A comprehensive portfolio for the challenges of today and tomorrow

The TIA offering is integrated seamlessly and it's so comprehensive that it provides the right automation solutions for every industry. We will continue to improve and expand our proven automation portfolio and are constantly including innovative technologies and solutions that pave the way towards the factory of the future.



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Real added value for the automation of your production

From the development of innovative machine concepts to engineering and optimized production:
TIA offers real added value along the entire value chain.

Smart Automation Development

Innovative machine concepts made easy: When you use standardized library concepts and preconfigured expertise, you can count on efficient engineering. Thanks to the integration of safety features, diagnostic functions, and cybersecurity, you also save valuable time.

Flexible Machine Concepts

No matter what new requirements emerge in the market, TIA supports modular machine concepts and the simple integration of new machines into existing lines – thanks to standardized hardware interfaces and engineering libraries. As a machine builder, this enables you to meet any challenge quickly and reliably.

Transparent Operation

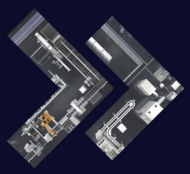
Integrated interfaces let you achieve a new level of transparency for the essential performance indicators in your processes and plants. The connection between IT and OT along with efficient data management lay the foundation for new service models such as predictive maintenance.

Future-proof Automation

Our TIA portfolio is constantly being refined with a view to integrating automation technologies more and more efficiently. The components can then interact with modern IT capabilities, which are becoming increasingly important for specific applications in automation. TIA provides a solid foundation, whether for working with our Industrial Operations X portfolio or for everything the future has in store.

Sustainable Solutions

Sustainability starts with the acquisition of data. With the TIA portfolio, you can measure energy and resource data and make it transparent, providing a solid foundation for calculating the Product Carbon Footprint. This is crucial for drawing the right conclusions and responding to sudden changes in order to lastingly reduce CO_2 emissions and save more resources in production.



www.siemens.com/tia

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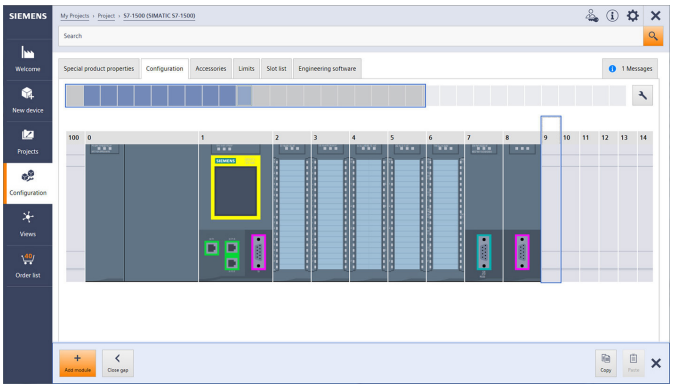
TIA Selection Tool – quick, easy, smart configuration

For you to get the most out of our portfolio quickly and easily.

Do you always need the optimum configuration for planning your project?
For your application we offer the TIA Selection Tool to support all project planners, beginners and experts alike.
No detailed portfolio knowledge is necessary.
TIA Selection Tool is available for download as a free desktop version or a cloud variant.



Your Advantages

Quick

- Configure a complete project with just a few entries – without a manual, without special knowledge
- Import and export of hardware configuration to TIA Portal or other systems
- Ideal visualization of the projects to be configured

Easy

- Tool download either as desktop version or web-based cloud version
- Technically always up-to-date about product portfolio and innovative approaches
- Highly flexible, secure, cross-team work in the cloud
- Direct ordering in SiePortal

Smart

- Smart selection wizard for error-free configuration and ordering
- Configuration options can be tested and simulated in advance
- Library for archiving sample configurations

The TIA Selection Tool is a completely paperless solution.
Download it now:
www.siemens.com/tst

For more information, scan the QR code

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Sustainability @Siemens

Transforming the everyday to create a better tomorrow.

For more information, see www.siemens.com/sustainability figures

As a company, Siemens considers environmental, social and governance (ESG) criteria from all angles with its DEGREE framework (decarbonization, ethics, governance, resource efficiency, equity and employability). We are not only committed to reducing the carbon footprint in our own operations to net zero by 2030, but also helping our customers achieve their decarbonization and sustainability goals.

Mission & strategy

As a focused technology company, Siemens is committed to addressing the world's most profound challenges by leveraging the synergies between digitalization and sustainability.

Technology with aim and purpose

We develop technologies that connect the real and digital worlds and enable our customers to positively transform the industries that form the backbone of our economy: industry, infrastructure, transportation and healthcare.

Our contribution

Siemens makes an impact every day by providing innovative solutions in response to challenges relating to environmental protection, decarbonization, health and safety. Innovative solutions that have a clear goal: to make the world more sustainable, more integrative and a better place to live.

Sustainability facts

For almost 175 years, Siemens has been driven by the desire to improve the lives of people around the world with our technologies.

Siemens EcoTech

Siemens EcoTech is an environmental product performance label designed to drive the sustainable transformation of industry and infrastructure. The label gives you transparency on the performance of our certified products across environmental relevant criteria, enabling you to make informed choices to support your sustainability goals, see www.siemens.com/SiemensEcoTech.

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1/17	with SIMOTICS S-1FT2 servomotors
1/28	with SIMOTICS S-1FS2 servomotors
1/29	with SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors
1/30	Accessories for SINAMICS S210 servo converters
1/31	Accessories for SIMOTICS S-1FK2 and S-1FT2 servomotors
1/31	Spare parts for SIMOTICS S-1FS2 servomotors
1/31	SINAMICS S210 starter kit
1/31	Training case
1/32	Pre-assembled OCC cables MOTION-CONNECT 500 and 800PLUS
1/32	Pre-assembled OCC cables MOTION-CONNECT 400
1/32	Length code for pre-assembled cables (max. 50 m (164 ft))
1/33	OCC components for customer assembly
1/33	Sold by the meter OCC cables MOTION-CONNECT
1/33	Length code for cables sold by the meter (max. 500 m (1640 ft))
1/34	Pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables
1/34	Length code for pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables
1/34	Control cabinet bushing
1/34	Recommended SIMATIC S7 controller
1/35	**SINAMICS S210 starter kit**

SINAMICS Drive Software – The right function for every application

Further information about SINAMICS Drive Software is available on the internet at:
www.siemens.com/sinamics-drive-software

For more information on ordering and configuration, see catalog D 99 and SiePortal at:
www.siemens.com/d-99
www.siemens.com/sinamics-drive-software/sieportal

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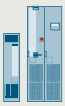
Overview

SINAMICS frequency converters

SINAMICS frequency converters are the ultimate solution for all drive applications. From low voltage to direct current (DC), our frequency converters meet your needs.

With increased efficiency and versatility, take your drive applications to the next generation for a digital and sustainable future.

www.siemens.com/sinamics

Low voltage										Direct voltage
Standard performance frequency converters		Distributed frequency converters	Industry-specific frequency converters	Servo converters			High performance frequency converters			DC converters
										
SINAMICS V20 G120C G120	SINAMICS G130 G150	SINAMICS G115D G120D SIMATIC ET 200pro FC-2	SINAMICS G120X	SINAMICS V90 S200	SINAMICS S110	SINAMICS S210 (6SL5...)	SINAMICS G220	SINAMICS S120 S120M	SINAMICS S150	SINAMICS DCM DCP [1]
0.12 kW to 250 kW	75 kW to 2700 kW	0.37 kW to 7.5 kW	0.75 kW to 630 kW	0.05 kW to 7 kW	0.55 kW to 132 kW	0.05 kW to 7 kW	0.55 kW to 160 kW	0.55 kW to 5700 kW	75 kW to 1200 kW	6 kW to 30 MW
Pumps, fans, compressors, conveyor belts, mixers, mills, spinning machines, textile machines, refrigerated display counters, fitness equipment, ventilation systems, single-axis positioning applications in machine and plant engineering	Pumps, fans, compressors, conveyor belts, mixers, mills, extruders	Conveyor technology, single-axis positioning applications (G120D)	Pumps, fans, compressors, building management systems, process industry, HVAC, water/waste water industries	Handling machines, packaging machines, automatic assembly machines, metal forming machines, printing machines, winding and unwinding units	Single-axis positioning applications in machine and plant engineering	Packaging machines, handling equipment, feed and withdrawal devices, stacking units, automatic assembly machines, laboratory automation, wood, glass and ceramics industry, digital printing machines	Pumps, fans, compressors, conveyor belts, mixers, mills, spinning machines, textile machines, refrigerated display counters, fitness equipment, ventilation systems, single-axis positioning applications in machine and plant engineering	Production machines (packaging, textile and printing machines, paper machines, plastic processing machines), machine tools, plants, process lines and rolling mills, marine drives, test bays	Test bays, cross cutters, centrifuges	Rolling mill drives, wire-drawing machines, extruders and kneaders, cableways and lifts, test bay drives
Catalog D 31.1	Catalog D 11	Catalog D 31.2	Catalog D 31.5	Catalog D 33 D 37.1	Catalog D 31.1	Catalog D 32	Catalog D 36.1	Catalogs D 21.3, D 21.4 NC 62	Catalog D 21.3	Catalog D 23.1, SiePortal
Engineering tools (e.g. Siemens Product Configurator, TIA Selection Tool, DriveSim Designer/Engineer, STARTER and SINAMICS Startdrive)										

[1] DC/DC controllers, see SiePortal.

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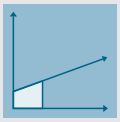
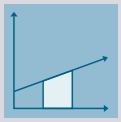
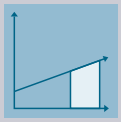
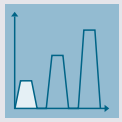
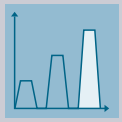
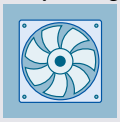
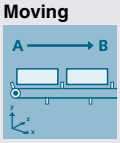
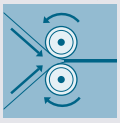
Overview

SINAMICS selection guide – typical applications

Use	Requirements for torque accuracy/speed accuracy/position accuracy/coordination of axes/functionality					
	Continuous motion			Non-continuous motion		
	Basic	Medium	High	Basic	Medium	High
						
Pumping, ventilating, compressing	Centrifugal pumps Radial / axial fans Compressors	Centrifugal pumps Radial / axial fans Compressors	Eccentric screw pumps	Hydraulic pumps Metering pumps	Hydraulic pumps Metering pumps	Descaling pumps Hydraulic pumps
	V20 G120C G120X	G120X G130/G150 DCM	G220 S120	G120/G220	S110	S120
Moving	Conveyor belts Roller conveyors Chain conveyors	Conveyor belts Roller conveyors Chain conveyors Lifting/lowering devices Elevators Escalators/moving walkways Indoor cranes Marine drives Cable railways	Elevators Container cranes Mining hoists Excavators for open-cast mining Test bays	Acceleration conveyors Storage and retrieval machines	Acceleration conveyors Storage and retrieval machines Cross cutters Reel changers	Storage and retrieval machines Robotics Pick & place Rotary indexing tables Cross cutters Roll feeds Engagers/disengagers
	V20 G115D G120C ET 200pro FC-2 [1]	G120/G220 G120D G130/G150	G220 S120 S150 DCM	V90 S200 G120/G220 G120D	S110 **S210** DCM	S120 **S210** DCM
Processing	Mills Mixers Kneaders Crushers Agitators Centrifuges	Mills Mixers Kneaders Crushers Agitators Centrifuges Extruders Rotary furnaces	Extruders Winders/unwinders Lead/follower drives Calenders Main press drives Printing machines	Tubular bagging machines Single-axis motion control such as • Position profiles • Path profiles	Tubular bagging machines Single-axis motion control such as • Position profiles • Path profiles	Servo presses Rolling mill drives Multi-axis motion control such as • Multi-axis positioning • Cams • Interpolations
	V20 G120C	G120/G220 G130/G150	G220/ S120 S150 DCM	V90 S200 G120/G220	S110 **S210**	S120 **S210** DCM
Machining	Main drives for • Turning • Milling • Drilling	Main drives for • Drilling • Sawing	Main drives for • Turning • Milling • Drilling • Gear cutting • Grinding	Axis drives for • Turning • Milling • Drilling	Axis drives for • Drilling • Sawing	Axis drives for • Turning • Milling • Drilling • Lasering • Gear cutting • Grinding • Nibbling and punching
	S110	S110 S120	S120	S110	S110 S120	S120

Using the SINAMICS selection guide

The varying range of demands on modern variable frequency drives requires a large number of different types. Selecting the optimum drive has become a significantly more complex process. The application matrix shown simplifies this selection process considerably, by suggesting the ideal SINAMICS drive for examples of typical applications and requirements.

- The application type is selected from the vertical column
  - Pumping, ventilating, compressing
  - Moving
  - Processing
  - Machining
- The quality of the motion type is selected from the horizontal row
  - Basic
  - Medium
  - High

More information

Further information about SINAMICS is available on the internet at
www.siemens.com/sinamics

Practical application examples and descriptions are available on the internet at
www.siemens.com/sinamics-applications

[1] Information on the SIMATIC ET 200pro FC-2 frequency converter is available in Catalog D 31.2 and at: www.siemens.com/et200pro-fc

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Overview

Example: SINAMICS S210 (6SL5...) converter frame size FSB, 200 V 1 AC, with SIMOTICS S-1FK2 servomotor shaft height 30

The servo drive system comprises a SINAMICS S210 servo converter, a SIMOTICS S-1FK2, S-1FT2 or S-1FS2 servomotor and the matching MOTION-CONNECT One Cable Connection (OCC) for connecting the motor to the converter.
SINAMICS S210 is a single-axis AC/AC servo converter system with high performance and dynamic response.

SINAMICS S210 servo converters are available for the following line voltages:
- 200 V to 240 V 1 AC (1 AC series)
- 200 V to 480 V 3 AC (3 AC series)

Flexible in application

The SINAMICS S210 is a flexible, versatile system.
SIMOTICS S-1FK2, S-1FT2 or S-1FS2 series synchronous servomotors are installed in rotary and linear axes. The integrated One Cable Connection (OCC) interface allows user-friendly connection of a SIMOTICS S-1FK2, S-1FT2 or S-1FS2 motor with just one cable. The electronic motor type plate data can be read out, which eliminates the need to parameterize the converter with the motor data. This significantly simplifies and shortens commissioning.

In conjunction with the technological functions of the higher-level controller, there are many possibilities of motion – from continuous operation through positioning and synchronous operation, to coordinated motion of multiple axes via cyclic cams or interpolation – everything is possible.

The SINAMICS S210 converter has an integrated PROFINET communications interface for connecting to a control system.

The data exchange with the higher-level controllers takes place via standardized protocols – the PROFIdrive profile for positioning mode and the PROFIsafe profile for safety-related communication.

Thus, operation is optimally ensured with the SIMATIC S7 automation system. The drive axis is connected via technology objects and Motion Control blocks in the SIMATIC S7 or a SIMOTION controller.

High performance for fast and precise control

The high performance of the SINAMICS S210 servo drive system in conjunction with a SIMOTICS S-1FK2, S-1FT2 or S-1FS2 servomotor derives from the following features:
- Low moment of inertia and high overload capability of the motor
- High-resolution encoder with fast scanning
- Current controller clock cycle of 62.5 µs and a pulse frequency of 8 kHz of the servo converter

This enables short cycle times on the machine even with complex motion control.

DC link coupling (only 3 AC series)

For devices of the 3 AC series, the DC links of up to six converters can be coupled. Thus, energy balancing between the axes is possible and energy produced during braking can be used by other axes for accelerating. This is not only efficient but also reduces the dissipated heat in the control cabinet, because the energy that is produced no longer has to be converted to heat in the braking resistor.

Innovated SINAMICS S210 (6SL5...) servo converters

As successor to the SINAMICS S210 (6SL3...) servo converters, the innovated version is now available under the name "SINAMICS S210 (6SL5...) servo converters".

The innovated SINAMICS S210 (6SL5...) servo converters have extended functionalities with a new hardware and a revised software from firmware V6.1.

Extended functionalities with new hardware
- Operation on a supply voltage of 200 V to 240 V 3 AC, e.g. for USA, Canada and Japan now also possible with internal braking resistors
  External braking resistors are no longer required.
- 1 communications interface for communication with a 2nd encoder (as of firmware V6.3)
- For future extensions (currently without function):
  - 1 temperature sensor input PTC

Revised software from firmware V6.1
- Security, User Management and Access Control (UMAC)
- Revised web server
- General rounding off and unification for the entire SINAMICS converter family
- Functional safety up to safety integrity level 3, PL e and Category 4.
  Firmware V6.1 includes the Safety Integrated Basic Functions as well as the Safety Integrated Extended Functions SS1, SLS, SDI, SSM.
  All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

From firmware V6.3:
- Basic positioner (EPOS): A positioning functionality integrated into the converter.
- EtherNet/IP for communication with third-party controllers

From firmware V6.4:
- OPC UA server with information model for inventory management and process data acquisition
- Security:
  - Security event log for sending security events via syslog protocol to a server
  - Additional UMAC privileges for security configuration
  - Integrity protection for backups
  - Extended handling of certificates
- Basic positioner (EPOS):
  - Higher resolution through 64-bit data type for position values together with new telegram 113
  - Load gearbox position tracking support for reproducibility of the load position when using gears
- Vibration suppression support for the reduction of vibrations in the natural frequency range up to 10 Hz
- Configurable supplementary telegram for handover additional data to the PLC

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Overview

The SIMOTICS S-1FK2, S-1FT2 and S-1FS2 servomotors differ as follows:

The 1FK2 servomotors are perfectly suited to overcome the essential challenges in servo drive technology. The product range includes a limited number of variants and options and therefore enables a simple overview and selection. They form the core of the servomotors for the SINAMICS S210 servo drive system.

The 1FT2 servomotors are an extension of the 1FK2 motor portfolio. They are more finely graded in terms of rated speeds, offer additional torque levels and have numerous variations and options. This makes it possible to solve the diverse challenges in the drive technology more precisely. Even more demanding tasks or applications in difficult environments can be mastered with 1FT2 servomotors.

	SIMOTICS S servomotors for SINAMICS S210		
	1FK2 High Dynamic (HD) / Compact (CT)	**1FT2** High Dynamic (HD) / Compact (CT)	**1FS2** High Dynamic (HD) / Compact (CT)
Versions	Shaft heights	Shaft heights	Shaft heights
• High Dynamic (HD)	20, 30, 40, 52, 63	20, 30, 40, 52, 63, 80	40, 52, 63
• High Dynamic (HD) forced ventilation	–	63, 80	–
• Compact (CT)	30, 40, 48, 63, 80, 100	30, 40, 48, 63, 80, 100	80
• Compact (CT) forced ventilation	–	63, 80, 100	–
Version as servo planetary geared motors	• with coaxial economy planetary gearbox	• with coaxial economy planetary gearbox • with angular economy planetary gearbox • with coaxial precision planetary gearbox	–
Static torque M_0	0.16 ... 40 Nm (0.12 ... 29.50 lb_f-ft)	0.16 ... 50 Nm (0.12 ... 36.90 lb_f-ft)	3.1 ... 23.5 Nm (2.29 ... 17.30 lb_f-ft)
Rated power P_N	Up to 6.4 kW	Up to 6.4 kW	Up to 2.51 kW
Applications	• Packaging machines • Handling equipment • Feed and withdrawal devices • Stacking units • Automatic assembly machines • Laboratory automation • Woodworking, glass and ceramic industries • Digital printing machines		• Food and beverage industries • Pharmaceutical industry • Packaging machines • Handling equipment • Feed and withdrawal devices
Housing	Aluminum/anthracite gray	Aluminum/anthracite gray Optionally other colors possible	Stainless steel
Degree of protection	IP64 IP65 optional or retrofittable	IP64 IP65 optional or retrofittable, IP67 optional	IP66/IP67, IP69K
Encoder systems			
• Absolute encoder 22-bit singleturn	✓	✓	–
• Absolute encoder 22-bit + 12-bit multiturn	✓	✓	✓
• Absolute encoder 26-bit singleturn	–	✓	–
• Absolute encoder 26-bit + 12-bit multiturn	–	✓	–
Notes	–	• Numerous variants and options	• Very high detergent resistance • Certification according to EHEDG

Operation of SIMOTICS S-1FG1 servo geared motors on SINAMICS S210 (6SL5...) servo converters (from FW 6.4 HF2)

The following configuration options apply to the SIMOTICS S-1FG1 servo geared motors in combination with the SINAMICS S210 (6SL5...) servo converters (from FW 6.4 HF2):

- Motors: SIMOTICS S-1FG1 servo geared motors with a maximum standstill current I_0 of up to 15 A are supported.
- Brakes:
  - Permanent magnet brakes with a rated current I_N of up to 1 A are permitted.
  - The order codes **N23** and **N24** are configurable with one limitation: For motors with shaft height 100 a holding brake with increased braking torque (order code **N24**) is not possible.
  - Spring-applied brakes (order codes **N30** to **N34**) are generally not configurable.
- **Encoders:** Only AM20DQI and AS20DQI DRIVE-CLiQ encoders can be used. These are marked by the letter **R** or **Q** in the 9th position of the article number.

SIMOTICS S-1FG1 servo geared motors are available as servo helical, servo parallel shaft, servo bevel and servo helical worm geared motors and are delivered as a completely assembled unit and with oil-filled gearbox. A wide range of mechanical mounting methods can be implemented with the numerous options. SIMOTICS S-1FG1 servo geared motors are designed for operation without external cooling and the heat is dissipated through the motor surface and the gearbox mounting surface.

The **Catalog D 41** presents a comprehensive overview of the portfolio of SIMOTICS S-1FG1 servo geared motors and is designed to help users make a preliminary selection of products to meet the requirements of a particular drive application. The information in the catalog relating to specific motors- and gearboxes is intended as a guide so that the correct servo geared motor can be identified on the basis of a known application.

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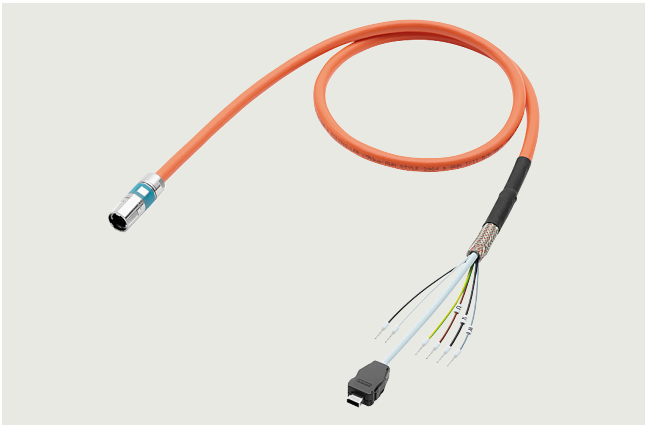
Overview

Optimized MOTION-CONNECT connection technology with One Cable Connection (OCC)



Example: SINAMICS S210 M12 OCC connecting cable

Motor and converter are simply connected to one another by one instead of the usual two or three cables. With this One Cable Technology, energy supply, encoder signals and braking signal are brought together in a single cable. This results in the following advantages:

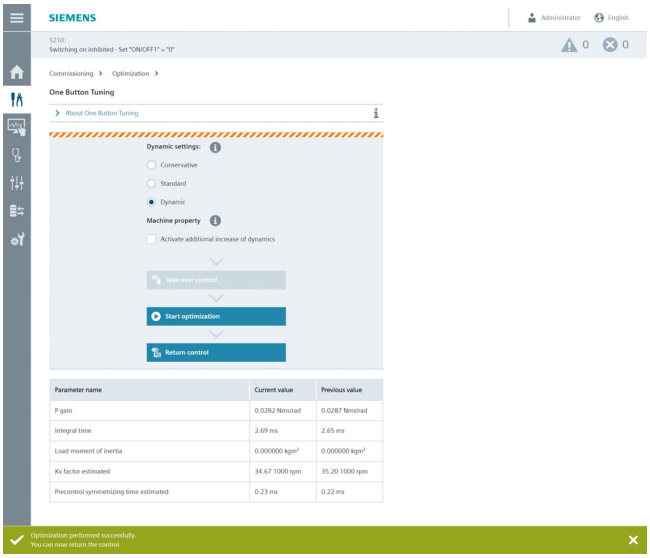
- Time-saving by laying only one cable
- Smaller installation space and space requirement in cable collars, tight bending radii
- Only one cable has to be cleaned. This is advantageous, e.g. in the pharmaceutical industry and where higher requirements are placed upon hygiene
- Can be ordered to the decimeter
- Compact connection system
- Rotatable connector on the motor side
- Motor with very low interfering contour for restricted installation space.

Cables are available in tree different qualities:

- MOTION-CONNECT 500
- MOTION-CONNECT 800PLUS
- MOTION-CONNECT 400 (only for SIMOTICS S-1FS2)

In addition to the pre-assembled cable, individual components (connectors and products sold by the meter) can be ordered for self-assembly.

Easy commissioning via web server, One Button Tuning and SINAMICS Startdrive/TIA Portal [1)]



SINAMICS Webserver for innovated SINAMICS S210 (6SL5...) – One Button Tuning

The web server of the converter offers a simple means of parameter assignment. The web server allows commissioning purely oriented on the functionality of the drive. With the web server, the SINAMICS S210 servo drive system can be brought into operation with a few clicks.

As a result of reading the electronic type plate of the connected SIMOTICS S-1FK2, S-1FT2 or S-1FS2 servomotor, only a few operator actions, such as automatic controller optimization with One Button Tuning, are necessary, as the motor and encoder are automatically detected. The controller parameters are automatically optimized. The three selectable dynamic levels of the controller can optimally take into account the desired behavior of the connected mechanics.

A motion of the axis can take place directly via the control panel during commissioning.

The customer benefits from the web server in many ways:

- Commissioning can also be easily done in places difficult to access, as the web server in the converter can also be accessed directly via PROFINET from the controller.
- The web server provides full diagnostic capability without the need for additional software.
- Commissioning and diagnostics can also be done without a cable via mobile devices, such as laptops, smart phones and tablets (an additional WLAN access point is necessary).
- Intuitive user interface

In addition to easy commissioning directly via the web server of the converter, engineering is also possible with SINAMICS Startdrive and TIA Portal [1)]. The tool for configuration, commissioning and diagnostics has been optimized with regard to the consistent utilization of the TIA Portal advantages – one shared work environment for PLC, HMI and drives [2)].

For more information, see the Engineering tools selection.

[1)] For SINAMICS S210 (6SL3...), from V15.1, for innovated SINAMICS S210 (6SL5...), from V18 SP1.

[2)] For SINAMICS S210 (6SL3...), from firmware V5.2, for innovated SINAMICS S210 (6SL5...), from firmware V6.1.

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Overview

Diagnostics

Faults and warnings are shown on the display located under the front cover, and they can be acknowledged with the Acknowledge button. Extensive diagnostics with plain text messages for cause and remedy information is possible via the web server.

Safety Integrated

The integrated safety functions provide highly effective, application-oriented protection for personnel and machinery (terms as defined in IEC 61800-5-2).

The following Safety Integrated Basic Functions are included as standard:

- Safe Torque Off (STO)
- Safe Brake Control (SBC)
- Safe Stop 1 time-controlled (SS1-t)

The following Safety Integrated Extended Functions [3] are available as options:

- Safe Stop 1 (SS1) [2]
- Safe Stop 2 (SS2)
- Safe Operating Stop (SOS)
- Safely-Limited Speed (SLS)
- Safe Speed Monitor (SSM)
- Safe Direction (SDI)
- Safely-Limited Acceleration (SLA)
- Safe Brake Test (SBT) diagnostic function

The Safety Integrated Functions are fully integrated into the drive system. They can be activated via fail-safe digital inputs on the converter (only STO and SS1-t) or via PROFINET with PROFIsafe.

The Safety Integrated Functions are implemented electronically and therefore require no additional installation effort or space in the control cabinet. Furthermore, the costs are considerably lower than for externally implemented monitoring functions.

The Safety Integrated Functions can be easily commissioned using the web server of the converter or SINAMICS Startdrive and TIA Portal [1] [3].

Perfect combination with SIMATIC S7-1200 G2, SIMATIC S7-1500, SIMATIC S7-1500 T-CPU, SIMATIC ET 200SP Open Controller and PROFINET

Example: Control SIMATIC S7-1200 G2 in combination with SINAMICS S210 (6SL5...) converter frame size FSB, 200 V 1 AC, with SIMOTICS S-1FK2 servomotor shaft height 30

It communicates with the higher-level control via PROFINET IRT. For optimal interaction between the controller and the SINAMICS S210 servo drive system, SIMATIC S7-1200 G2, SIMATIC S7-1500,SIMATIC S7-1500 T-CPU,SIMATIC ET 200SP Open Controller, and SIMOTION can be used as the control system.

The SINAMICS S210 servo converters have an integrated PROFINET communications interface with a cycle of up to 250 µs for connecting to a control system.

Standardized protocols for linking to a higher-level control with RT and IRT are supported – the PROFIdrive profile with DSC for positioning mode and the PROFIsafe profile for safety-related communication. Functions, such as Shared Device, ring redundancy and PROFIenergy, are also possible.

Everything from one source: Through the use of Motion Control functionalities in the controller, the combination of converter and SIMATIC S7 automation system or a SIMOTION controller allows ideally harmonized engineering. As a result, commissioning times are shortened.

Via technology objects and Motion Control blocks of the higher-level controller, there are many possibilities of motion, such as continuous operation, positioning and synchronous operation, and coordinated motion of multiple axes via cyclic cams or interpolation.

Siemens offers tested SIMATIC PLC/HMI application examples for connection of the servo drive system to a SIMATIC controller:
www.siemens.com/sinamics-applications

Further information on the SIMATIC S7-1200 G2, SIMATIC S7-1500, SIMATIC S7-1500 T-CPU and SIMATIC ET 200SP Open Controller is available in the ST 70 Catalog and on the internet under
www.siemens.com/simatic-s7-1200
www.siemens.com/simatic-s7-1500

[1] For SINAMICS S210 (6SL3...), from V15.1, for innovated SINAMICS S210 (6SL5...), from V18 SP1.

[2] Safe Stop 1 time-controlled (SS1-t) is also included in the Safety Integrated Basic functions.

[3] The Extended Functions require a Safety license.
For SINAMICS S210 servo converters (6SL3...), available from SINAMICS V5.1 SP1.
For innovated SINAMICS S210 (6SL5...) servo converters with firmware V6.1, the functions SS1, SLS, SDI and SSM are available. All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

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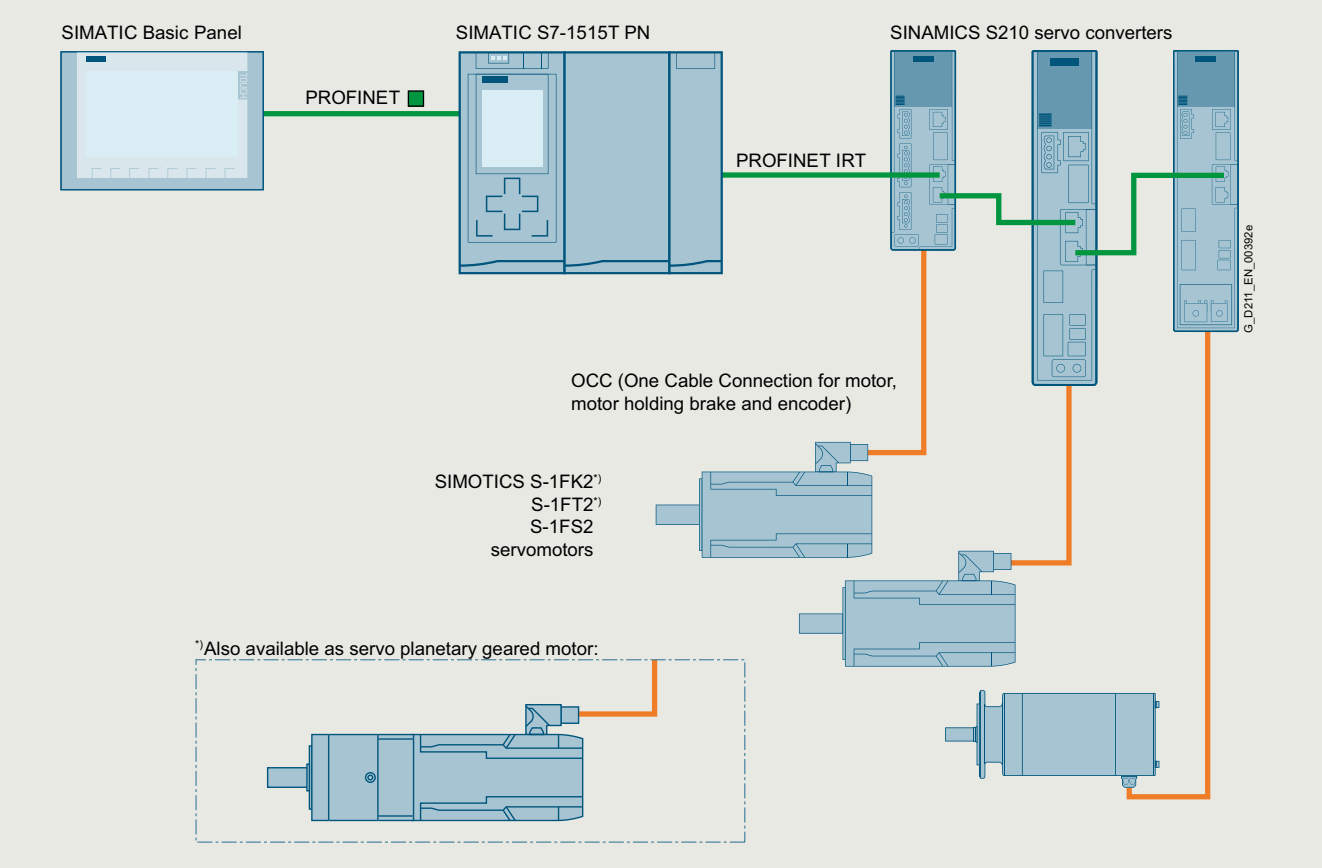
Overview



Example: Communication via PROFINET

Ruggedness

The SINAMICS S210 is equipped as standard with varnished or partially varnished modules. The painting on the modules protects the sensitive SMD components against corrosive gases, chemically active dust and moisture.

Can be used worldwide

In addition to the usual approvals, the SINAMICS S210 drive system also has UL approval for the North American market. This means that the drive system, comprising SINAMICS S210 and SIMOTICS S-1FK2, S-1FT2 or S-1FS2, including the One Cable Connection (OCC), can be used worldwide.

Extended warranty

For SINAMICS S210 servo drive system, Siemens offers an optional extended warranty of up to 7years via Service Protect:

- Free for the first 6 months after registering the product at: www.siemens.com/serviceprotect
- Subject to a charge for a further 3 or 5 years of extended warranty for SINAMICS S210 servo converters.
- Subject to a charge for a further 1 or 2 years of extended warranty for SIMOTICS S-1FK2/1FT2/1FS2 servo motors.

You can find detailed information here:
https://support.industry.siemens.com/cs/ww/en/sc/4842

You can find the correct Service Protect product number for your SINAMICS S210 servo drive system using our simple configurator
www.siemens.com/serviceprotect

Concerning standard warranty please ask your partner at Siemens.

Your partner can be found in our Personal Contacts Database at:
www.siemens.com/automation-contact

Siemens EcoTech Profile (SEP) for SINAMICS S210

Siemens introduces a new label: Siemens EcoTech. It is an environmental declaration for products based on product-specific evaluations of sustainability relevant KPIs.

To provide maximum transparency, the Siemens EcoTech Profile (SEP) were created for all Siemens EcoTech products.

It is a Siemens-created, standardized product data sheet which gives insight about the product performance in environmental relevant criteria as well as about interpretation and comparison of data against an existing norm, standard or predecessor product.

You can find more information on the internet at:
https://support.industry.siemens.com/cs/ww/en/ps/29596/cert?ci=5702

www.siemens.com/SiemensEcoTech

Siemens EcoTech

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Overview

More information

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-s210/documentation

Detailed information on the SINAMICS S210 drive system, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates, manuals and operating instructions), is available on the internet at:
www.siemens.com/sinamics-s210

and is also available via the Siemens Product Configurator on the internet.
The Siemens Product Configurator can be found in SiePortal at the following address:
www.siemens.com/sinamics-s210/configuration

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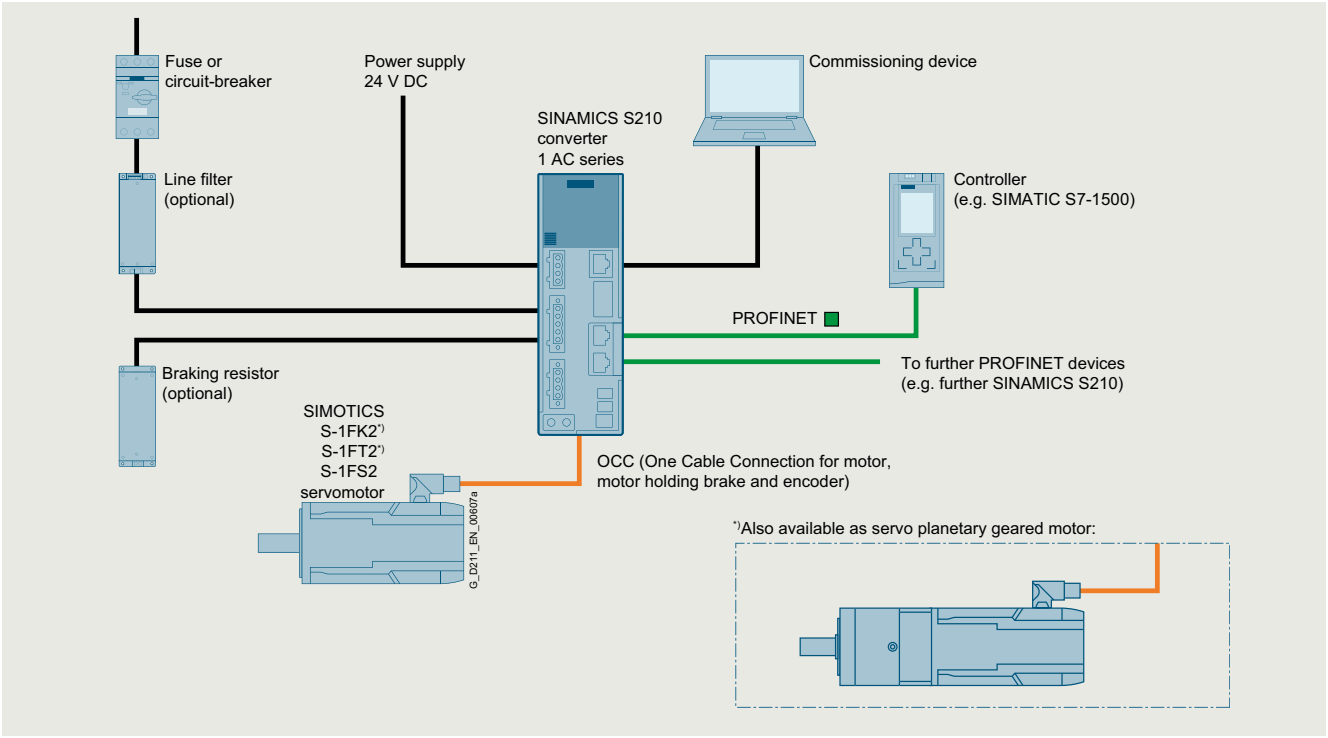
Overview



SINAMICS S210 (6SL5...) drive system, 1 AC series with optional components

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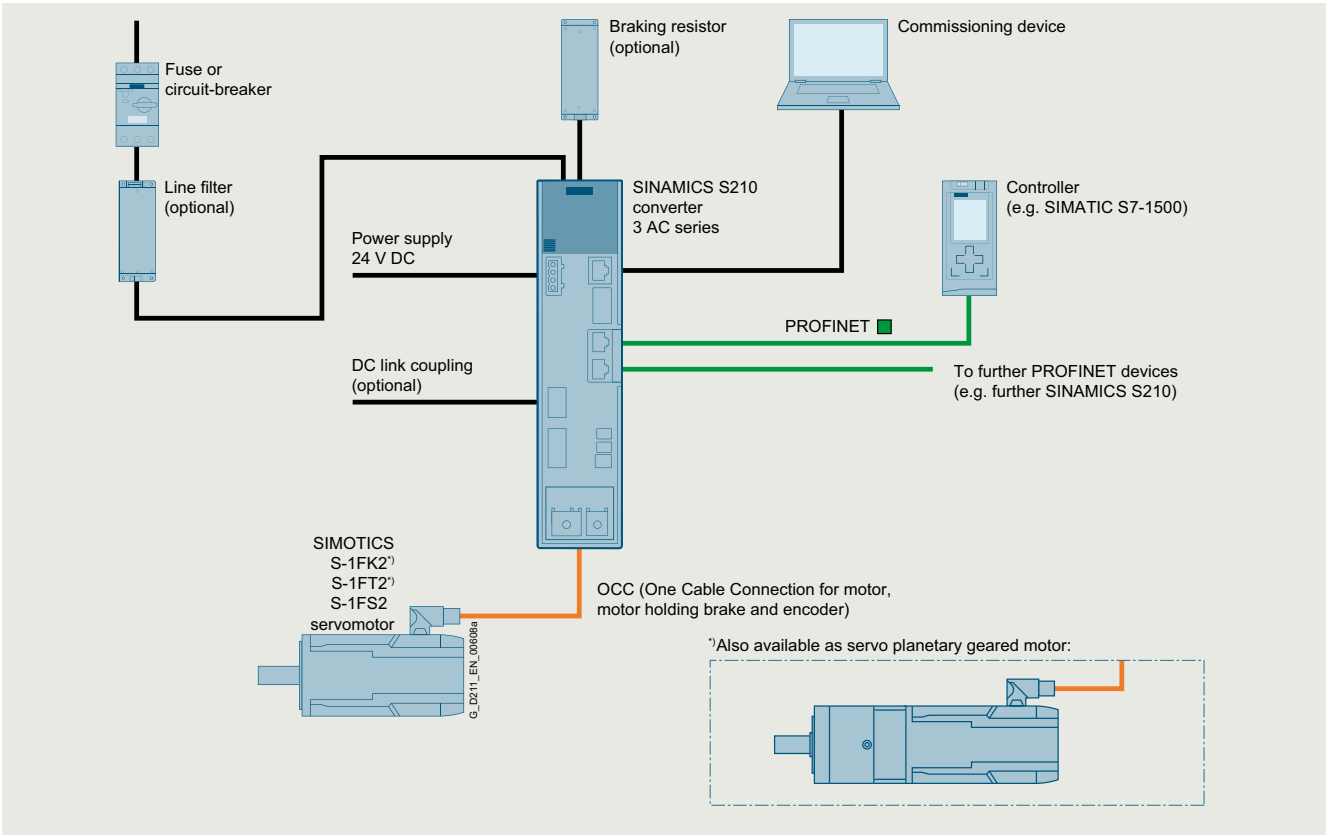
Overview



SINAMICS S210 (6SL5...) drive system, 3 AC series with optional components

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FK2 servomotors for line connection 200 ... 240 V 1 AC

SIMOTICS S-1FK2 servomotor							SINAMICS S210 servo converter (1 AC series) Supply voltage 200 ... 240 V 1 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 230 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications							**SINAMICS S210 servo converter**			**One Cable Connection**
20	0.16 (0.12)	0.56 (0.41)	3000	0.05 (0.07)	0.16 (0.12)	**1FK2102-0AG■■-■■A0**	0.1	FSA	**6SL5310-1BB10-1CF0**	**6FX■002-8QN04-1■■■**
	0.32 (0.24)	1.11 (0.82)	3000	0.1 (0.13)	0.32 (0.24)	**1FK2102-1AG■■-■■A0**	0.1	FSA	**6SL5310-1BB10-1CF0**	**6FX■002-8QN04-1■■■**
30	0.64 (0.47)	1.95 (1.44)	3000	0.2 (0.27)	0.64 (0.47)	**1FK2103-2AG■■-■■A0**	0.2	FSA	**6SL5310-1BB10-2CF0**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	4.05 (2.99)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2103-4AG■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN04-1■■■**
40	1.27 (0.94)	3.75 (2.77)	1500	0.2 (0.27)	1.27 (0.94)	**1FK2104-4AF■■-■■A0**	0.2	FSA	**6SL5310-1BB10-2CF0**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.85 (2.84)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2104-4AK■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.5 (5.53)	1500	0.375 (0.50)	2.4 (1.77)	**1FK2104-5AF■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.6 (5.61)	3000	0.75 (1.01)	2.4 (1.77)	**1FK2104-5AK■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	10 (7.38)	1500	0.5 (0.67)	3.2 (2.36)	**1FK2104-6AF■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
Compact for high precision applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.85 (1.36)	3000	0.2 (0.27)	0.64 (0.47)	**1FK2203-2AG■■-■■A0**	0.2	FSA	**6SL5310-1BB10-2CF0**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	3.75 (2.77)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2203-4AG■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN04-1■■■**
40	2.4 (1.77)	7.1 (5.24)	1500	0.375 (0.50)	2.4 (1.77)	**1FK2204-5AF■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.1 (5.24)	3000	0.75 (1.01)	2.4 (1.77)	**1FK2204-5AK■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	9.5 (7.01)	1500	0.5 (0.67)	3.2 (2.36)	**1FK2204-6AF■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
48	3.6 (2.66)	10.8 (7.97)	1500	0.53 (0.71)	3.4 (2.51)	**1FK2205-2AF■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**

Article No. supplements

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FK2 servomotors for line connection 200 ... 240 V 3 AC

SIMOTICS S-1FK2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Rated speed n_N r/min	Rated power 240 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications							**SINAMICS S210 servo converter**			**One Cable Connection**
20	0.16 (0.12)	0.56 (0.41)	3000	0.05 (0.07)	0.16 (0.12)	**1FK2102-0AG■■-■■A0**	0.24	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN04-1■■■**
	0.32 (0.24)	1.11 (0.82)	3000	0.1 (0.13)	0.32 (0.24)	**1FK2102-1AG■■-■■A0**	0.24	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN04-1■■■**
30	0.64 (0.47)	1.95 (1.44)	3000	0.2 (0.27)	0.64 (0.47)	**1FK2103-2AG■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	4.05 (2.99)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2103-4AG■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN04-1■■■**
40	1.27 (0.94)	3.75 (2.77)	1500	0.2 (0.27)	1.27 (0.94)	**1FK2104-4AF■■-■■A0**	0.24	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.85 (2.84)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2104-4AK■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.5 (5.53)	1500	0.375 (0.50)	2.4 (1.77)	**1FK2104-5AF■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.6 (5.61)	3000	0.75 (1.01)	2.4 (1.77)	**1FK2104-5AK■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	10 (7.38)	1500	0.5 (0.67)	3.2 (2.36)	**1FK2104-6AF■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
52	5.0 (3.69)	15 (11.06)	1500	0.79 (1.06)	5.0 (3.69)	**1FK2105-4AF■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	8.0 (5.90)	24 (17.70)	1500	1.26 (1.69)	8 (5.90)	**1FK2105-6AF■■-■■A0**	1.2	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN08-1■■■**
63	9.0 (6.64)	26 (19.18)	1500	1.3 (1.74)	8.3 (6.12)	**1FK2106-3AF■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	33 (24.34)	1500	1.64 (2.20)	10.5 (7.74)	**1FK2106-4AF■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	16 (11.80)	45.5 (33.56)	1500	2.15 (2.88)	13.8 (10.18)	**1FK2106-6AF■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FK2 servomotors for line connection 200 ... 240 V 3 AC (continued)

SIMOTICS S-1FK2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Rated speed n_{max} r/min	Rated power 240 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.85 (1.36)	3000	0.2 (0.27)	0.64 (0.47)	**1FK2203-2AG■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	3.75 (2.77)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2203-4AG■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN04-1■■■**
40	2.4 (1.77)	7.1 (5.24)	1500	0.375 (0.50)	2.4 (1.77)	**1FK2204-5AF■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.1 (5.24)	3000	0.75 (1.01)	2.4 (1.77)	**1FK2204-5AK■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	9.5 (7.01)	1500	0.5 (0.67)	3.2 (2.36)	**1FK2204-6AF■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
48	3.6 (2.66)	10.8 (7.97)	1500	0.53 (0.71)	3.4 (2.51)	**1FK2205-2AF■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	6.0 (4.43)	18 (13.28)	1500	0.86 (1.15)	5.5 (4.06)	**1FK2205-4AF■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
63	6.5 (4.79)	18 (13.28)	1500	0.97 (1.30)	6.1 (4.50)	**1FK2206-2AF■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	36 (26.55)	1500	1.72 (2.31)	10.9 (8.04)	**1FK2206-4AF■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
80	18 (13.28)	51 (37.62)	1000	1.74 (2.33)	16.6 (12.24)	**1FK2208-3AC■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	1000	2.15 (2.88)	20 (14.75)	**1FK2208-4AC■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	27 (19.92)	80 (59.01)	1000	2.5 (3.35)	23.5 (17.33)	**1FK2208-5AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
100	30 (22.13)	90 (66.38)	750	2.5 (3.35)	30 (22.13)	**1FK2210-3AB■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	90 (66.38)	1000	3.2 (4.29)	30 (22.13)	**1FK2210-3AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.50)	120 (88.51)	750	3.05 (4.09)	39 (28.77)	**1FK2210-4AB■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.50)	120 (88.51)	1000	3.9 (5.23)	37 (27.29)	**1FK2210-4AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
Degree of protection			
IP64 (without shaft sealing ring)		**0**	
IP65 (with shaft sealing ring)		**1**	
Shaft end / feather key			
Plain shaft			**0**
Shaft with feather key			**1**
Plain shaft, reduced shaft diameter • ∅11 × 23 mm (0.43 × 0.91 in) (only for 1FK2.03 and IP64) • ∅14 × 30 mm (0.55 × 1.18 in) (only for 1FK2.04 and IP64)		**0**	**2**
Encoder			
AS22DQC (absolute encoder 22-bit singleturn)			**S**
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)			**M**

Pre-assembled MOTION-CONNECT cable			
MOTION-CONNECT 500	**5**		
MOTION-CONNECT 800PLUS	**8**		
Length code (max. 50 m (164 ft))			
0 m (0 ft)		**A**	
10 m (32.8 ft)		**B**	
...		...	
50 m (164 ft)		**F**	
0 m (0 ft)			**A**
1 m (3.28 ft)			**B**
2 m (6.56 ft)			**C**
3 m (9.84 ft)			**D**
4 m (13.1 ft)			**E**
5 m (16.4 ft)			**F**
6 m (19.7 ft)			**G**
7 m (23.0 ft)			**H**
8 m (26.2 ft)			**J**
9 m (29.5 ft)			**K**
0 m (0 ft)			**0**
0.1 m (0.33 ft)			**1**
...			...
0.8 m (2.62 ft)			**8**

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage. The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FK2 servomotors for line connection 380 ... 480 V 3 AC

SIMOTICS S-1FK2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.95 (1.44)	4500	0.28 (0.38)	0.59 (0.44)	**1FK2103-2AH■■-■■A0**	0.4	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	4.05 (2.99)	4500	0.48 (0.64)	1.01 (0.74)	**1FK2103-4AH■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
40	1.27 (0.94)	3.75 (2.77)	3000	0.4 (0.54)	1.27 (0.94)	**1FK2104-4AF■■-■■A0**	0.4	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.85 (2.84)	6000	0.6 (0.80)	0.95 (0.70)	**1FK2104-4AK■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.5 (5.53)	3000	0.75 (1.01)	2.4 (1.77)	**1FK2104-5AF■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.6 (5.61)	6000	1.07 (1.43)	1.7 (1.25)	**1FK2104-5AK■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	10 (7.38)	3000	1.0 (1.34)	3.2 (2.36)	**1FK2104-6AF■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
52	5.0 (3.69)	15 (11.06)	3000	1.45 (1.94)	4.6 (3.39)	**1FK2105-4AF■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	8.0 (5.90)	24 (17.70)	3000	2.1 (2.82)	6.6 (4.87)	**1FK2105-6AF■■-■■A0**	2.0	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN08-1■■■**
63	9.0 (6.64)	26 (19.18)	3000	2.3 (3.08)	7.3 (5.38)	**1FK2106-3AF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	33 (24.34)	3000	2.7 (3.62)	8.6 (6.34)	**1FK2106-4AF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	16 (11.80)	45.5 (33.56)	3000	3.3 (4.43)	10.6 (7.82)	**1FK2106-6AF■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake		
Without holding brake	0	
With holding brake	1	
Degree of protection		
IP64 (without shaft sealing ring)	0	
IP65 (with shaft sealing ring)	1	
Shaft end / feather key		
Plain shaft		0
Shaft with feather key		1
Plain shaft, reduced shaft diameter • Ø11 × 23 mm (0.43 × 0.91 in) (only for 1FK2.03 and IP64) • Ø14 × 30 mm (0.55 × 1.18 in) (only for 1FK2.04 and IP64)	0	2
Encoder		
AS22DQC (absolute encoder 22-bit singleturn)		S
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)		M

Pre-assembled MOTION-CONNECT cable		
MOTION-CONNECT 500	5	
MOTION-CONNECT 800PLUS	8	
Length code (max. 50 m (164 ft))		
0 m (0 ft)		A
10 m (32.8 ft)		B
...		...
50 m (164 ft)		F
0 m (0 ft)		A
1 m (3.28 ft)		B
2 m (6.56 ft)		C
3 m (9.84 ft)		D
4 m (13.1 ft)		E
5 m (16.4 ft)		F
6 m (19.7 ft)		G
7 m (23.0 ft)		H
8 m (26.2 ft)		J
9 m (29.5 ft)		K
0 m (0 ft)		0
0.1 m (0.33 ft)		1
...		...
0.8 m (2.62 ft)		8

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FK2 servomotors for line connection 380 ... 480 V 3 AC (continued)

SIMOTICS S-1FK2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.85 (1.36)	6000	0.255 (0.342)	0.405 (0.299)	**1FK2203-2AK■■-■■A0**	0.4	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.75 (2.77)	6000	0.43 (0.58)	0.68 (0.50)	**1FK2203-4AK■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
40	2.4 (1.77)	7.1 (5.24)	3000	0.75 (1.01)	2.4 (1.77)	**1FK2204-5AF■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.1 (5.24)	6000	0.57 (0.76)	0.9 (0.66)	**1FK2204-5AK■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	9.5 (7.01)	3000	1 (1.34)	3.2 (2.36)	**1FK2204-6AF■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
48	3.6 (2.66)	10.8 (7.97)	3000	0.94 (1.26)	3.0 (2.21)	**1FK2205-2AF■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	6.0 (4.43)	18 (13.28)	3000	1.45 (1.94)	4.6 (3.39)	**1FK2205-4AF■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
63	6.5 (4.79)	18 (13.28)	3000	1.71 (2.29)	5.4 (3.98)	**1FK2206-2AF■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	36 (26.55)	3000	2.85 (3.82)	9.1 (6.71)	**1FK2206-4AF■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
80	18 (13.28)	51 (37.62)	2000	3.05 (4.09)	14.5 (10.70)	**1FK2208-3AC■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	2000	3.55 (4.76)	17 (12.54)	**1FK2208-4AC■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	27 (19.92)	80 (59.01)	2000	4.0 (5.36)	19.1 (14.09)	**1FK2208-5AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
100	30 (22.13)	90 (66.38)	1500	4.5 (6.03)	28.5 (21.02)	**1FK2210-3AB■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	90 (66.38)	2000	5.5 (7.38)	26 (19.18)	**1FK2210-3AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.50)	120 (88.51)	1500	5.4 (7.24)	34.5 (25.45)	**1FK2210-4AB■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.50)	120 (88.51)	2000	6.4 (8.58)	30.5 (22.50)	**1FK2210-4AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 200 ... 240 V 1 AC

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (1 AC series) Supply voltage 200 ... 240 V 1 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 230 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications							**SINAMICS S210 servo converter**			**One Cable Connection**
20	0.16 (1.42)	0.56 (4.96)	3000	0.05 (0.07)	0.16 (1.42)	**1FT2102-0AG■■-■■A0**	0.1	FSA	**6SL5310-1BB10-1CF0**	**6FX■002-8QN04-1■■■**
	0.32 (2.83)	1.11 (9.82)	3000	0.1 (0.13)	0.32 (2.83)	**1FT2102-1AG■■-■■A0**	0.1	FSA	**6SL5310-1BB10-1CF0**	**6FX■002-8QN04-1■■■**
30	0.64 (5.66)	1.95 (17.26)	3000	0.2 (0.27)	0.64 (5.66)	**1FT2103-2AG■■-■■A0**	0.2	FSA	**6SL5310-1BB10-2CF0**	**6FX■002-8QN04-1■■■**
	1.27 (11.24)	4.05 (35.85)	3000	0.4 (0.54)	1.27 (11.24)	**1FT2103-4AG■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN04-1■■■**
40	1.27 (11.24)	3.75 (33.19)	1500	0.2 (0.27)	1.27 (11.24)	**1FT2104-4AF■■-■■A0**	0.2	FSA	**6SL5310-1BB10-2CF0**	**6FX■002-8QN08-1■■■**
	1.27 (11.24)	3.85 (34.08)	3000	0.4 (0.54)	1.27 (11.24)	**1FT2104-4AK■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	2.4 (21.24)	7.5 (66.38)	1500	0.375 (0.5)	2.4 (21.24)	**1FT2104-5AF■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	2.4 (21.24)	7.6 (67.27)	3000	0.75 (1.01)	2.4 (21.24)	**1FT2104-5AK■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
	3.2 (28.32)	10 (88.51)	1500	0.5 (0.67)	3.2 (28.32)	**1FT2104-6AF■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
Compact for high precision applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.85 (1.36)	3000	0.2 (0.27)	0.64 (0.47)	**1FT2203-2AG■■-■■A0**	0.2	FSA	**6SL5310-1BB10-2CF0**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	3.75 (2.77)	3000	0.4 (0.54)	1.27 (0.94)	**1FT2203-4AG■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN04-1■■■**
40	2.4 (1.77)	7.1 (5.24)	1500	0.375 (0.5)	2.4 (1.77)	**1FT2204-5AF■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.1 (5.24)	3000	0.75 (1.01)	2.4 (1.77)	**1FT2204-5AK■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	9.5 (7.01)	1500	0.5 (0.67)	3.2 (2.36)	**1FT2204-6AF■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
48	3.6 (2.66)	10.8 (7.97)	1000	0.36 (0.48)	3.45 (2.54)	**1FT2205-2AC■■-■■A0**	0.4	FSB	**6SL5310-1BB10-4CF0**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10.8 (7.97)	1500	0.53 (0.71)	3.4 (2.51)	**1FT2205-2AF■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10.8 (7.97)	2500	0.82 (1.1)	3.15 (2.32)	**1FT2205-2AH■■-■■A0**	0.75	FSC	**6SL5310-1BB10-8CF0**	**6FX■002-8QN08-1■■■**

Article No. supplements

| | | | | | | |

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 200 ... 240 V 3 AC

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications							**SINAMICS S210 servo converter**			**One Cable Connection**
20	0.16 (0.12)	0.56 (0.41)	3000	0.05 (0.07)	0.16 (0.12)	**1FT2102-0AG■■-■■A0**	0.24	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN04-1■■■**
	0.32 (0.24)	1.11 (0.82)	3000	0.1 (0.13)	0.32 (0.24)	**1FT2102-1AG■■-■■A0**	0.24	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN04-1■■■**
30	0.64 (0.47)	1.95 (1.44)	3000	0.2 (0.27)	0.64 (0.47)	**1FT2103-2AG■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	4.05 (2.99)	3000	0.4 (0.54)	1.27 (0.94)	**1FT2103-4AG■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN04-1■■■**
40	1.27 (0.94)	3.75 (2.77)	1500	0.2 (0.27)	1.27 (0.94)	**1FT2104-4AF■■-■■A0**	0.24	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.85 (2.84)	3000	0.4 (0.54)	1.27 (0.94)	**1FT2104-4AK■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.5 (5.53)	1500	0.375 (0.5)	2.4 (1.77)	**1FT2104-5AF■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.6 (5.61)	3000	0.75 (1.01)	2.4 (1.77)	**1FT2104-5AK■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	10 (7.38)	1500	0.5 (0.67)	3.2 (2.36)	**1FT2104-6AF■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10 (7.38)	2500	0.86 (1.15)	3.25 (2.40)	**1FT2104-6AH■■-■■A0**	0,9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
52	5.0 (3.69)	15 (11.06)	1500	0.79 (1.06)	5.0 (3.69)	**1FT2105-4AF■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	5.0 (3.69)	15 (11.06)	2500	1.27 (1.7)	4.85 (3.58)	**1FT2105-4AH■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN08-1■■■**
	8.0 (5.9)	24 (17.7)	1500	1.26 (1.69)	8.0 (5.9)	**1FT2105-6AF■■-■■A0**	1.2	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN08-1■■■**
63	9.0 (6.64)	26 (19.18)	1500	1.3 (1.74)	8.3 (6.12)	**1FT2106-3AF■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	33 (24.34)	1500	1.64 (2.2)	10.5 (7.74)	**1FT2106-4AF■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	16 (11.8)	45.5 (33.56)	1500	2.15 (2.88)	13.8 (10.18)	**1FT2106-6AF■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake		
Without holding brake	**0**	
With holding brake	**1**	
Degree of protection		
IP64 (without shaft sealing ring)	**0**	
IP65 (with shaft sealing ring)	**1**	
IP67 (with shaft sealing ring) (not for 1FT2102)	**2**	
Shaft end / feather key		
Plain shaft		**0**
Shaft with feather key		**1**
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)	**0**	**2**
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		**2**
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		**3**
Encoder		
AS22DQC (absolute encoder 22-bit singleturn)		**S**
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)		**M**
AS26DQC (absolute encoder 26-bit singleturn)		**B**
AM26DQC (absolute encoder 26-bit + 12-bit multiturn)		**C**

Pre-assembled MOTION-CONNECT cable		
MOTION-CONNECT 500	**5**	
MOTION-CONNECT 800PLUS	**8**	
Length code (max. 50 m (164 ft))		
0 m (0 ft)		**A**
10 m (32.8 ft)		**B**
...		...
50 m (164 ft)		**F**
0 m (0 ft)		**A**
1 m (3.28 ft)		**B**
2 m (6.56 ft)		**C**
3 m (9.84 ft)		**D**
4 m (13.1 ft)		**E**
5 m (16.4 ft)		**F**
6 m (19.7 ft)		**G**
7 m (23.0 ft)		**H**
8 m (26.2 ft)		**J**
9 m (29.5 ft)		**K**
0 m (0 ft)		**0**
0.1 m (0.33 ft)		**1**
...		...
0.8 m (2.62 ft)		**8**

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage.
The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 200 ... 240 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications (continued)							**SINAMICS S210 servo converter**			**One Cable Connection**
80	25 (18.44)	74 (54.58)	1000	2.45 (3.29)	23.5 (17.33)	**1FT2108-4AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	100 (73.73)	750	2.2 (2.95)	28 (20.65)	**1FT2108-5AB■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	37.5 (27.66)	118 (87.04)	750	2.6 (3.49)	33 (24.34)	**1FT2108-7AB■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
High Dynamic for highly dynamic applications – forced ventilation							**SINAMICS S210 servo converter**			**One Cable Connection**
63 NEW	11.5 (8.48)	25 (18.44)	1500	1.68 (2.25)	10.7 (7.89)	**1FT2106-3SF■■-■■A0**	3	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
NEW	16 (11.8)	33 (24.34)	1500	2.3 (3.08)	14.5 (10.7)	**1FT2106-4SF■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
80	40 (29.5)	100 (73.73)	750	3 (4.02)	38 (28.03)	**1FT2108-5SB■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake																								
Without holding brake	**0**																							
With holding brake	**1**																							
With reinforced brake (only for 1FT2108)	**2**																							
Degree of protection																								
IP64 (without shaft sealing ring)		**0**																						
IP65 (with shaft sealing ring)		**1**																						
IP67 (with shaft sealing ring)		**2**																						
Shaft end / feather key																								
Plain shaft			**0**																					
Shaft with feather key			**1**																					
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)		**0**	**2**																					
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**2**																					
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**3**																					
Encoder																								
AS22DQC (absolute encoder 22-bit singleturn)				**S**																				
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)				**M**																				
AS26DQC (absolute encoder 26-bit singleturn)				**B**																				
AM26DQC (absolute encoder 26-bit + 12-bit multiturn)				**C**																				

Pre-assembled MOTION-CONNECT cable																								
MOTION-CONNECT 500																								**5**
MOTION-CONNECT 800PLUS																								**8**
Length code (max. 50 m (164 ft))																								
0 m (0 ft)																							**A**	
10 m (32.8 ft)																							**B**	
...																							...	
50 m (164 ft)																							**F**	
0 m (0 ft)																						**A**		
1 m (3.28 ft)																						**B**		
2 m (6.56 ft)																						**C**		
3 m (9.84 ft)																						**D**		
4 m (13.1 ft)																						**E**		
5 m (16.4 ft)																						**F**		
6 m (19.7 ft)																						**G**		
7 m (23.0 ft)																						**H**		
8 m (26.2 ft)																						**J**		
9 m (29.5 ft)																						**K**		
0 m (0 ft)																								**0**
0.1 m (0.33 ft)																								**1**
...																								...
0.8 m (2.62 ft)																								**8**

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage. The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 200 ... 240 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.85 (1.36)	3000	0.2 (0.27)	0.64 (0.47)	**1FT2203-2AG■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN04-1■■■**
	1.27 (0.94)	3.75 (2.77)	3000	0.4 (0.54)	1.27 (0.94)	**1FT2203-4AG■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN04-1■■■**
40	2.4 (1.77)	7.1 (5.24)	1500	0.375 (0.5)	2.4 (1.77)	**1FT2204-5AF■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.1 (5.24)	3000	0.75 (1.01)	2.4 (1.77)	**1FT2204-5AK■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	9.5 (7.01)	1500	0.5 (0.67)	3.2 (2.36)	**1FT2204-6AF■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
48	3.6 (2.66)	10.8 (7.97)	1000	0.36 (0.48)	3.45 (2.54)	**1FT2205-2AC■■-■■A0**	0.45	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10.8 (7.97)	1500	0.53 (0.71)	3.4 (2.51)	**1FT2205-2AF■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10.8 (7.97)	2500	0.82 (1.1)	3.15 (2.32)	**1FT2205-2AH■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	6.0 (4.43)	18 (13.28)	1500	0.86 (1.15)	5.5 (4.06)	**1FT2205-4AF■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
63	6.0 (4.43)	18 (13.28)	1000	0.61 (0.82)	5.85 (4.31)	**1FT2206-2AC■■-■■A0**	0.6	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN11-1■■■**
	6.5 (4.79)	18 (13.28)	1500	0.97 (1.3)	6.1 (4.5)	**1FT2206-2AF■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	6.5 (4.79)	18 (13.28)	2500	1.45 (1.94)	5.5 (4.06)	**1FT2206-2AH■■-■■A0**	1.2	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN11-1■■■**
	9.0 (6.64)	27 (19.92)	750	0.68 (0.91)	8.7 (6.42)	**1FT2206-3AB■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	9.0 (6.64)	27 (19.92)	1500	1.29 (1.73)	8.2 (6.05)	**1FT2206-3AF■■-■■A0**	1.2	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	38 (28.03)	1000	1.2 (1.61)	11.5 (8.48)	**1FT2206-4AC■■-■■A0**	0.9	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	36 (26.55)	1500	1.72 (2.31)	10.9 (8.04)	**1FT2206-4AF■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	36 (26.55)	2500	2.4 (3.22)	9.3 (6.86)	**1FT2206-4AH■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake			
Without holding brake	0		
With holding brake	1		
Degree of protection			
IP64 (without shaft sealing ring)	0		
IP65 (with shaft sealing ring)	1		
IP67 (with shaft sealing ring)	2		
Shaft end / feather key			
Plain shaft		0	
Shaft with feather key		1	
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)	0	2	
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		2	
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		3	
Encoder			
AS22DQC (absolute encoder 22-bit singleturn)			S
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)			M
AS26DQC (absolute encoder 26-bit singleturn)			B
AM26DQC (absolute encoder 26-bit + 12-bit multiturn)			C

Pre-assembled MOTION-CONNECT cable			
MOTION-CONNECT 500	5		
MOTION-CONNECT 800PLUS	8		
Length code (max. 50 m (164 ft))			
0 m (0 ft)		A	
10 m (32.8 ft)		B	
...		...	
50 m (164 ft)		F	
0 m (0 ft)			A
1 m (3.28 ft)			B
2 m (6.56 ft)			C
3 m (9.84 ft)			D
4 m (13.1 ft)			E
5 m (16.4 ft)			F
6 m (19.7 ft)			G
7 m (23.0 ft)			H
8 m (26.2 ft)			J
9 m (29.5 ft)			K
0 m (0 ft)			0
0.1 m (0.33 ft)			1
...			...
0.8 m (2.62 ft)			8

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage.
The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 200 ... 240 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications (continued)							**SINAMICS S210 servo converter**			**One Cable Connection**
80	12.5 (9.22)	38 (28.03)	1500	1.68 (2.25)	10.7 (7.89)	**1FT2208-2AF■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	18 (13.28)	51 (37.62)	750	1.34 (1.8)	17 (12.54)	**1FT2208-3AB■■-■■A0**	1.2	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN11-1■■■**
	18 (13.28)	51 (37.62)	1000	1.74 (2.33)	16.6 (12.24)	**1FT2208-3AC■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	18 (13.28)	51 (37.62)	1500	2.4 (3.22)	15.4 (11.36)	**1FT2208-3AF■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	750	1.62 (2.17)	20.7 (15.27)	**1FT2208-4AB■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	1000	2.15 (2.88)	20 (14.75)	**1FT2208-4AC■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	1500	2.75 (3.69)	17.6 (12.98)	**1FT2208-4AF■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	27 (19.92)	80 (59.01)	750	1.92 (2.57)	24.5 (18.07)	**1FT2208-5AB■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	27 (19.92)	80 (59.01)	1000	2.5 (3.35)	23.5 (17.33)	**1FT2208-5AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
100	22 (16.23)	60 (44.26)	1000	2.15 (2.88)	20.5 (15.12)	**1FT2210-2AC■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	60 (44.26)	1500	3.1 (4.16)	19.6 (14.46)	**1FT2210-2AF■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	90 (66.38)	750	2.5 (3.35)	30 (22.13)	**1FT2210-3AB■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	90 (66.38)	1000	3.2 (4.29)	30 (22.13)	**1FT2210-3AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.5)	120 (88.51)	750	3.05 (4.09)	39 (28.77)	**1FT2210-4AB■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.5)	120 (88.51)	1000	3.9 (5.23)	37 (27.29)	**1FT2210-4AC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	50 (36.88)	150 (110.64)	750	3.5 (4.69)	44.5 (32.82)	**1FT2210-5AB■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 200 ... 240 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 200 ... 240 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 230 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 240 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications – forced ventilation							**SINAMICS S210 servo converter**			**One Cable Connection**
63 NEW	14.5 (10.7)	36 (26.55)	1500	2.1	13.4 (9.88)	**1FT2206-4SF■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
NEW	14.5 (10.7)	36 (26.55)	2500	3.1	11.9 (8.78)	**1FT2206-4SH■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
80	22 (16.23)	51 (37.62)	750	1.62 (2.17)	20.5 (15.12)	**1FT2208-2SB■■-■■A0**	2.1	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	51 (37.62)	1000	2.15 (2.88)	20.5 (15.12)	**1FT2208-3SC■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	51 (37.62)	1500	3.1 (4.16)	19.9 (14.68)	**1FT2208-3SF■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	28 (20.65)	66 (48.68)	750	2.1 (2.82)	26.5 (19.55)	**1FT2208-4SB■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	28 (20.65)	66 (48.68)	1000	2.75 (3.69)	26 (19.18)	**1FT2208-4SC■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	35 (25.82)	80 (59.01)	750	2.6 (3.49)	33.5 (24.71)	**1FT2208-5SB■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
100 NEW	53 (39.09)	120 (88.51)	750	4 (2.95)	51 (37.60)	**1FT2210-4SB■■-■■A0**	4.2	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN21-1■■■**

Article No. supplements

Holding brake		
Without holding brake	0	
With holding brake	1	
With reinforced brake (only for 1FT2208-2 and 1FT2208-3)	2	
Degree of protection		
IP64 (without shaft sealing ring)	0	
IP65 (with shaft sealing ring)	1	
IP67 (with shaft sealing ring)	2	
Shaft end / feather key		
Plain shaft		0
Shaft with feather key		1
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)	0	2
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		2
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		3
Encoder		
AS22DQC (absolute encoder 22-bit singleturn)		S
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)		M
AS26DQC (absolute encoder 26-bit singleturn)		B
AM26DQC (absolute encoder 26-bit + 12-bit multiturn)		C

Pre-assembled MOTION-CONNECT cable		
MOTION-CONNECT 500	5	
MOTION-CONNECT 800PLUS	8	
Length code (max. 50 m (164 ft))		
0 m (0 ft)		A
10 m (32.8 ft)		B
...		...
50 m (164 ft)		F
0 m (0 ft)		A
1 m (3.28 ft)		B
2 m (6.56 ft)		C
3 m (9.84 ft)		D
4 m (13.1 ft)		E
5 m (16.4 ft)		F
6 m (19.7 ft)		G
7 m (23.0 ft)		H
8 m (26.2 ft)		J
9 m (29.5 ft)		K
0 m (0 ft)		0
0.1 m (0.33 ft)		1
...		...
0.8 m (2.62 ft)		8

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage. The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 380 ... 480 V 3 AC

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.95 (1.44)	4500	0.28 (0.38)	0.59 (0.44)	**1FT2103-2AH■■-■■A0**	0.4	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	4.05 (2.99)	4500	0.48 (0.64)	1.01 (0.74)	**1FT2103-4AH■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
40	1.27 (0.94)	3.75 (2.77)	3000	0.4 (0.54)	1.27 (0.94)	**1FT2104-4AF■■-■■A0**	0.4	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.85 (2.84)	6000	0.6 (0.8)	0.95 (0.7)	**1FT2104-4AK■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.5 (5.53)	3000	0.75 (1.01)	2.4 (1.77)	**1FT2104-5AF■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.6 (5.61)	6000	1.07 (1.43)	1.7 (1.25)	**1FT2104-5AK■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	10 (7.38)	3000	1.0 (1.34)	3.2 (2.36)	**1FT2104-6AF■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	3.6 2.66	10 (7.38)	4500	1.32 (1.77)	2.8 (2.07)	**1FT2104-6AH■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
52	5.0 (3.69)	15 (11.06)	3000	1.45 (1.94)	4.6 (3.39)	**1FT2105-4AF■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	5.0 (3.69)	15 (11.06)	4500	1.74 (2.33)	3.7 (2.73)	**1FT2105-4AH■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN08-1■■■**
	8.0 (5.9)	24 (17.7)	3000	2.1 (2.82)	6.6 (4.87)	**1FT2105-6AF■■-■■A0**	2.0	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN08-1■■■**
63	9.0 (6.64)	26 (19.18)	3000	2.3 (3.08)	7.3 (5.38)	**1FT2106-3AF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	33 (24.34)	3000	2.7 (3.62)	8.6 (6.34)	**1FT2106-4AF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	16 (11.8)	45.5 (33.56)	3000	3.3 (4.43)	10.6 (7.82)	**1FT2106-6AF■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 380 ... 480 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb$_f$-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
High Dynamic for highly dynamic applications (continued)							**SINAMICS S210 servo converter**			**One Cable Connection**
80	25 (18.44)	74 (54.58)	2000	4.3 (5.77)	20.5 (15.12)	**1FT2108-4AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	100 (73.73)	1500	4.0 (5.36)	25.5 (18.81)	**1FT2108-5AB■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	37.5 (27.66)	118 (87.04)	1500	4.7 (6.30)	30 (22.13)	**1FT2108-7AB■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
High Dynamic for highly dynamic applications – forced ventilation							**SINAMICS S210 servo converter**			**One Cable Connection**
63 NEW	11.5 (8.48)	26 (19.18)	3000	3.1 (4.21)	9.8 (7.23)	**1FT2106-3SF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
NEW	16 (11.8)	33 (24.34)	3000	4.05 (5.43)	12.9 (9.51)	**1FT2106-4SF■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
80	40 (29.5)	100 (73.73)	1500	5.6 (7.51)	35.5 (16.18)	**1FT2108-5SB■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake																								
Without holding brake	**0**																							
With holding brake	**1**																							
With reinforced brake (only for 1FT2108)	**2**																							
Degree of protection																								
IP64 (without shaft sealing ring)		**0**																						
IP65 (with shaft sealing ring)		**1**																						
IP67 (with shaft sealing ring)		**2**																						
Shaft end / feather key																								
Plain shaft			**0**																					
Shaft with feather key			**1**																					
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)		**0**	**2**																					
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**2**																					
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**3**																					
Encoder																								
AS22DQC (absolute encoder 22-bit singleturn)				**S**																				
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)				**M**																				
AS26DQC (absolute encoder 26-bit singleturn)				**B**																				
AM26DQC (absolute encoder 26-bit + 12-bit multiturn)				**C**																				

Pre-assembled MOTION-CONNECT cable																								
MOTION-CONNECT 500																								
MOTION-CONNECT 800PLUS																								
Length code (max. 50 m (164 ft))																								
0 m (0 ft)																								
10 m (32.8 ft)																								
...																								
50 m (164 ft)																								
0 m (0 ft)																								
1 m (3.28 ft)																								
2 m (6.56 ft)																								
3 m (9.84 ft)																								
4 m (13.1 ft)																								
5 m (16.4 ft)																								
6 m (19.7 ft)																								
7 m (23.0 ft)																								
8 m (26.2 ft)																								
9 m (29.5 ft)																								
0 m (0 ft)																								
0.1 m (0.33 ft)																								
...																								
0.8 m (2.62 ft)																								

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 380 ... 480 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maxi-mum torque M_{max} Nm (lb_f-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications							**SINAMICS S210 servo converter**			**One Cable Connection**
30	0.64 (0.47)	1.85 (1.36)	6000	0.255 (0.34)	0.405 (0.3)	**1FT2203-2AK■■-■■A0**	0.4	FSA	**6SL5310-1BE10-4DF1**	**6FX■002-8QN08-1■■■**
	1.27 (0.94)	3.75 (2.77)	6000	0.43 (0.58)	0.68 (0.5)	**1FT2203-4AK■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
40	2.4 (1.77)	7.1 (5.24)	3000	0.75 (1.01)	2.4 (1.77)	**1FT2204-5AF■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	2.4 (1.77)	7.1 (5.24)	6000	0.57 (0.76)	0.9 (0.66)	**1FT2204-5AK■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	3.2 (2.36)	9.5 (7.01)	3000	1.0 (1.34)	3.2 (2.36)	**1FT2204-6AF■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
48	3.6 (2.66)	10.8 (7.97)	2000	0.69 (0.93)	3.3 (2.43)	**1FT2205-2AC■■-■■A0**	0.75	FSA	**6SL5310-1BE10-8DF1**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10.8 (7.97)	3000	0.94 (1.26)	3.0 (2.21)	**1FT2205-2AF■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN08-1■■■**
	3.6 (2.66)	10.8 (7.97)	4500	1.06 (1.42)	2.25 (1.66)	**1FT2205-2AH■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
	6.0 (4.43)	18 (13.28)	3000	1.45 (1.94)	4.6 (3.39)	**1FT2205-4AF■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN08-1■■■**
63	6 (4.43)	18 (13.28)	2000	1.15 (1.54)	5.5 (4.06)	**1FT2206-2AC■■-■■A0**	1.0	FSA	**6SL5310-1BE11-0DF1**	**6FX■002-8QN11-1■■■**
	6.5 (4.79)	18 (13.28)	3000	1.71 (2.29)	5.4 (3.98)	**1FT2206-2AF■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	6.5 (4.79)	18 (13.28)	4500	1.8 (2.41)	3.85 (2.84)	**1FT2206-2AH■■-■■A0**	2.0	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN11-1■■■**
	9.0 (6.64)	27 (19.92)	1500	1.3 (1.74)	8.3 (6.12)	**1FT2206-3AB■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	9.0 (6.64)	27 (19.92)	3000	2.35 (3.15)	7.5 (5.53)	**1FT2206-3AF■■-■■A0**	2.0	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	38 (28.03)	2000	2.2 (2.95)	10.5 (7.74)	**1FT2206-4AC■■-■■A0**	1.5	FSB	**6SL5310-1BE11-5DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	36 (26.55)	3000	2.85 (3.82)	9.1 (6.71)	**1FT2206-4AF■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	12 (8.85)	36 (26.55)	4500	2.2 (2.95)	4.7 (3.47)	**1FT2206-4AH■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 380 ... 480 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications (continued)							**SINAMICS S210 servo converter**			**One Cable Connection**
80	12.5 (9.22)	38 (28.03)	3000	2.85 (3.82)	9.0 (6.64)	**1FT2208-2AF■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	18 (13.28)	51 (37.62)	1500	2.5 (3.35)	16 (11.8)	**1FT2208-3AB■■-■■A0**	2.0	FSB	**6SL5310-1BE12-0DF1**	**6FX■002-8QN11-1■■■**
	18 (13.28)	51 (37.62)	2000	3.05 (4.09)	14.5 (10.7)	**1FT2208-3AC■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	18 (13.28)	51 (37.62)	3000	3.5 (4.69)	11.1 (8.19)	**1FT2208-3AF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	1500	2.9 (3.89)	18.6 (13.72)	**1FT2208-4AB■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	2000	3.55 (4.76)	17 (12.54)	**1FT2208-4AC■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	66 (48.68)	3000	3.7 (4.96)	11.8 (8.7)	**1FT2208-4AF■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	27 (19.92)	80 (59.01)	1500	3.45 (4.63)	22 (16.23)	**1FT2208-5AB■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	27 (19.92)	80 (59.01)	2000	4.0 (5.36)	19.1 (14.09)	**1FT2208-5AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
100	22 (16.23)	60 (44.26)	2000	3.85 (5.16)	18.4 (13.57)	**1FT2210-2AC■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	60 (44.26)	3000	5.1 (6.84)	16.2 (11.95)	**1FT2210-2AF■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	90 (66.38)	1500	4.5 (6.03)	28.5 (21.02)	**1FT2210-3AB■■-■■A0**	3.5	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	30 (22.13)	90 (66.38)	2000	5.5 (7.38)	26 (19.18)	**1FT2210-3AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.5)	120 (88.51)	1500	5.4 (7.24)	34.5 (25.45)	**1FT2210-4AB■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	40 (29.5)	120 (88.51)	2000	6.4 (8.58)	30.5 (22.5)	**1FT2210-4AC■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	50 (36.88)	150 (110.64)	1500	6.1 (8.18)	39 (28.77)	**1FT2210-5AB■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

Holding brake		
Without holding brake	0	
With holding brake	1	
With reinforced brake (only for 1FT2208-2, 1FT2208-3, 1FT2210-2, 1FT2210-3)	2	
Degree of protection		
IP64 (without shaft sealing ring)	0	
IP65 (with shaft sealing ring)	1	
IP67 (with shaft sealing ring)	2	
Shaft end / feather key		
Plain shaft		0
Shaft with feather key		1
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)	0	2
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		2
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)		3
Encoder		
AS22DQC (absolute encoder 22-bit singleturn)		S
AM22DQC (absolute encoder 22-bit + 12-bit multiturn)		M
AS26DQC (absolute encoder 26-bit singleturn)		B
AM26DQC (absolute encoder 26-bit + 12-bit multiturn)		C

Pre-assembled MOTION-CONNECT cable		
MOTION-CONNECT 500	5	
MOTION-CONNECT 800PLUS	8	
Length code (max. 50 m (164 ft))		
0 m (0 ft)		A
10 m (32.8 ft)		B
...		...
50 m (164 ft)		F
0 m (0 ft)		A
1 m (3.28 ft)		B
2 m (6.56 ft)		C
3 m (9.84 ft)		D
4 m (13.1 ft)		E
5 m (16.4 ft)		F
6 m (19.7 ft)		G
7 m (23.0 ft)		H
8 m (26.2 ft)		J
9 m (29.5 ft)		K
0 m (0 ft)		0
0.1 m (0.33 ft)		1
...		...
0.8 m (2.62 ft)		8

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Order overview

SINAMICS S210 drive system with SIMOTICS S-1FT2 servomotors for line connection 380 ... 480 V 3 AC (continued)

SIMOTICS S-1FT2 servomotor							SINAMICS S210 servo converter (3 AC series) Supply voltage 380 ... 480 V 3 AC			MOTION-CONNECT motor connection cable
Shaft height	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Rated speed n_N r/min	Rated power 400 V P_N kW (hp)	Rated torque M_N Nm (lb_f-ft)	Article No.	Rated power 400 V P_N kW	Frame size	Article No.	Article No.
Compact for high precision applications – forced ventilation							**SINAMICS S210 servo converter**			**One Cable Connection**
63	14.5 (10.70)	36 (26.55)	3000	3.85 (5.16)	12.2 (9.00)	**1FT2206-4SF■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	14.5 (10.70)	36 (26.55)	4500	4.7 (6.3)	10 (7.38)	**1FT2206-4SH■■-■■A0**	5.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
80	22 (16.23)	51 (37.62)	1500	3.1 (4.16)	19.9 (14.68)	**1FT2208-3SB■■-■■A0**	5.0	FSC	**6SL5310-1BE13-5DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	51 (37.62)	2000	4.0 (4.36)	19.1 (14.09)	**1FT2208-3SC■■-■■A0**	7.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	22 (16.23)	51 (37.62)	3000	5.5 (7.38)	17.6 (12.98)	**1FT2208-3SF■■-■■A0**	5.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	28 (20.65)	66 (48.68)	1500	4.0 (4.36)	25.5 (18.81)	**1FT2208-4SB■■-■■A0**	7.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
	28 (20.65)	66 (48.68)	2000	5.1 (6.84)	24 (17.70)	**1FT2208-4SC■■-■■A0**	5.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**
	35 (25.82)	80 (59.01)	1500	5.0 (6.71)	32 (23.60)	**1FT2208-5SB■■-■■A0**	3.0	FSC	**6SL5310-1BE15-0DF1**	**6FX■002-8QN11-1■■■**
100	53 (39.09)	120 (88.51)	1500	7.6 (10.19)	48 (35.4)	**1FT2210-4SB■■-■■A0**	7.0	FSC	**6SL5310-1BE17-0DF1**	**6FX■002-8QN11-1■■■**

Article No. supplements

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Clicking to SiePortal

6SL3255-0AA00-5AA0

SINAMICS S210 servo drive system with SIMOTICS S-1FS2 servomotors

Order overview

SINAMICS S210 drive system with SIMOTICS S-1FS2 servomotors

SIMOTICS S-1FS2 servomotor								SINAMICS S210 servo converter	
Shaft height	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Rated speed n_N r/min	Rated power for 380 ... 480 V 3 AC [1] P_N kW (hp)	Rated torque for 380 ... 480 V 3 AC [1] M_N Nm (lb$_f$-ft)	Article No.	Additional order code for cable end and cable length Order code	**Supply voltage 200 ... 240 V 1 AC** Article No.	**Supply voltage 200 ... 240 V 3 AC and 380 ... 480 V 3 AC** Article No.
40	3.1 (2.29)	10 (7.38)	3000	0.8 (1.07)	2.55 (1.88)	**1FS2104-6AF■7-■MZ0**	**Q■■**	**6SL5310-1BB10-8CF0**	**6SL5310-1BE11-0DF1**
52	7.6 (5.61)	24 (17.7)	3000	1.29 (1.73)	4.1 (3.02)	**1FS2105-6AF■7-■MZ0**	**Q■■**	**-**	**6SL5310-1BE12-0DF1**
63	14 (10.3)	42 (31)	2500	1.81 (2.43)	6.9 (5.09)	**1FS2106-6AE■7-■MZ0**	**Q■■**	**-**	**6SL5310-1BE15-0DF1**
	14 (10.3)	42 (31)	3000	1.95 (2.61)	6.2 (4.57)	**1FS2106-6AF■7-■MZ0**	**Q■■**	**-**	**6SL5310-1BE15-0DF1**
80	23.5 (21.39)	80 (59.1)	2000	2.51 (3.37)	12 (8.85)	**1FS2208-5AC■7-■MZ0**	**Q■■**	**-**	**6SL5310-1BE17-0DF1**

Article No. supplements

Holding brake		
Without holding brake	**0**	
With holding brake	**1**	
Shaft end / feather key		
Plain shaft		**0**
Shaft with feather key		**1**

Supplements for the additional order code

Cable end	
Free cable ends for direct connection to the converter	**0**
Cable end with SPEED-CONNECT coupling M17 (1FS2104 and 1FS2105) or M23 (1FS2106 and 1FS2208)	**1**
Cable length	
0.5 m (1.64 ft)	**A**
1 m (3.28 ft)	**B**
1.5 m (4.92 ft)	**C**
2 m (6.56 ft)	**D**
2.5 m (8.20 ft)	**E**
3 m (9.84 ft)	**F**
3.5 m (11.48 ft)	**G**
4 m (13.12 ft)	**H**
4.5 m (14.76 ft)	**J**
5 m (16.41 ft)	**K**
5.5 m (18.05 ft)	**L**
6 m (19.69 ft)	**M**
6.5 m (21.33 ft)	**N**
7 m (22.97 ft)	**P**
7.5 m (24.61 ft)	**Q**
8 m (26.25 ft)	**R**
8.5 m (27.89 ft)	**S**
9 m (29.53 ft)	**T**
9.5 m (31.17 ft)	**U**
10 m (32.81 ft)	**V**
10.5 m (34.45 ft)	**W**
11 m (36.09 ft)	**X**

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage.

The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

[1] Values for operation at 200 ... 240 V 1/3 AC, see chapter 3.3 "SIMOTICS S-1FS2 servomotors for SINAMICS S210".

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Order overview

SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Configuration in the Siemens Product Configurator
www.siemens.com/simotics-1fk2-servogearedmotors/configuration
www.siemens.com/simotics-1ft2-servogearedmotors/configuration

SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Basic motor Article No. | Planetary gearbox Order codes

1 F ■ 2 . . . - . A . ■ ■ - . ■ ■ 0 -Z ■ ■ ■ + ■ ■ ■ + ■ ■ ■ + ■ ■ ■

Basic servomotor			K T		
Holding brake	Without holding brake		0		
	With holding brake		1		
	Reinforced holding brake (only for 1FT2208-2, 1FT2208-3, 1FT2210-2 and 1FT2210-3)		2		
Degree of protection motor	IP64		0		
	IP65		1		
Motor shaft – Assignment depends on the gearbox size, see selection and ordering data tables					
Encoder	Absolute encoder single-turn 22-bit (AS22DQC)			S	
	Absolute encoder 22-bit + 12-bit multi-turn (AM22DQC)			M	
	Absolute encoder single-turn 26-bit (AS26DQC)	T	(only for 1FT2)	B	
	Absolute encoder 26-bit + 12-bit multi-turn (AM26DQC)	T	(only for 1FT2)	C	
Connection technology	One-cable technology for SINAMICS S210 servo converters			A	
	Two-cable technology for SINAMICS S120 servo converters (see Catalog D 21.4)			B	

Gearbox type, gearbox size, number of gearbox stages, transmission ratio, lubrication and gearbox shaft

1. Order code – gearbox type, gearbox size and number of gearbox stages

• Gearbox type	Economy gearbox NRB or economy angular gearbox NRBW	A
	Economy gearbox NRK or economy angular gearbox NRKW	B
	Economy gearbox NLC or economy angular gearbox NLCW	C
	Precision gearbox SP+	J
	Precision gearbox TP+	H

• Gearbox size				
040/050/-/-/-	1	160/155/-/140/050	5	
060/070/060/060/004	2	-/-/-/180/110	6	
080/090/080/075/010	3	-/-/-/210/300	7	
120/120/120/100/025	4	-/-/-/240/500	8	

• Number of gearbox stages	Coaxial gearboxes		Angular gearboxes	
		1-stage 1 2-stage 2 3-stage 3		1-stage 6 2-stage 7 3-stage 8

2. Order code – transmission ratio *i*

1-stage				2-stage						3-stage			
3	R03	10	R10	9	R09	25	R25	50	R50	60	R60	200	R02
4	R04			12	R12	28	R28	64	R64	80	R80	256	R52
5	R05			15	R15	32	R32	70	R70	100	R01	320	R23
7	R07			16	R16	35	R35	100	R00	120	R21	512	R51
8	R08			20	R20	40	R40			160	R61		

3. Order code – gearbox lubrication, shaft version and torsional backlash

Lubrication	Shaft end at gear unit		Torsional backlash	
Standard lubrication	+ Plain solid shaft	M00	+ Backlash-reduced design	M05
	+ Solid shaft with feather key	M01		M06
	+ Geared shaft	M02		M07
Food-safe lubricant	+ Plain solid shaft	M10		M15
	+ Solid shaft with feather key	M11		M16
	+ Geared shaft	M12		M17

4. Order code (optional) – different orientation of the output for angular gearboxes

Standard orientation	–	Connector on the output side	Q91	Connector offset through 180° with respect to the standard	Q92	Connector opposite the output	Q93

Notes:
- The geared motor can only be delivered as a unit – motor plus gearbox – (no individual gearboxes).
- Not all combinations are possible – see selection and ordering data tables.
- For shaft design with feather key, the gearbox data only applies to pulsating loads. With alternating load / reversal of direction of rotation, limitation of the torque as a function of the number of load cycles is required (see Configuration Manual).

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Order overview

Accessories for SINAMICS S210 servo converters

Description	Article No.
SINAMICS SD card for SINAMICS S210 (6SL5...) 8 GB The parameter assignment, firmware and licenses for a converter can be stored on the memory card.	
• Empty	**6SL5970-0AA00-0AA0**
• Empty and Safety license (Extended Functions) [1]	**6SL5970-0AA00-0AA0-ZF01**
• With firmware V6.1	**6SL5370-0GB00-0AA0**
• With firmware V6.1 and Safety license (Extended Functions) [1]	**6SL5370-0GB00-0AA0-ZF01**
• With firmware V6.3	**6SL5370-0GD00-0AA0**
• With firmware V6.3 and Safety license (Extended Functions) [1]	**6SL5370-0GD00-0AA0-ZF01**
• With firmware V6.4 NEW	**6SL5370-0GE00-0AA0**
• With firmware V6.4 and Safety license (Extended Functions) [1] NEW	**6SL5370-0GE00-0AA0-ZF01**
• With firmware V6.4 and SINAMICS OPC UA Single Extended license NEW	**6SL5370-0GE00-0AA0-ZH80**
Safety license for SINAMICS S210 (6SL5...) (Extended Functions) [1] [2]	
• Certificate of License (CoL) in electronic form	**6SL5977-0AA00-2HA0**
SINAMICS OPC UA Single Extended license for SINAMICS S210 (6SL5...)	
• Certificate of License (CoL) in electronic form NEW	**6SL5977-0AA00-1GA0**
PROFINET patch cable For the networking of concatenated converters	
• 0.3 m	**6XV1870-3QE30**
• 0.5 m	**6XV1870-3QE50**
SINAMICS SDI Pro 5.5" NEW Powerful and user-friendly operator panel for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220	**6SL4950-0AH35-2AA0**
SINAMICS Smart Adapter [6] Wi-Fi solution for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) [6] and SINAMICS G220	**6SL4950-0AJ00-0AA0**

Description	Article No.
Only for the 1 AC series	
Line filter With a line filter, Category C2 for motor cable lengths up to 25 m (82 ft), Category C3 for cable lengths up to 50 m (164 ft) acc. to IEC 61800-3 can be achieved.	
• For converters FSA, FSB and FSC	**6SL3203-0BB21-8VA1**
Only for the 3 AC series	
Line filter With a line filter, Category C2 for motor cable lengths up to 25 m (82 ft), Category C3 for cable lengths up to 50 m (164 ft) acc. to IEC 61800-3 can be achieved. When connected via a DC link, a total cable length of up to 100 m (328 ft) with Category C2 and up to 250 m (820 ft) with Category C3 is possible [3]	
• For converters FSA	**6SL3203-0BE23-5HA0**
• For converters FSB, FSC and drive line-ups (with and without DC link coupling, total of the currents ≤ 65 A)	**6SL3203-0BE26-5HA0**
Connector set AC bus and DC link For coupling the DC link and the line infeed Scope of delivery: 1 AC bus connector, 1 DC link connector, 2 cover caps The AC bus connector replaces the push-in connector included in the scope of delivery of the converter. Wiring is performed with conventional 16 mm² cable (not included in scope of delivery) [4]	**6SL3260-2DC00-0AA0**
Connector set AC bus individual For coupling the line infeed Scope of delivery: 1 AC bus connector, 1 cover cap This connector replaces the push-in connector included in the scope of delivery of the converter. Wiring is performed with conventional 16 mm² cable (not included in scope of delivery) [4]	**6SL3260-2DC10-0AA0**
External braking resistors for 200 … 240 V 3 AC For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage. The innovated SINAMICS S210 (6SL5...) converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this. [5]	
• 100 W, 47 Ω for FSA and FSB	**GXK:BWG250047TS-190**
• 240 W, 14 Ω for FSC	**GXK:BWG600014TS-190**

[1] The Extended Functions require a Safety license.
For converters with article number 6SL5... from firmware V6.1, the Extended Functions SS1, SLS, SDI and SSM are available.
All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

[2] Extended function for an existing memory card. The memory card is not included in the scope of delivery. The Safety license can also be ordered together with a memory card (see above). With a CoL in electronic form, the license is supplied as a PDF file. Notification of this with a download link is received by email.

[3] The data is applicable for the complete cable length of the motors, whose associated converters are coupled with one another via an AC coupling or through the DC link.
The maximum motor cable length per motor is 25 m using the internal filters to achieve EMC category C3 or an external filter to achieve EMC category C2. If an external filter is used to achieve EMC category C3, the maximum motor cable length per motor is 50 m.

[4] Permissible cables:
- 16 mm², Class 5 (finely stranded, PVC-insulated) H07V-K + H07V2-K according to EN 50525-2-31
- HELUTHERM 145: 16 mm², Class 5 (finely stranded, crosslinked polyolefin-copolymer, halogen-free) www.helukabel.com
- External diameter 6.7 mm to 8.1 mm

Permissible cables (UL approval):
- AWG 6, copper cable with PVC insulation, with or without nylon jacket, 19 strands
- Types: MTW, THHW, THW, THW-2, THHN, THWN-2, TW, TWN
- CSA types: TW, TWU, TWN75, TW75, TWU75, T90, no compressed conductors

[5] The prefix "**GXK:**" is part of a Siemens internal order code that does not belong to the product number of the original manufacturer Michael Koch GmbH.

[6] Release for SINAMICS S210 (6SL5...) available soon.

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Order overview

Accessories for SIMOTICS S-1FK2 and S-1FT2 servomotors

Description	For motor	Article No.
Shaft sealing ring (optional) Degree of protection kit to achieve degree of protection IP65 for mounting on the motor — for retrofitting or as spare part	1FK2102 1FT2102	**1FY2902-0GC00**
	1FK2.03 1FT2.03	**1FY2903-0GC00**
	1FK2.04 1FT2.04	**1FY2904-0GC00**

Spare parts for SIMOTICS S-1FS2 servomotors

Description	For motor	Article No.
Gasket External flange gasket on the drive side (DE) of the motor	1FS2104	**1FY2904-1GF00**
	1FS2105	**1FY2905-1GF00**
	1FS2106	**1FY2906-1GF00**
	1FS2108	**1FY2908-1GF00**

SINAMICS S210 starter kit

Description	Article No.
SINAMICS S210 starter kit with Extended Safety Scope of delivery: • SINAMICS S210 (6SL5...) servo converter • SIMOTICS S-1FK2 servomotor, 400 W • One Cable Connection (OCC) motor connection cables, 3 m (9.84 ft) • Memory card with Safety license (Extended Functions)	**6SL5990-0AE30-0AA0**

Training case

Description	Article No.
SINAMICS S210 training case Scope of delivery: • 2 × SINAMICS S210 (6SL5...) servo converters, 0.1 kW, 230 V 1 AC • 2 × SIMOTICS S-1FK2 servomotors, High Dynamic • 2 × One Cable Connection (OCC) motor connection cables • Rail, prepared for installation of a controller, e.g. SIMATIC S7-1500 (controller not included in scope of delivery) The SINAMICS S210 training case is supplied as a trolley with a hood.	**6AG1067-1AA33-0AA0**

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Order overview

Pre-assembled OCC cables MOTION-CONNECT 500 and 800PLUS

Cross-section mm²	Connector size	For SIMOTICS S motor 1FK2	1FT2	1FS2	MOTION-CONNECT 500 and 800PLUS OCC motor connection and extension cables incl. shield clamp Article No.
0.38	M12	1FK2102, 1FK2.03-..G	1FT2102, 1FT2.03-..G	–	**6FX ■ 0 ■ 2-8Q ■ 04-1 ■■■**
0.84	M17	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05	1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05	1FS2104, 1FS2105	**6FX ■ 0 ■ 2-8Q ■ 08-1 ■■■**
1.5	M23	1FK2.06, 1FK2208, 1FK2210	1FT2.06, 1FT2.08, 1FT2210	1FS2106, 1FS2208	**6FX ■ 0 ■ 2-8Q ■ 11-1 ■■■**
2.5 [1]	M23	1FK2.06, 1FK2208, 1FK2210	1FT2.06, 1FT2.08, 1FT2210	–	**6FX ■ 0 ■ 2-8Q ■ 21-1 ■■■**

Article No. supplement					
Type of cable					
• MOTION-CONNECT 500 – for predominantly fixed routing	**5**				
• MOTION-CONNECT 800PLUS – for use with cable carriers	**8**				
Type of assembly					
• Completely pre-assembled		**0**			
• Connector for the converter side enclosed [2]		**1**			
Type of cable					
• Motor connection cable			**N**		
• Extension cable			**E**		
Length code					
See table "Length code for pre-assembled cables (max. 50 m (164 ft))"					**■■■**

Pre-assembled OCC cables MOTION-CONNECT 400

Cross-section mm²	Connector size	For SIMOTICS S motor 1FS2	MOTION-CONNECT 400 OCC cables incl. shield clamp Article No.
0.84	M17	1FS2104, 1FS2105	**6FX40 ■ 2-8QN08-1 ■■■**
1.5	M23	1FS2106, 1FS2208	**6FX40 ■ 2-8QN11-1 ■■■**

Article No. supplement			
Type of assembly			
• Completely pre-assembled	**0**		
• Converter-side Siemens IX signal connector enclosed	**1**		
Length code			
See table "Length code for pre-assembled cables (max. 50 m (164 ft))"			**■■■**

Length code for pre-assembled cables (max. 50 m (164 ft))

Description	Article No. supplement 6FX.0.2-8Q.0.-1 ■■■		
MOTION-CONNECT cable			
0 m (0 ft)	**A**		
10 m (32.8 ft)	**B**		
20 m (65.6 ft)	**C**		
30 m (98.4 ft)	**D**		
40 m (131 ft)	**E**		
50 m (164 ft)	**F**		
0 m (0 ft)		**A**	
1 m (3.28 ft)		**B**	
2 m (6.56 ft)		**C**	
3 m (9.84 ft)		**D**	
4 m (13.1 ft)		**E**	
5 m (16.4 ft)		**F**	
6 m (19.7 ft)		**G**	
7 m (23.0 ft)		**H**	
8 m (26.2 ft)		**J**	
9 m (29.5 ft)		**K**	
0 m (0 ft)			**0**
0.1 m (0.33 ft)			**1**
0.2 m (0.66 ft)			**2**
0.3 m (0.98 ft)			**3**
0.4 m (1.31 ft)			**4**
0.5 m (1.64 ft)			**5**
0.6 m (1.97 ft)			**6**
0.7 m (2.30 ft)			**7**
0.8 m (2.62 ft)			**8**

The maximum permissible cable length must be observed.

[1] For increased requirement regarding routing type and ambient temperature. See tables on page 4/4.

[2] For the extension cable (10th position of the Article No. "**E**"), special tools for assembling are required. For more information, refer to the installation instructions.

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Order overview

OCC components for customer assembly

Description	Cross-section	For SIMOTICS S motor			OCC component
	mm^2	1FK2	1FT2	1FS2	Article No.
Siemens IX signal connector on the converter side	–	–	–	–	**6FX2003-0DE01**
Shield clamp (Packing unit: 10 items)					
• For pre-assembled cables with M12 and M17 plugs	0.38 and 0.84	–	–	–	**6FX2003-7EX10**
• For pre-assembled cables with M23 plugs	1.5 and 2.5	–	–	–	**6FX2003-7EX11**
SPEED-CONNECT plug					
• M12	0.38	1FK2102, 1FK2.03-..G	1FT2102, 1FT2.03-..G	–	**6FX2003-0L■64**
• M17	0.84	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05	1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05	1FS2104, 1FS2105	**6FX2003-0L■54**
• M23	1.5 and 2.5	1FK2.06, 1FK2208, 1FK2210	1FT2.06, 1FT2.08, 1FT2210	1FS2106, 1FS2208	**6FX2003-0L■34**

Article No. supplement	
• Motor-side plug	**U**
• Plug with male thread for extension cable	**A**

Sold by the meter OCC cables MOTION-CONNECT

Cross-section	For SIMOTICS S motor		MOTION-CONNECT 500 and 800PLUS sold by the meter OCC cables
mm^2	1FK2	1FT2	Article No.
0.38	1FK2102, 1FK2.03-..G	1FT2102, 1FT2.03-..G	**6FX■ 008-1BE04-■■A0**
0.84	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05	1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05	**6FX■ 008-1BE08-■■A0**
1.5	1FK2.06, 1FK2208, 1FK2210	1FT2.06, 1FT2.08, 1FT2210	**6FX■ 008-1BE11-■■A0**
2.5 [1]	1FK2.06, 1FK2208, 1FK2210	1FT2.06, 1FT2.08, 1FT2210	**6FX■ 008-1BE21-■■A0**

Article No. supplement	
Type of cable	
• MOTION-CONNECT 500 for predominantly fixed routing	**5**
• MOTION-CONNECT 800PLUS for use with cable carriers	**8**
Length code	
See table "Length code for cables sold by the meter (max. 500 m (1640 ft))"	**■■**

Cross-section	For SIMOTICS S motor	MOTION-CONNECT 400 sold by the meter OCC cables
mm^2	1FS2	Article No.
0.84	1FS2104, 1FS2105	**6FX4008-1BE08-■■A0**
1.5	1FS2106, 1FS2208	**6FX4008-1BE11-■■A0**

Article No. supplement	
Length code	
See table "Length code for cables sold by the meter (max. 500 m (1640 ft))"	**■■**

Length code for cables sold by the meter (max. 500 m (1640 ft))

Description	Article No. supplement	
MOTION-CONNECT cable	**6FX . 008-1BE . . -■■A0**	
50 m (164 ft)	**1**	**F**
100 m (328 ft)	**2**	**A**
200 m (656 ft)	**3**	**A**
300 m (984 ft)	**4**	**A**
400 m (1312 ft)	**5**	**A**
500 m (1640 ft)	**6**	**A**

The maximum permissible cable length must be observed.

[1] For increased requirement regarding routing type and ambient temperature. See tables on page 4/4.

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Order overview

Pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables

Description	Length, max. [1] m (ft)	D_{max} mm (in)	Converter side connector/degree of protection	Encoder side connector/degree of protection	Article No. (Length code see table)
Basic cable between encoder and SINAMICS S210 (6SL5...) converter					
Pre-assembled MOTION-CONNECT 500 DRIVE-CLiQ signal cable for predominantly fixed routing with 8-pole M12 socket on the encoder side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	100 (328)	7.1 (0.28)	Siemens IX/IP20	M12/IP67	**6FX5002-2DX30- ■■■ 0**
Pre-assembled MOTION-CONNECT 800PLUS DRIVE-CLiQ signal cable for use with cable carriers with 8-pole M12 socket on the encoder side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	75 (246)	7.1 (0.28)	Siemens IX/IP20	M12/IP67	**6FX8002-2DX30- 1 ■■ 0**
Extension for all cables with 8-pole M12 connection					
Pre-assembled MOTION-CONNECT 500 DRIVE-CLiQ extension cable for predominantly fixed routing with 8-pole M12 connection	30 (98.4)	7.1 (0.28)	M12/IP67	M12/IP67	**6FX5002-2DC34- 1 ■■ 0**
Pre-assembled MOTION-CONNECT 800PLUS DRIVE-CLiQ extension cable for use with cable carriers with 8-pole M12 connection	30 (98.4)	7.1 (0.28)	M12/IP67	M12/IP67	**6FX8002-2DC34- 1 ■■ 0**

Length code for pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables

Description	Article No. supplement **6FX . 002-2D . 3 . - ■■■ 0**			
Pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables				
0 m (0 ft)	**1**			
100 m (328 ft)	**2**			
0 m (0 ft)		**A**		
10 m (32.8 ft)		**B**		
20 m (65.6 ft)		**C**		
30 m (98.4 ft)		**D**		
40 m (131 ft)		**E**		
50 m (164 ft)		**F**		
60 m (197 ft)		**G**		
70 m (230 ft)		**H**		
80 m (262 ft)		**J**		
90 m (295 ft)		**K**		
0 m (0 ft)			**A**	
1 m (3.28 ft)			**B**	
2 m (6.56 ft)			**C**	
3 m (9.84 ft)			**D**	
4 m (13.1 ft)			**E**	
5 m (16.4 ft)			**F**	
6 m (19.7 ft)			**G**	
7 m (23.0 ft)			**H**	
8 m (26.2 ft)			**J**	
9 m (29.5 ft)			**K**	

Control cabinet bushing

Description	Article No.
Mounting flange for cabinet bushing	
• For connector size M12	**6FX2003-7JX00**
• For connector size M17	**6FX2003-7HX00**
• For connector size M23	**6FX2003-7BX00**

Recommended SIMATIC S7 controller

More information about SIMATIC S7-1200 G2, SIMATIC S7-1500 and SIMATIC S7-1500 T-CPU controllers is available in Catalog ST 70 and on the internet at
www.siemens.com/simatic-s7-1200
www.siemens.com/simatic-s7-1500

[1] To the meter up to 20 m (65.6 ft), beyond that in steps of 5 m (16.4 ft) up to the maximum length.

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Overview

The SINAMICS S210 starter kit with Extended Safety with Article No. 6SL5990-0AE30-0AA0 comprises

- a SINAMICS S210 (6SL5...) servo converter, 230 V 1 AC, 400 W (Article No. 6SL5310-1BB10-4CF0)
- a SIMOTICS S-1FK2 servomotor, High Dynamic, shaft height 30, 400 W, without brake, shaft with feather key, with absolute encoder multiturn (Article No. 1FK2103-4AG00-1MA0)
- a corresponding One Cable Connection cable (OCC), 3 m (Article No. 6FX5002-8QN04-1AD0)
- a memory card with firmware V6.x and Safety license (Extended Functions) (Article No. 6SL5370-0G..0-0AA0-Z F01)

The delivery quantity is limited to three units per customer.

The SINAMICS S210 starter kit can be perfectly combined with the SIMATIC S7-1500 starter kit. In this way, Motion Control applications can be quickly and easily implemented.

For more information on SIMATIC S7-1500 starter kits, see:
www.siemens.com/s7-1500-starterkits

Selection and ordering data

Description	Article No.
SINAMICS S210 starter kit with Extended Safety Scope of delivery: • SINAMICS S210 (6SL5...) servo converter • SIMOTICS S-1FK2 servomotor, 400 W • One Cable Connection (OCC) motor connection cables, 3 m (9.84 ft) • Memory card with Safety license (Extended Functions)	**6SL5990-0AE30-0AA0**

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Notes

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2/23 **Supplementary system components**
2/23 Memory cards
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2/30 SINAMICS Smart Adapter

Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator can be used on the internet at the following address:
www.siemens.com/sinamics-s210/configuration

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Innovated SINAMICS S210 (6SL5...) servo converters

Overview

SINAMICS S210 (6SL5...), 1 AC series, frame sizes FSA to FSC

SINAMICS S210 (6SL5...), 3 AC series, frame sizes FSA to FSC

Innovated SINAMICS S210 (6SL5...) servo converters

As successor to the SINAMICS S210 (6SL3...) servo converters, the innovated version is now available under the name "SINAMICS S210 (6SL5...) servo converters".

Innovated SINAMICS S210 (6SL5...) servo converters have extended functionalities with a new hardware and a revised software from firmware V6.1.

Extended functionalities with new hardware

- Operation on a supply voltage of 200 V to 240 V 3 AC, e.g. for USA, Canada and Japan now also possible with internal braking resistors
  External braking resistors are no longer required.
- 1 communications interface for communication with a 2nd encoder (as of firmware V6.3)
- For future extensions (currently without function):
  - 1 temperature sensor input PTC

Revised software from firmware V6.1

- Security, User Management and Access Control (UMAC)
- Revised web server
- General rounding off and unification for the entire SINAMICS converter family
- Functional safety up to safety integrity level 3, PL e and Category 4.
  Firmware V6.1 includes the Safety Integrated Basic Functions as well as the Safety Integrated Extended Functions SS1, SLS, SDI, SSM.
  All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

From firmware V6.3:

- Basic positioner (EPOS): A positioning functionality integrated into the converter.
- EtherNet/IP for communication with third-party controllers

From firmware V6.4:

- OPC UA server with information model for inventory management and process data acquisition
- Security:
  - Security event log for sending security events via syslog protocol to a server
  - Additional UMAC privileges for security configuration
  - Integrity protection for backups
  - Extended handling of certificates
- Basic positioner (EPOS):
  - Higher resolution through 64-bit data type for position values together with new telegram 113
  - Load gearbox position tracking support for reproducibility of the load position when using gears
- Vibration suppression support for the reduction of vibrations in the natural frequency range up to 10 Hz
- Configurable supplementary telegram for handover additional data to the PLC

Compatibility

Due to the lack of Safety Integrated Extended Functions (with firmware V6.1), modified numbering of the parameters and new User Management, the innovated SINAMICS S210 (6SL5...) servo converters are not compatible with the SINAMICS S210 (6SL3...) servo converters available to date.

Innovated SINAMICS S210 (6SL5...) servo converters are compatible with the previously available SINAMICS S210 (6SL3...) servo converters with regard to the following aspects:

- Dimensions
- Power data
- Connection system
- SIMOTICS S-1FK2, S-1FT2 and S-1FS2 servomotors
- MOTION-CONNECT One Cable Connection (OCC) cables

Complete engineering support with the SINAMICS Startdrive and TIA Portal (from V18 SP1) is available for innovated SINAMICS S210 (6SL5...) servo converters. The converter can be integrated into the previous TIA Portal versions via the GSDML file, whereby the parameterization is only possible via the integrated web server.

A migration tool is available for upgrading TIA projects from SINAMICS S210 (6SL3...) to innovated SINAMICS S210 (6SL5...). This means that the converters can be conveniently exchanged while parameterization and networking remain.
https://support.industry.siemens.com/cs/document/109822030

It is not possible to operate the innovated SINAMICS S210 (6SL5...) servo converters with firmware V5.2 SP3.

Furthermore, it is not possible to operate the previously available SINAMICS S210 (6SL3...) servo converters with firmware V6.1 or higher. This means that newly available functions cannot be retrofitted.

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Overview

SINAMICS S210 (6SL5...) with firmware V6.1 and higher – the single-axis servo drive for highly dynamic applications

SINAMICS S210 (6SL5...), 1 AC series, frame sizes FSA to FSC

SINAMICS S210 (6SL5...), 3 AC series, frame sizes FSA to FSC

The SINAMICS S210 (6SL5...) servo converters with firmware V6.1 and higher is designed for connection to SIMOTICS S-1FK2, S-1FT2 or S-1FS2 synchronous servomotors. PROFINET RT/IRT is available for connection to a higher-level control system. That allows, above all, SIMATIC S7 and SIMOTION to be used as controllers.

SINAMICS S210 (6SL5...) is optimized for operation with SIMATIC S7-1200 G2, SIMATIC S7-1500 and S7-1500T which provide technology objects for motion control functionality. Additionally the basic positioner function (EPOS) is also integrated into the converter.

The converter works with a servo controller with or without Dynamic Servo Control (DSC) and has a torque setpoint limitation. A wide range of internal protection functions are included to protect the converter.

The status of the converter is indicated by two multi-color LEDs and a 7-segment display. Pending faults can be acknowledged with a button under the front cover.

The converter has a web server, which can be called via the service interface or via PROFINET from a web browser on a PC. Both commissioning and diagnostics can be performed through this. With the web server, the converter can be brought into operation in a few steps. As the motor data from the converter is read from the electronic type plate, they do not need to be parameterized. The PROFIdrive telegram is automatically accepted by the controller; so only the controller parameters have to be adjusted. This is simply done with the One Button Tuning function, which automatically determines the parameters.

With the SINAMICS S210 (6SL5...), the PROFINET function "Dynamic Frame Packing" (DFP) is available, which enables the connection of large numbers of axes to a SIMATIC controller.

In addition, communication via EtherNet/IP is available from firmware V6.3 onwards. This allows the SINAMICS S210 (6SL5...) to be connected to third-party controllers in conjunction with EPOS.

In addition to easy commissioning directly via the web server of the converter, engineering is also possible with SINAMICS Startdrive (as of V18 SP1) and TIA Portal. The tool for configuration, commissioning and diagnostics has been optimized with regard to user friendliness and the consistent utilization of the TIA Portal advantages of a shared work environment for PLC, HMI and drives.

SIMOTICS S-1FK2, S-1FT2 or S-1FS2 servomotors can be connected and operated via a One Cable Connection (OCC) line. Third-party motors cannot be connected because the converter requires the type plate data of the motor.

No additional components are required for controlling the motor holding brake as all the required components are integrated into the converter. In addition, no special power supply is required because the converter optimally sets the voltage for the brake internally. Thus, in combination with the SIMOTICS S-1FK2, S-1FT2 or S-1FS2 servomotors, shortened opening and closing times of the brakes are also possible.

The converter can be operated optionally with a memory card. The card is inserted in the card slot behind the front cover. Firmware and drive parameters can be stored on the memory card, so that the converter can easily be replaced without any other aids. This memory card can also be used to perform series commissioning on multiple drives of identical type.

The memory card is available as an empty memory card or containing the latest converter firmware version. The memory card also contains the licenses for chargeable functions, such as the Safety license for the Extended Safety Functions. To use these functions, a memory card containing the corresponding Safety license must be permanently inserted.

If necessary, the converter contains an integrated braking resistor. As a result of the generous dimensioning of the resistor and the DC link capacities, an external braking resistor is only necessary to meet very high requirements.

For the 3 AC series, DC link coupling of up to six devices is possible. Thus, the energy that is generated when braking axes can be used for accelerating other axes. This conserves energy and reduces the amount of heat dissipated via the braking resistors.

The converter also features an integrated line filter.
For the 1 AC series, it satisfies category C2 for motor cable lengths up to 10 m and category C3 for cable lengths up to 25 m. With an optional external line filter, motor cable lengths of up to 25 m are also possible with category C2 and up to 50 m with category C3.
For the 3 AC series, category C3 is achieved for motor cable lengths up to 25 m. For requirements that go beyond this, an external line filter is required.

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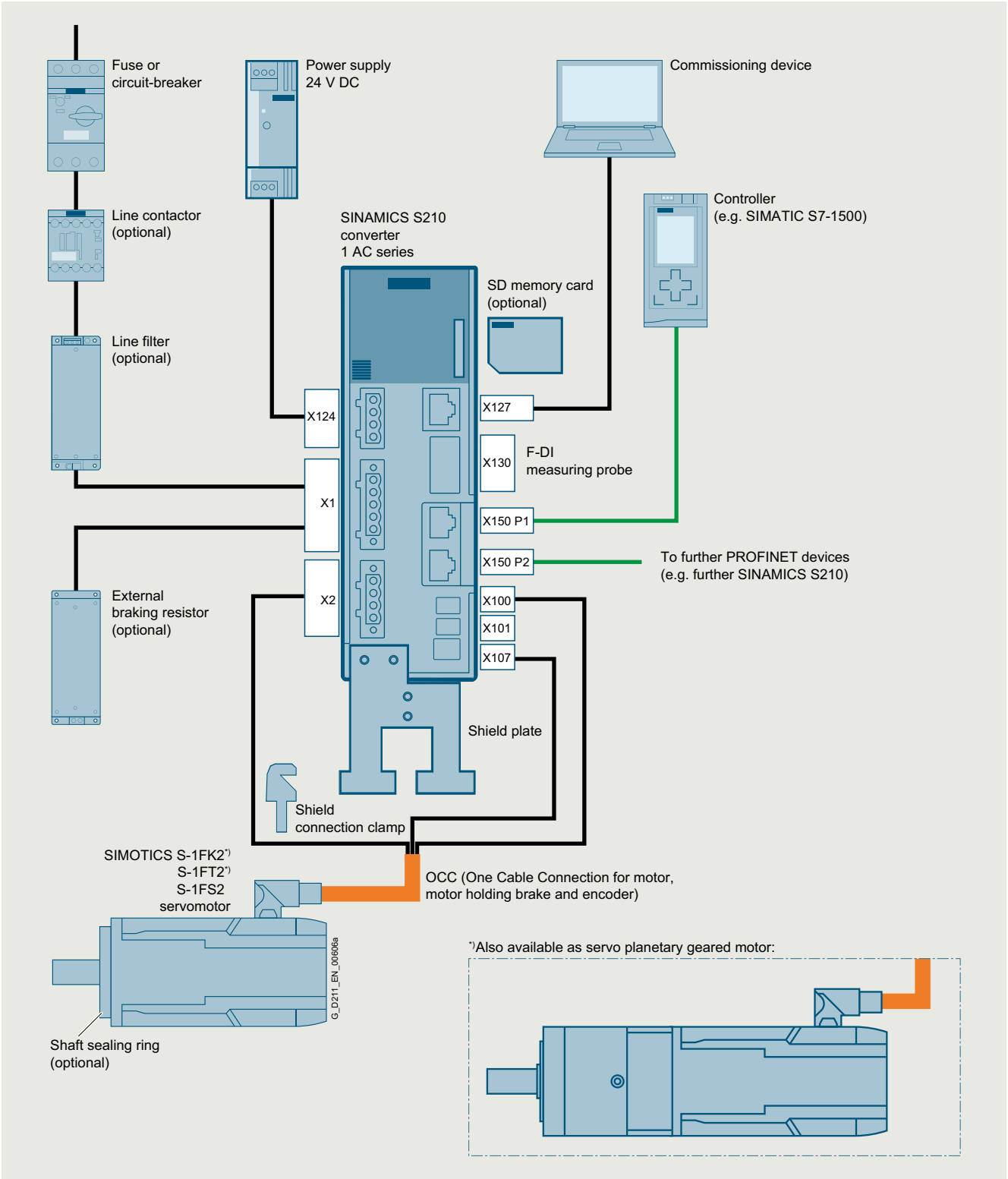
2

Overview



Example for SINAMICS S210 (6SL5...), 1 AC series

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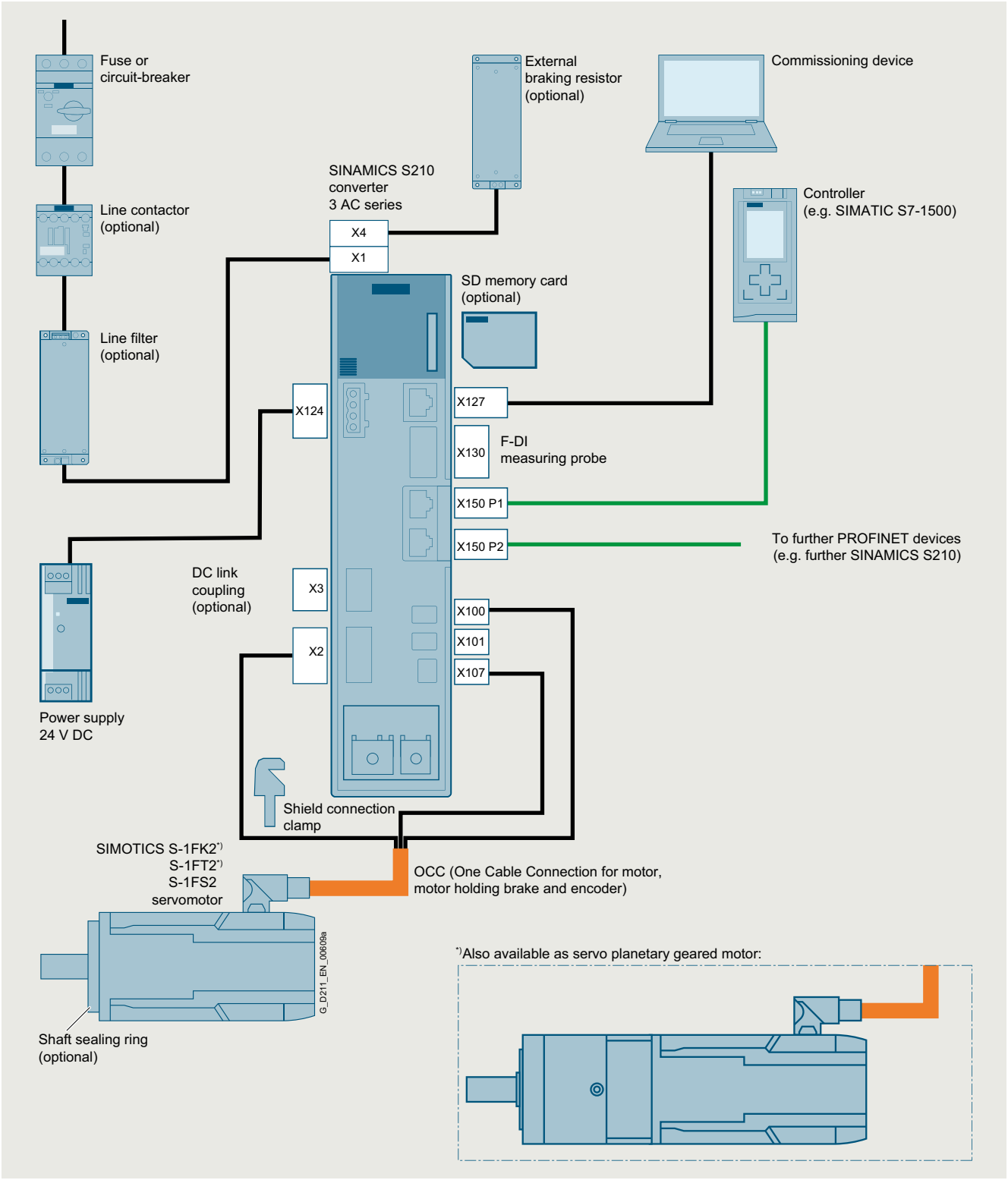
Overview



Example for SINAMICS S210 (6SL5...), 3 AC series

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2

Design

The single-axis AC/AC converter contains a power unit and a Control Unit for the powerful communication, open and closed-loop control functions.

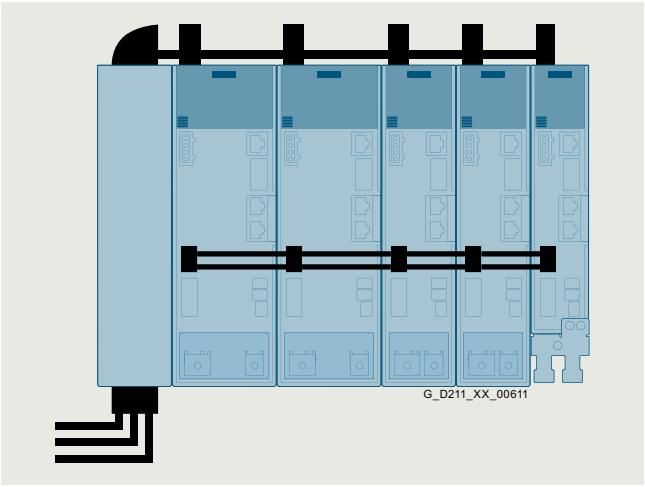
The SINAMICS S210 (6SL5...) servo converter, with firmware V6.1 and higher features the following connections and interfaces as standard:

- Fieldbus interface
  - 1 PROFINET interface with two ports (RJ45 sockets) with PROFIdrive V4 profile and Dynamic Frame Packing (DFP). As of firmware V6.3, communication via EtherNet/IP is supported.
- 1 service interface for Ethernet communications with a service PC
- One Cable Connection (OCC)
  - 1 communications interface for communication with the encoder of the SIMOTICS S-1FK2, S-1FT2 or S-1FS2 motors
  - 1 motor power connector for the power conductors of the SIMOTICS S-1FK2, S-1FT2 or S-1FS2 motors
  - 1 brake connection for the conductors of the motor holding brake of the SIMOTICS S-1FK2, S-1FT2 or S-1FS2 motors
- 1 communication interface for communication with a 2nd encoder (encoder with DRIVE-CLiQ interface) (as of firmware V6.3)
- 1 PTC temperature sensor input (for future extensions, currently without function)
- 1 connection for the electronic power supply via the 24 V DC supply connector (supply can be looped through connectors for several SINAMICS S210)
- 1 connection for the line voltage and an external braking resistor (braking resistor optional, for the 3 AC series via a separate connector).
- 1 connection for the DC link coupling (optional, only for the 3 AC series)
- Digital inputs
  - 1 fail-safe digital input (isolated) for controlling STO and SS1-t via terminals
  - 2 high-speed digital inputs for measuring probe or reference marks
  - 1 digital input for monitoring the temperature of an external braking resistor
- 1 slot for a memory card on which the firmware, parameters and licenses can be stored
- 1 display with 3-digit, 7-segment display for indicating faults and two status LEDs
- 1 button for acknowledging errors

DC link coupling (only 3 AC series)

For devices of the 3 AC series, the DC links of up to six converters can be coupled. Thus, energy balancing between the axes is possible and energy produced during braking can be used by other axes for accelerating. This is not only efficient but also reduces the dissipated heat in the control cabinet, because the energy that is produced no longer has to be converted to heat in the braking resistor. For DC link coupling, the line side must also be coupled (AC bus).

It is recommended that innovated SINAMICS S210 (6SL5...) servo converters and SINAMICS S210 (6SL3...) servo converters should not be in a common DC link coupling.



SINAMICS S210 (6SL5...), 3 AC series, one line filter plus five servo converters, AC coupling and DC link coupling

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Function

Closed-loop control	Servo control with DSC
Control functions	Speed control with encoder Torque control with encoder Dynamic Servo Control (DSC) Torque setpoint limitation Current controller and current controller adaptation suitably adjusted for SIMOTICS S-1FK2, S-1FT2 or S-1FS2 servomotors One Button Tuning with moment of inertia estimator and reference model Local measuring probe Simple brake control Direction reversal without changing the setpoint channel Travel to fixed stop Vertical axis Speed controller adaptation Thermal monitoring for power unit and servomotor High-performance brake control
Protective functions	Undervoltage DC link voltage Overvoltage DC link voltage Overcurrent power unit Overcurrent motor Overload power unit (I^2t) Short-circuit Ground fault Temperature rise servomotor Temperature rise power unit
Safety Integrated	Safe Torque Off (STO) Safe Brake Control (SBC) Safe Stop 1 time-controlled (SS1-t) Safe Stop 1 (SS1) [1)] Safe Stop 2 (SS2) [1)] Safe Operating Stop (SOS) [1)] Safely-Limited Speed (SLS) [1)] Safe Speed Monitor (SSM) [1)] Safe Direction (SDI) [1)] Safely-Limited Acceleration (SLA) [1)] Safe Brake Test (SBT) diagnostic function [1)]
Commissioning	Identification of the SIMOTICS S-1FK2, S-1FT2 or S-1FS2 motors via the electronic type plate Automatic controller optimization

Configuration

The following electronic configuring aids and engineering tools are available for the SINAMICS S210 (6SL5...) servo converters:

DriveSim Designer and DriveSim Engineer (firmware V6.1 or higher)

DriveSim Designer and DriveSim Engineer provides easy-to-use models for PROFIdrive-enabled SINAMICS converters, so you can create a digital twin of your drive.

More information is provided on the internet at:
www.siemens.com/drive-virtualization

Siemens Product Configurator

The Siemens Product Configurator helps you to configure the optimum drive technology products for a number of applications – starting with gearboxes, motors, converters as well as the associated options and components and ending with controllers, software licenses and connection systems.

The Siemens Product Configurator can be used on the internet without requiring any installation. The Siemens Product Configurator can be found in SiePortal at the following address:
www.siemens.com/spc

Drive dimensioning of the SINAMICS S210 servo drive system with the TIA Selection Tool

The SINAMICS S210 servo drive system is easily configured with the TIA Selection Tool under the Drive Dimensioning plug-in. The TIA Selection Tool provides support when selecting the hardware and firmware components necessary to implement a drive task. The plug-in encompasses the configuration of the entire drive system and allows the handling of individual drives.

- Intuitive user interface, menu-based operation and help
- Configuration of the SINAMICS S210 servo drive system
- Adjustable traversing cycles and various mechanical systems integrated for single-axis applications
- Interface to the TIA Portal and SiePortal

The TIA Selection Tool is available for free on the internet at
www.siemens.com/tia-selection-tool-standalone

SINAMICS web server for SINAMICS S210 (6SL5...)

The converter can be brought easily and quickly into operation and optimized with the web server. Additional software does not need to be installed as access comes directly from a web browser.

You can find further information about the web server for SINAMICS S210 (6SL5...) in the Engineering tools section.

SINAMICS Startdrive commissioning tool (TIA Portal)

SINAMICS Startdrive (V18 SP1 or higher) is a tool for configuring, commissioning and diagnosing the SINAMICS converter family that is integrated into TIA Portal.

The SINAMICS Startdrive has been optimized with regard to user friendliness and consistent use of the TIA Portal benefits of a common working environment for PLC, HMI and drives. SINAMICS firmware V6.1 or higher is required for SINAMICS S210.

The SINAMICS Startdrive Advanced license is required for the Safety Integrated acceptance test.

The SINAMICS Startdrive commissioning tool is available free on the internet at
www.siemens.com/startdrive

You can find further information on the SINAMICS Startdrive commissioning tool in the section Engineering tools.

[1)] The Extended Functions require a Safety license. The functions SS1, SLS, SDI and SSM are available with firmware V6.1. All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

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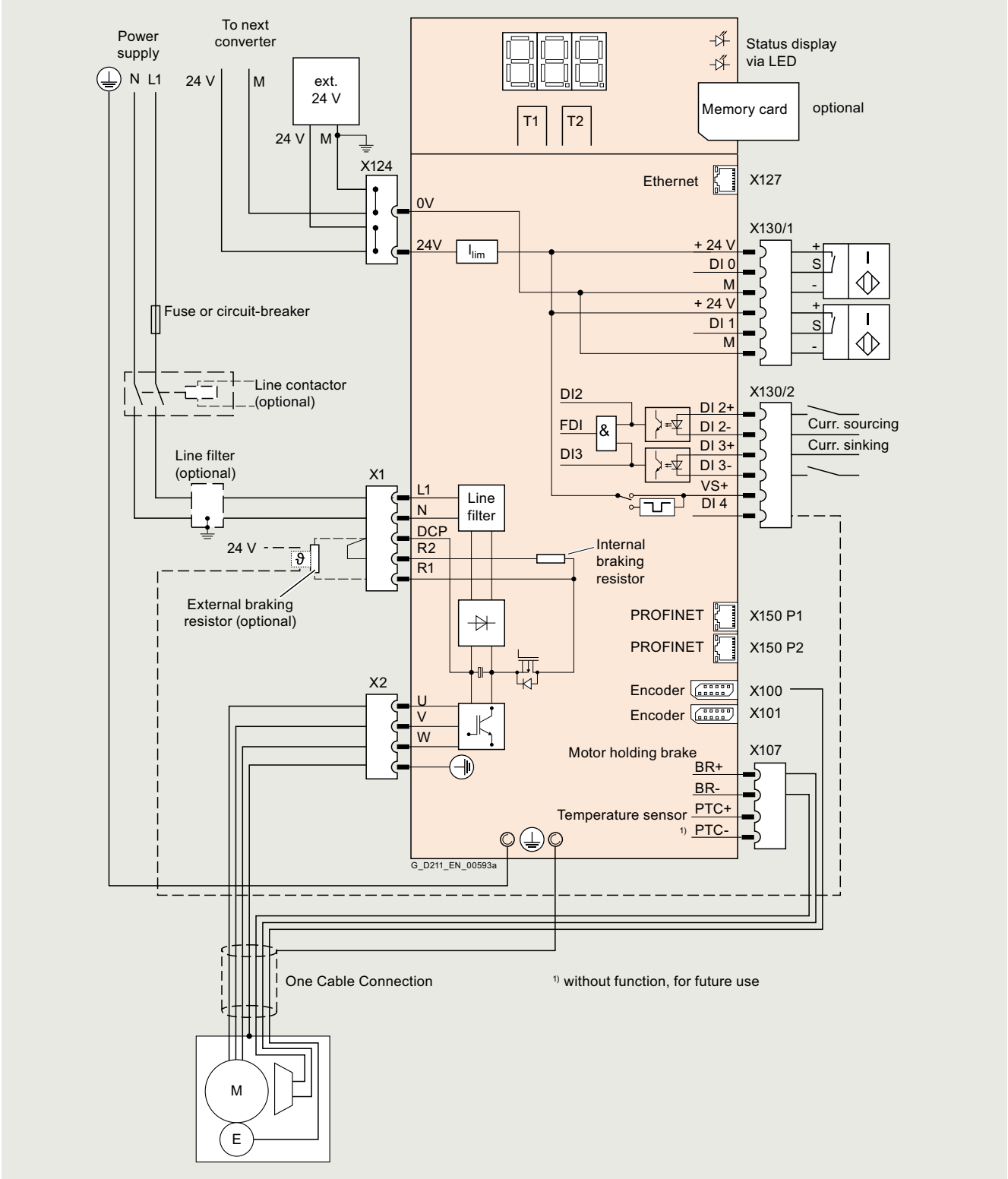
Integration



Connection example SINAMICS S210 (6SL5...) servo converters, 1 AC series

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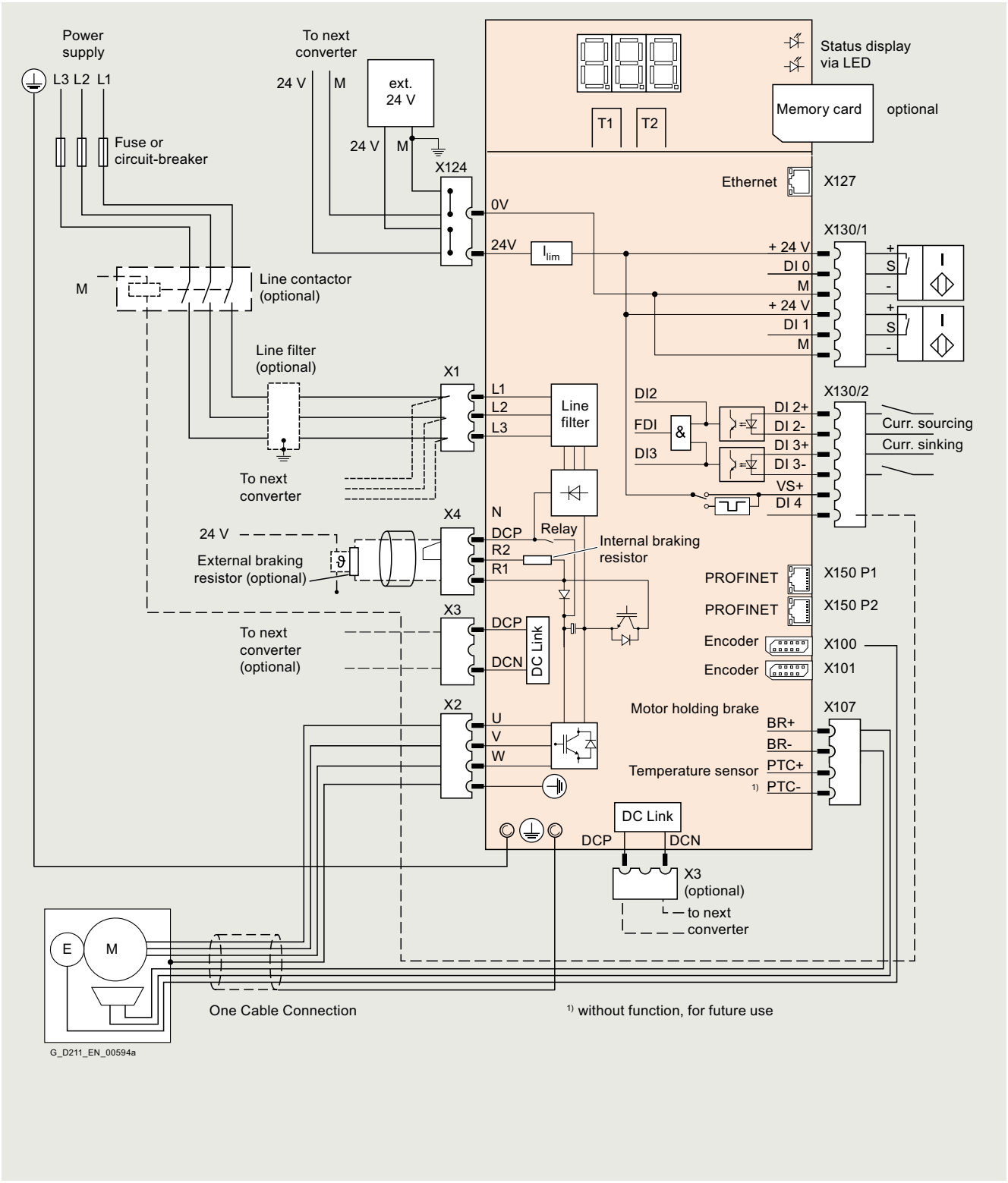
Integration



Connection example SINAMICS S210 (6SL5...) servo converters, 3 AC series

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Selection and ordering data

Description	Frame size	Article No.
200 ... 240 V 1 AC		
SINAMICS S210 (6SL5...) servo converters with shield plate and push-in connectors without memory card The shield clamp is included in the scope of delivery of the MOTION-CONNECT cable.		
• 0.1 kW	FSA	**6SL5310-1BB10-1CF0**
• 0.2 kW	FSA	**6SL5310-1BB10-2CF0**
• 0.4 kW	FSB	**6SL5310-1BB10-4CF0**
• 0.75 kW	FSC	**6SL5310-1BB10-8CF0**

Description	Frame size	Article No.
200 ... 480 V 3 AC		
SINAMICS S210 (6SL5...) servo converters with shield plate (for FSA only) and push-in connectors without memory card The shield clamp is included in the scope of delivery of the MOTION-CONNECT cable.		
• 0.4 kW	FSA	**6SL5310-1BE10-4DF1**
• 0.75 kW	FSA	**6SL5310-1BE10-8DF1**
• 1 kW	FSA	**6SL5310-1BE11-0DF1**
• 1.5 kW	FSB	**6SL5310-1BE11-5DF1**
• 2 kW	FSB	**6SL5310-1BE12-0DF1**
• 3.5 kW	FSC	**6SL5310-1BE13-5DF1**
• 5 kW	FSC	**6SL5310-1BE15-0DF1**
• 7 kW	FSC	**6SL5310-1BE17-0DF1**

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Selection and ordering data

Accessories

Description		Article No.
	SINAMICS SD card for SINAMICS S210 (6SL5...) (optional) 8 GB The parameter assignment, firmware and licenses for a converter can be stored on the memory card.	
	• Empty	**6SL5970-0AA00-0AA0**
	• Empty and Safety license (Extended Functions) 1)	**6SL5970-0AA00-0AA0-Z F01**
	• With firmware V6.1	**6SL5370-0GB00-0AA0**
	• With firmware V6.1 and Safety license (Extended Functions) 1)	**6SL5370-0GB00-0AA0-Z F01**
	• With firmware V6.3	**6SL5370-0GD00-0AA0**
	• With firmware V6.3 and Safety license (Extended Functions) 1)	**6SL5370-0GD00-0AA0-Z F01**
	• With firmware V6.4	**6SL5370-0GE00-0AA0**
	• With firmware V6.4 and Safety license (Extended Functions) 1)	**6SL5370-0GE00-0AA0-Z F01**
	• With firmware V6.4 and SINAMICS OPC UA Single Extended license	**6SL5370-0GE00-0AA0-Z H80**
	Safety license (Extended Functions) 1)2) • Certificate of License (CoL) in electronic form	**6SL5977-0AA00-2HA0**
	SINAMICS OPC UA Single Extended license • Certificate of License (CoL) in electronic form	**6SL5977-0AA00-1GA0**
	PROFINET patch cable For the networking of concatenated converters Industrial Ethernet TP cord, CAT 6 A, twisted pair line 4 × 2 cores, pre-assembled with two RJ45 connectors • 0.3 m (0.98 ft) • 0.5 m (1.64 ft)	 **6XV1870-3QE30** **6XV1870-3QE50**
	SINAMICS SDI Pro 5.5" NEW Powerful and user-friendly operator panel for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220	**6SL4950-0AH35-2AA0**
	SINAMICS Smart Adapter Wi-Fi solution for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220	**6SL4950-0AJ00-0AA0**
Only for the 1 AC series		
	Line filter With a line filter, Category C2 for motor cable lengths up to 25 m (82 ft), Category C3 for cable lengths up to 50 m (164 ft) acc. to EN 61800-3 can be achieved. • For converters FSA, FSB and FSC	**6SL3203-0BB21-8VA1**
	Replacement connector set For frame sizes FSA, FSB and FSC With a connector set, as in the scope of delivery, and two shield plates	**6SL3260-2DB00-0AA0**

1) The Extended Functions require a Safety license. The functions SS1, SLS, SDI and SSM are available with firmware V6.1.
All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

2) Extended function for an existing memory card. The memory card is not included in the scope of delivery.
The Safety license can also be ordered together with a memory card (see above). With a CoL in electronic form, the license is supplied as a PDF file. Notification of this with a download link is received by email.
For further information, see section Supplementary system components > Memory cards.

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Selection and ordering data

Description	Article No.
Only for the 3 AC series	
Line filter With a line filter, Category C2 for motor cable lengths up to 25 m (82 ft), Category C3 for cable lengths up to 50 m (164 ft) acc. to IEC 61800-3 can be achieved. When connected via a DC link, a total motor cable length of up to 100 m (328 ft) with Category C2 and up to 250 m (820 ft) with Category C3 is possible [1] • For converters FSA • FSB, FSC and drive line-ups (with and without DC link coupling, total of the currents ≤ 65 A)	**6SL3203-0BE23-5HA0** **6SL3203-0BE26-5HA0**
Connector set **AC bus and DC link** For coupling the DC link and the line infeed Scope of delivery: 1 AC bus connector, 1 DC link connector, 2 cover caps The AC bus connector replaces the push-in connector included in the scope of delivery of the converter. Wiring is performed with conventional 16 mm^2 cable (not included in scope of delivery) [2]	**6SL3260-2DC00-0AA0**
Connector set **AC bus individual** For coupling the line infeed Scope of delivery: 1 AC bus connector, 1 cover cap This connector replaces the push-in connector included in the scope of delivery of the converter. Wiring is performed with conventional 16 mm^2 cable (not included in scope of delivery) [2]	**6SL3260-2DC10-0AA0**
Replacement connector set For frame sizes FSA, FSB and FSC With a connector set, as in the scope of delivery, and one shield plate (for FSA)	**6SL3260-2DB10-0AA0**
Replacement fan Incl. support • Frame size FSA • Frame size FSB • Frame size FSC	**6SL3260-0AA00-0AA0** **6SL3260-0AB00-0AA0** **6SL3260-0AC00-0AA0**

[1] The data is applicable for the complete cable length of the motors, which associated converters are coupled with one another via an AC coupling or through the DC link.The maximum motor cable length per motor is 25 m using the internal filters to achieve EMC category C3 or an external filter to achieve EMC category C2. If an external filter is used to achieve EMC category C3, the maximum motor cable length per motor is 50 m.

[2] Permissible cables:
- 16 mm^2, Class 5 (finely stranded, PVC-insulated) H07V-K + H07V2-K according to EN 50525-2-31
- HELUTHERM 145: 16 mm^2, Class 5 (finely stranded, crosslinked polyolefin-copolymer, halogen-free) www.helukabel.com
- External diameter 6.7 mm to 8.1 mm

Permissible cables (UL approval):
- AWG 6, copper cable with PVC insulation, with or without nylon jacket, 19 strands
- Types: MTW, THHW, THW, THW-2, THHN, THWN-2, TW, TWN
- CSA types: TW, TWU, TWN75, TW75, TWU75, T90, no compressed conductors

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Technical specifications

Unless explicitly specified otherwise, the following technical specifications are valid for all SINAMICS S210 (6SL5...) servo converters.

General technical specifications	
Mechanical specifications	
Vibratory load	
• Transport [1] acc. to IEC 60721-3-2: 1997	Class 2M3
• Operation acc. to IEC 60721-3-3: 2002	Class 3M2
- Test values according to IEC/EN 60068-2-6	Test Fc (sinusoidal) • 2 ... 9 Hz: 1.5 mm deflection amplitude • 9 ... 200 Hz: 0.5 × *g* acceleration amplitude • 10 frequency cycles per axis
Shock load	
• Transport [1] acc. to IEC 60721-3-2: 1997	Class 2M3
• Operation acc. to IEC 60721-3-3: 2002	Class 3M2
- Test values according to IEC/EN 60068-2-27	Test Ea (semisinusoidal) • 5 × *g* peak acceleration • 30 ms duration • 3 shocks in all three axes in both directions
Fieldbus interface	
PROFINET	1 PROFINET interface with two ports (RJ45 sockets) with PROFIdrive V4 profile and Dynamic Frame Packing (DFP)
Ethernet/IP	As of firmware V6.3, communication via EtherNet/IP is supported
OPC UA connectivity	From Firmware V6.4 HF2
Environmental conditions	
Protection class According to IEC/EN 61800-5-1	Class I (with protective bonding circuit) and class III (PELV or SELV)
Degree of protection According to IEC/EN 60529	IP20 Mounting in control cabinet necessary
Permissible ambient temperature (air) in operation	-10 ... 50 °C (14 ... 122 °F)
Installation altitude	Up to max. 4000 m (13123 ft) (IEC/EN/UL), up to max. 2000 m (6562 ft) (CSA) • Up to 1000 m (3281 ft) above sea level without derating • As from 1000 m (3281 ft) derating 10 % of current or 5 K per 1000 m (3281 ft) • As from 2000 m (6562 ft) an isolating transformer is required
Climatic environmental conditions	
• Storage [2] acc. to IEC 60721-3-1: 1997	Class 1K4 -25 ... +55 °C (-13 ... +131 °F)
• Transport [1] acc. to IEC 60721-3-2: 1997	Class 2K4 -40 ... +70 °C (-40 ... +158 °F) Max. air humidity: 95 % at 40 °C (104 °F)
• Operation acc. to IEC 60721-3-3: 2002	Better than class 3K3 0 ... 50 °C (32 ... 122 °F) Relative air humidity: 5 ... 95 % Condensation, splashwater, and ice formation not permitted (IEC/EN 60204, Part 1)
Environmental class/harmful chemical substances	
• Storage [2] acc. to IEC 60721-3-1: 1997	Class 1C2
• Transport [1] acc. to IEC 60721-3-2: 1997	Class 2C2
• Operation acc. to IEC 60721-3-3: 2002	Class 3C2 Class 3C3 for H_2S and SO_2
• Operation acc. to ANSI/ISA 71.04: 2013	Class G3
Organic/biological influences	
• Storage [2] acc. to IEC 60721-3-1: 1997	Class 1B2
• Transport [1] acc. to IEC 60721-3-2: 1997	Class 2B2
• Operation acc. to IEC 60721-3-3: 2002	Class 3B2
Degree of pollution According to IEC/EN 61800-5-1	2
Standards	
Certificates of suitability	CE, UKCA, cULus (UL File No. E355661 for 1 AC and 3 AC series), RCM, EAC, KC, SEMI F47
Functional safety	• SIL 3 according to IEC 61508 parts 1 to 3 (2010) and IEC 61800-5-2 (2016) • PL e according to ISO 13849 part 1 (2015) • Category 4 according to ISO 13849 part 1 (2015)

Environmental Product Declaration (EPD)

Environmental Product Declarations (EPD) are available as PDFs for this product.The EPD PDF provides brief and concise information about the ecological properties of a product. You can find more information on the internet at:
https://support.industry.siemens.com/cs/ww/en/ps/24677/cert?ci=5690

[1] In transport packaging.

[2] In product packaging.

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2

Technical specifications

Line voltage 200 ... 240 V 1 AC		SINAMICS S210 (6SL5...) servo converters, 1 AC series			
		6SL5310-1BB10-1CF0	6SL5310-1BB10-2CF0	6SL5310-1BB10-4CF0	6SL5310-1BB10-8CF0
Line supply connection					
• Supply voltage		200 ... 240 V 1 AC ±10 %			
• Line frequency	Hz	50/60			
• Conductor cross-section, max.	mm^2	2.5			
• Line system configuration		Grounded TN/TT networks and ungrounded IT networks			
Rated current	A	1.4	2.7	5	9.3
Inrush current	A	8	8	8	8
Power loss	W	15.7	23.2	38.5	71.1
Electronic power supply					
• Voltage		24 V -15 % ... +20 %			
• Power requirement, max.	A	0.8 without brake For current consumption of the brake, see section SIMOTICS S-1FK2 servomotors > Technical specifications > Holding brake, page 3.1/9			
• Conductor cross-section, max.	mm^2	2.5			
Output					
• Rated power 230 V	kW	0.1	0.2	0.4	0.75
• Rated current	A	0.8	1.4	2.4	4.4
• Output current, max.	A	3.1	4.8	8.7	16
Pulse frequency power unit	kHz	8			
Output frequency	Hz	0 ... 550			
Line filter		Integrated, category C2 (up to 10 m (32.8 ft) motor cable length), category C3 (up to 25 m (82.0 ft) motor cable length)			
Braking resistor		Without [1]	Integrated	Integrated	Integrated
Digital inputs [2]					
• Fast inputs for measuring probes, reference marks, temperature monitoring, external braking resistor		3			
- Low level		-30 V ... +5 V and ≤ 2 mA			
- High level		15 V ... 30 V			
- Current consumption	mA	6			
- Delay time, typ., L → H	µs	5			
- Delay time, typ., H → L	µs	50			
- Galvanic isolation		No			
• Fail-safe input		1			
- Low level		-30 V ... +5 V and ≤ 2 mA			
- High level		15 V ... 30 V			
- Current consumption	mA	5			
- Delay time, typ., L → H	µs	50			
- Delay time, typ., H → L	µs	100			
- Galvanic isolation		Yes			
• Conductor cross-section, max.	mm^2	1.5			
Cooling		Convection (without fan)			
Frame size		FSA		FSB	FSC
Dimensions					
• Width	mm (in)	45 (1.77)		55 (2.17)	74.5 (2.93)
• Height	mm (in)	170 (6.69)		170 (6.69)	170 (6.69)
• Depth	mm (in)	172 (6.79)		172 (6.79)	197 (7.77)
Weight, approx.	kg (lb)	1.1 (2.43)		1.2 (2.65)	1.9 (4.19)

[1] An internal braking resistor is not required for normal operation on account of the available DC link capacity.

[2] The specified delay times refer to the hardware. The actual reaction time depends on the time slot in which the digital input is processed.

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Technical specifications

Line voltage 200 ... 480 V 3 AC		SINAMICS S210 (6SL5...) servo converters, 3 AC series							
		6SL5310-1BE10-4DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE12-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1
Line supply connection									
• Supply voltage		200 ... 480 V 3 AC ±10 %							
• Line frequency	Hz	50/60							
• Conductor cross-section, max.	mm^2	6							
• Line system configuration		Grounded TN/TT networks and ungrounded IT networks							
Rated current	A	1.6	2.8	3.8	6	7.5	12.5	15	17.9
Inrush current	A	4.3	4.3	4.3	8.6	8.6	27.8	27.8	27.8
Power loss	W	69	81	94	114	131	167	191	204
Electronic power supply									
• Voltage		24 V -15 % ... +20 %							
• Power requirement, max.	A	1.2 without brake For current consumption of the brake, see section SIMOTICS S-1FK2 servomotors > Technical specifications > Holding brake, page 3.1/9							
• Conductor cross-section, max.	mm^2	2.5							
Output									
• Rated power									
- 400 V	kW	0.4	0.75	1	1.5	2	3.5	5	7
- 240 V	kW	0.24	0.45	0.6	0.9	1.2	2.1	3	4.2
• Rated current	A	1.2	2.3	3	5	7	9	12	15
• Output current, max.	A	4.2	7.6	10.9	19	24	33	44	55
Pulse frequency power unit	kHz	8							
Output frequency	Hz	0 ... 550							
Line filter		Category C3 (up to 25 m (82.0 ft) motor cable length for a single axis, for DC link coupling see Accessories/line filters)							
Braking resistor		Integrated							
Digital inputs [1]									
• Fast inputs for measuring probes, reference marks, temperature monitoring, external braking resistor		3							
- Low level		-30 V ... +5 V and ≤ 2 mA							
- High level		15 V ... 30 V							
- Current consumption	mA	6							
- Delay time, typ., L → H	µs	5							
- Delay time, typ., H → L	µs	50							
- Galvanic isolation		No							
• Fail-safe input		1							
- Low level		-30 V ... +5 V and ≤ 2 mA							
- High level		15 V ... 30 V							
- Current consumption	mA	5							
- Delay time, typ., L → H	µs	50							
- Delay time, typ., H → L	µs	100							
- Galvanic isolation		Yes							
• Conductor cross-section, max.	mm^2	1.5							
Cooling		Air cooling with integrated fan							
Frame size		FSA			FSB		FSC		
Dimensions									
• Width	mm (in)	50 (1.97)			70 (2.76)		105 (4.13)		
• Height	mm (in)	231 (9.09)			280 (11.0)		280 (11.0)		
• Depth	mm (in)	223 (8.78)			223 (8.78)		223 (8.78)		
Weight, approx.	kg (lb)	2.1 (4.63)			3.3 (7.28)		5 (11.03)		

[1] The specified delay times refer to the hardware. The actual reaction time depends on the time slot in which the digital input is processed.

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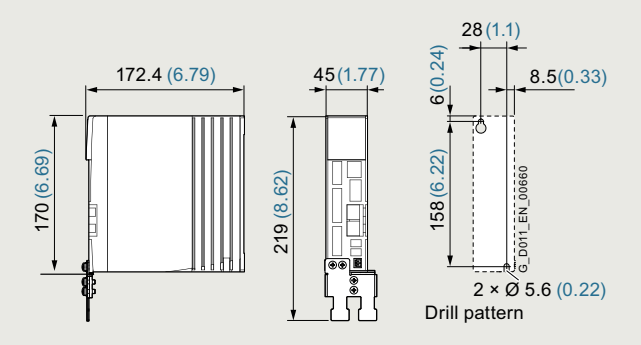
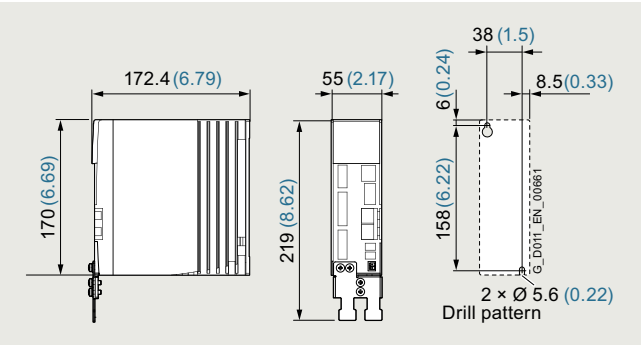
2

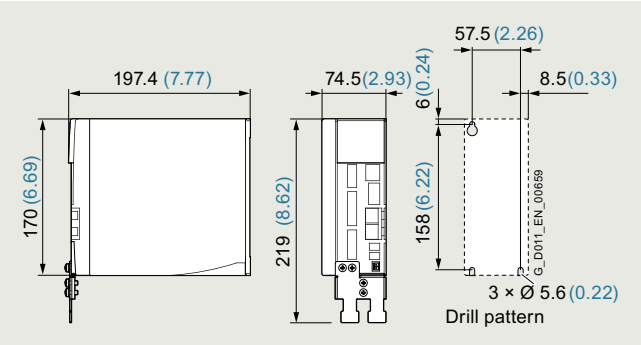
Dimensional drawings



Dimensional drawing SINAMICS S210 (6SL5...), frame size FSA, 1 AC series



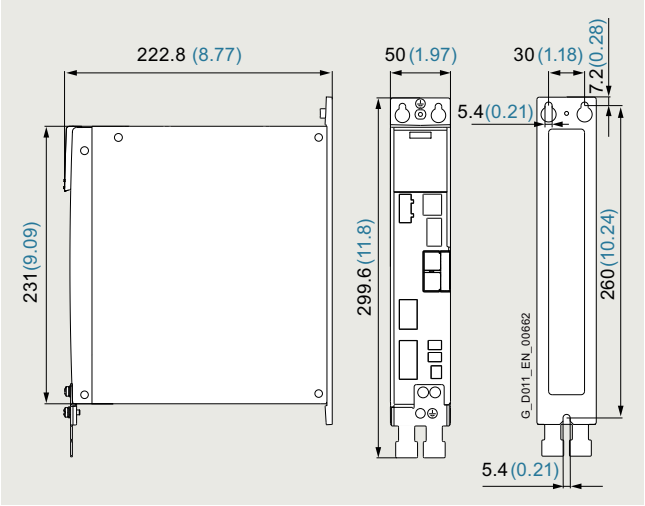
Dimensional drawing SINAMICS S210 (6SL5...), frame size FSB, 1 AC series



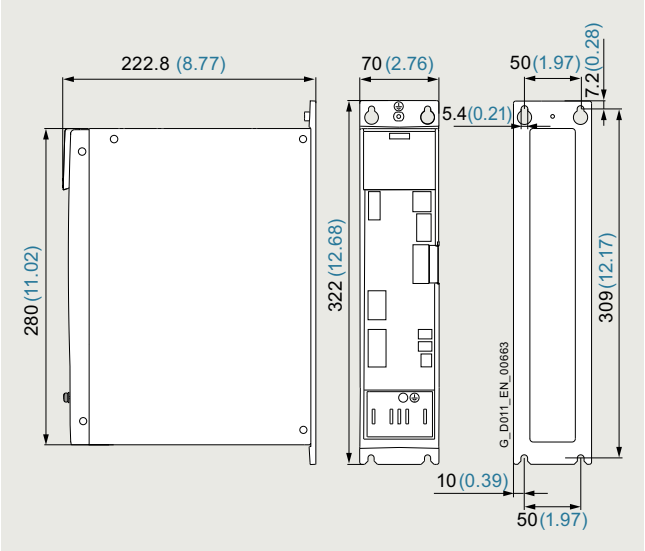
Dimensional drawing SINAMICS S210 (6SL5...), frame size FSC, 1 AC series

All dimensions in mm (values in brackets are in inches).

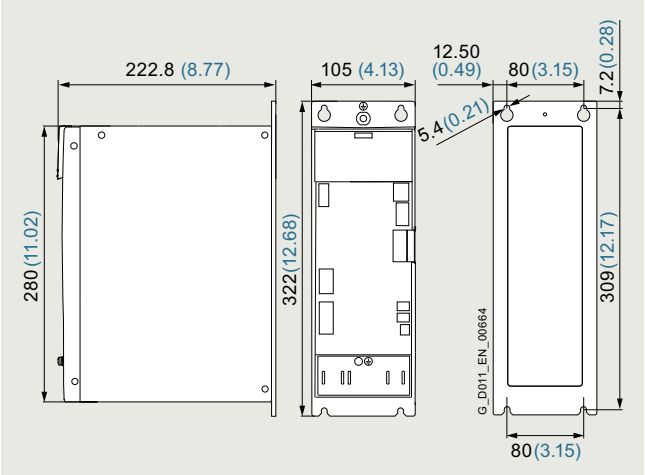
With the OCC motor connection cable connected, the overall depth increases by 63 mm (2.48 inches).



Dimensional drawing SINAMICS S210 (6SL5...), frame size FSA, 3 AC series



Dimensional drawing SINAMICS S210 (6SL5...), frame size FSB, 3 AC series



Dimensional drawing SINAMICS S210 (6SL5...), frame size FSC, 3 AC series

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Accessories

Line filters

1 AC series

Filters are already integrated in order to achieve category C2 (for motor cable lengths up to 10 m) or category C3 (for motor cable lengths up to 25 m). Further requirements can be achieved using an external line filter.

1 AC series	Maximum motor cable length	
	for converters without additional line filter	for converters with external line filter
EMC category C2	10 m (32.8 ft)	25 m (82.0 ft)
EMC category C3	25 m (82.0 ft)	50 m (164 ft)

3 AC series

Filters for achieving category C3 are already integrated (for motor cable lengths up to 25 m). Further requirements can be achieved using an external line filter.

3 AC series	Line/DC link coupling	Maximum motor cable length	
		for converters with integrated line filter	for converters with external line filter
EMC category C2	Without line/DC link coupling	–	25 m (82 ft)
	With line/DC link coupling ≤ 6 converters [1]	–	100 m (328 ft)
EMC category C3	Without line/DC link coupling	25 m (82 ft)	50 m (164 ft)
	With line/DC link coupling ≤ 6 converters [1]	100 m (328 ft)	250 m (820 ft)

Example: SINAMICS S210, 3 AC line filter with servo converter, frame size FSB

Recommended line-side overcurrent protection devices

Overcurrent protection devices are necessary for the operation of the converters. The table listed in the section "Recommended line-side overcurrent protection devices" provides recommendations according to IEC and UL regulations, depending on the area of application. Recommendations on further overcurrent protection devices are available at:
https://support.industry.siemens.com/cs/document/109815356

Additional information about the listed Siemens fuses is available in Catalog LV 10 as well as in SiePortal.

Braking resistors

As far as necessary, braking resistors are integrated into the converters. Together with the generously dimensioned DC link capacities, an external braking resistor is not necessary in the normal case. Even with a supply voltage of 200 V to 240 V 3AC, no external braking resistor is necessary.

If the internal braking resistor is inadequate for applications with very high requirements, an external braking resistor can be connected as an alternative.

Memory cards

A memory card (SINAMICS SD card) can be optionally used with SINAMICS S210. The associated slot is located under the front cover of the converter. Not only the firmware but also the device parameterization of a SINAMICS S210 servo converter can be stored on the memory card.

When service is required, e.g. after the converter has been replaced and the data have been downloaded from the memory card, the drive system is immediately ready for use again.

A memory card is only necessary if functions requiring license, such as the Extended Safety Functions, are used. The necessary litcense is saved on the memory card.

[1] The data is applicable for the complete cable length of the motors, whose associated converters are coupled with one another via an AC coupling or through the DC link.
The maximum motor cable length per motor is 25 m using the internal filters to achieve EMC category C3 or an external filter to achieve EMC category C2. If an external filter is used to achieve EMC category C3, the maximum motor cable length per motor is 50 m.

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Overview

1 AC line filter, 18 A

3 AC line filter, 35 A and 65 A

- Depending on the converter, the following line filters are used:
- Converter with 1 AC mains connection: 1 AC line filter, 18 A
- Individual converters frame size FSA with 3 AC mains connection: 3 AC line filter, 35 A
- Drive line-ups (with and without DC link coupling, total of the currents ≤ 65 A) and individual converters frame sizes FSB and FSC with 3 AC mains connection: 3 AC line filter, 65 A

The 3 AC line filters are connected via the AC coupling of the converters.
The total of the rated currents of the converters on an AC bus must not exceed the rated current of the line filter.

Selection and ordering data

Rated current of the servo converter A	Frame Size	Suitable for SINAMICS S210 (6SL5...)	**Line filter** Article No.
Line voltage 200 ... 240 V 1 AC			
1,4	FSA	6SL5310-1BB10-1CF0	**6SL3203-0BB21-8VA1**
2,7		6SL5310-1BB10-2CF0	
5	FSB	6SL5310-1BB10-4CF0	
9,3	FSC	6SL5310-1BB10-8CF0	
Line voltage 200 ... 480 V 3 AC			
1,6	FSA	6SL5310-1BE10-4DF1	**6SL3203-0BE23-5HA0**
2,8		6SL5310-1BE10-8DF1	
3,8		6SL5310-1BE11-0DF1	
6	FSB	6SL5310-1BE11-5DF1	**6SL3203-0BE26-5HA0**
7,5		6SL5310-1BE12-0DF1	
12,5	FSC	6SL5310-1BE13-5DF1	
15		6SL5310-1BE15-0DF1	
17,9		6SL5310-1BE17-0DF1	
Drive line-ups (with and without DC link coupling, total of the currents ≤ 65 A)			

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Technical specifications

Line voltage 200 ... 240 V 1 AC		**Line filter**
		6SL3203-0BB21-8VA1
Rated current	A	18
Power loss	W	< 1.2
Line/load connection		Screw terminals
• Conductor cross-section		
- For single-conductor connection	mm^2	0.25 ... 6 AWG 24 ... 10
- For flexible cables	mm^2	0.25 ... 4 AWG 24 ... 12
PE connection		M5 screw stud
Degree of protection		IP20
Dimensions		
• Width	mm (in)	62 (2.44)
• Height	mm (in)	155 (6.10)
• Depth	mm (in)	53 (2.09)
Weight, approx.	kg (lb)	0.7 (1.54)
Suitable for SINAMICS S210 (6SL5...) servo converters	Type	FSA 6SL5310-1BB10-1CF0 (1,4 A) 6SL5310-1BB10-2CF0 (2,7 A) FSB 6SL5310-1BB10-4CF0 (5 A) FSC 6SL5310-1BB10-8CF0 (9,3 A)

Line voltage 200 ... 480 V 3 AC		**Line filter**	
		6SL3203-0BE23-5HA0	6SL3203-0BE26-5HA0
Rated current	A	35	65
Power loss	W	12	18
Line supply connection		Screw terminals	Screw terminals
• Conductor cross-section	mm^2	0.5 ... 10 AWG 24 ... 6	4 ... 25 AWG 10 ... 3
Load connection		Screw terminals	Screw terminals
• Conductor cross-section	mm^2	16 AWG 6	16 AWG 6
PE connection		M4 screw stud	M5 screw stud
Degree of protection		IP20	IP20
Dimensions			
• Width	mm (in)	50 (1.97)	70 (2.76)
• Height	mm (in)	296.2 (11.66)	348.8 (13.73)
• Depth	mm (in)	220 (8.66)	220 (8.66)
Weight, approx.	kg (lb)	2.3 (5.07)	3.5 (7.72)
Suitable for SINAMICS S210 (6SL5...) servo converters	Type	FSA 6SL5310-1BE10-4DF1 (1,6 A) 6SL5310-1BE10-8DF1 (2,8 A) 6SL5310-1BE11-0DF1 (3,8 A)	FSB 6SL5310-1BE11-5DF1 (6 A) 6SL5310-1BE12-0DF1 (7,5 A) FSC 6SL5310-1BE13-5DF1 (12,5 A) 6SL5310-1BE15-0DF1 (15 A) 6SL5310-1BE17-0DF1 (17,9 A)

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Selection and ordering data

Overcurrent protection devices are necessary for the operation of the converters. The following table lists recommendations for fuses.

- Siemens fuses of type 3NA3 for use in the area of validity of IEC
- UL-listed fuses Class J for use in USA and Canada

Recommendations on further overcurrent protection devices are available at:

- Für SINAMICS S210 (6SL5...)
  https://support.industry.siemens.com/cs/document/109815356

The Short Circuit Current Rating (SCCR) according to UL for industrial control cabinet installations to NEC Article 409 or UL 508A/508C or UL 61800-5-1 is as follows for Class J fuses for

- SINAMICS S210 (6SL5...): 65 kA

SCCR and ICC values for combination with further overcurrent protection devices are available at:

- For SINAMICS S210 (6SL5...)
  https://support.industry.siemens.com/cs/document/109815356

Notes for installations in Canada:

The converters are intended for line supply systems with overvoltage category III.
More information is available in the technical documentation on the internet at:
www.siemens.com/sinamics-s210/documentation

Additional information about the listed Siemens fuses is available in Catalog LV 10 as well as in SiePortal.

Rated power	SINAMICS S210 (6SL5...)	**IEC-compliant** **Fuse**		**UL/cUL-compliant** **Fuse type** Rated voltage 600 V AC	
		Current	**3NA3**		Current
kW	Type	A	Article No.	Class	A
Line voltage 200 ... 240 V 1 AC					
0.1	6SL5310-1BB10-1CF0	4	**3NA3804**	J	3.5
0.2	6SL5310-1BB10-2CF0	6	**3NA3801**	J	6
0.4	6SL5310-1BB10-4CF0	10	**3NA3803**	J	10
0.75	6SL5310-1BB10-8CF0	16	**3NA3805**	J	15
Line voltage 200 ... 480 V 3 AC					
0.4	6SL5310-1BE10-4DF1	4	**3NA3804**	J	3.5
0.75	6SL5310-1BE10-8DF1	6	**3NA3801**	J	5
1	6SL5310-1BE11-0DF1	10	**3NA3803**	J	8
1.5	6SL5310-1BE11-5DF1	10	**3NA3803**	J	10
2	6SL5310-1BE12-0DF1	16	**3NA3805**	J	15
3.5	6SL5310-1BE13-5DF1	25	**3NA3810**	J	25
5	6SL5310-1BE15-0DF1	32	**3NA3812**	J	30
7	6SL5310-1BE17-0DF1	32	**3NA3812**	J	30

Group protection of multiple converters

Further information is available in the technical documentation on the internet at:
www.siemens.com/sinamics-s210/documentation
https://support.industry.siemens.com/cs/document/109815356

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Overview

As far as necessary, braking resistors are integrated into the converters. Together with the generously dimensioned DC link capacities, another external braking resistor is not necessary in the normal case.

If the internal braking resistor is inadequate for applications with very high requirements, an external braking resistor can be connected as an alternative.

Only intrinsically safe braking resistors with temperature monitoring may be used in order to minimize the risk of an explosion, the outbreak of fire or melting of the enclosure in the event of a continuous overload, e.g. due to a defect.

External braking resistors for 200 V to 240 V 3 AC

For operation with a supply voltage of 200 V to 240 V 3 AC, an external, intrinsically safe braking resistor is always required for SINAMICS S210 (6SL3...) servo converters for each converter. Use of braking resistors integrated in the converter is not permissible with this supply voltage. The innovated SINAMICS S210 (6SL5...) servo converters may also be operated with the integrated braking resistor at this supply voltage. An external braking resistor is not required for this.

The following resistors are recommended as a substitute for the internal braking resistors of SINAMICS S210 (6SL3...) servo converters. If these are not sufficient, the resistors from Michael Koch GmbH listed in the table can be used.

- 100 W, 47 Ω for frame sizes FSA and FSB:
  GXK:BWG250047TS-190
- 240 W, 14 Ω for frame size FSC:
  GXK:BWG600014TS-190

These resistors have approvals for the North American market (cURus and CSA).

If the temperature sensor of the resistor is connected to the input DI4 of the converter, the converter switches off when the braking resistor is overloaded.

More information

Further information is available from the "Siemens Product Partner for Drives Options":
www.siemens.com/drives-options-partner

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Technical specifications

General requirements placed on an external braking resistor

SINAMICS S210 (6SL5...)		Braking resistor			
Article No.	Rated power	Min. resistance	Max. continuous power	Max. peak power	Max. braking energy
6SL5310-...	kW	Ω	W	W	kJ
Line voltage 200 ... 240 V 1 AC					
1BB10-1CF0	0.1	300	50	350	0.7
1BB10-2CF0	0.2	150	100	600	1.3
1BB10-4CF0	0.4	100	200	1300	2.3
1BB10-8CF0	0.75	50	380	2400	3.8
Line voltage 200 ... 240 V 3 AC					
1BE10-4DF1	0.4	100	200	600	1
1BE10-8DF1	0.75	100	380	1200	1
1BE11-0DF1	1	100	500	1700	1
1BE11-5DF1	1.5	50	880	2900	20
1BE12-0DF1	2	50	1000	3800	20
1BE13-5DF1	3.5	15	1750	7500	25
1BE15-0DF1	5	15	2500	9500	25
1BE17-0DF1	7	15	3250	12500	25
Line voltage 380 ... 480 V 3 AC					
1BE10-4DF1	0.4	200	200	1200	8
1BE10-8DF1	0.75	200	380	2400	8
1BE11-0DF1	1	200	500	3400	8
1BE11-5DF1	1.5	100	880	5700	80
1BE12-0DF1	2	100	1000	7600	80
1BE13-5DF1	3.5	30	1750	15000	100
1BE15-0DF1	5	30	2500	19000	100
1BE17-0DF1	7	30	3250	25000	100

Examples of braking resistors from Michael Koch GmbH

SINAMICS S210 (6SL5...)	Braking resistors from Michael Koch GmbH				
Article No.	Order designation with temperature sensor 190 °C (Can only be obtained directly from Michael Koch GmbH)	Continuous power for CE	for UL	Max. peak power	Max. braking energy
6SL5310-...		W	W	W	kJ
Line voltage 200 ... 240 V 1 AC					
1BB10-1CF0	BWG250047TS-190 [1]	50	50	350	0.7
1BB10-2CF0	BWG250047TS-190 [1]	100	100	600	1.1
1BB10-4CF0	BWG250047TS-190 [1]	100	100	1300	1.8
1BB10-8CF0	BWG500027TS-190	200	200	2400	2.7
Line voltage 200 ... 240 V 3 AC					
1BE10-4DF1	BWG500027TS-190	200	200	600	0.9
1BE10-8DF1	BWG600014TS-190 [2]	380	240	1200	0.8
1BE11-0DF1	BWG600014TS-190 [2]	400	240	1700	0.8
1BE11-5DF1	BWD500027K03LIP65IS	600	600	2900	14.5
1BE12-0DF1	BWD500027K03LIP65IS	600	600	3800	13.9
1BE13-5DF1	BWD600014K03LIP65IS	1200	720	7500	18.7
1BE15-0DF1	BWD600014K03LIP65IS	1200	720	9500	17.8
1BE17-0DF1	BWD600014K03LIP65IS	1200	720	12500	18.2
Line voltage 380 ... 480 V 3 AC					
1BE10-4DF1	BWG500100TS-190	200	200	1200	5.2
1BE10-8DF1	BWG600047TS-190	380	240	2400	6.2
1BE11-0DF1	BWG600047TS-190	400	240	3400	6.1
1BE11-5DF1	BWD500100K03LIP65IS	600	600	5700	30.4
1BE12-0DF1	BWD500100K03LIP65IS	600	600	7600	30.4
1BE13-5DF1	BWD600047K03LIP65IS	1200	720	15000	50
1BE15-0DF1	BWD600047K03LIP65IS	1200	720	19000	47.5
1BE17-0DF1	BWD600047K03LIP65IS	1200	720	25000	41.7

[1] Can also be ordered directly from Siemens with the article number **GXK:BWG250047TS-190**

[2] Can also be ordered directly from Siemens with the article number **GXK:BWG600014TS-190**

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Overview

Example of the SINAMICS memory card (SD card)

The parameter assignment, firmware and licenses for a converter can be stored on the SINAMICS memory card (SD card). When service is required, e.g. after the converter has been replaced and the data have been downloaded from the memory card the drive system is immediately ready for use again.

The memory card has the following functions:

- Parameter settings can be written from the memory card to the converter or saved from the converter to the memory card
- The memory card supports series commissioning without the use of a commissioning tool
- If firmware is stored on the memory card, the firmware can be upgraded/downgraded during startup
- It is used for storing licenses when using functions under license, e.g. the Safety license for enabling the Extended Functions [1]
  - Safe Stop 1 (SS1) [2]
  - Safe Stop 2 (SS2)
  - Safe Operating Stop (SOS)
  - Safely-Limited Speed (SLS)
  - Safe Speed Monitor (SSM)
  - Safe Direction (SDI)
  - Safely-Limited Acceleration (SLA)
  - Safe Brake Test (SBT) diagnostic function

Notes:

In general, the converter can be operated without a memory card. However, it is necessary if licenses, such as the Extended Safety license, are required. The card must then remain permanently inserted.

It is not possible to operate the innovated SINAMICS S210 (6SL5...) servo converters with firmware V5.2 SP3.

Furthermore, it is not possible to operate the previously available SINAMICS S210 (6SL3...) servo converters with firmware V6.1 or higher.

Selection and ordering data

Description	Article No.
SINAMICS SD card for SINAMICS S210 (6SL5...) 8 GB The parameter assignment, firmware and licenses for a converter can be stored on the memory card.	
• Empty	**6SL5970-0AA00-0AA0**
• Empty and Safety license (Extended Functions) [1]	**6SL5970-0AA00-0AA0-Z F01**
• With firmware V6.1	**6SL5370-0GB00-0AA0**
• With firmware V6.1 and Safety license (Extended Functions) [1]	**6SL5370-0GB00-0AA0-Z F01**
• With firmware V6.3	**6SL5370-0GD00-0AA0**
• With firmware V6.3 and Safety license (Extended Functions) [1]	**6SL5370-0GD00-0AA0-Z F01**
• With firmware V6.4	**6SL5370-0GE00-0AA0**
• With firmware V6.4 and Safety license (Extended Functions) [1]	**6SL5370-0GE00-0AA0-Z F01**
• With firmware V6.4 and SINAMICS OPC UA Single Extended license	**6SL5370-0GE00-0AA0-Z H80**
Safety license for SINAMICS S210 (6SL5...) (Extended Functions) [1] [3]	
• Certificate of License (CoL) in electronic form	**6SL5977-0AA00-2HA0**
SINAMICS OPC UA Single Extended license for SINAMICS S210 (6SL5...)	
• Certificate of License (CoL) in electronic form	**6SL5977-0AA00-1GA0**

[1] The Extended Functions require a Safety license.
For innovated SINAMICS S210 (6SL5...) converters from firmware V6.1, the Extended Functions SS1, SLS, SDI and SSM are available. All other Safety Integrated Extended Functions are available with firmware from V6.3 and TIA Portal from V19 onwards.

[2] Safe Stop 1 time-controlled (SS1-t) is also included in the Safety Integrated Basic functions.

[3] Extended function for an existing memory card. The memory card is not included in the scope of delivery. The Safety license can also be ordered together with a memory card (see above). With a CoL in electronic form, the license is supplied as a PDF file. Notification of this with a download link is received by email.

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More information

Certificate of License (CoL)

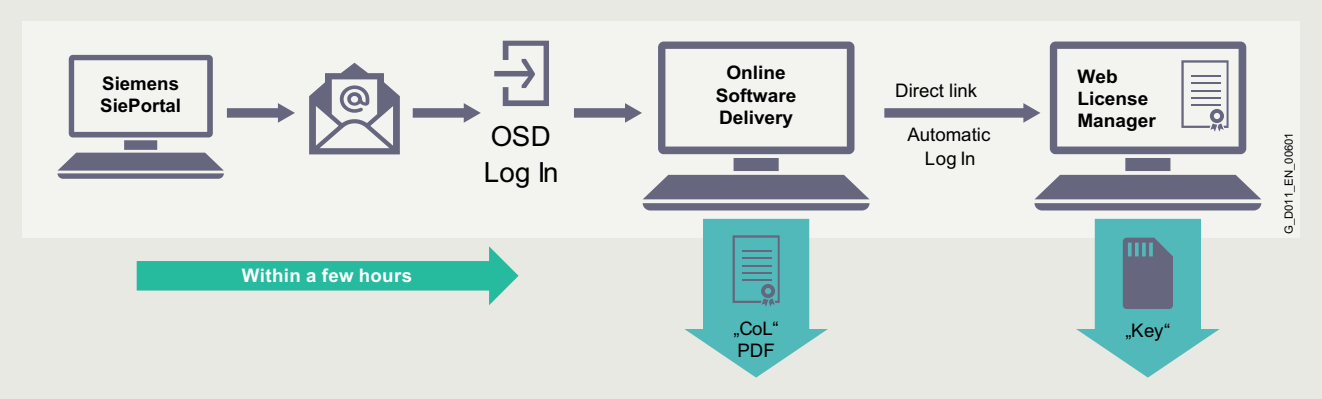
The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL must be assigned to each use and must be kept in a safe place.

Electronic Certificate of License
The electronic Certificate of License is the paperless delivery form for runtime options for SINAMICS and SINUMERIK.

Like the previous paper Certificate of License CoL, the electronic Certificate of License contains information about the type of rights of use purchased for the software. The electronic Certificate of License is supplied as a PDF file via the Online Software Delivery Portal (OSD). This enables quick notification with a download link to the email address to be stated in the order.

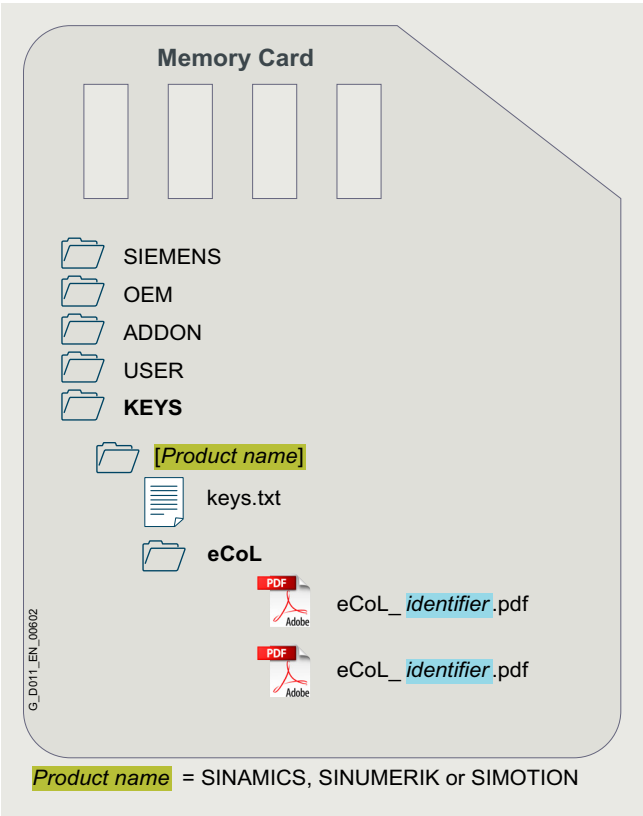
The electronic Certificate of License can then be downloaded from the OSD. The Web License Manager can also be called from the OSD to assign the runtime license to a memory card. In this case, the data of the electronic Certificate of License are automatically transferred to the Web License Manager and do not have to be entered manually.
This ensures quick availability of the license key and simple and secure handling and management of the license certificates.

You will find information on the OSD at:
https://support.industry.siemens.com/cs/document/109759444



Electronic Certificate of License: Procedure for order licenses

In the future, the pre-licensed memory cards will also be delivered with the corresponding electronic Certificates of License on the memory card. The Certificates of License are stored in directory "KEYS". The pre-licensed memory cards will successively make the transition from paper CoLs to electronic CoLs. The CoL on paper will then no longer be contained in the delivery.



Electronic Certificate of License: Storage location on data medium

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Overview

SINAMICS SDI Pro 5.5"

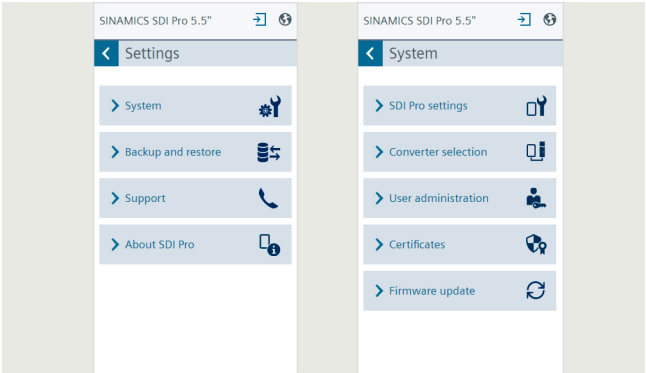
The SINAMICS SDI Pro 5.5" represents a powerful and user-friendly Operator Panel for SINAMICS G220, SINAMICS S200 and SINAMICS S210 (6SL5...)[1]. The SINAMICS SDI Pro 5.5" supports both newcomers and drive experts. Thanks to its touch interface and high-contrast 5.5" color display, it goes hand-in-glove for commissioning, diagnostics, operator control and monitoring as well as on-site maintenance and servicing of converters.

The user interface to the converter is provided by the converter's built-in web server. The technology of the SINAMICS SDI Pro 5.5" grants full access to the functionality of the web server.
The supported web server functions pertaining to each converter can be found here:

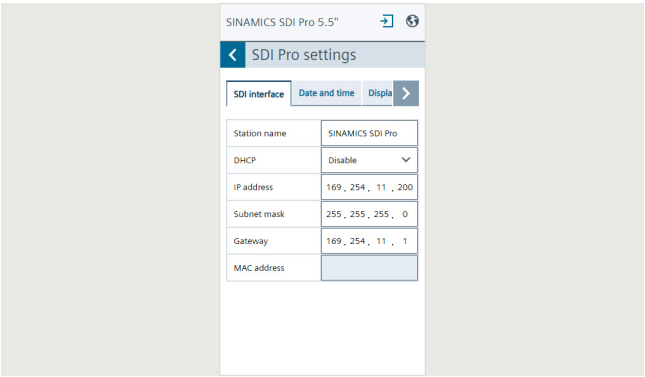
- SINAMICS G220 ⇒ For more information on web server functions, see SINAMICS web server for SINAMICS G220.
- SINAMICS S200 ⇒ For more information on web server functions, see SINAMICS web server for SINAMICS S200.
- SINAMICS S210 (6SL5...)[1]⇒ For more information on web server functions, see SINAMICS web server for SINAMICS S210 (6SL5...).

In addition, the SINAMICS SDI Pro 5.5" offers its own configuration interface with the following settings options:

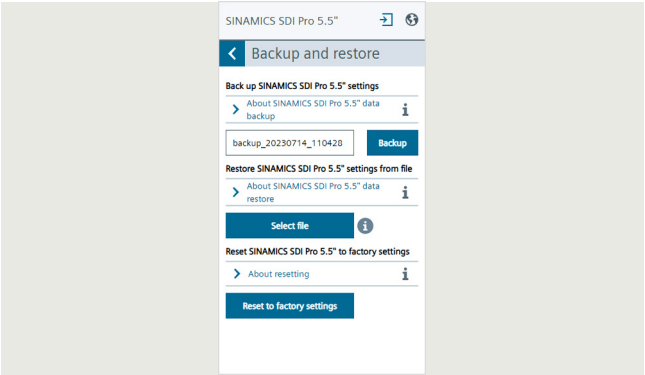
- SINAMICS SDI Pro 5.5" main menu



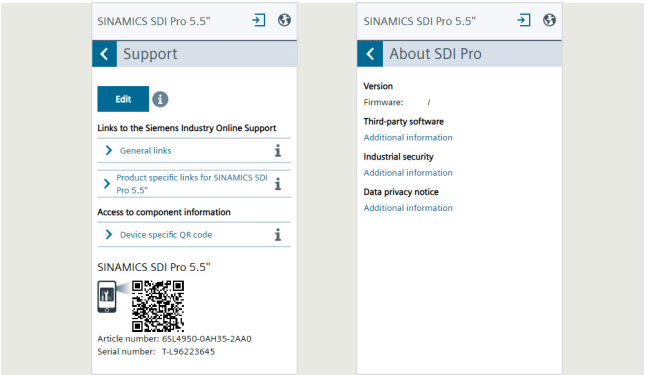
- Set the SINAMICS SDI Pro 5.5" system settings such as user interface language, real-time clock, interface settings, display settings, change background image of the home screen



- Back up and restore the SINAMICS SDI Pro 5.5" device settings



- Access product-specific information (e.g. manuals, downloads, FAQs) and information on SINAMICS SDI Pro 5.5" (e.g. currently installed firmware version, security notifications)



The additionaly available options in the form of the SINAMICS SDI Pro 5.5" handheld kit and SINAMICS SDI Pro 5.5" door mounting kit extend the operating range of the device. With the SINAMICS SDI Pro 5.5" handheld kit, the device can be equipped with a rubber oversheath for mobile use. The SINAMICS SDI Pro 5.5" door mounting kit enables the SINAMICS SDI Pro 5.5" to be installed in control cabinet doors.

[1] Release for SINAMICS S210 (6SL5...) available soon.

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Selection and ordering data

Description	Article No.
SINAMICS SDI Pro 5.5" [2] [4] for use with SINAMICS G220 SINAMICS S200[1] SINAMICS S210 (6SL5...)[1] Operating languages: German, English, French, Italian, Spanish, Chinese Simplified	**6SL4950-0AH35-2AA0**
Accessories	
SINAMICS SDI Pro 5.5'' handheld kit [2] for use with the SINAMICS SDI Pro 5.5" Included in the scope of delivery: • Handheld housing • Ethernet connecting cable Length 3 m (9.84 ft), can be used to connect a SINAMICS SDI Pro 5.5" with a converter	**6SL4950-0AH65-0AA0**
SINAMICS SDI Pro 5.5" door mounting kit [2] for mounting a SINAMICS SDI Pro 5.5" in control cabinet doors with metal thicknesses of 1 ... 3 mm (0.04 ... 0.12 in) Degree of protection IP55 Included in the scope of delivery: • Metal plate for installing the SINAMICS SDI Pro 5.5" • Fixing accessories	**6SL4950-0AH55-0AA0**
SINAMICS IP55 panel mounting frame for SINAMICS G220 Included in the scope of delivery: • SINAMICS IP55 panel mounting frame • Ethernet connecting cable, length approx. 15 cm (5.91 in)	**6SL4950-0AH75-0AA0**
Bundle SINAMICS SDI Pro 5.5'' with SINAMICS IP55 panel mounting frame for SINAMICS G220 Included in the scope of delivery: • SINAMICS SDI Pro 5.5'' • SINAMICS IP55 panel mounting frame • Ethernet connecting cable, length approx. 15 cm (5.91 in)	**6SL4950-0AH45-0AA0**
IE TP Cord RJ45/RJ45 [3] Patch cable, available fully assembled • With 4 x 2 cores for 10/100/1000 Mbps Ethernet • Small cable diameter • Cat6$_A$ (4 x 2) of the ISO/IEC 11801 and EN 50173 international cabling standards	
0.3 m	**6XV1870-3QE30**
0.5 m	**6XV1870-3QE50**
1 m	**6XV1870-3QH10**
2 m	**6XV1870-3QH20**
3 m	**6XV1870-3QH30**
4 m	**6XV1870-3QH40**
6 m	**6XV1870-3QH60**
10 m	**6XV1870-3QN10**
15 m	**6XV1870-3QN15**
20 m	**6XV1870-3QN20**
25 m	**6XV1870-3QN25**
30 m	**6XV1870-3QN30**

[1] For information on updates to the SINAMICS SDI Pro 5.5", see www.siemens.com/sinamics-sdi-pro-dl

[2] The Ethernet connection cable to connect the SINAMICS SDI Pro 5.5" to the service interface of the converter (X127) or the PROFINET interface (X150) must be ordered separately.
To use the operator panel without an additional power supply at the service interface of the converter (X127; point-to-point connection), an 8-wire RJ45 Ethernet cable is required. Pre-assembled cables can be ordered as an accessory.

[3] For applications where the space behind the SINAMICS SDI Pro 5.5'' is very limited, a cable with angled connectors can be used. Such cables can be purchased from HARTING under the order number 09 48 858 5745 050. For information on HARTING cables visit www.harting.com.

[4] Release for SINAMICS S210 (6SL5...) available soon.

Benefits

- User interface
  - Intuitive user interface for the drive provided by the converter itself
  - High-contrast 5.5" color touch display
  - SINAMICS SDI Pro 5.5'' device design open for future function expansions (e.g. device functions, languages)
  - Easily upgradable to latest features via USB C interface
- Commissioning
  - Easy commissioning of the connected converter via the Quick/Advanced Commissioning Wizard. Neither variant requires expert knowledge of converter parameters.
  - Quick commissioning gives the user simple and fast access to all the basic parameters required to commission simple applications.
  - Advanced commissioning provides the parameters required to commission more complex applications, dispensing with the need to switch between different areas within the user interface.
  - Fast series commissioning of frequency converters thanks to cloning function (backup/restore)
  - For quicker access right on the SINAMICS SDI Pro 5.5", the names of the backup files you wish to create can be entered or modified with the on-screen keyboard.
  - Context-sensitive help functions provide support for the user during commissioning.
  - Simple local commissioning on-site using the handheld kit
- Operator control and monitoring
  - Simple, individual local drive control (start/stop, setpoint value specification, change in direction of rotation)
  - Actual values from the converter are displayed clearly. You can change the parameters you wish to monitor depending on the requirement.
- Diagnostics
  - Rapid diagnostics thanks to on-site plain text display
  - Integrated plain text help function for local display and resolution of fault messages
- Service and Support function
  - Input/output of a service contact person
  - Easy access to component information via QR code shown on the display
  - Quick access to product information, documentation, FAQs using mobile devices (e.g. smartphones, tablets) by scanning a QR code generated on the SINAMICS SDI Pro 5.5"
  - Optional scanning and evaluation of the QR code with the Industry Online Support app (https://support.industry.siemens.com/cs/ww/en/sc/2067)
  - Simple cloning of specific settings of the SINAMICS SDI Pro 5.5" such as the language setting, backlight timer, date/time settings, interface settings (IP address), list of available converters, user administration of the SDI Pro. Settings made once can thus be transferred easily to many other SINAMICS SDI Pro 5.5" devices.
  - Firmware upgrade for the SINAMICS SDI Pro 5.5"
    The SINAMICS SDI Pro 5.5" can be updated and expanded with the integrated USB C port.
    Data can be transferred from a PC to the device for future expansions. Furthermore, the USB interface allows user languages and firmware updates[1] that will become available in future to be downloaded.
- Management of users allowed to have access to the SINAMICS SDI Pro 5.5" settings (UMAC)
- Management of certificates for encrypted communication to the converter (https)

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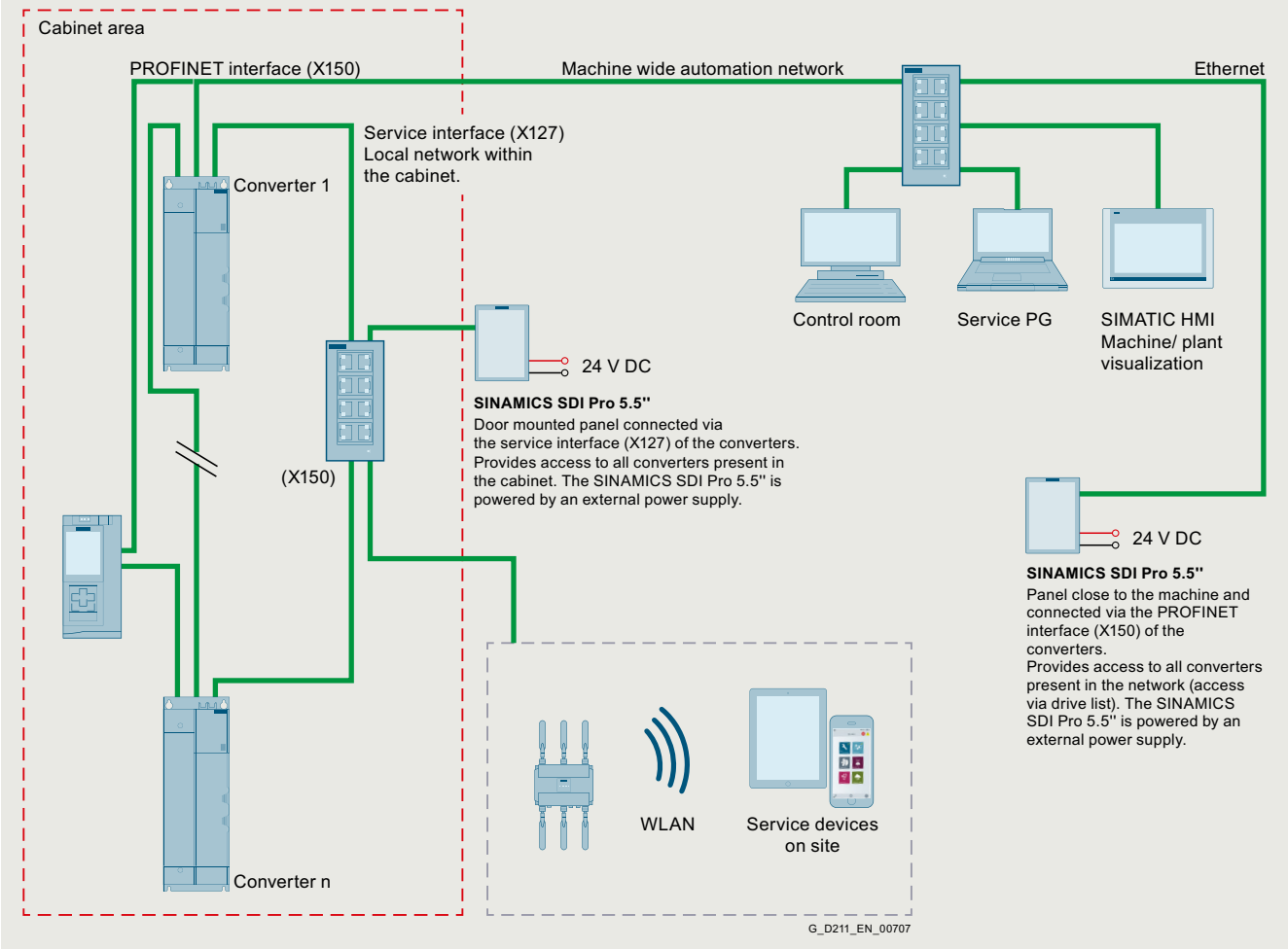
Integration

- Flexible deployment in point-to-point and network configurations
  - The SINAMICS SDI Pro 5.5" can either be connected to the service interface (X127) or the PROFINET interface (X150) of the converter.
  - The SINAMICS SDI Pro 5.5" can be directly supplied with power via the converter service interface. An external power supply is not required. [1)]
  - If the SINAMICS SDI Pro 5.5" is operated in a network with n converters ($1 < n \leq 20$), the converters can be accessed in a flexible way via a drive list. As such, a wide range of converters can be operated or diagnosed via an SINAMICS SDI Pro 5.5", for instance.
    The drive list can be conveniently created on the SINAMICS SDI Pro 5.5" either automatically or manually.



Application example in which multiple converters in a control cabinet can be reached with one SINAMICS SDI Pro 5.5"

[1)] To use the operator panel without an additional power supply at the service interface of the converter (X127; point-to-point connection), an 8-wire RJ45 Ethernet cable is required.
Pre-assembled cables can be ordered as an accessory.

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Technical specifications

	SINAMICS SDI Pro 5.5" 6SL4950-0AH35-2AA0
Display	High-contrast color display
• Resolution	320 × 580 pixels
Operator panel	Touch display
User languages	German, English, French, Italian, Spanish, Chinese Simplified
Power supply	20 ... 29 V DC 24 V DC via the RJ45 (8-core) X127 cable connection from the converter [1] or external power supply via the external power supply terminals on the Operator Panel
Current, max.	300 mA
Ambient temperature	
• During transport and storage	-40 ... +70 °C (-40 ... +158 °F)
• During operation	When using the SINAMICS SDI Pro 5.5" handheld kit: -20 ... +55 °C (-4 ... +131 °F) If installed with the SINAMICS SDI Pro 5.5" door mounting kit: -20 ... +55 °C (-4 ... +131 °F)
Air humidity	Relative air humidity < 95 %, non-condensing
Environmental class/harmful chemical substances	
• Operation	Class 3C3 per IEC 60721-3-3: 2002
Degree of protection	IP20 on the rear side or when in use with the SINAMICS SDI Pro 5.5" handheld kit IP55 on the front side, mounted with the SINAMICS SDI Pro 5.5" door mounting kit
Dimensions (H × W × D)	167 mm × 111 mm × 16.1 mm (6.57 in × 4.37 in × 0.63 in)
Weight, approx.	0.275 kg (0.61 lb)
Certificate of suitability	CE, UKCA, RCM, cULus, EAC, KC-REM-S49-SINAMICS

	SINAMICS SDI Pro 5.5" handheld kit 6SL4950-0AH65-2AA0
Ambient temperature	
• During transport and storage	-40 ... +70 °C (-40 ... +158 °F)
Air humidity	Relative air humidity < 95 %, non-condensing
Degree of protection	IP20
Weight, approx.	0.265 kg (0.58 lb)

	SINAMICS SDI Pro 5.5" door mounting kit 6SL4950-0AH55-0AA0
Ambient temperature	
• During transport and storage	-40 ... +70 °C (-40 ... +158 °F)
Air humidity	Relative air humidity < 95 %, non-condensing
Degree of protection	IP20 on the rear side or inside of the cabinet IP55 on the front side, mounted with the SINAMICS SDI Pro 5.5" door mounting kit
Dimensions	
• Door mounting kit dimensions	Cabinet cutout: 93 mm × 153 mm (3.66 in × 6.02 in), Screws: M4 × 20, 6 pcs., Tightening torque: 0.1 Nm (0.89 lbf-in) / M3 × 6, 2 pcs., Tightening torque: 1.2 Nm (10.6 lbf-in)
Weight, approx.	0.214 kg (0.47 lb)

	SINAMICS IP55 Panel mounting frame 6SL4950-0AH75-0AA0
Ambient temperature	
• During transport and storage	-40 ... +70 °C (-40 ... +158 °F)
Air humidity	Relative air humidity < 95 %, non-condensing
Degree of protection	IP55, including the SINAMICS SDI Operator Panel
Dimensions	
• Mounting frame dimensions	180 mm × 150 mm × 35 mm (7.09 in × 5.91 in × 1.38 in), Screws: M4 × 20, 4 pcs., Tightening torque: 1.2 Nm (10.6 lbf-in)
Weight, approx.	0.405 kg (0.89 lb) + 0.275 kg (0.61 lb) if the SINAMICS SDI Pro Operator Panel is inserted in the mounting frame

[1] The Ethernet connection cable to connect the SINAMICS SDI Pro 5.5" to the service interface of the converter (X127) or the PROFINET interface (X150) must be ordered separately.
To use the operator panel without an additional power supply at the service interface of the converter (X127; point-to-point connection), an 8-wire RJ45 Ethernet cable is required. Pre-assembled cables can be ordered as an accessory.

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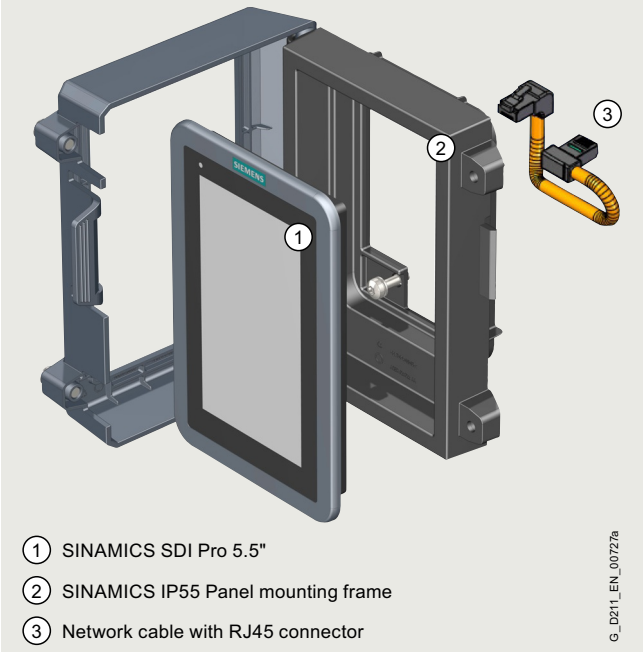
Accessories

SINAMICS SDI Pro 5.5" handheld kit

SINAMICS SDI Pro 5.5" with handheld kit

A handheld kit can be ordered to assist with using the SINAMICS SDI Pro 5.5" while on the go. It contains a rubber housing and a 3 m long Ethernet connecting cable.

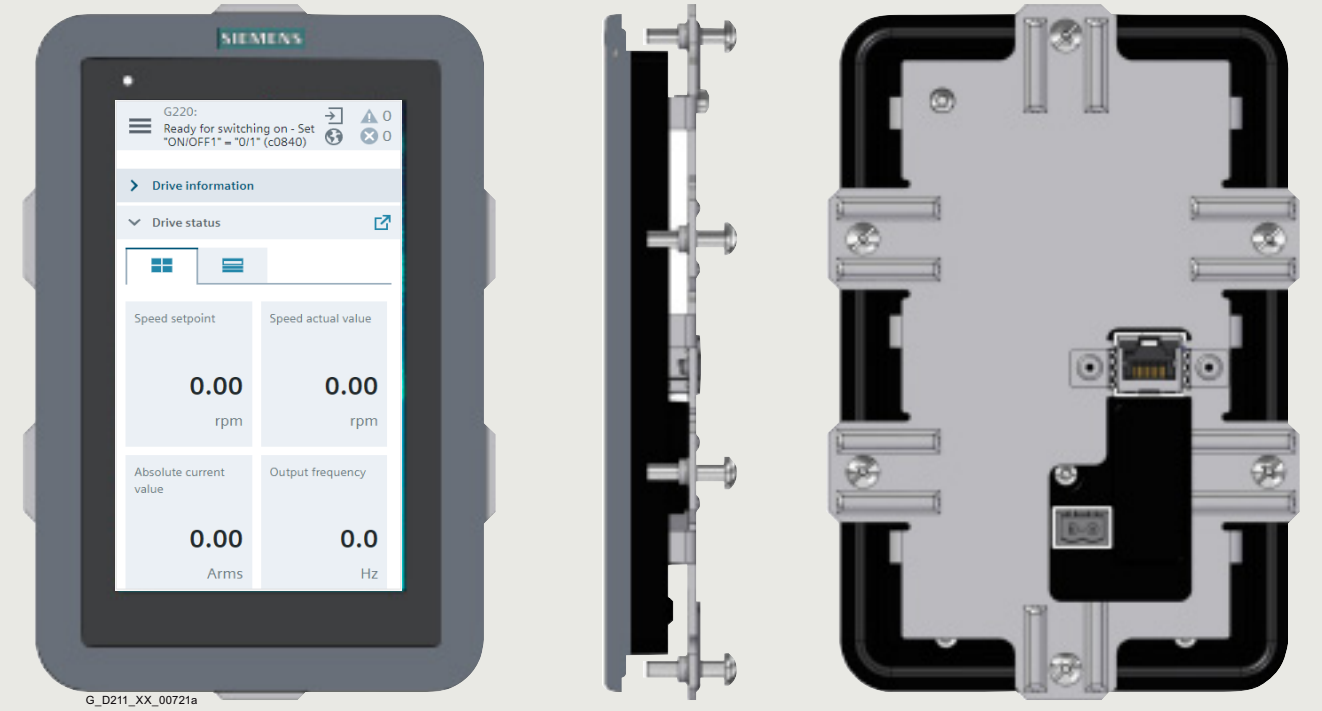
SINAMICS IP55 Panel mounting frame



SINAMICS IP55 Panel mounting frame

The SINAMICS IP55 Panel mounting frame is designed so that the SINAMICS SDI Pro Operator Panel can be connected to the IP55 converter while retaining the IP55 degree of protection of the converter.

SINAMICS SDI Pro 5.5" door mounting kit



With the optional SINAMICS SDI Pro 5.5" door mounting kit, a SINAMICS SDI Pro 5.5" can be easily installed in a control cabinet door in just a few steps. The door mounting kit includes a metal plate for installing the SINAMICS SDI Pro 5.5" e.g. in a cabinet cutout. [1)]
In case of door mounting with the SINAMICS SDI Pro 5.5" Operator Panel, the degree of protection IP55/UL type 12 enclosure is achieved for the front side.

1) The Ethernet connection cable to connect the SINAMICS SDI Pro 5.5" to the service interface of the converter (X127) or the PROFINET interface (X150) must be ordered separately.

To use the operator panel without an additional power supply at the service interface of the converter (X127; point-to-point connection), an 8-wire RJ45 Ethernet cable is required.
Pre-assembled cables can be ordered as an accessory.

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2

Overview

SINAMICS Smart Adapter

SINAMICS Smart Adapter is a Wi-Fi solution for engineering, service and maintenance tasks for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220. The adapter is designed to be plugged into and powered from the service interface (X127) on the converter.

Benefits

- Wireless access to the converter-integrated web server via mobile users device
- Wireless access with SINAMICS Startdrive to the SINAMICS converters
- Portable and compact Wi-Fi solution for engineering, service and maintenance tasks for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220
- Advanced security technology
- Plug and Play interface for easy connectivity
- User friendly

Application

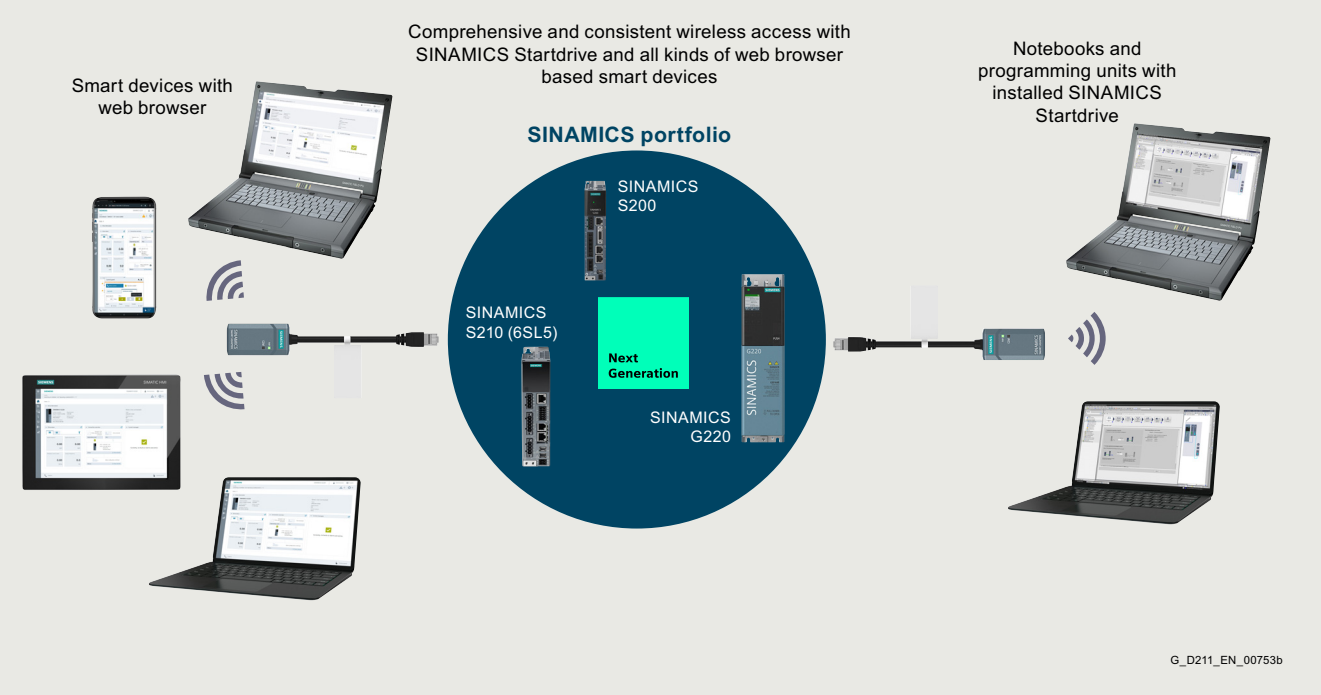
SINAMICS Smart Adapter is used in general industrial applications as an engineering solution for quick commissioning and service.

The adapter is especially valuable in areas, which are difficult to access due to their mechanical mounting locations. The use of SINAMICS Smart Adapter avoids cable spaghetti and tripping points during commissioning and service tasks and therefore prevents from occasional accidents.

Function

- Easy and quick service and commissioning via a wireless solution using the converter-integrated web server
- Interface compatible with the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220 and allows power supply of SINAMICS Smart Adapter directly from the converter.
- Advanced security with WPA3 protocol

Integration



Wireless access with SINAMICS Startdrive via SINAMICS Smart Adapte

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Selection and ordering data

Description	Article No.
SINAMICS Smart Adapter Wi-Fi solution compatible with the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220	**6SL4950-0AJ00-0AA0**

Technical specifications

	SINAMICS Smart Adapter 6SL4950-0AJ00-0AA0
Supported operating systems	Apple iOS (from 12.2), Android, Microsoft Windows, Mac OS (from 10.15)
Recommended browsers	Google Chrome (from 69.0), Microsoft Edge (from 80.0), Safari, Opera (from 56.0)
Ambient temperature	
• During storage and transport	-40 °C ... +70 °C (-40 °F ... +158 °F)
• During operation	-10 °C ... +40 °C (-40 °F ... +104 °F)
Humidity	< 95 %, without condensation
Rated voltage	24 V DC
Wireless technology and frequency range [1]	
• At 2.4G:	Wi-Fi 2400 MHz ... 2483.5 MHz
• At 5G:	Wi-Fi 5150 MHz ... 5250 MHz
Wireless modulation type	
• At 2.4G:	802.11 b/g/n
• At 5G:	802.11 a/n
Maximum output power (EIRP)	
• At 2.4G:	17.66 dBm
• At 5G:	14.50 dBm
Type of modulation	DSSS (DBPSK, DQPSK, CCK), OFDM (BPSK, QPSK, 16QAM, 64QAM)
Maximum wireless communication distance	50 m (164 ft)
Maximum antenna gain	
• At 2.4G:	1.2 dBi
• At 5G:	1.6 dBi
Maximum radio frequency output power	
• At 2.4G:	18 dBm
• At 5G:	15 dBm
Degree of protection	IP20/UL Open Type
Dimensions	
• Width	30 mm (1.18 in)
• Height	200 mm (7.87 in)
• Depth	18 mm (0.71 in)
Weight, approx.	0.032 kg (0.071 lb)
Compliance with standards	CE, UKCA, UL, CRC, IMDA, NBTC, KCC, NCC, ICASA, SDPPI, UkrCEPRO, JRF, RED, FCC, IC, WPC, ANATEL, TRA, MIC, SRRC, RCM, ENACOM, SUBTEL, MTC, SDOC, MOC

[1] The actual frequency range may vary depending on market.

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Notes

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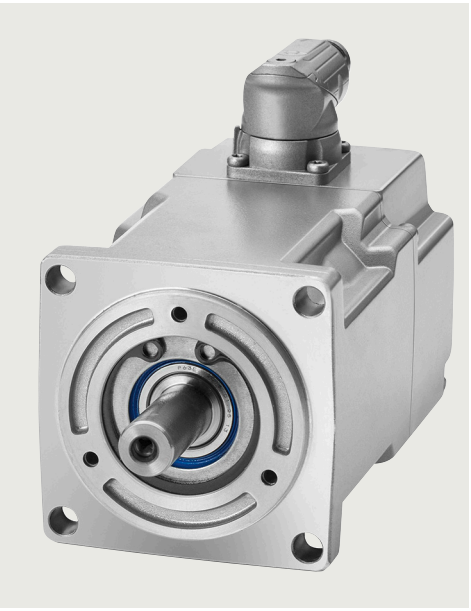

3/2	**Overview**
3.1/1	**SIMOTICS S-1FK2 servomotors**
3.2/1	**SIMOTICS S-1FT2 servomotors**
3.3/1	**SIMOTICS S-1FS2 servomotors**
3.4/1	**SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors**
3.5/1	**SIMOTICS S-1FG1 servo geared motors**

Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at:
www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator for the SINAMICS S210 drive system can be used on the internet at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FK2, S-1FT2 and S-1FS2 servo motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1fk2/configuration
www.siemens.com/simotics-1ft2/configuration
www.siemens.com/simotics-1fs2/configuration

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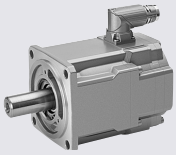
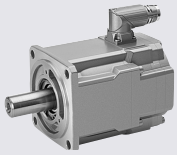
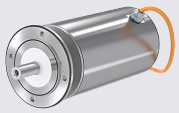
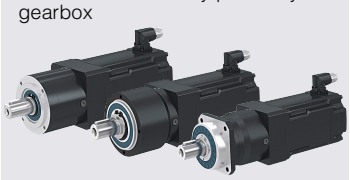
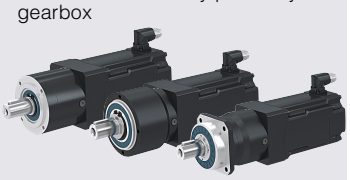
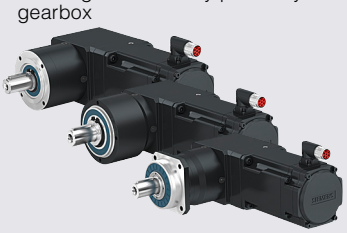
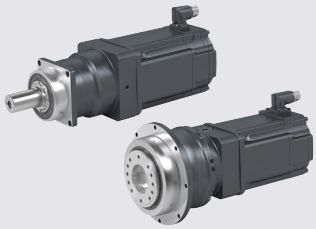
Overview

The 1FK2 servomotors are perfectly suited to overcome the essential challenges in servo drive technology. The product range includes a limited number of variants and options and therefore enables a simple overview and selection. They form the core of the servomotors for the SINAMICS S210 servo drive system.

The 1FT2 servomotors are an extension of the 1FK2 motor portfolio. They are more finely graded in terms of rated speeds, offer additional torque levels and have numerous variations and options. This makes it possible to solve the diverse challenges in the drive technology more precisely. Even more demanding tasks or applications in difficult environments can be mastered with 1FT2 servomotors.

	SIMOTICS S servomotors for SINAMICS S210		
	1FK2 High Dynamic (HD) / Compact (CT)	**1FT2** High Dynamic (HD) / Compact (CT)	**1FS2** High Dynamic (HD) / Compact (CT)
			
Versions	Shaft heights	Shaft heights	Shaft heights
• High Dynamic (HD)	20, 30, 40, 52, 63	20, 30, 40, 52, 63, 80	40, 52, 63
• High Dynamic (HD) forced ventilation	–	63, 80	–
• Compact (CT)	30, 40, 48, 63, 80, 100	30, 40, 48, 63, 80, 100	80
• Compact (CT) forced ventilation	–	63, 80, 100	–
Version as servo planetary geared motor	• with coaxial economy planetary gearbox 	• with coaxial economy planetary gearbox  • with angular economy planetary gearbox  • with coaxial precision planetary gearbox NEW 	–
Static torque M_0	0.16 ... 40 Nm (0.12 ... 29.50 lb_f-ft)	0.16 ... 50 Nm (0.12 ... 36.90 lb_f-ft)	3.1 ... 23.5 Nm (2.29 ... 17.33 lb_f-ft)
Rated power P_N	Up to 6.4 kW	Up to 6.4 kW	Up to 2.51 kW
Applications	• Packaging machines • Handling equipment • Feed and withdrawal devices • Stacking units • Automatic assembly machines • Laboratory automation • Woodworking, glass and ceramic industries • Digital printing machines		• Food and beverage industries • Pharmaceutical industry • Packaging machines • Handling equipment • Feed and withdrawal devices

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	SIMOTICS S servomotors for SINAMICS S210		
	1FK2 High Dynamic (HD) / Compact (CT)	**1FT2** High Dynamic (HD) / Compact (CT)	**1FS2** High Dynamic (HD) / Compact (CT)
Housing	Aluminum/anthracite gray	Aluminum/anthracite gray Optionally other colors possible	Stainless steel
Degree of protection	IP64 IP65 optional or retrofittable	IP64 IP65 optional or retrofittable, IP67 optional	IP66/IP67, IP69K
Encoder systems			
• Absolute encoder 22-bit singleturn	✓	✓	–
• Absolute encoder 22-bit + 12-bit multiturn	✓	✓	✓
• Absolute encoder 26-bit singleturn	–	✓	–
• Absolute encoder 26-bit + 12-bit multiturn	–	✓	–
Notes	–	• Numerous variants and options	• Very high detergent resistance • Certification according to EHEDG

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Notes

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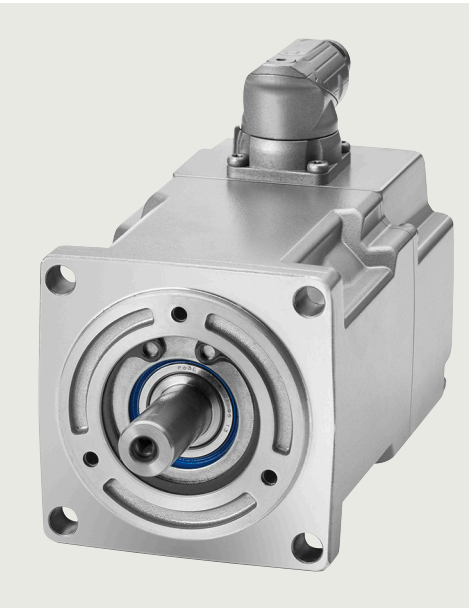
SIMOTICS S-1FK2 servomotors for SINAMICS S210



3.1/2 Overview
3.1/2 Benefits
3.1/2 Application
3.1/2 More information
3.1/3 Selection and ordering data
3.1/6 Technical specifications
3.1/6 General technical specifications
3.1/10 Shaft height 20
3.1/12 Shaft height 30
3.1/15 Shaft height 40
3.1/19 Shaft height 48
3.1/21 Shaft height 52
3.1/23 Shaft height 63
3.1/26 Shaft height 80
3.1/29 Shaft height 100

Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at:
www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator for the SINAMICS S210 drive system can be used on the internet at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FK2 servo motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1fk2/configuration

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Overview

The SIMOTICS S-1FK2 servomotors are compact and highly dynamic synchronous motors for a wide range of uses in an industrial environment. They are characterized by high power density, degree of protection and overload capability.

The 1FK2 servomotors are perfectly suited to overcome the essential challenges in servo drive technology. The product range includes a limited number of variants and options and therefore enables a simple overview and selection. They form the core of the servomotors for the SINAMICS S210 servo drive system.

The 1FT2 servomotors are an extension of the 1FK2 motor portfolio – see chapter 3.2.
They are more finely graded in terms of rated speeds, offer additional torque levels and have numerous variations and options. This makes it possible to solve the diverse challenges in the drive technology more precisely. Even more demanding tasks or applications in difficult environments can be mastered with 1FT2 servomotors.

SIMOTICS S-1FK2 High Dynamic motors

Highest dynamic response through low inertia for highly dynamic applications with low moved masses.

SIMOTICS S-1FK2 Compact motors

Precise, stable control with medium to high masses to be moved with medium moment of inertia.

Benefits

The SIMOTICS S-1FK2 servomotors fully exploit their strengths in the system with the SINAMICS S210 converter:

- Short adjustment and positioning times
- Quick and precise compensation of disturbances
- Stable closed loop control with high dynamic response

This is achieved by:

- Rapid control cycle
- High pulse frequency
- Complex rule algorithms
- High-resolution optical encoder with fast scanning
- Low moment of inertia of the motors
- High overload capability

Application

- Packaging machines
- Handling equipment
- Feed and withdrawal devices
- Stacking units
- Automatic assembly machines
- Laboratory automation
- Woodworking, glass and ceramic industries
- Digital printing machines

More information

Environmental Product Declaration (EPD)

Environmental Product Declarations (EPD) are available as PDFs for this product.
The EPD PDF provides brief and concise information about the ecological properties of a product.

You can find more information on the internet at:
https://support.industry.siemens.com/cs/ww/en/ps/24677/cert?ci=5690

SIMOTICS S-1FK2 servo planetary geared motors

SIMOTICS S-1FK2 servomotors can optionally be ordered as SIMOTICS S-1FK2 servo planetary geared motors – see chapter 3.4.

SIMOTICS S-1FK2 servo planetary geared motors with economy gearboxes NRB, NRK, NLC are highly dynamic, compact and economical drive units. The combinations, each composed of a servomotor with a high-performance coaxial planetary gearbox, are suitable for a wide range of applications in an industrial environment.

These planetary geared motors are specified and delivered completely as a unit. All outstanding performance data are matched to the motor-gearbox combination.

More technical information

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-s210/documentation

Detailed information on the SINAMICS S210 drive system, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates, manuals and operating instructions), is available on the internet at:
www.siemens.com/sinamics-s210
and is also available via the Siemens Product Configurator on the internet.

Configuration in the Siemens Product Configurator

The Siemens Product Configurator for the SINAMICS S210 drive system can be found in SiePortal at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FK2 servo motors and the SIMOTICS S-1FK2 servo planetary geared motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1fk2/configuration
www.siemens.com/simotics-1fk2-servogearedmotors/configuration

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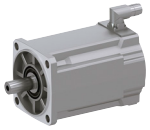
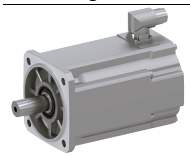
Selection and ordering data

	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1 AC / 3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia J_{Mot} kg cm^2 (lb_f-in^2)	**SIMOTICS S-1FK2 servomotor** Article No.
High Dynamic for highly dynamic applications							
Shaft height 20							
	0.16 (0.12)	0.56 (0.41)	8000	3000	–	0.025 (0.009)	**1FK2102-0AG■■-■■A0**
	0.32 (0.24)	1.11 (0.82)	8000	3000	–	0.036 (0.012)	**1FK2102-1AG■■-■■A0**
Shaft height 30							
	0.64 (0.47)	1.95 (1.44)	8000	3000	–	0.093 (0.032)	**1FK2103-2AG■■-■■A0**
	0.64 (0.47)	1.95 (1.44)	8000	–	4500	0.093 (0.032)	**1FK2103-2AH■■-■■A0**
	1.27 (0.94)	4.05 (2.99)	7300	3000	–	0.14 (0.048)	**1FK2103-4AG■■-■■A0**
	1.27 (0.94)	4.05 (2.99)	8000	–	4500	0.14 (0.048)	**1FK2103-4AH■■-■■A0**
Shaft height 40							
	1.27 (0.94)	3.75 (2.77)	7200	1500	3000	0.35 (0.120)	**1FK2104-4AF■■-■■A0**
	1.27 (0.94)	3.85 (2.84)	8000	3000	6000	0.35 (0.120)	**1FK2104-4AK■■-■■A0**
	2.4 (1.77)	7.5 (5.53)	6700	1500	3000	0.56 (0.191)	**1FK2104-5AF■■-■■A0**
	2.4 (1.77)	7.6 (5.61)	8000	3000	6000	0.56 (0.191)	**1FK2104-5AK■■-■■A0**
	3.2 (2.36)	10 (7.38)	7200	1500	3000	0.76 (0.260)	**1FK2104-6AF■■-■■A0**
Shaft height 52							
	5 (3.69)	15 (11.06)	6000	1500	3000	1.7 (0.581)	**1FK2105-4AF■■-■■A0**
	8 (5.90)	24 (17.70)	6000	1500	3000	2.7 (0.923)	**1FK2105-6AF■■-■■A0**
Shaft height 63							
	9 (6.64)	26 (19.18)	6000	1500	3000	4.6 (1.572)	**1FK2106-3AF■■-■■A0**
	12 (8.85)	33 (24.34)	6000	1500	3000	6.0 (2.050)	**1FK2106-4AF■■-■■A0**
	16 (11.80)	45.5 (33.56)	6000	1500	3000	8.7 (2.973)	**1FK2106-6AF■■-■■A0**

Article No. supplements			
Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
Degree of protection			
IP64 (without shaft sealing ring)		**0**	
IP65 (with shaft sealing ring)		**1**	
Shaft end / feather key			
Plain shaft			**0**
Shaft with feather key			**1**
Plain shaft, reduced shaft diameter, ∅11 × 23 mm (0.43 × 0.91 in) (only for 1FK2.03 and IP64), ∅14 × 30 mm (0.55 × 1.18 in) (only for 1FK2.04 and IP64)		**0**	**2**
Encoder			
Absolute encoder 22-bit singleturn	**S**		
Absolute encoder 22-bit + 12-bit multiturn	**M**		

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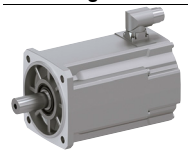
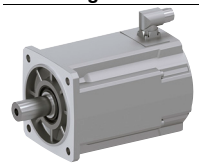
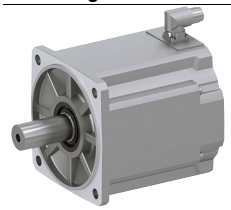
Selection and ordering data

	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1 AC / 3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia J_{Mot} kg cm^2 (lb_f-in^2)	**SIMOTICS S-1FK2 servomotor** Article No.
Compact for high precision applications							
Shaft height 30							
	0.64 (0.47)	1.85 (1.36)	8000	3000	–	0.20 (0.068)	**1FK2203-2AG■■-■■A0**
	0.64 (0.47)	1.85 (1.36)	8000	–	6000	0.20 (0.068)	**1FK2203-2AK■■-■■A0**
	1.27 (0.94)	3.75 (2.77)	7800	3000	–	0.35 (0.120)	**1FK2203-4AG■■-■■A0**
	1.27 (0.94)	3.75 (2.77)	8000	–	6000	0.35 (0.120)	**1FK2203-4AK■■-■■A0**
Shaft height 40							
	2.4 (1.77)	7.1 (5.24)	7500	1500	3000	1.2 (0.410)	**1FK2204-5AF■■-■■A0**
	2.4 (1.77)	7.1 (5.24)	8000	3000	6000	1.2 (0.410)	**1FK2204-5AK■■-■■A0**
	3.2 (2.36)	9.5 (7.01)	7600	1500	3000	1.6 (0.547)	**1FK2204-6AF■■-■■A0**
Shaft height 48							
	3.6 (2.66)	10.8 (7.97)	6000	1500	3000	3.2 (1.093)	**1FK2205-2AF■■-■■A0**
	6 (4.43)	18 (13.28)	6000	1500	3000	5.1 (1.743)	**1FK2205-4AF■■-■■A0**
Shaft height 63							
	6.5 (4.79)	18 (13.28)	6000	1500	3000	7.8 (2.665)	**1FK2206-2AF■■-■■A0**
	12 (8.85)	36 (26.55)	5800	1500	3000	15 (5.126)	**1FK2206-4AF■■-■■A0**
Shaft height 80							
	18 (13.28)	51 (37.62)	4100	1000	2000	30 (10.251)	**1FK2208-3AC■■-■■A0**
	22 (16.23)	66 (48.68)	4600	1000	2000	39 (13.326)	**1FK2208-4AC■■-■■A0**
	27 (19.92)	80 (59.01)	4700	1000	2000	48 (16.402)	**1FK2208-5AC■■-■■A0**
Shaft height 100							
	30 (22.13)	90 (66.38)	2500	750	1500	89 (30.411)	**1FK2210-3AB■■-■■A0**
	30 (22.13)	90 (66.38)	4400	1000	2000	89 (30.411)	**1FK2210-3AC■■-■■A0**
	40 (29.50)	120 (88.51)	2500	750	1500	120 (41.004)	**1FK2210-4AB■■-■■A0**
	40 (29.50)	120 (88.51)	3300	1000	2000	120 (41.004)	**1FK2210-4AC■■-■■A0**

Article No. supplements			
Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
Degree of protection			
IP64 (without shaft sealing ring)		**0**	
IP65 (with shaft sealing ring)		**1**	
Shaft end / feather key			
Plain shaft			**0**
Shaft with feather key			**1**
Plain shaft, reduced shaft diameter, ∅11 × 23 mm (0.43 × 0.91 in) (only for 1FK2.03 and IP64), ∅14 × 30 mm (0.55 × 1.18 in) (only for 1FK2.04 and IP64)		**0**	**2**
Encoder			
Absolute encoder 22-bit singleturn			**S**
Absolute encoder 22-bit + 12-bit multiturn			**M**

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Selection and ordering data

Accessories

Description	For motor	Article No.
Shaft sealing ring	1FK2.02	**1FY2902-0GC00**
Degree of protection kit to achieve degree of protection IP65 for mounting on the motor – for retrofitting or as spare part	1FK2.03	**1FY2903-0GC00**
	1FK2.04	**1FY2904-0GC00**

Structure of the Article No. of the SIMOTICS S-1FK2 servomotors

Data position in Article No.	1	2	3	4	5	6	7		8	9	10	11	12		13	14	15	16
	1	**F**	**K**	**2**	■	■	■	-	■	**A**	■	■	■	-	■	■	**A**	**0**
1st to 4th position: digit, letter, letter, digit	**Motor**	1	F	K	2													
5th position: digit	**Moment of inertia**																	
	High Dynamic				1													
	Compact				2													
6th and 7th positions: digit, digit	**Shaft height**																	
	20				1	0	2											
	30				1/2	0	3											
	40				1/2	0	4											
	52				1	0	5											
	48				2	0	5											
	63				1/2	0	6											
	80				2	0	8											
	100				2	1	0											
8th position: digit	**Overall length**																	
	See specific technical specifications								0 ... 8									
9th position: letter	Reserved									A								
10th position: letter	**Winding/rated speed**																	
	For converters connected to max. 240 V							**For converters connected to max. 480 V**										
	750 r/min at 230 V							1500 r/min at 400 V			B							
	1000 r/min at 240 V							2000 r/min at 400 V			C							
	1500 r/min at 230 V							3000 r/min at 400 V			F							
	3000 r/min at 230 V							Not permissible			G							
	2500 r/min at 230 V							4500 r/min at 400 V			H							
	3000 r/min at 230 V							6000 r/min at 400 V			K							
11th position: digit	**Holding brake**																	
	Without holding brake											0						
	With holding brake											1						
12th position: digit	**Degree of protection**																	
	IP64 (without shaft sealing ring)												0					
	IP65 (with shaft sealing ring)												1					
13th position: digit	**Shaft end / feather key**																	
	Plain shaft														0			
	Shaft with feather key														1			
	Plain shaft, reduced shaft diameter Ø11 × 23 mm (0.43 × 0.91 in) (only for 1FK2.03 and IP64), Ø14 × 30 mm (0.55 × 1.18 in) (only for 1FK2.04 and IP64)												0		2			
14th position: letter	**Encoder**																	
	Absolute encoder 22-bit singleturn (AS22DQC)															S		
	Absolute encoder 22-bit + 12-bit multiturn (AM22DQC)															M		
15th position: letter	**One Cable Connection**																A	
16th position: digit	Reserved																	0

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Technical specifications

General technical specifications

SIMOTICS S-1FK2 High Dynamic/Compact motors	
Motor type	Permanent-magnet synchronous motor
Permissible operating conditions without derating • Ambient temperature • Installation altitude, max.	 -15 ... +40 °C (5 ... 104 °F) 1000 m (3281 ft)
Degree of protection According to EN 60034-5 (IEC 60034-5)	IP64 IP65 optional or retrofittable
Cooling According to EN 60034-6	Natural cooling (IC410)
Type of construction According to EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3)
Shaft end According to DIN 748-3 (IEC 60072-1)	Plain shaft Optional shaft with feather key (half-key balancing)
Shaft and flange accuracy According to DIN 42955 (IEC 60072-1)	Tolerance N In each case for radial eccentricity of the shaft end, concentricity of the centering ring, and axial eccentricity of the mounting flange to the axis of the shaft end.
Vibration severity grade According to EN 60034-14 (IEC 60034-14)	Grade A is maintained up to rated speed
Stator winding insulation According to EN 60034-1 (IEC 60034-1) • 1FK2102, 1FK2.03 • 1FK2.04, 1FK2.05, 1FK2.06, 1FK2.08, 1FK2.10	 Thermal class 130 (B) for a winding overtemperature of ΔT = 80 K Thermal class 155 (F) for a winding overtemperature of ΔT = 100 K
Sound pressure level L_{pA} (1 m), max. According to ISO 1680 • 1FK2102, 1FK2.03, 1FK2.04 • 1FK2.05 and 1FK2.06 • 1FK2.08 and 1FK2.10	 55 dB(A) + 3 dB(A) tolerance 65 dB(A) + 3 dB(A) tolerance 70 dB(A) + 3 dB(A) tolerance
Encoder system	• AS22DQC (absolute encoder 22-bit singleturn) • AM22DQC (absolute encoder 22-bit + 12-bit multiturn)
Holding brake	Optional integrated holding brake
Connection	One Cable Connection (OCC) for signals and power Rotatable connector
Paint finish	RAL 7016 (anthracite gray) Note: All motors may be repainted using commercially available coatings. Do not apply more than two additional layers of paint.
Certificates of suitability	cURus, CE

Note:

SIMOTICS motors are designed for operation with frequency converters and non-periodic load and speed changes.

Typical applications include machine tools or production machines with non-periodic speed and load cycles. This corresponds to IEC 60034-1 operating mode S9.

In operating mode S9, a correspondingly selected constant load, similar to operating mode S1, is used as a reference value.

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Technical specifications

Regulations, standards, specifications

The motors comply with the appropriate standards and regulations, see table below.

As a result of the fact that in many countries the national regulations have been completely harmonized with the international IEC 60034-1 recommendation, there are no longer any differences with respect to coolant temperatures, temperature classes and temperature rise limits.

General specifications for rotating electrical machines	IEC 60034-1
Terminal designations and direction of rotation for electrical machines	IEC 60034-8
Types of construction of rotating electrical machines	IEC 60034-7
Cooling methods of rotating electrical machines	IEC 60034-6
Degrees of protection of rotating electrical machines	IEC 60034-5
Vibration severity of rotating electrical machines	IEC 60034-14
Noise limit values for rotating electrical machines	IEC 60034-9
Cylindrical shaft ends for electrical machines	DIN 748-3/IEC 60072-1

SIMOTICS S-1FK2 motors have UL approval from Underwriters Laboratories Inc. and are marked with the "UL Recognized Component" test symbol. This is used for components which are part of a larger product or system. This confirmed compliance with the corresponding US American and Canadian regulations, and allowed access to the North American market.

For SIMOTICS S-1FK2 motors, conformity with the relevant EC directives 2006/95/EC and 2014/35/EU and the relevant standards EN 60034-1:2010 and EN 60204-1:2006 is confirmed. By applying the CE mark to the product, Siemens AG confirms this for the product, and secures the free movement of goods within the European Union.

Degree of protection acc. to IEC 60034-5

A suitable degree of protection must be selected according to the operating and environmental conditions to protect the machine against damage caused by the ingress of water and other liquids, as well as dust and foreign bodies.

SIMOTICS S-1FK2 motors have degree of protection IP64 as standard.

The motor can be optionally supplied with a radial shaft seal ring in degree of protection IP65. This increases the protection against the ingress of liquids.

The degree of protection designation is composed from the code **IP** (for International Protection) and two code numbers for the protection against touching and penetration of foreign bodies, and the degree of protection against the ingress of water.

First code number

6: Protection against dust ingress and complete protection against touching

Second code number

4: Protection against splashwater from any direction

5: Protection against jet water from any direction

Recommended degrees of protection for AC motors

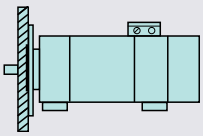
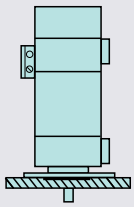
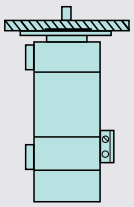
When cooling lubricants are used, protection against water alone is inadequate. The IP rating should only be considered as a guide value in this case. The motors may have to be protected by suitable covers. Attention must be paid to providing suitable sealing of the motor shaft for the selected degree of protection for the motor.

The following table can serve as a decision aid for selecting the proper degree of protection for motors. A permanent covering of liquid on the flange must be avoided when the motor is mounted with the shaft end facing upwards (IM V3).

Effect	General workshop environment	Water/general cooling lubricant (95 % water, 5 % oil)
Dry	IP64	–
Water-enriched environment	–	IP64
Mist	–	IP65
Spray	–	IP65

Type of construction, mounting position according to IEC 60034-7

SIMOTICS S-1FK2 motors are designed in type of construction IM B5. It can also be used in mounting positions IM V1 and IM V3.

Code 1	IM B5	IM V1	IM V3
Code 2	IM 3001	IM 3011	IM 3031
			
	Horizontal flange mounting	Flange mounting, output shaft pointing vertically downwards	Flange mounting, output shaft pointing vertically upwards

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Technical specifications

Shaft and flange accuracy in accordance with IEC 60072-1

Radial eccentricity tolerance of shaft in relation to housing axis

(referred to cylindrical shaft ends)

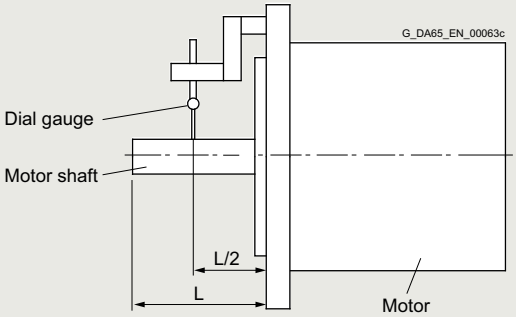
Motor	Shaft ends D × L mm (in)	Radial eccentricity Tolerance N µm
1FK2102	8 × 25 (0.31 × 0.98)	30
1FK2.03	14 × 30 (0.55 × 1.18)	35
	11 × 23 (0.43 × 0.91)	35
1FK2.04	19 × 40 (0.75 × 1.57)	40
	14 × 30 (0.55 × 1.18)	35
1FK2.05	19 × 40 (0.75 × 1.57)	40
1FK2.06	24 × 50 (0.94 × 1.97)	40
1FK2208	32 × 58 (1.26 × 2.28)	50
1FK2210	38 × 80 (1.50 × 3.15)	50

Concentricity and axial eccentricity tolerance of the flange surface for the shaft axis

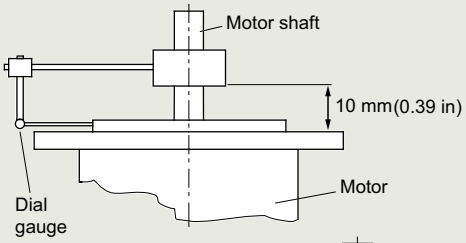
(referred to the centering diameter of the mounting flange)

Motor	Centering diameter mm (in)	Concentricity and axial eccentricity Tolerance N µm
1FK2102	30 (1.18)	80
1FK2.03	50 (1.97)	
1FK2.04	70 (2.76)	
1FK2205	80 (3.15)	
1FK2105	95 (3.74)	
1FK2.06	110 (4.33)	100
1FK2208	130 (5.12)	
1FK2210	130 (5.12)	

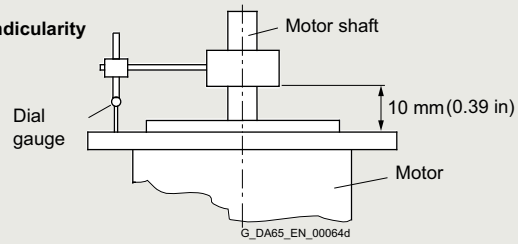
Test: runout



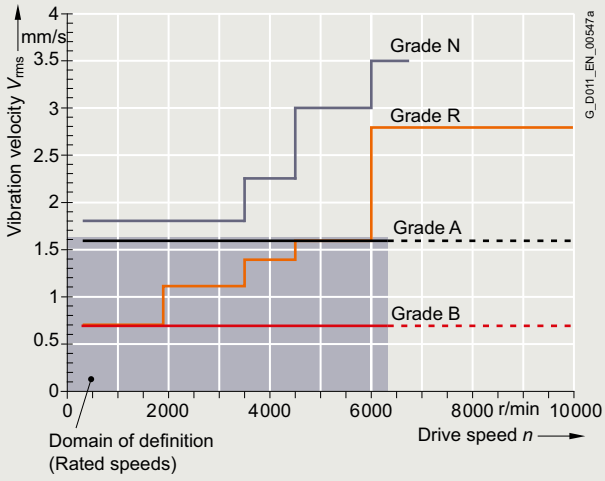
Test: concentricity



Test: perpendicularity



Vibration severity and vibration severity grade A according to IEC 60034-14



Vibration severity limit values

The vibration severity is the RMS value of the vibration velocity (frequency range from 10 Hz to 1000 Hz). The vibration severity is measured using electrical measuring devices according to DIN 45666.

The specified values refer only to the motor. These values can increase as a result of the overall system vibrational behavior due to installation.

The speeds of 1800 r/min and 3600 r/min and the associated limit values are specified according to IEC 60034-14.
The speeds of 4500 r/min and 6000 r/min and the specified values are defined by the motor manufacturer.

The motors maintain vibration severity grade A up to the rated speed.

Balancing according to ISO 21940-32

Apart from the balance quality of the motor, the vibrational quality of motors with attached pulleys is mainly determined by the balance state of the mounted component. If the motor and the mounted component are balanced separately before being joined, the balancing process of the pulley is to be adapted to the motor's balancing type.

SIMOTICS S-1FK2 motors with feather keys are always half-key balanced. In general, motors with a plain shaft are recommended for systems with the most stringent vibrational quality requirements.

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Technical specifications

Vibration stress, immitted vibration values

The requirements of environmental class 3M8 (according to EN 60721-3-3 Table 6) must be maintained for proper function and safeguard the bearing life. The following limits are valid for (immitted) vibration values introduced into the motor from outside:

- Vibration velocity V_{rms} according to ISO 10816, max. 4.5 mm/s (0.18 in/s)
- Vibration acceleration a_{peak} axial and radial 50 m/s^2 (164 ft/s^2)

During transport, the motors withstand single shocks (6 ms) of up to 250 m/s^2 (820 ft/s^2).

Ambient temperature and installation altitude

Operating range without restrictions:

Temperature range from -15 °C to +40 °C (5.0 °F to 104 °F), installation altitude up to 1000 m (3281 ft).

If deviating conditions are encountered, the S1 characteristic of the motor must be adapted with regard to speed and torque.

Use the following equation to calculate the reduced S1 characteristic: $S1_{red}\,(n) = x_D \times S1_{40°C;\ 1000m}\,(n/x_D)$

Installation altitude above sea level	Derating factor x_D at an ambient temperature of				
m (ft)	30 °C (86 °F)	40 °C (104 °F)	45 °C (113 °F)	50 °C (122 °F)	55 °C (131 °F)
1000 (3281)	1.05	1	0.95	0.89	0.84
2000 (6562)	1	0.95	0.86	0.8	0.73
3000 (9843)	0.95	0.89	0.76	0.69	0.62
4000 (13123)	0.89	0.84	0.65	0.57	0.47

Encoder systems

In motors with integrated OCC/DRIVE-CLiQ interface, the sensor signal is already digitally prepared in the motor, and then transferred quickly and without loss to the drive system. Motors with an OCC/DRIVE-CLiQ interface simplify commissioning and diagnostics, as the motor parameters and encoder system are identified automatically.

Single-turn absolute encoder

This encoder outputs an absolute angular position between 0° and 360° in the specified resolution. In contrast to the multi-turn absolute encoder, it does not have a revolution counter, and can therefore only supply the position value within one revolution. It does not have a traversing range.

Multi-turn absolute encoder

This encoder outputs an absolute angular position between 0° and 360° in the specified resolution. It can also count 4096 revolutions. So with a ball screw, for example, the absolute position of the slide can be determined over a longer distance.

14th position in the Article No. of the motor	Designation	
1FK2...-.....-.**S**..	AS22DQC	Absolute encoder 22-bit singleturn (resolution 4194304)
1FK2...-.....-.**M**..	AM22DQC	Absolute encoder 22-bit + 12-bit multiturn (resolution 4194304, traversing range 4096 revolutions)

Holding brake

Many drives need a holding brake with an EMERGENCY STOP function for safety reasons or to meet process requirements. The brakes used on the SIMOTICS S-1FK2 motors function according to the closed-circuit principle. A spring or permanent magnet exerts a tensile force on the brake armature disk, i.e. in a state of zero current, the brake is closed and the motor shaft thereby stopped.

An electric current that flows through a coil generates an opposing field that counteracts the force effect of the spring or permanent magnet and releases or holds open the brake. Only a limited number of braking operations can be performed for an EMERGENCY STOP or power failure without causing excessive wear on the holding brake. The holding brake is not an operational brake. Regular dynamic braking leads to increased wear and premature brake failure. In order to ensure the functionality and specification of the brake, neither the total operating energy nor the maximum switching energy per braking operation may be exceeded.

The braking signal is already fully integrated into the SINAMICS S210 converter system, so that an external circuit is not necessary.

After an EMERGENCY STOP sequence with the maximum single switching energy, a cooling time of at least 5 minutes must be allowed.

The following table shows the technical specifications of the holding brakes for operation with SINAMICS S210 (for 1 AC converters, hardware version 2 or higher) and firmware V5.2 or higher.

Motor	Shaft height	Holding torque at 120 °C (248 °F)	Average dynamic braking torque at 120 °C (248 °F)	Maximum dynamic braking torque at 120 °C (248 °F)	Opening time	Closing time	Maximum permissible single switching energy	Total operating energy (service life)	Holding current	Break-induced current, typ. [1] for 500 ms
		Nm (lb$_f$-ft)	Nm (lb$_f$-ft)	Nm (lb$_f$-ft)	ms	ms	J	kJ	A	A
1FK2102	20	0.32 (0.24)	0.32 (0.24)	1 (0.74)	25	20	7.4	1.75	0.1	0.6
1FK2.03	30	1.3 (0.96)	1.3 (0.96)	3.9 (2.88)	40	30	62	17.5	0.15	0.8
1FK2.04	40	3.3 (2.43)	3.3 (2.43)	9 (6.64)	50	40	270	120	0.2	1.2
1FK2.05	48/52	8 (5.90)	5 (3.69)	18 (13.28)	35	20	570	284	0.3	1.1
1FK2106	63	16 (11.80)	9 (6.64)	35 (25.82)	70	35	1065	774	0.35	1.1
1FK2206	63	13 (9.59)	6.5 (4.79)	35 (25.82)	70	35	1550	774	0.35	1.1
1FK2208-3	80	19 (14.0)	12 (8.85)	37 (27.29)	70	35	2000	1800	0.4	1.2
1FK2208-4	80	32 (23.60)	17 (12.54)	70 (51.63)	120	40	4800	2400	0.5	1.4
1FK2208-5	80	32 (23.60)	17 (12.54)	70 (51.63)	120	40	4800	2400	0.5	1.4
1FK2210-3	100	32 (23.60)	17 (12.54)	70 (51.63)	120	40	6600	2400	0.5	1.4
1FK2210-4	100	55 (40.57)	26 (19.18)	100 (73.76)	130	65	8700	3800	0.5	1.5
1FK2210-5	100	55 (40.57)	26 (19.18)	100 (73.76)	130	65	8700	3800	0.5	1.5

[1] Typical values at an ambient temperature of 20 °C (68° F). At -15 °C (5 °F), the break-induced currents can increase by up to 30 %.

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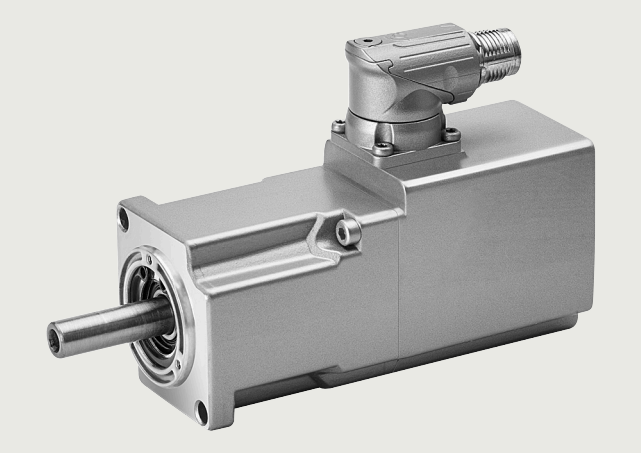
SIMOTICS S-1FK2 shaft height 20

Technical specifications

SIMOTICS S-1FK2 shaft height 20



Specific technical specifications

SIMOTICS S-1FK2 servomotors		High Dynamic	
Shaft height 20		**1FK2102-0AG**	**1FK2102-1AG**
Static torque M_0	Nm (lb_f-ft)	0.16 (0.12)	0.32 (0.24)
Stall current I_0	A	0.75	0.76
Maximum torque M_{max}	Nm (lb_f-ft)	0.56 (0.41)	1.11 (0.82)
Maximum current I_{max}	A	3.1	2.95
Maximum speed n_{max}	r/min	8000	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.025 (0.009)	0.036 (0.012)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.029 (0.010)	0.040 (0.014)
Weight m_{Mot}	kg (lb)	0.47 (1.04)	0.60 (1.32)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	0.73 (1.61)	0.86 (1.90)
200 ... 240 V 1 AC / 3 AC			
Rated speed n_N	r/min	3000	3000
Rated torque M_N	Nm (lb_f-ft)	0.16 (0.12)	0.32 (0.24)
Rated current I_N	A	0.75	0.76
Rated power P_N	W	50	100
Suitable for SINAMICS S210 (6SL5...) servo converters			
• 200 ... 240 V 1 AC		6SL5310-1BB10-1CF0	6SL5310-1BB10-1CF0
• 200 ... 240 V 3 AC		6SL5310-1BE10-4DF1	6SL5310-1BE10-4DF1

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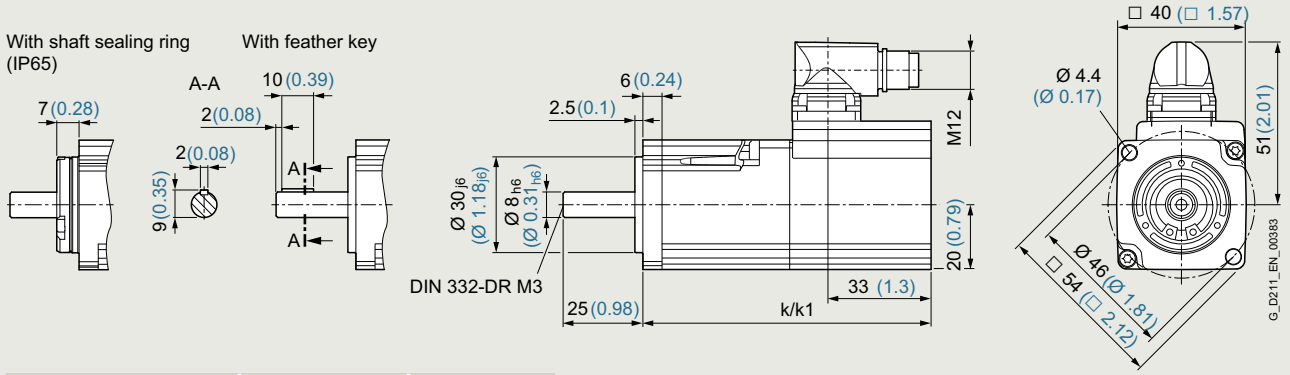
Technical specifications

Dimensional drawing

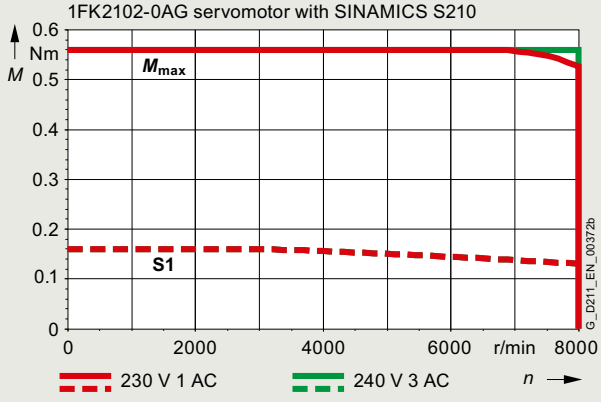


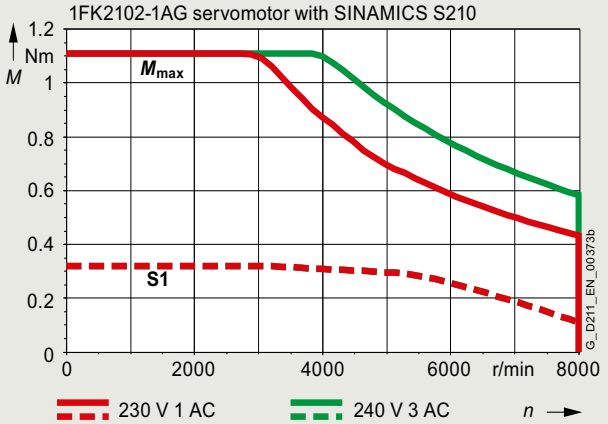
Shaft height 20 DIN IEC	Without brake k LB	With brake k1 LB1
1FK2102-0A...	90 (3.54)	121 (4.76)
1FK2102-1A...	106 (4.17)	137 (5.39)

All dimensions in mm (values in brackets are in inches).

Speed/torque characteristics

High Dynamic





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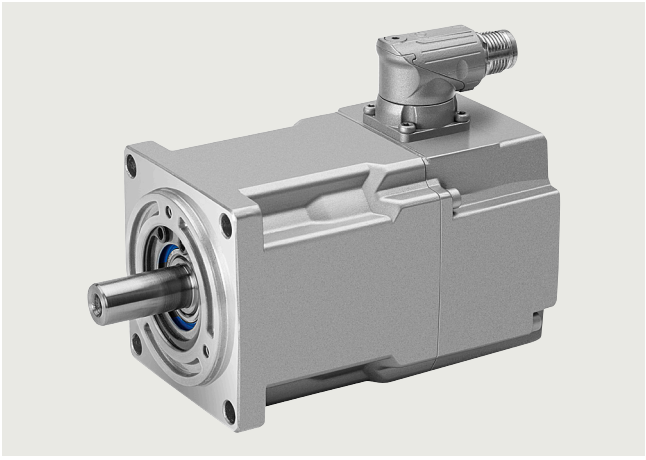
SIMOTICS S-1FK2 shaft height 30

Technical specifications

SIMOTICS S-1FK2 shaft height 30



Specific technical specifications

SIMOTICS S-1FK2 servomotors		High Dynamic				Compact			
Shaft height 30		**1FK2103-2AG**	**1FK2103-2AH**	**1FK2103-4AG**	**1FK2103-4AH**	**1FK2203-2AG**	**1FK2203-2AK**	**1FK2203-4AG**	**1FK2203-4AK**
Static torque M_0	Nm (lb_f-ft)	0.64 (0.47)	0.64 (0.47)	1.27 (0.94)	1.27 (0.94)	0.64 (0.47)	0.64 (0.47)	1.27 (0.94)	1.27 (0.94)
Stall current I_0	A	1.36	1.06	2.4	1.87	1.38	1.05	2.52	2.05
Maximum torque M_{max}	Nm (lb_f-ft)	1.95 (1.44)	1.95 (1.44)	4.05 (2.99)	4.05 (2.99)	1.85 (1.36)	1.85 (1.36)	3.75 (2.77)	3.75 (2.77)
Maximum current I_{max}	A	4.8	3.95	8.7	7.1	4.2	3.4	7.8	6.7
Maximum speed n_{max}	r/min	8000	8000	7300	8000	8000	8000	7800	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.093 (0.032)	0.093 (0.032)	0.14 (0.048)	0.14 (0.048)	0.20 (0.068)	0.20 (0.068)	0.35 (0.120)	0.35 (0.120)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.11 (0.038)	0.11 (0.038)	0.16 (0.055)	0.16 (0.055)	0.22 (0.075)	0.22 (0.075)	0.37 (0.126)	0.37 (0.126)
Weight m_{Mot}	kg (lb)	1.17 (2.58)	1.18 (2.60)	1.64 (3.62)	1.65 (3.64)	1.15 (2.54)	1.16 (2.56)	1.48 (3.26)	1.49 (3.29)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	1.54 (3.40)	1.55 (3.42)	1.98 (4.37)	1.99 (4.39)	1.52 (3.35)	1.53 (3.37)	1.96 (4.32)	1.97 (4.34)
200 ... 240 V 1 AC / 3 AC									
Rated speed n_N	r/min	3000	–	3000	–	3000	–	3000	–
Rated torque M_N	Nm (lb_f-ft)	0.64 (0.47)	–	1.27 (0.94)	–	0.64 (0.47)	–	1.27 (0.94)	–
Rated current I_N	A	1.36	–	2.4	–	1.38	–	2.52	–
Rated power P_N	W	200	–	400	–	200	–	400	–
380 ... 480 V 3 AC									
Rated speed n_N	r/min	–	4500	–	4500	–	6000	–	6000
Rated torque M_N	Nm (lb_f-ft)	–	0.59 (0.44)	–	1.01 (0.74)	–	0.405 (0.299)	–	0.68 (0.50)
Rated current I_N	A	–	1.05	–	1.56	–	0.75	–	1.24
Rated power P_N	W	–	280	–	480	–	255	–	430
Suitable for SINAMICS S210 (6SL5...) servo converters									
• 200 ... 240 V 1 AC		6SL5310-1BB10-2CF0	–	6SL5310-1BB10-4CF0	–	6SL5310-1BB10-2CF0	–	6SL5310-1BB10-4CF0	–
• 200 ... 240 V 3 AC		6SL5310-1BE10-8DF1	–	6SL5310-1BE11-0DF1	–	6SL5310-1BE10-8DF1	–	6SL5310-1BE11-0DF1	–
• 380 ... 480 V 3 AC		–	6SL5310-1BE10-4DF1	–	6SL5310-1BE10-8DF1	–	6SL5310-1BE10-4DF1	–	6SL5310-1BE10-8DF1

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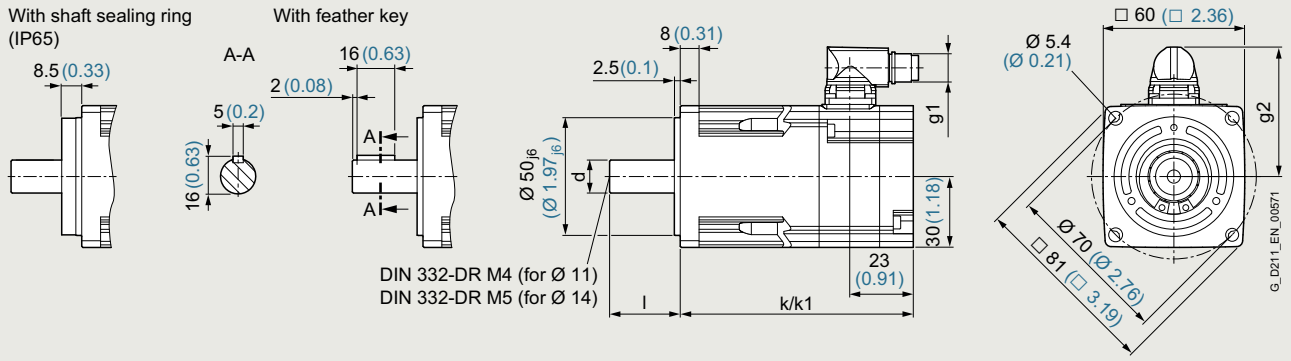
Technical specifications

Dimensional drawing

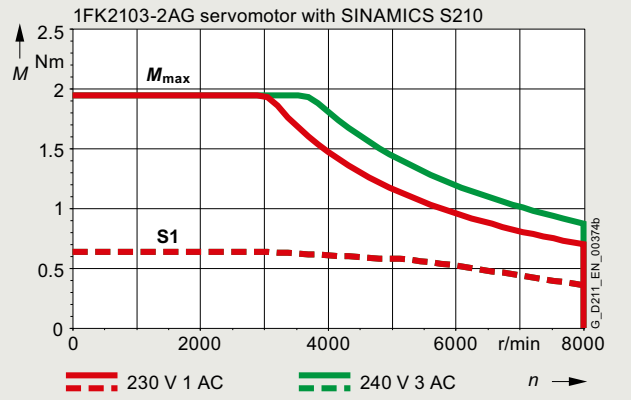


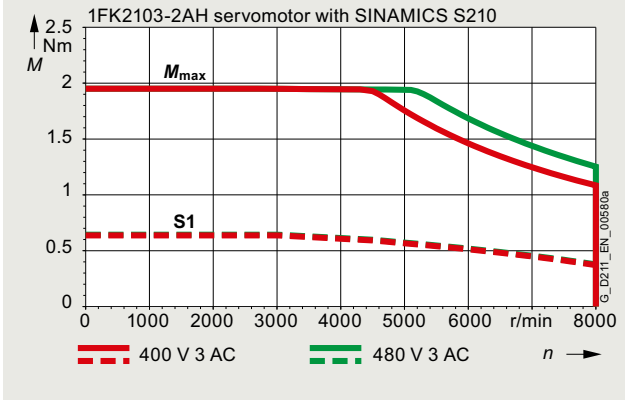
Shaft height 30	Without brake	With brake	With shaft Ø 14		With shaft Ø 11		Plug	
DIN IEC	k LB	k1 LB1	d D	l L	d D	l L	g1 G1	g2 G2
1FK2.03-2AG	99 (3.9)	131 (5.16)	Ø 14_{h6} (Ø 0.55_{h6})	30 (1.18)	Ø 11_{k6} (Ø 0.43_{k6})	23 (0.91)	M12	55 (2.17)
1FK2.03-2AH 1FK2.03-2AK							M17	60 (2.36)
1FK2.03-4AG	123 (4.84)	155 (6.1)	Ø 14_{h6} (Ø 0.55_{h6})	30 (1.18)	Ø 11_{k6} (Ø 0.43_{k6})	23 (0.91)	M12	55 (2.17)
1FK2.03-4AH 1FK2.03-4AK							M17	60 (2.36)

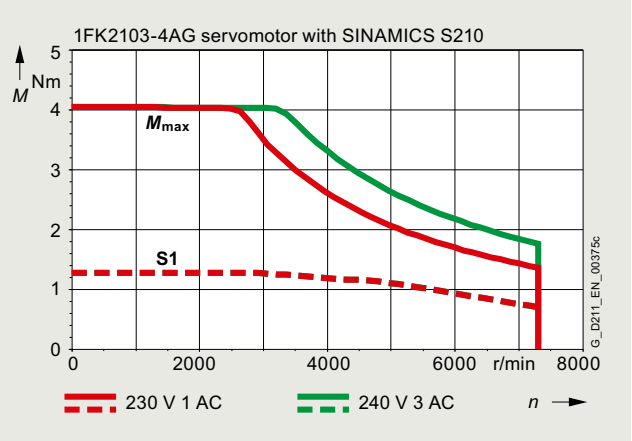
All dimensions in mm (values in brackets are in inches).

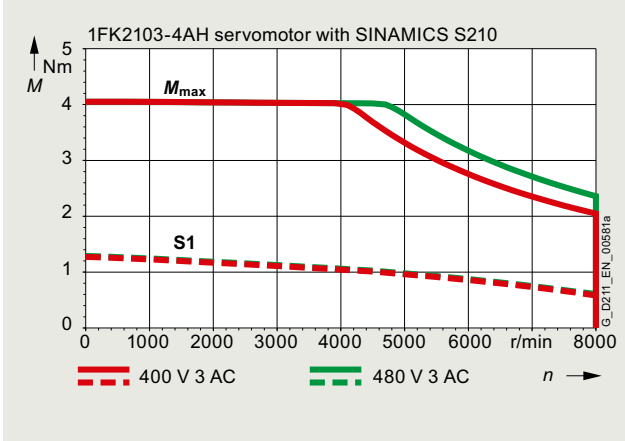
Speed/torque characteristics

High Dynamic









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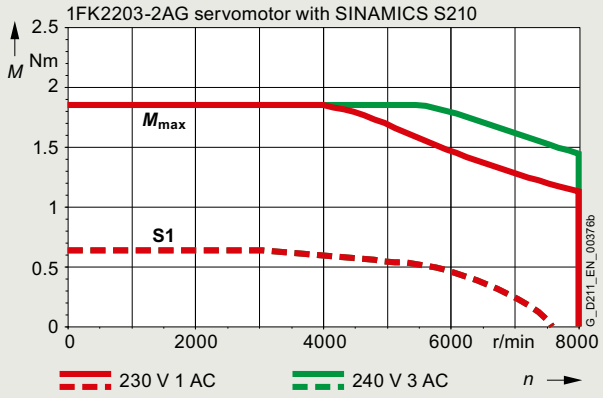
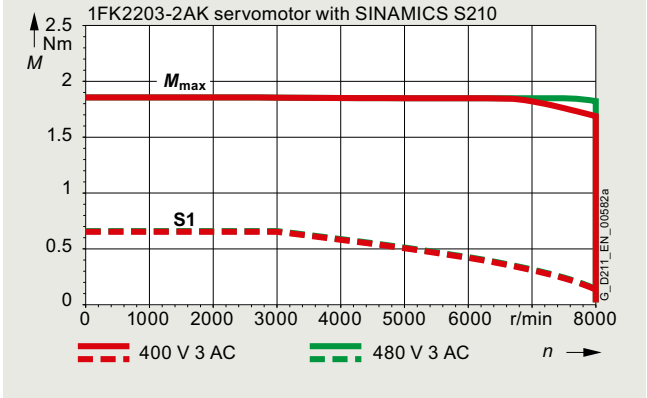
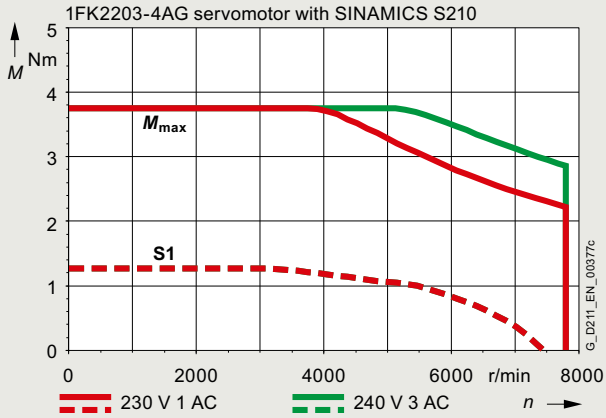
SIMOTICS S-1FK2 shaft height 30

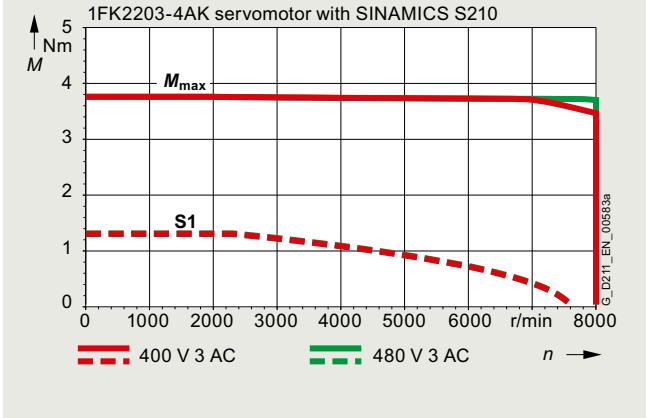
Technical specifications

Compact









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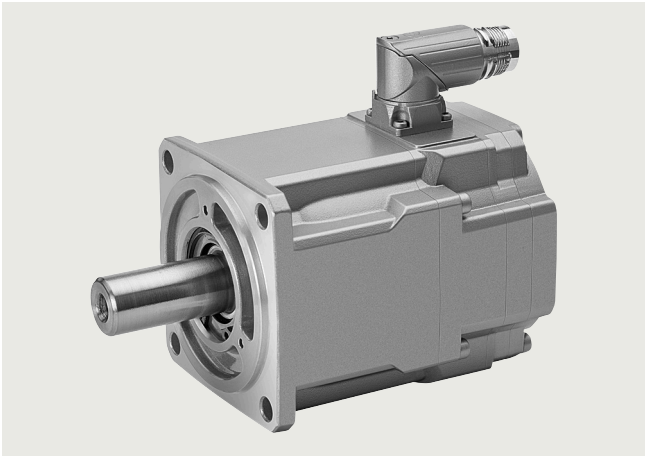
Technical specifications

SIMOTICS S-1FK2 shaft height 40



Specific technical specifications

SIMOTICS S-1FK2 servomotors		High Dynamic					Compact		
Shaft height 40		**1FK2104-4AF**	**1FK2104-4AK**	**1FK2104-5AF**	**1FK2104-5AK**	**1FK2104-6AF**	**1FK2204-5AF**	**1FK2204-5AK**	**1FK2204-6AF**
Static torque M_0	Nm (lb_f-ft)	1.27 (0.94)	1.27 (0.94)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)
Stall current I_0	A	1.19	2.4	2.1	4.4	3	2.25	4.4	3
Maximum torque M_{max}	Nm (lb_f-ft)	3.75 (2.77)	3.85 (2.84)	7.5 (5.53)	7.6 (5.61)	10 (7.38)	7.1 (5.24)	7.1 (5.24)	9.5 (7.01)
Maximum current I_{max}	A	4.2	8.7	7.6	16	10.9	7.1	14.2	9.9
Maximum speed n_{max}	r/min	7200	8000	6700	8000	7200	7500	8000	7600
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.35 (0.120)	0.35 (0.120)	0.56 (0.191)	0.56 (0.191)	0.76 (0.260)	1.2 (0.410)	1.2 (0.410)	1.6 (0.547)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.43 (0.147)	0.43 (0.147)	0.65 (0.222)	0.65 (0.222)	0.84 (0.287)	1.3 (0.444)	1.3 (0.444)	1.7 (0.581)
Weight m_{Mot}	kg (lb)	2.05 (4.52)	2.05 (4.52)	2.85 (6.28)	2.85 (6.28)	3.4 (7.50)	2.9 (6.39)	2.9 (6.39)	3.5 (7.72)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	2.9 (6.39)	2.9 (6.39)	3.7 (8.16)	3.7 (8.16)	4.25 (9.37)	3.75 (8.27)	3.75 (8.27)	4.4 (9.70)
200 ... 240 V 1 AC / 3 AC									
Rated speed n_N	r/min	1500	3000	1500	3000	1500	1500	3000	1500
Rated torque M_N	Nm (lb_f-ft)	1.27 (0.94)	1.27 (0.94)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)
Rated current I_N	A	1.19	2.4	2.1	4.4	3	2.25	4.4	3
Rated power P_N	W	200	400	375	750	500	375	750	500
380 ... 480 V 3 AC									
Rated speed n_N	r/min	3000	6000	3000	6000	3000	3000	6000	3000
Rated torque M_N	Nm (lb_f-ft)	1.27 (0.94)	0.95 (0.70)	2.4 (1.77)	1.7 (1.25)	3.2 (2.36)	2.4 (1.77)	0.9 (0.66)	3.2 (2.36)
Rated current I_N	A	1.19	1.88	2.1	3.20	3	2.25	1.95	3
Rated power P_N	W	400	600	750	1070	1000	750	570	1000
Suitable for SINAMICS S210 (6SL5...) servo converters									
• 200 ... 240 V 1 AC		6SL5310-1BB10-2CF0	6SL5310-1BB10-4CF0	6SL5310-1BB10-4CF0	6SL5310-1BB10-8CF0	6SL5310-1BB10-8CF0	6SL5310-1BB10-4CF0	6SL5310-1BB10-8CF0	6SL5310-1BB10-8CF0
• 200 ... 240 V 3 AC		6SL5310-1BE10-4DF1	6SL5310-1BE11-0DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE10-4DF1	6SL5310-1BE11-0DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1

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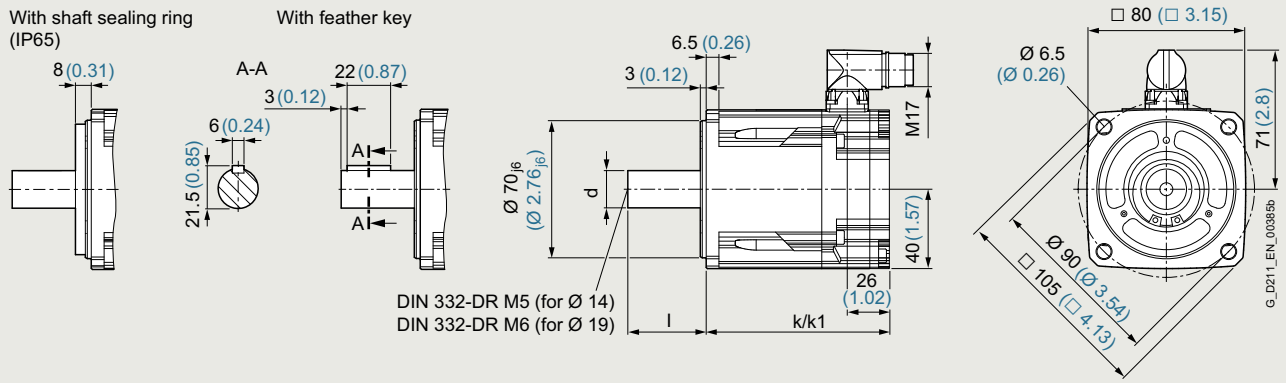
Technical specifications

Dimensional drawing

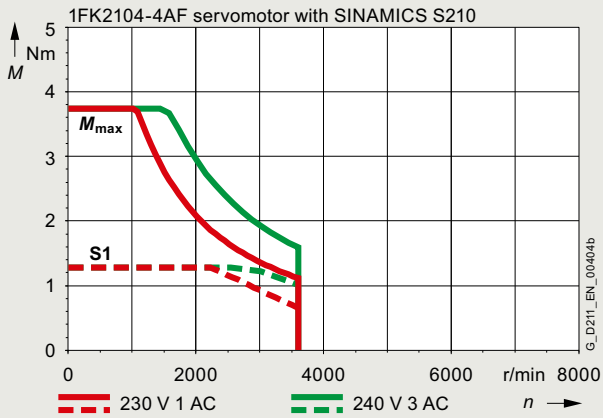


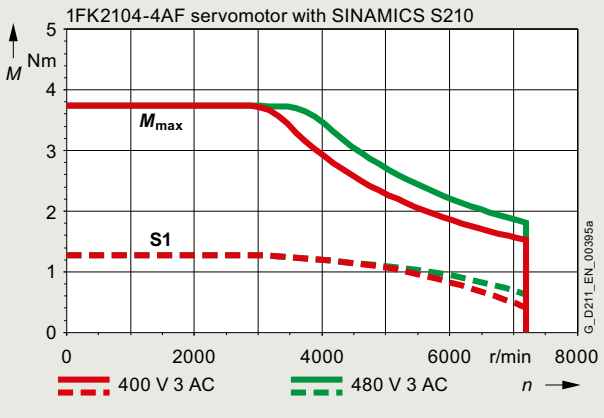
Shaft height 40	Without brake	With brake	With shaft Ø 19		With shaft Ø 14	
DIN	k	k1	d	l	d	l
IEC	LB	LB1	D	L	D	L
1FK2.04-4A...	98 (3.86)	142 (5.59)				
1FK2.04-5A...	126 (4.96)	170 (6.69)	Ø 19_{k6} (Ø 0.75_{k6})	40 (1.57)	Ø 14_{k6} (Ø 0.55_{k6})	30 (1.18)
1FK2.04-6A...	144 (5.67)	188 (7.4)				

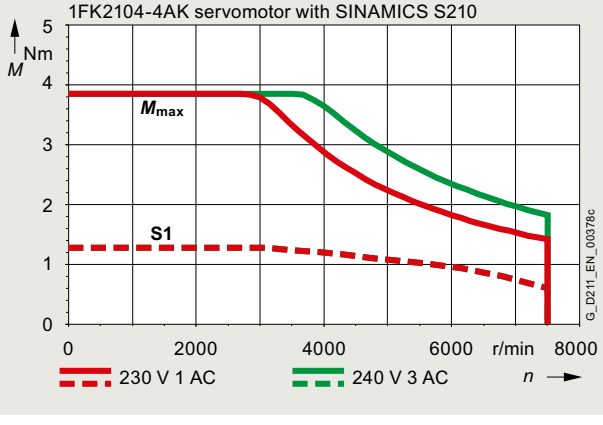
All dimensions in mm (values in brackets are in inches).

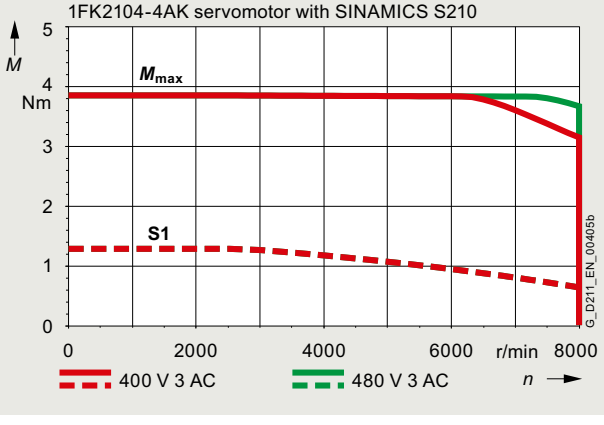
Speed/torque characteristics

High Dynamic









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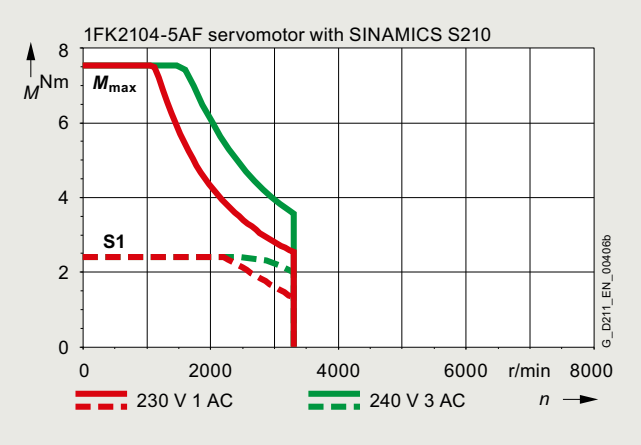
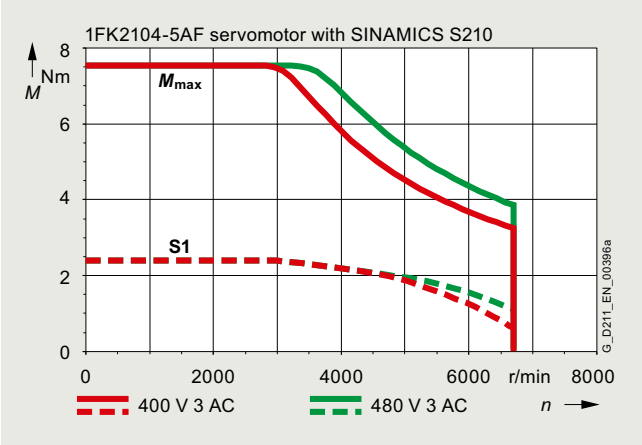
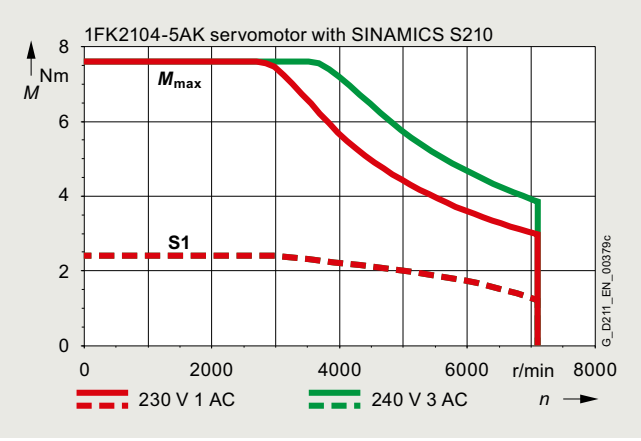
Technical specifications

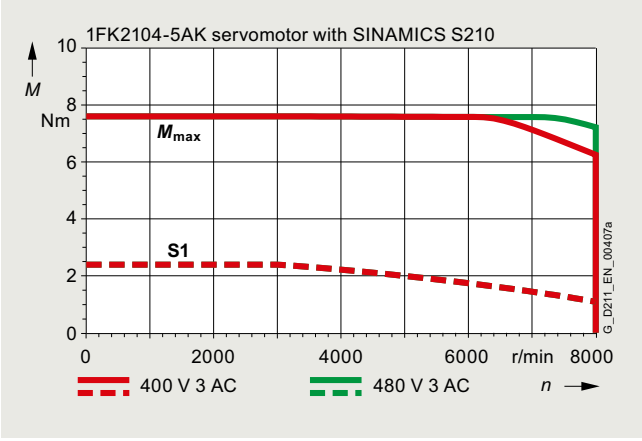
Speed/torque characteristics (continued)

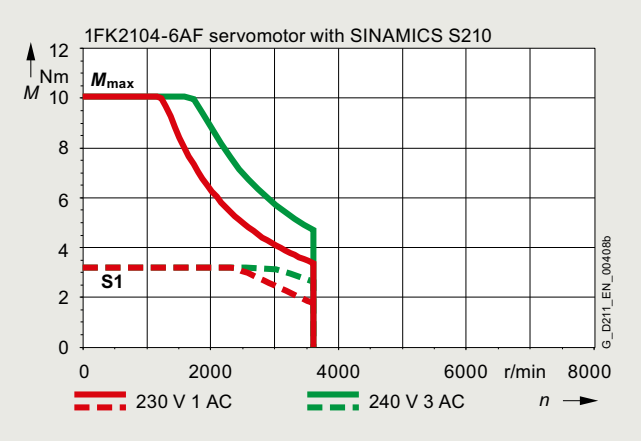
High Dynamic (continued)

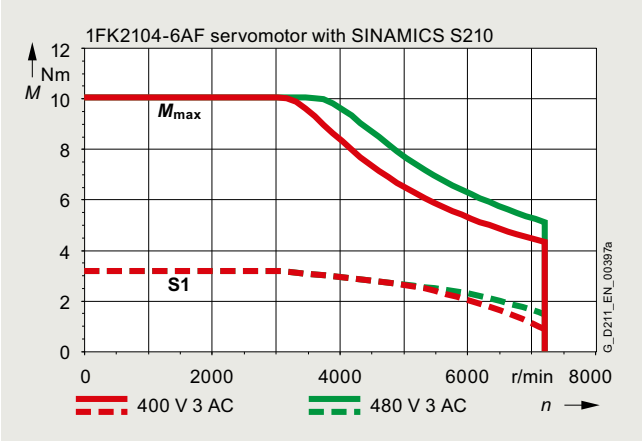












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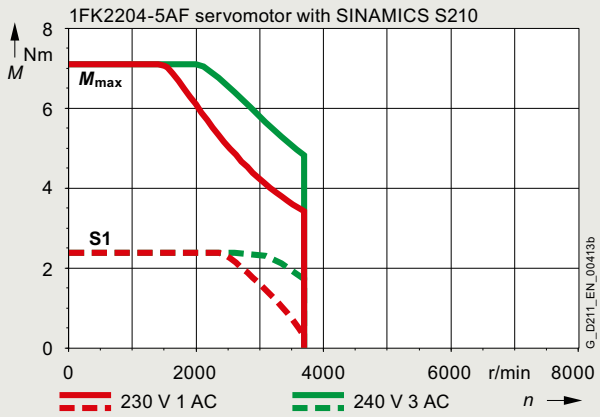
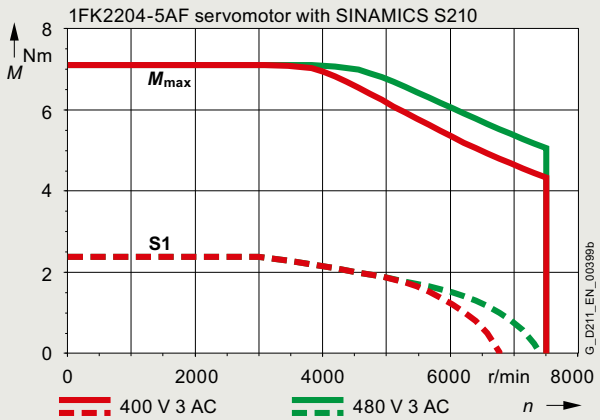
SIMOTICS S-1FK2 shaft height 40

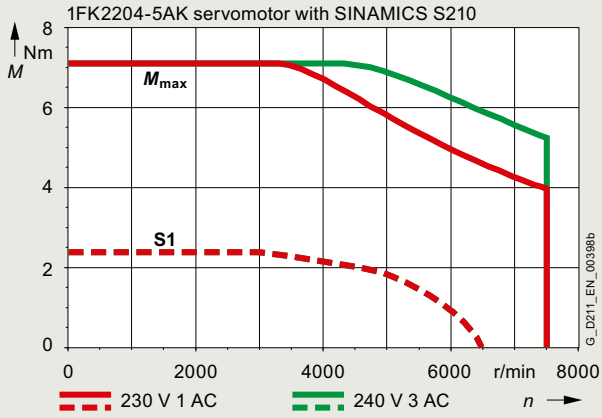
Technical specifications

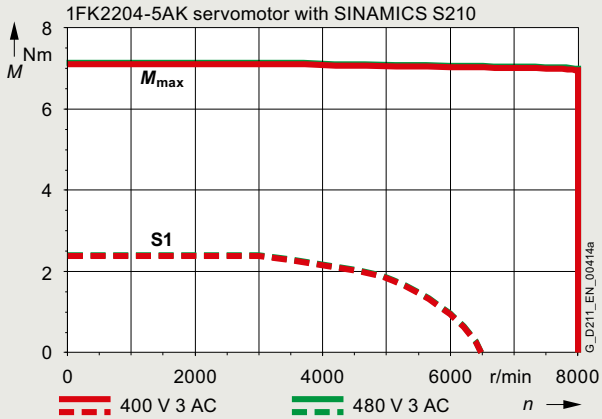
Speed/torque characteristics (continued)

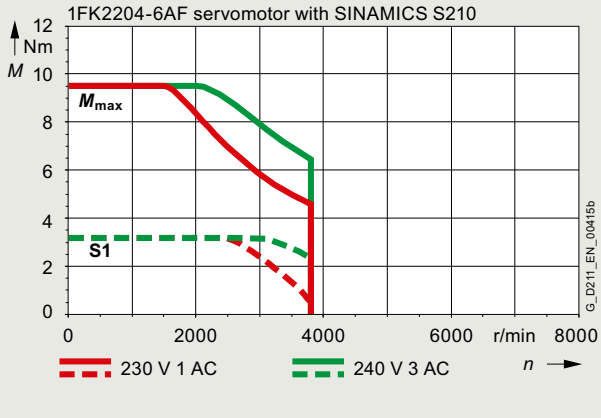
Compact

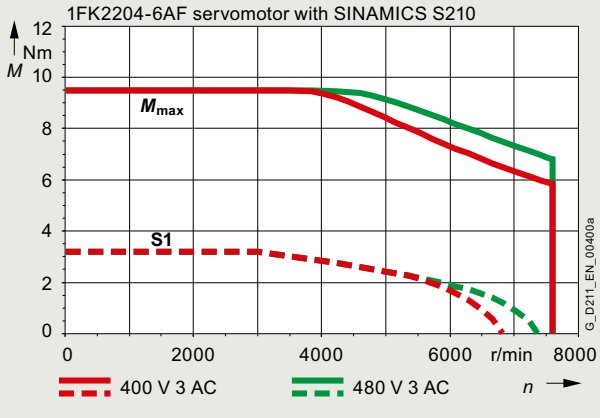












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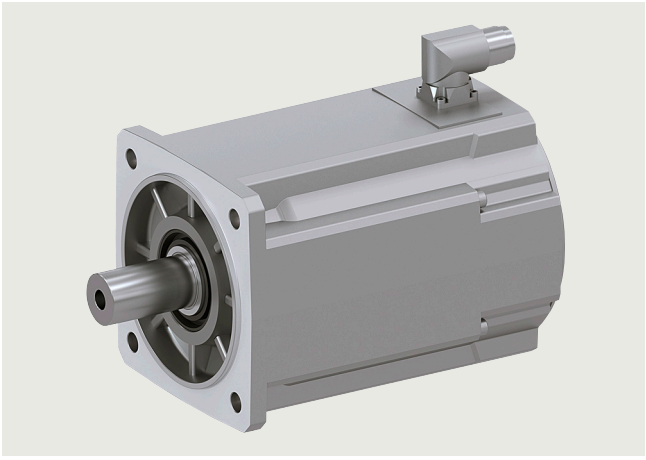
Technical specifications

SIMOTICS S-1FK2 shaft height 48



Specific technical specifications

SIMOTICS S-1FK2 servomotors		Compact	
Shaft height 48		**1FK2205-2AF**	**1FK2205-4AF**
Static torque M_0	Nm (lb_f-ft)	3.6 (2.66)	6 (4.43)
Stall current I_0	A	2.9	4.7
Maximum torque M_{max}	Nm (lb_f-ft)	10.8 (7.97)	18 (13.28)
Maximum current I_{max}	A	9.5	15.1
Maximum speed n_{max}	r/min	6000	6000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	3.2 (1.093)	5.1 (1.743)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	4.0 (1.367)	6.0 (2.050)
Weight m_{Mot}	kg (lb)	3.75 (8.27)	5.2 (11.47)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	4.75 (10.47)	6.2 (13.67)
200 ... 240 V 1 AC / 3 AC			
Rated speed n_N	r/min	1500	1500
Rated torque M_N	Nm (lb_f-ft)	3.4 (2.51)	5.5 (4.06)
Rated current I_N	A	2.8	4.35
Rated power P_N	W	530	860
380 ... 480 V 3 AC			
Rated speed n_N	r/min	3000	3000
Rated torque M_N	Nm (lb_f-ft)	3 (2.21)	4.6 (3.39)
Rated current I_N	A	2.5	3.75
Rated power P_N	W	940	1450
Suitable for SINAMICS S210 (6SL5...) servo converters			
• 200 ... 240 V 1 AC		6SL5310-1BB10-8CF0	–
• 200 ... 240 V 3 AC		6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1
• 380 ... 480 V 3 AC		6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1

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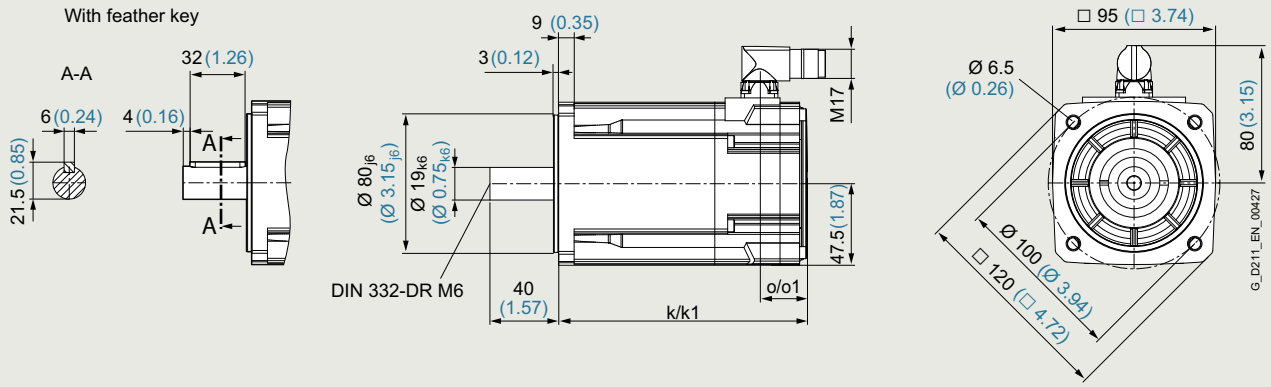
SIMOTICS S-1FK2 shaft height 48

Technical specifications

Dimensional drawing

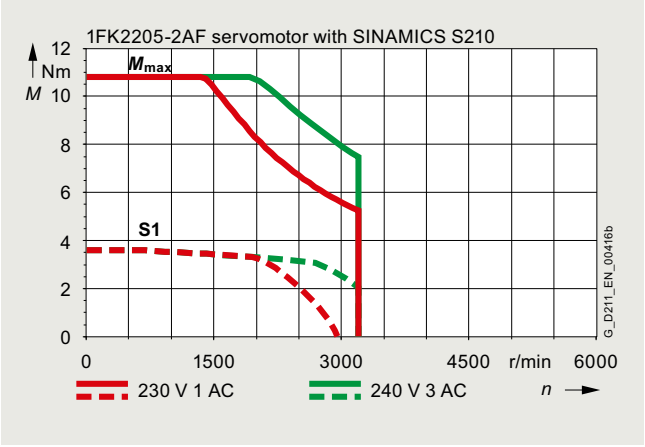


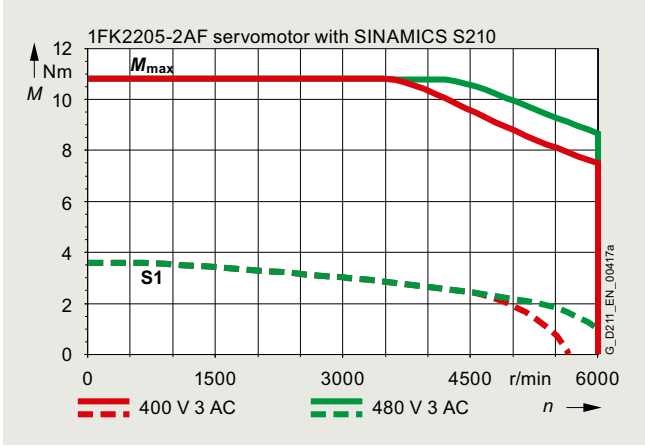
Shaft height 48 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FK2205-2A…	145 (5.71)	188 (7.4)	28 (1.1)	34 (1.34)
1FK2205-4A…	177 (6.97)	220 (8.66)		

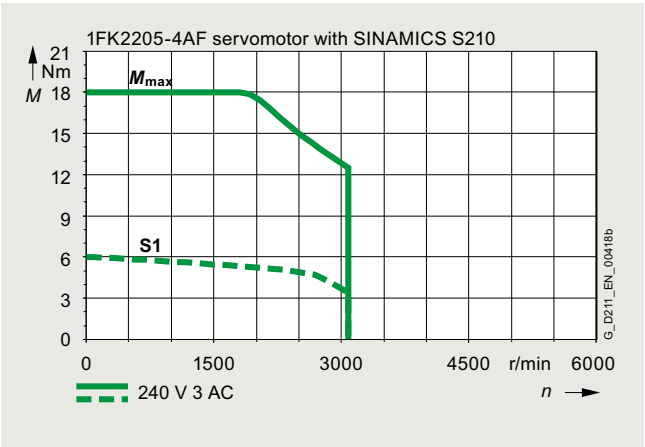
All dimensions in mm (values in brackets are in inches).

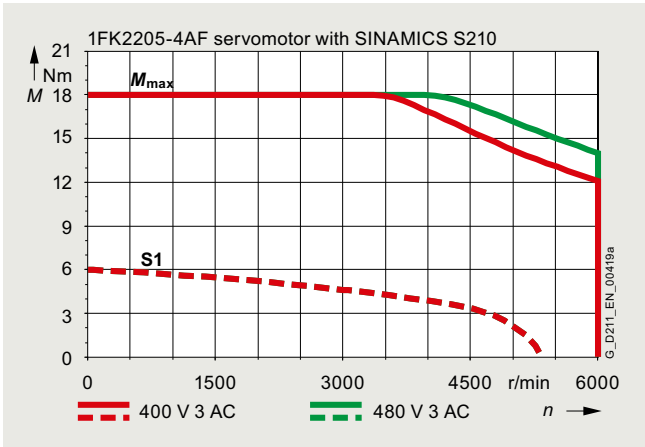
Speed/torque characteristics

Compact









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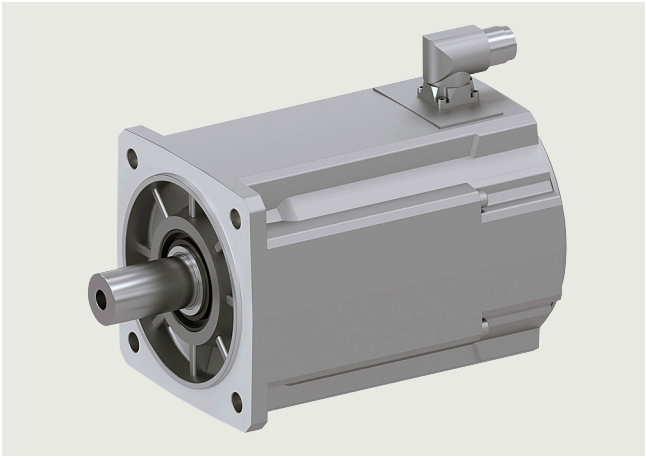
Technical specifications

SIMOTICS S-1FK2 shaft height 52



Specific technical specifications

SIMOTICS S-1FK2 servomotors		High Dynamic	
Shaft height 52		**1FK2105-4AF**	**1FK2105-6AF**
Static torque M_0	Nm (lb_f-ft)	5 (3.69)	8 (5.90)
Stall current I_0	A	4.65	6.7
Maximum torque M_{max}	Nm (lb_f-ft)	15 (11.06)	24 (17.70)
Maximum current I_{max}	A	18	24
Maximum speed n_{max}	r/min	6000	6000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	1.7 (0.581)	2.7 (0.923)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	2.6 (0.888)	3.5 (1.196)
Weight m_{Mot}	kg (lb)	5.6 (12.35)	7.7 (16.98)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	6.6 (14.55)	8.7 (19.18)
200 ... 240 V 3 AC			
Rated speed n_N	r/min	1500	1500
Rated torque M_N	Nm (lb_f-ft)	5 (3.69)	8 (5.90)
Rated current I_N	A	4.65	6.7
Rated power P_N	W	790	1260
380 ... 480 V 3 AC			
Rated speed n_N	r/min	3000	3000
Rated torque M_N	Nm (lb_f-ft)	4.6 (3.39)	6.6 (4.87)
Rated current I_N	A	4.35	5.6
Rated power P_N	W	1450	2100
Suitable for SINAMICS S210 (6SL5...) servo converters			
• 200 ... 240 V 3 AC		6SL5310-1BE11-5DF1	6SL5310-1BE12-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE11-5DF1	6SL5310-1BE12-0DF1

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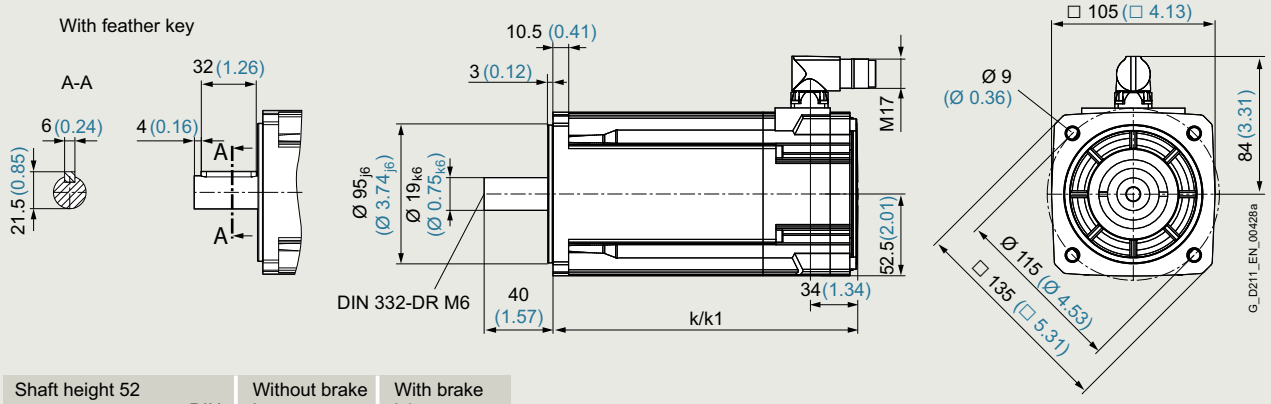
SIMOTICS S-1FK2 shaft height 52

Technical specifications

Dimensional drawing

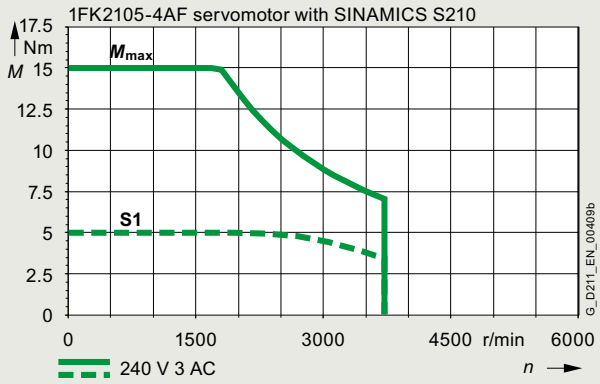


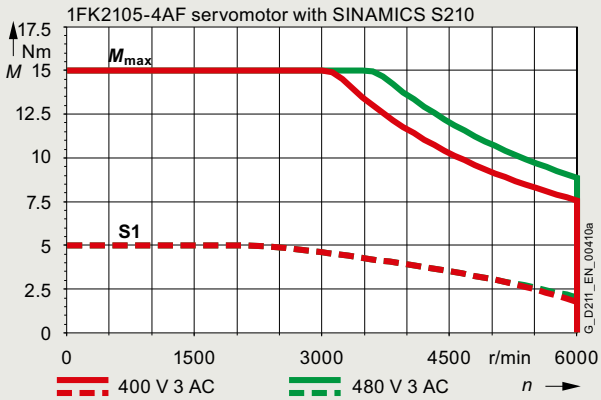
Shaft height 52 DIN IEC	Without brake k LB	With brake k1 LB1
1FK2105-4A…	173 (6.81)	200 (7.87)
1FK2105-6A…	215 (8.46)	242 (9.53)

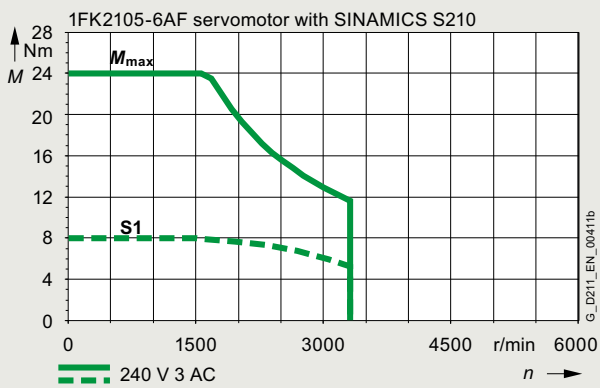
All dimensions in mm (values in brackets are in inches).

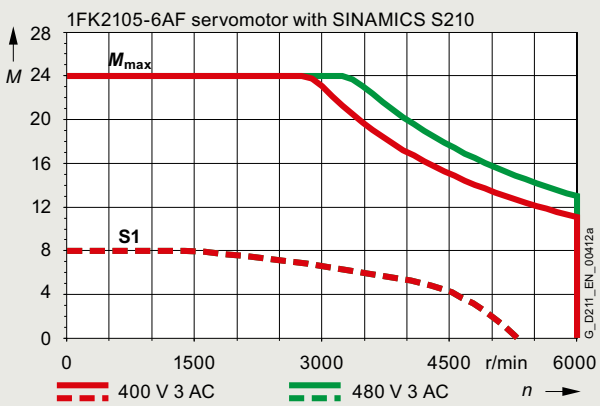
Speed/torque characteristics

High Dynamic









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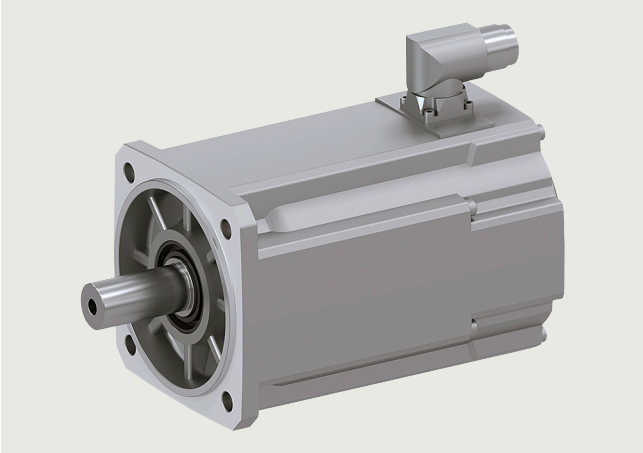
Technical specifications

SIMOTICS S-1FK2 shaft height 63



Specific technical specifications

SIMOTICS S-1FK2 servomotors		High Dynamic			Compact	
Shaft height 63		**1FK2106-3AF**	**1FK2106-4AF**	**1FK2106-6AF**	**1FK2206-2AF**	**1FK2206-4AF**
Static torque M_0	Nm (lb_f-ft)	9 (6.64)	12 (8.85)	16 (11.80)	6.5 (4.79)	12 (8.85)
Stall current I_0	A	9.2	10.7	14.3	5	7.9
Maximum torque M_{max}	Nm (lb_f-ft)	26 (19.18)	33 (24.34)	45.5 (33.56)	18 (13.28)	36 (26.55)
Maximum current I_{max}	A	43	42	49	17.8	29.5
Maximum speed n_{max}	r/min	6000	6000	6000	6000	5800
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	4.6 (1.572)	6.0 (2.050)	8.7 (2.973)	7.8 (2.665)	15 (5.126)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	6.3 (2.153)	7.6 (2.597)	10 (3.417)	9.4 (3.212)	17 (5.809)
Weight m_{Mot}	kg (lb)	7.4 (16.32)	9 (19.85)	11.8 (26.02)	6.3 (13.89)	8.9 (19.62)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	9 (19.85)	10.6 (23.37)	13.4 (29.55)	7.9 (17.42)	10.6 (23.37)
200 ... 240 V 3 AC						
Rated speed n_N	r/min	1500	1500	1500	1500	1500
Rated torque M_N	Nm (lb_f-ft)	8.3 (6.12)	10.5 (7.74)	13.8 (10.18)	6.1 (4.50)	10.9 (8.04)
Rated current I_N	A	8.7	9.6	12.5	4.8	7.3
Rated power P_N	W	1300	1640	2150	970	1720
380 ... 480 V 3 AC						
Rated speed n_N	r/min	3000	3000	3000	3000	3000
Rated torque M_N	Nm (lb_f-ft)	7.3 (5.38)	8.6 (6.34)	10.6 (7.82)	5.4 (3.98)	9.1 (6.71)
Rated current I_N	A	7.9	8.1	9.7	4.35	6.2
Rated power P_N	W	2300	2700	3300	1710	2850
Suitable for SINAMICS S210 (6SL5...) servo converters						
• 200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE13-5DF1
• 380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE13-5DF1

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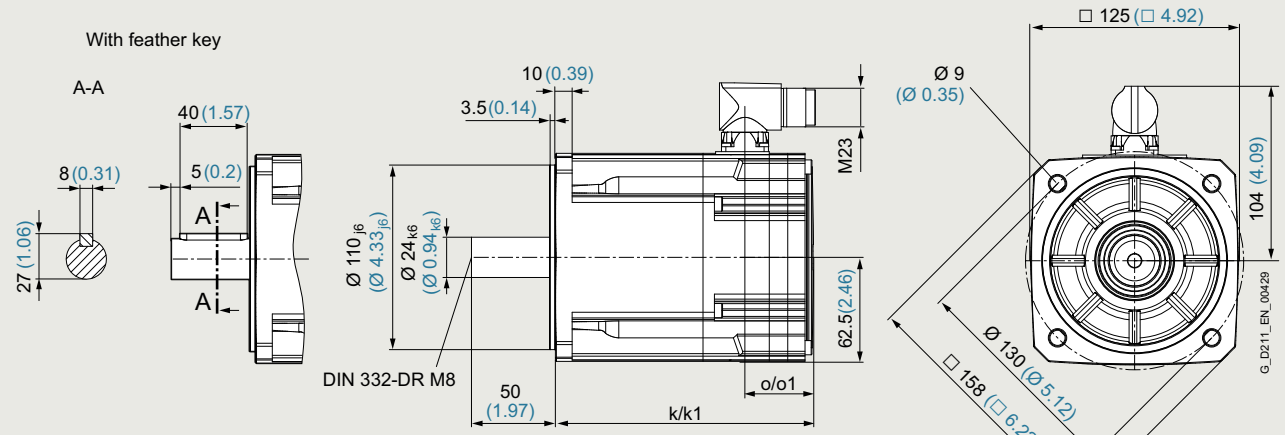
SIMOTICS S-1FK2 shaft height 63

Technical specifications

Dimensional drawing

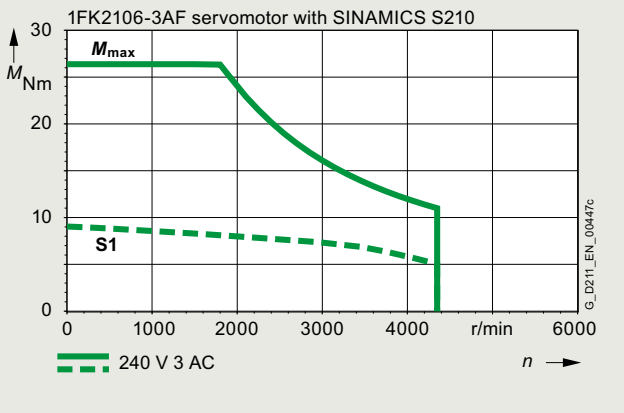


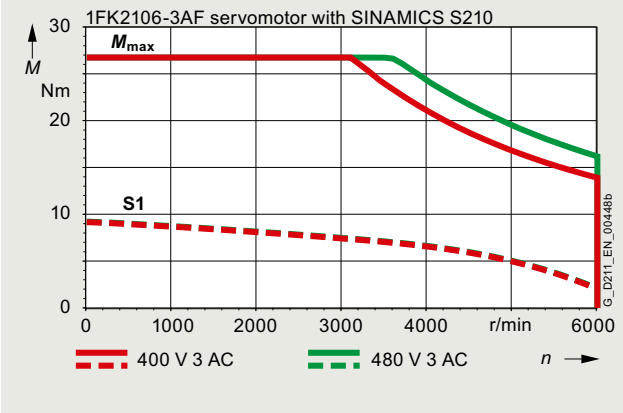
Shaft height 63 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FK2206-2A…	154 (6.06)	205 (8.07)	41 (1.61)	53 (2.09)
1FK2106-3A…	174 (6.85)	225 (8.86)		
1FK2.06-4A…	193 (7.6)	244 (9.61)		
1FK2106-6A…	232 (9.13)	283 (11.14)		

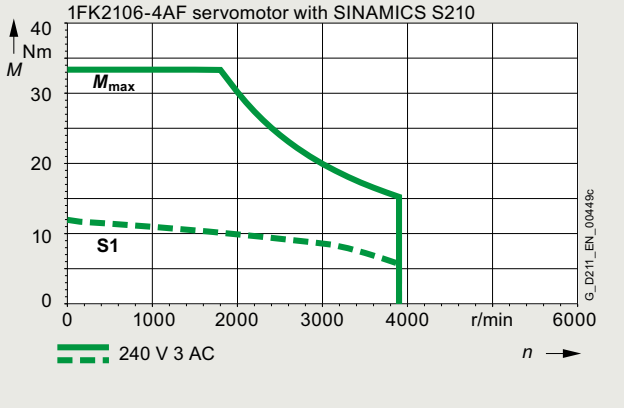
All dimensions in mm (values in brackets are in inches).

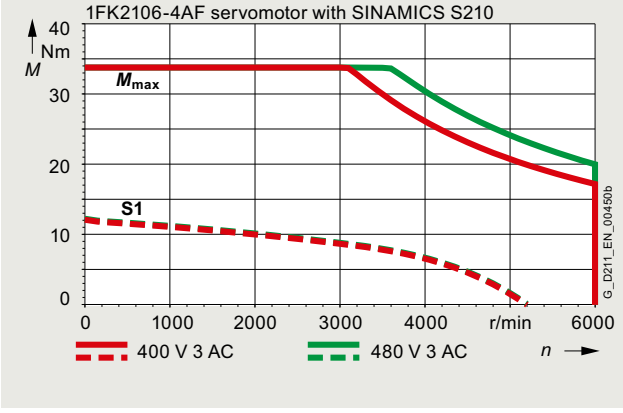
Speed/torque characteristics

High Dynamic









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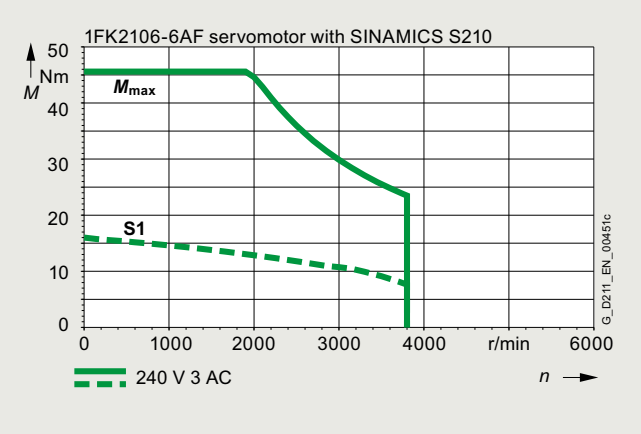
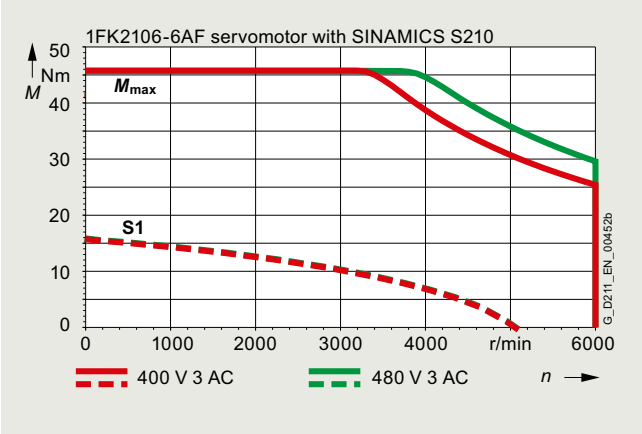
Technical specifications

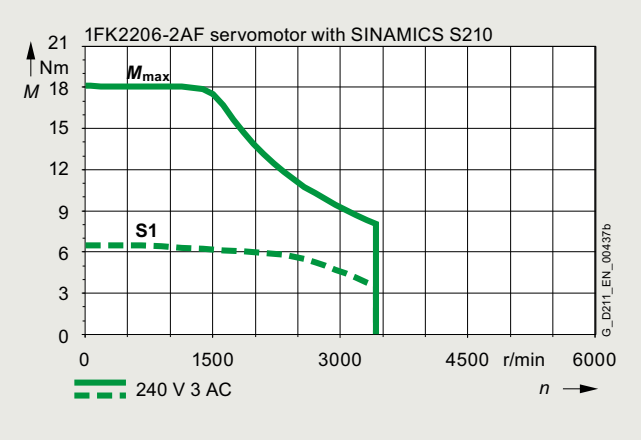
Speed/torque characteristics (continued)

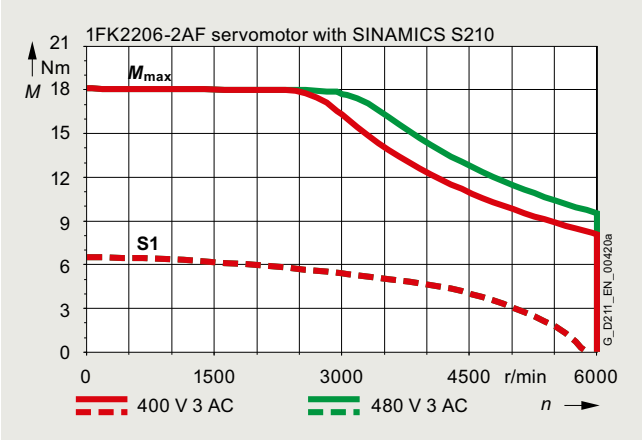
High Dynamic (continued)

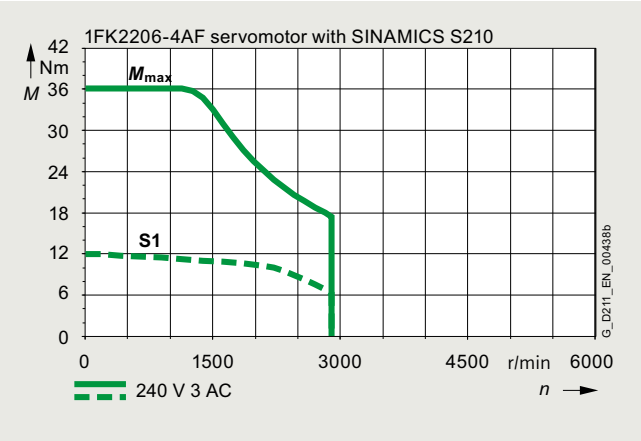


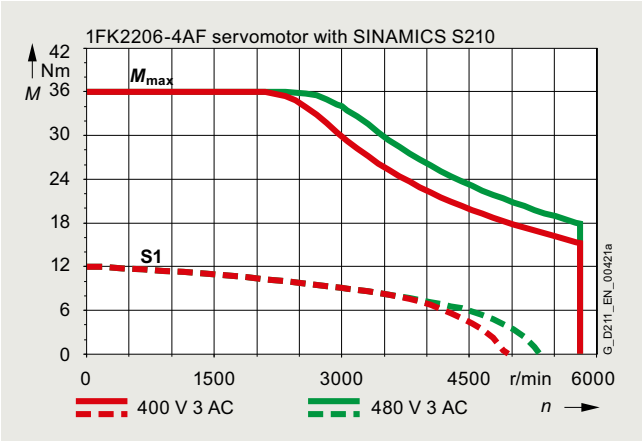


Compact









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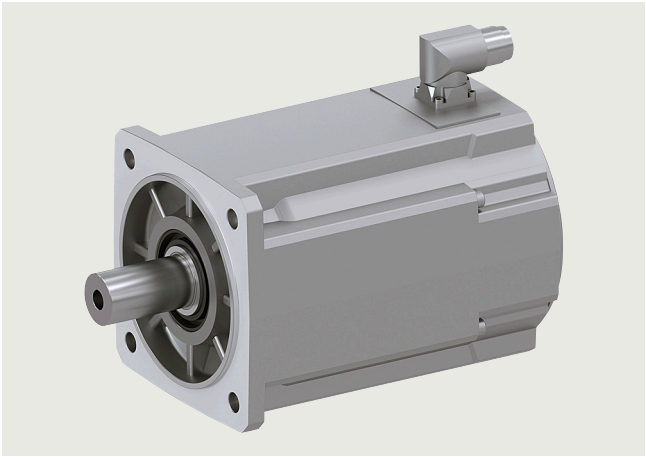
SIMOTICS S-1FK2 shaft height 80

Technical specifications

SIMOTICS S-1FK2 shaft height 80



Specific technical specifications

SIMOTICS S-1FK2 servomotors		Compact		
Shaft height 80		**1FK2208-3AC**	**1FK2208-4AC**	**1FK2208-5AC**
Static torque M_0	Nm (lb_f-ft)	18 (13.28)	22 (16.23)	27 (19.92)
Stall current I_0	A	8.4	11.7	14.6
Maximum torque M_{max}	Nm (lb_f-ft)	51 (37.62)	66 (48.68)	80 (59.01)
Maximum current I_{max}	A	29.5	43.5	51.5
Maximum speed n_{max}	r/min	4100	4600	4700
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	30 (10.251)	39 (13.326)	48 (16.402)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	33 (11.276)	44 (15.035)	54 (18.452)
Weight m_{Mot}	kg (lb)	12.6 (27.78)	14.6 (32.19)	16.6 (36.60)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	14.6 (32.19)	17.3 (38.15)	19.3 (42.56)
200 ... 240 V 3 AC				
Rated speed n_N	r/min	1000	1000	1000
Rated torque M_N	Nm (lb_f-ft)	16.6 (12.24)	20 (14.75)	23.5 (17.33)
Rated current I_N	A	7.9	10.9	13.2
Rated power P_N	W	1740	2150	2500
380 ... 480 V 3 AC				
Rated speed n_N	r/min	2000	2000	2000
Rated torque M_N	Nm (lb_f-ft)	14.5 (10.70)	17 (12.54)	19.1 (14.09)
Rated current I_N	A	7	9.3	10.8
Rated power P_N	W	3050	3550	4000
Suitable for SINAMICS S210 (6SL5...) servo converters				
• 200 ... 240 V 3 AC		6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1

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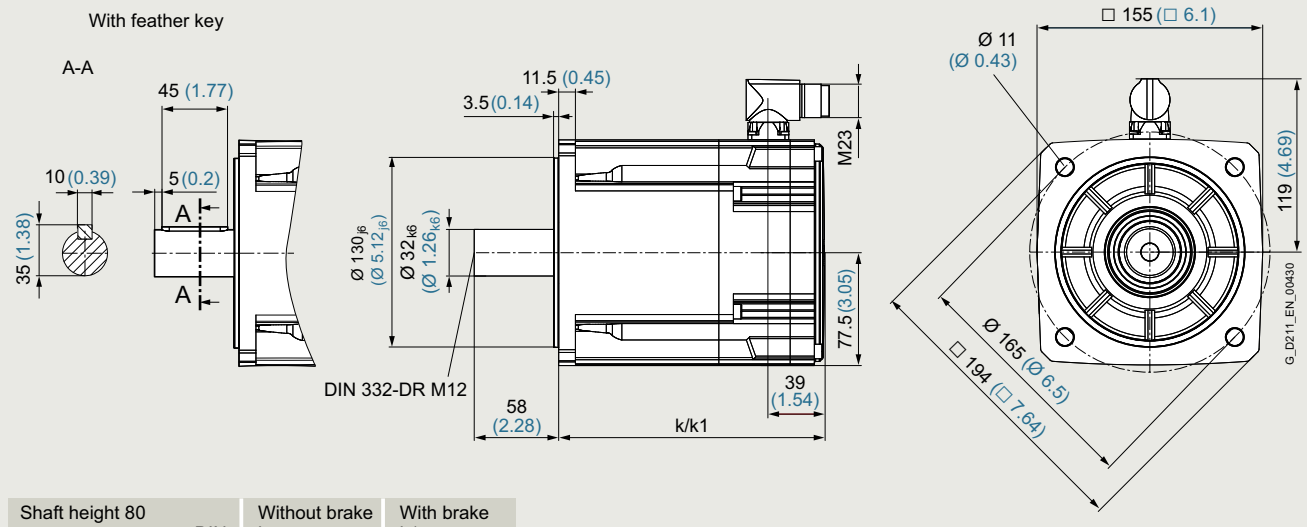
Technical specifications

Dimensional drawing



Shaft height 80 DIN IEC	Without brake k LB	With brake k1 LB1
1FK2208-3A…	183 (7.2)	236 (9.29)
1FK2208-4A…	203 (7.99)	256 (10.08)
1FK2208-5A…	223 (8.78)	276 (10.87)

All dimensions in mm (values in brackets are in inches).

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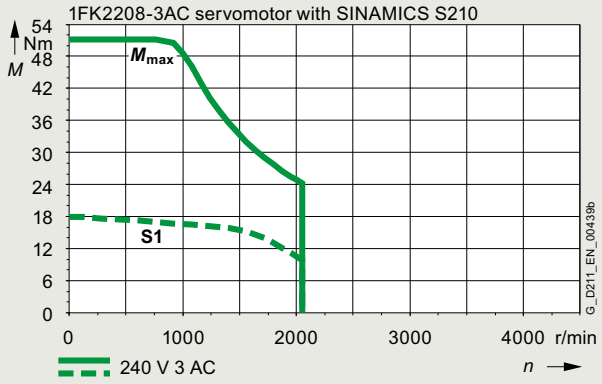
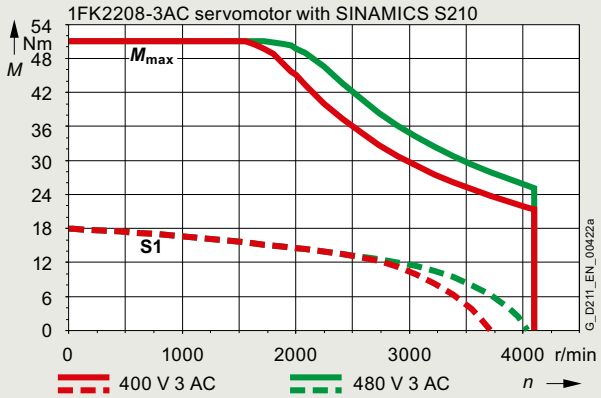
SIMOTICS S-1FK2 shaft height 80

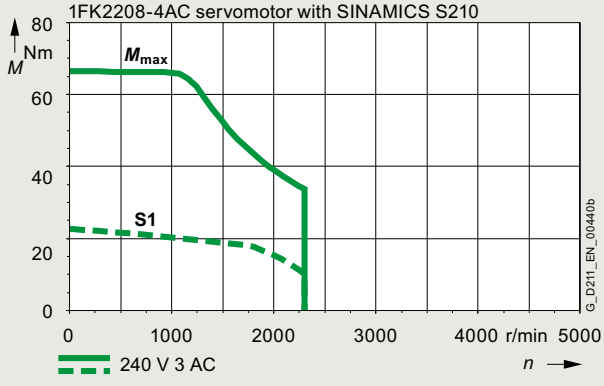
Technical specifications

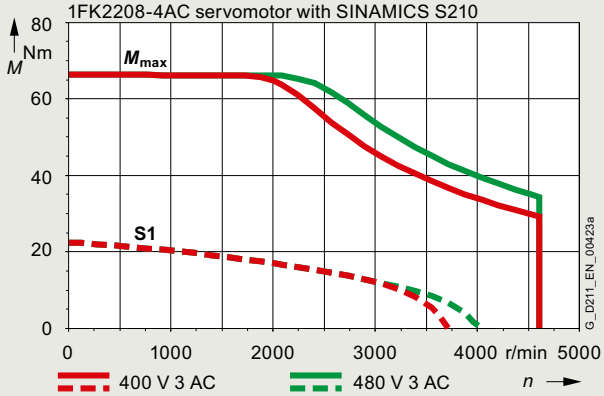
Speed/torque characteristics

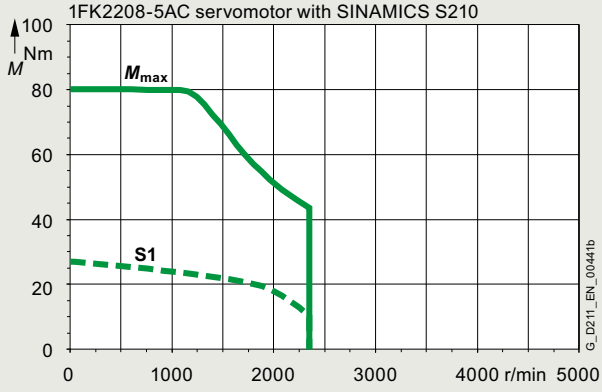
Compact

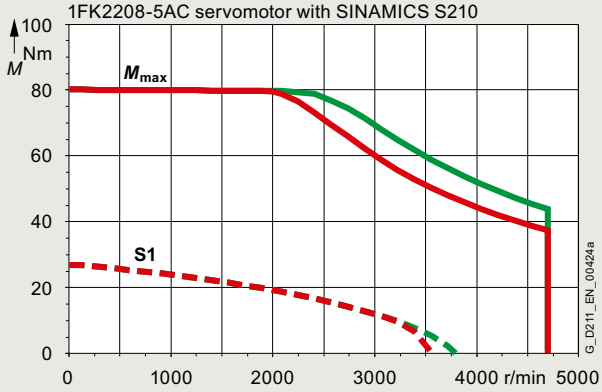












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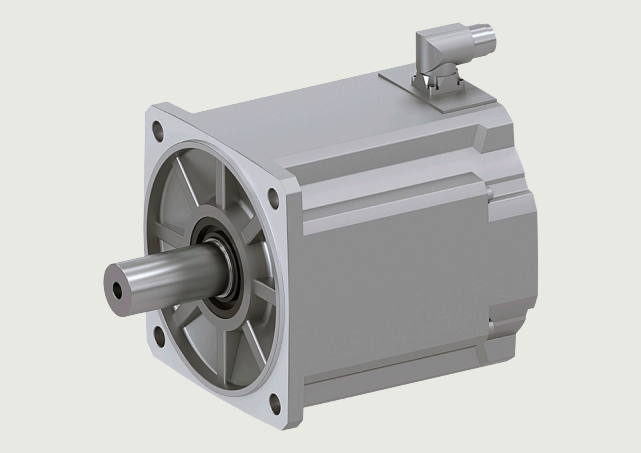
Technical specifications

SIMOTICS S-1FK2 shaft height 100



Specific technical specifications

SIMOTICS S-1FK2 servomotors		Compact			
Shaft height 100		**1FK2210-3AB**	**1FK2210-3AC**	**1FK2210-4AB**	**1FK2210-4AC**
Static torque M_0	Nm (lb_f-ft)	30 (22.13)	30 (22.13)	40 (29.50)	40 (29.50)
Stall current I_0	A	8.5	15	11.8	15
Maximum torque M_{max}	Nm (lb_f-ft)	90 (66.38)	90 (66.38)	120 (88.51)	120 (88.51)
Maximum current I_{max}	A	31.5	55	43.5	55
Maximum speed n_{max}	r/min	2500	4400	2500	3300
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	89 (30.411)	89 (30.411)	120 (41.004)	120 (41.004)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	95 (32.462)	95 (32.462)	130 (44.421)	130 (44.421)
Weight m_{Mot}	kg (lb)	22 (48.51)	22 (48.51)	27 (59.54)	27 (59.54)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	25 (55.13)	25 (55.13)	31 (68.36)	31 (68.36)
200 ... 240 V 3 AC					
Rated speed n_N	r/min	750	1000	750	1000
Rated torque M_N	Nm (lb_f-ft)	30 (22.13)	30 (22.13)	39 (28.77)	37 (27.29)
Rated current I_N	A	8.6	15.5	11.6	14.3
Rated power P_N	W	2500	3200	3050	3900
380 ... 480 V 3 AC					
Rated speed n_N	r/min	1500	2000	1500	2000
Rated torque M_N	Nm (lb_f-ft)	28.5 (21.02)	26 (19.18)	34.5 (25.45)	30.5 (22.50)
Rated current I_N	A	8.3	13.5	10.4	11.8
Rated power P_N	W	4500	5500	5400	6400
Suitable for SINAMICS S210 (6SL5...) servo converters					
• 200 ... 240 V 3 AC		6SL5310-1BE13-5DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE13-5DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1

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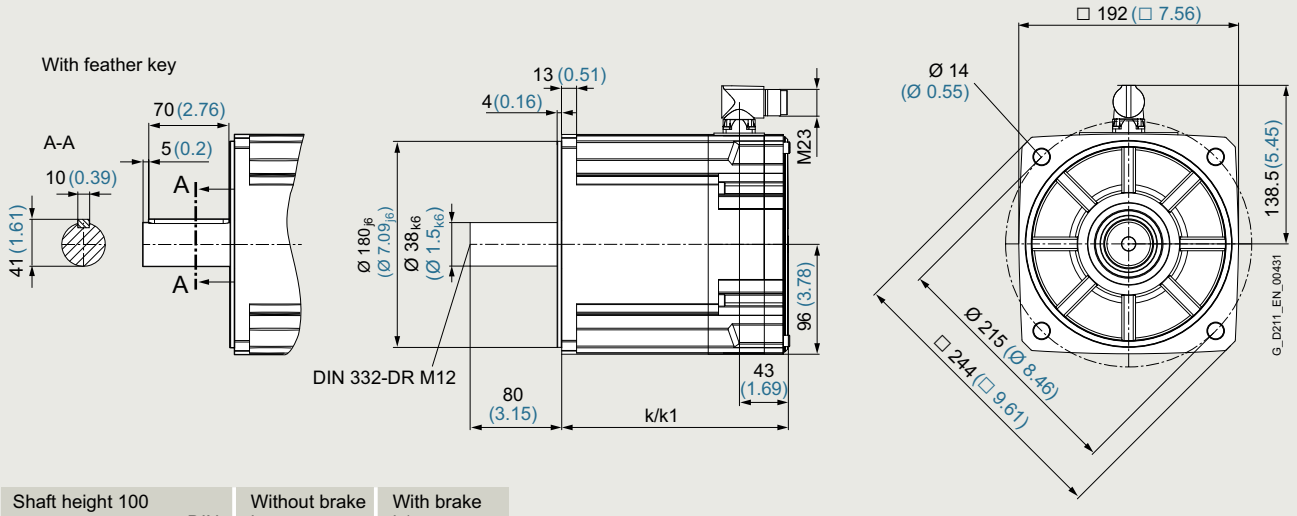
SIMOTICS S-1FK2 shaft height 100

Technical specifications

Dimensional drawing



Shaft height 100 DIN IEC	Without brake k LB	With brake k1 LB1
1FK2210-3A…	198 (7.8)	257 (10.12)
1FK2210-4A…	223 (8.78)	282 (11.1)

All dimensions in mm (values in brackets are in inches).

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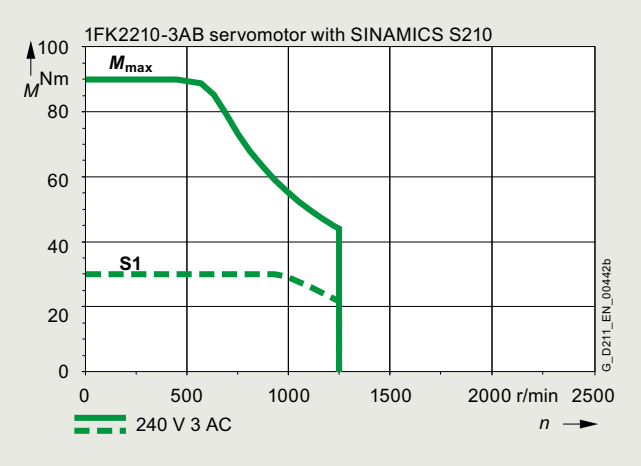
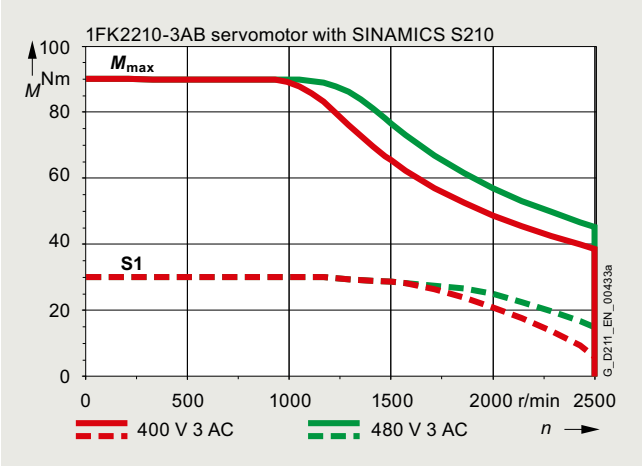
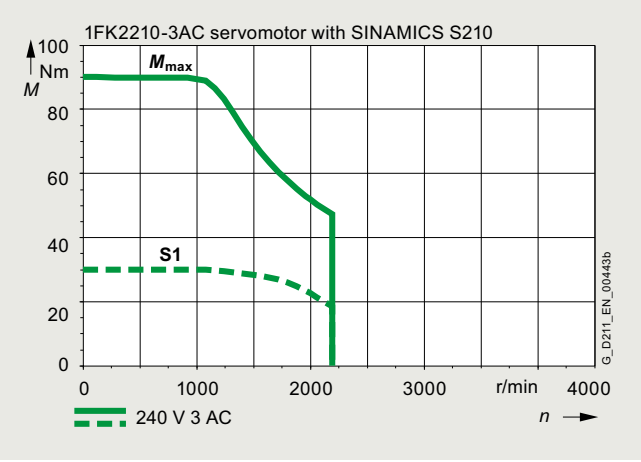
Technical specifications

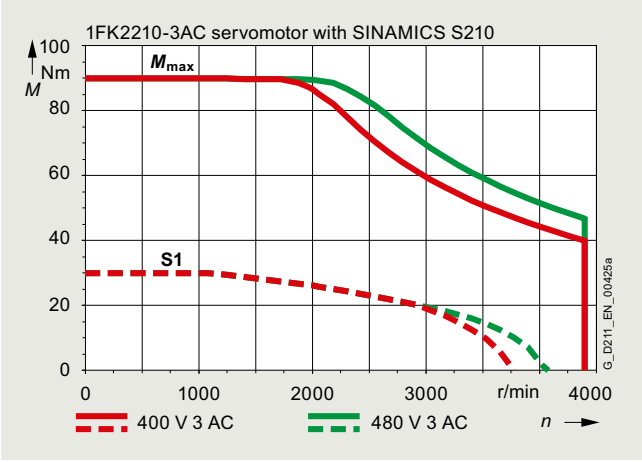
Speed/torque characteristics

Compact









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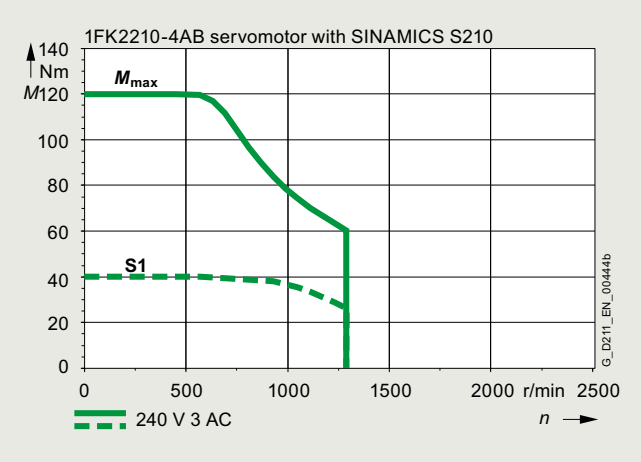
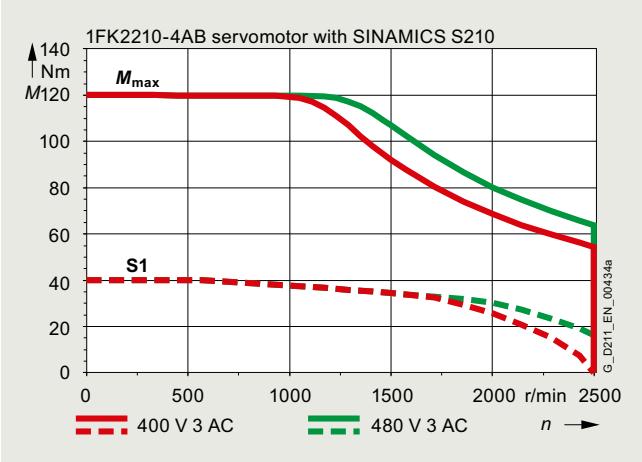
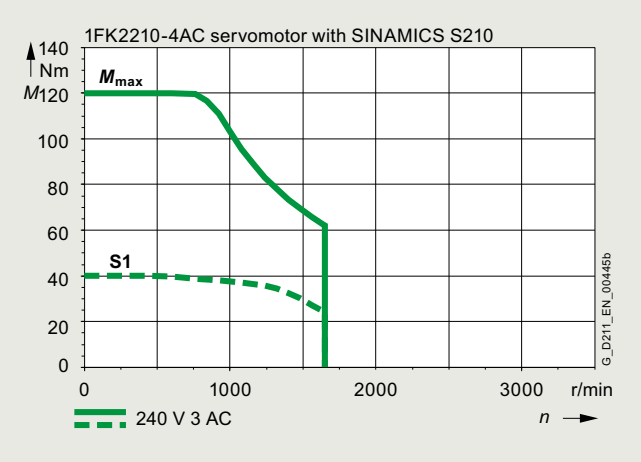
Technical specifications

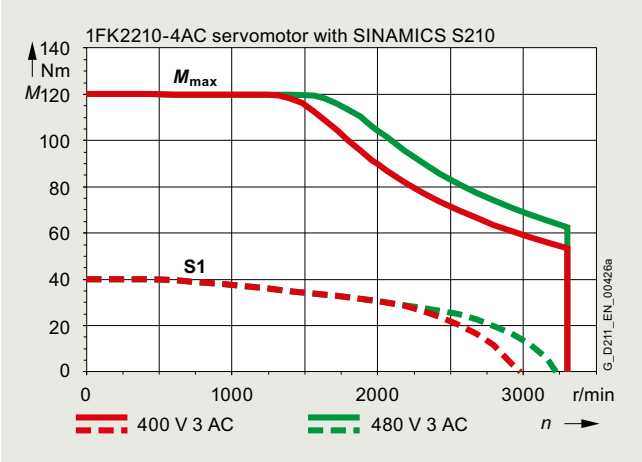
Speed/torque characteristics (continued)

Compact (continued)









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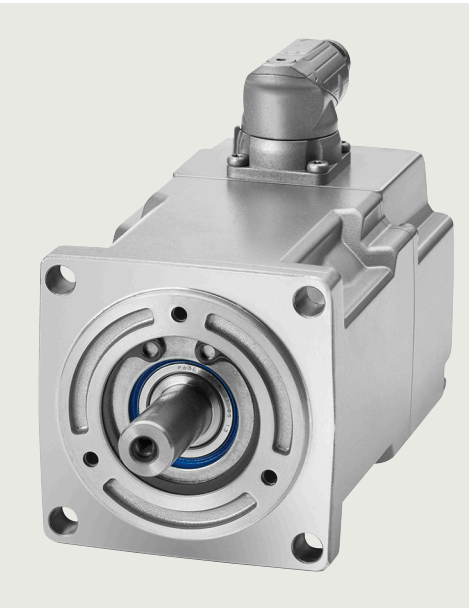

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3.2/2	Application
3.2/2	More information
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3.2/11	General technical specifications
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3.2/18	Shaft height 30
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3.2/28	Shaft height 52
3.2/31	Shaft height 63
3.2/37	Shaft height 63 forced ventilation NEW
3.2/40	Shaft height 80
3.2/48	Shaft height 80 forced ventilation
3.2/53	Shaft height 100
3.2/57	Shaft height 100 forced ventilation NEW

Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at:
www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator for the SINAMICS S210 drive system can be used on the internet at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FT2 servo motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1ft2/configuration

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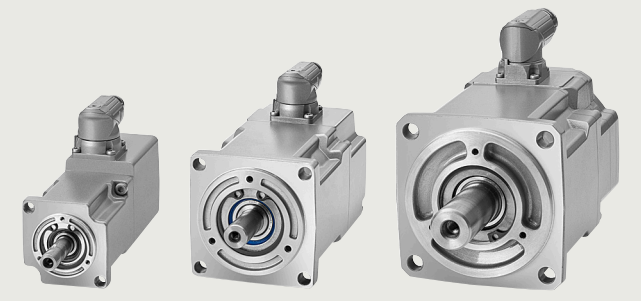
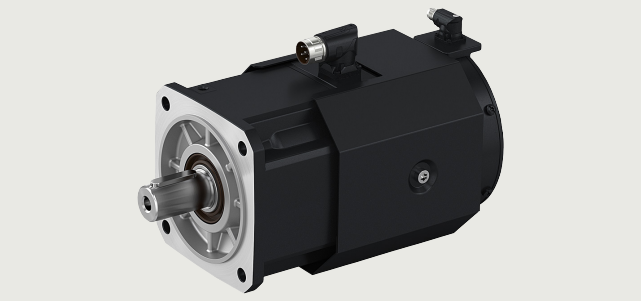
Overview



SIMOTICS S-1FT2 servomotors, natural cooling



SIMOTICS S-1FT2 servomotors, forced ventilation

The SIMOTICS S-1FT2 servomotors are compact and highly dynamic synchronous motors for a wide range of uses in an industrial environment. They are characterized by high power density, degree of protection and overload capability. You can choose between natural cooling or forced ventilation.
In the case of natural cooling, the heat loss is dissipated via the surface, while in the case of forced ventilation, an attached fan dissipates the heat loss and significantly increases the continuous performance of the motor.

The 1FT2 servomotors are an extension of the 1FK2 motor portfolio. They are more finely graded in terms of rated speeds, offer additional torque levels and have numerous variations and options. This makes it possible to solve the diverse challenges in the drive technology more precisely. Even more demanding tasks or applications in difficult environments can be mastered with 1FT2 servomotors.

SIMOTICS S-1FT2 High Dynamic motors

Highest dynamic response through low inertia for highly dynamic applications with low moved masses.

SIMOTICS S-1FT2 Compact motors

Precise, stable control with medium to high masses to be moved with medium moment of inertia.

Benefits

The SIMOTICS S-1FT2 servomotors fully exploit their strengths in the system with the SINAMICS S210 converter:
- Short adjustment and positioning times
- Quick and precise compensation of disturbances
- Stable closed loop control with high dynamic response
- Highest flexibility during selection
- More rugged
- Best accuracy

This is achieved by:
- Rapid control cycle
- High pulse frequency
- Complex rule algorithms
- Highest resolution optical encoder
- Low moment of inertia of the motors
- High overload capability

Application

- Packaging machines
- Handling equipment
- Feed and withdrawal devices
- Stacking units
- Automatic assembly machines
- Laboratory automation
- Woodworking, glass and ceramic industries
- Digital printing machines

More information

Siemens EcoTech Profile (SEP) for SIMOTICS S-1FT2

Siemens introduces a new label: Siemens EcoTech. It is an environmental declaration for products based on product-specific evaluations of sustainability relevant KPIs.

To provide maximum transparency, the Siemens EcoTech Profile (SEP) were created for all Siemens EcoTech products. It is a Siemens-created, standardized product data sheet which gives insight about the product performance in environmental relevant criteria as well as about interpretation and comparison of data against an existing norm, standard or predecessor product.

You can find more information on the internet at:
https://support.industry.siemens.com/cs/document/109963165
www.siemens.com/SiemensEcoTech

Siemens
EcoTech

Environmental Product Declaration (EPD)

Environmental Product Declarations (EPD) are available as PDFs for this product.
The EPD PDF provides brief and concise information about the ecological properties of a product.

You can find more information on the internet at:
https://support.industry.siemens.com/cs/ww/en/ps/28193/cert?ci=5690

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More information

SIMOTICS S-1FT2 servo planetary geared motors

SIMOTICS S-1FT2 servomotors can optionally be ordered as SIMOTICS S-1FT2 servo planetary geared motors – see chapter 3.4.

SIMOTICS S-1FT2 servo planetary geared motors with economy gearboxes NRB, NRK, NLC or with economy angular gearboxes NRBW, NRKW, NLCW or with precision gearboxes SP+ and TP+ are highly dynamic, compact and economical drive units. The combinations, each composed of a servomotor with a high-performance coaxial or angular planetary gearbox, are suitable for a wide range of applications in an industrial environment.

These planetary geared motors are specified and delivered completely as a unit. All outstanding performance data are matched to the motor-gearbox combination.

More technical information

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-s210/documentation

Detailed information on the SINAMICS S210 drive system, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates, manuals and operating instructions), is available on the internet at:
www.siemens.com/sinamics-s210
and is also available via the Siemens Product Configurator on the internet.

Configuration in the Siemens Product Configurator

The Siemens Product Configurator for the SINAMICS S210 drive system can be found in SiePortal at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FT2 servo motors and the SIMOTICS S-1FT2 servo planetary geared motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1ft2/configuration
www.siemens.com/simotics-1ft2-servogearedmotors/configuration

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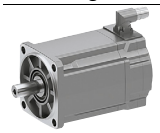
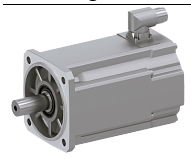
Selection and ordering data

	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1/3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia (without brake) J_{Mot} kg cm² (lb_f-in²)	SIMOTICS S-1FT2 servomotor Article No.
High Dynamic for highly dynamic applications							
Shaft height 20							
	0.16 (0.12)	0.56 (0.41)	8000	3000	–	0.025 (0.009)	**1FT2102-0AG■■-■■A0**
	0.32 (0.24)	1.11 (0.82)	8000	3000	–	0.036 (0.012)	**1FT2102-1AG■■-■■A0**
Shaft height 30							
	0.64 (0.47)	1.95 (1.44)	8000	3000	–	0.093 (0.032)	**1FT2103-2AG■■-■■A0**
	0.64 (0.47)	1.95 (1.44)	8000	–	4500	0.093 (0.032)	**1FT2103-2AH■■-■■A0**
	1.27 (0.94)	4.05 (2.99)	7300	3000	–	0.14 (0.048)	**1FT2103-4AG■■-■■A0**
	1.27 (0.94)	4.05 (2.99)	8000	–	4500	0.14 (0.048)	**1FT2103-4AH■■-■■A0**
Shaft height 40							
	1.27 (0.94)	3.75 (2.77)	7200	1500	3000	0.35 (0.120)	**1FT2104-4AF■■-■■A0**
	1.27 (0.94)	3.85 (2.84)	8000	3000	6000	0.35 (0.120)	**1FT2104-4AK■■-■■A0**
	2.4 (1.77)	7.5 (5.53)	6700	1500	3000	0.56 (0.191)	**1FT2104-5AF■■-■■A0**
	2.4 (1.77)	7.6 (5.61)	8000	3000	6000	0.56 (0.191)	**1FT2104-5AK■■-■■A0**
	3.2 (2.36)	10 (7.38)	7200	1500	3000	0.76 (0.260)	**1FT2104-6AF■■-■■A0**
	3.6 (2.66)	10 (7.38)	9000	2500	4500	0.76 (0.260)	**1FT2104-6AH■■-■■A0**
Shaft height 52							
	5 (3.69)	15 (11.06)	7400	1500	3000	1.7 (0.581)	**1FT2105-4AF■■-■■A0**
	5 (3.69)	15 (11.06)	9000	2500	4500	1.7 (0.581)	**1FT2105-4AH■■-■■A0**
	8 (5.90)	24 (17.70)	6600	1500	3000	2.7 (0.923)	**1FT2105-6AF■■-■■A0**
Shaft height 63							
	9 (6.64)	26 (19.18)	8000	1500	3000	4.6 (1.572)	**1FT2106-3AF■■-■■A0**
	12 (8.85)	33 (24.34)	7800	1500	3000	6.0 (2.050)	**1FT2106-4AF■■-■■A0**
	16 (11.80)	45.5 (33.56)	7600	1500	3000	8.7 (2.973)	**1FT2106-6AF■■-■■A0**

Article No. supplements			
Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
With reinforced holding brake (only for 1FT2108)	**2**		
Degree of protection			
IP64 (without shaft sealing ring)		**0**	
IP65 (with shaft sealing ring)		**1**	
IP67 (with shaft sealing ring and spring lock washer) (not for 1FT2102)		**2**	
Shaft end / feather key			
Plain shaft			**0**
Shaft with feather key			**1**
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)		**0**	**2**
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**2**
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**3**
Encoder			
Absolute encoder 22-bit singleturn			**S**
Absolute encoder 22-bit + 12-bit multiturn			**M**
Absolute encoder 26-bit singleturn			**B**
Absolute encoder 26-bit + 12-bit multiturn			**C**

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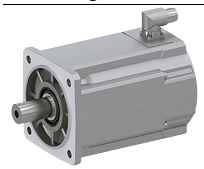
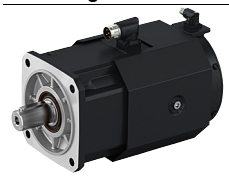
Selection and ordering data

	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1/3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia (without brake) J_{Mot} kg cm² (lb_f-in²)		SIMOTICS S-1FT2 servomotor Article No.
High Dynamic for highly dynamic applications								
Shaft height 80								
	25 (18.44)	74 (54.58)	5600	1000	2000	18 (6.151)		**1FT2108-4AC■■-■■A0**
	30 (22.13)	100 (73.73)	3750	750	1500	22 (7.517)		**1FT2108-5AB■■-■■A0**
	37.5 (27.66)	118 (87.04)	3550	750	1500	28 (9.568)		**1FT2108-7AB■■-■■A0**
High Dynamic for highly dynamic applications – forced ventilation								
Shaft height 63								
	11.5	26	8000	1500	3000	4.6	NEW	**1FT2106-3SF■■-■■A0**
	16	33	8000	1500	3000	6.0	NEW	**1FT2106-4SF■■-■■A0**
Shaft height 80								
	40 (29.50)	100 (73.73)	3700	750	1500	22 (7.517)		**1FT2108-5SB■■-■■A0**

Article No. supplements			
Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
With reinforced holding brake (only for 1FT2108)	**2**		
Degree of protection			
IP64 (without shaft sealing ring)		**0**	
IP65 (with shaft sealing ring)		**1**	
IP67 (with shaft sealing ring and spring lock washer) (not for 1FT2102)		**2**	
Shaft end / feather key			
Plain shaft			**0**
Shaft with feather key			**1**
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)	**0**		**2**
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**2**
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**3**
Encoder			
Absolute encoder 22-bit singleturn			**S**
Absolute encoder 22-bit + 12-bit multiturn			**M**
Absolute encoder 26-bit singleturn			**B**
Absolute encoder 26-bit + 12-bit multiturn			**C**

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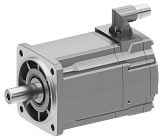
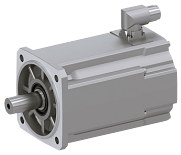
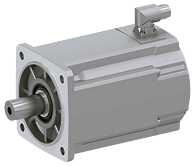
Selection and ordering data

	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1/3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia (without brake) J_{Mot} kg cm² (lb_f-in²)	SIMOTICS S-1FT2 servomotor Article No.
Compact for high precision applications							
Shaft height 30							
	0.64 (0.47)	1.85 (1.36)	8000	3000	–	0.20 (0.068)	**1FT2203-2AG■■-■■A0**
	0.64 (0.47)	1.85 (1.36)	8000	–	6000	0.20 (0.068)	**1FT2203-2AK■■-■■A0**
	1.27 (0.94)	3.75 (2.77)	7800	3000	–	0.35 (0.120)	**1FT2203-4AG■■-■■A0**
	1.27 (0.94)	3.75 (2.77)	8000	–	6000	0.35 (0.120)	**1FT2203-4AK■■-■■A0**
Shaft height 40							
	2.4 (1.77)	7.1 (5.24)	7500	1500	3000	1.2 (0.410)	**1FT2204-5AF■■-■■A0**
	2.4 (1.77)	7.1 (5.24)	8000	3000	6000	1.2 (0.410)	**1FT2204-5AK■■-■■A0**
	3.2 (2.36)	9.5 (7.01)	7600	1500	3000	1.6 (0.547)	**1FT2204-6AF■■-■■A0**
Shaft height 48							
	3.6 (2.66)	10.8 (7.97)	4850	1000	2000	3.2 (1.093)	**1FT2205-2AC■■-■■A0**
	3.6 (2.66)	10.8 (7.97)	6500	1500	3000	3.2 (1.093)	**1FT2205-2AF■■-■■A0**
	3.6 (2.66)	10.8 (7.97)	8300	2500	4500	3.2 (1.093)	**1FT2205-2AH■■-■■A0**
	6 (4.43)	18 (13.28)	6200	1500	3000	5.1 (1.743)	**1FT2205-4AF■■-■■A0**
Shaft height 63							
	6 (4.43)	18 (13.28)	4300	1000	2000	7.8 (2.665)	**1FT2206-2AC■■-■■A0**
	6.5 (4.79)	18 (13.28)	6800	1500	3000	7.8 (2.665)	**1FT2206-2AF■■-■■A0**
	6.5 (4.79)	18 (13.28)	8000	2500	4500	7.8 (2.665)	**1FT2206-2AH■■-■■A0**
	9 (6.64)	27 (19.92)	3300	750	1500	12 (4.100)	**1FT2206-3AB■■-■■A0**
	9 (6.64)	27 (19.92)	5700	1500	3000	12 (4.100)	**1FT2206-3AF■■-■■A0**
	12 (8.85)	38 (28.03)	3300	1000	2000	15 (5.126)	**1FT2206-4AC■■-■■A0**
	12 (8.85)	36 (26.55)	5800	1500	3000	15 (5.126)	**1FT2206-4AF■■-■■A0**
	12 (8.85)	36 (26.55)	8000	2500	4500	15 (5.126)	**1FT2206-4AH■■-■■A0**
Shaft height 80							
	12.5 (9.22)	38 (28.03)	6000	1500	3000	23 (7.859)	**1FT2208-2AF■■-■■A0**
	18 (13.28)	51 (37.62)	3000	750	1500	30 (10.251)	**1FT2208-3AB■■-■■A0**
	18 (13.28)	51 (37.62)	4100	1000	2000	30 (10.251)	**1FT2208-3AC■■-■■A0**
	18 (13.28)	51 (37.62)	5600	1500	3000	30 (10.251)	**1FT2208-3AF■■-■■A0**
	22 (16.23)	66 (48.68)	3000	750	1500	39 (13.326)	**1FT2208-4AB■■-■■A0**
	22 (16.23)	66 (48.68)	4600	1000	2000	39 (13.326)	**1FT2208-4AC■■-■■A0**
	22 (16.23)	66 (48.68)	5900	1500	3000	39 (13.326)	**1FT2208-4AF■■-■■A0**
	27 (19.92)	80 (59.01)	3000	750	1500	48 (16.402)	**1FT2208-5AB■■-■■A0**
	27 (19.92)	80 (59.01)	4700	1000	2000	48 (16.402)	**1FT2208-5AC■■-■■A0**

Article No. supplements			
Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
With reinforced holding brake (only for 1FT2208-2, 1FT2208-3, 1FT2210-2 and 1FT2210-3)	**2**		
Degree of protection			
IP64 (without shaft sealing ring)		**0**	
IP65 (with shaft sealing ring)		**1**	
IP67 (with shaft sealing ring and spring lock washer)		**2**	
Shaft end / feather key			
Plain shaft			**0**
Shaft with feather key			**1**
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)		**0**	**2**
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**2**
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			**3**
Encoder			
Absolute encoder 22-bit singleturn			**S**
Absolute encoder 22-bit + 12-bit multiturn			**M**
Absolute encoder 26-bit singleturn			**B**
Absolute encoder 26-bit + 12-bit multiturn			**C**

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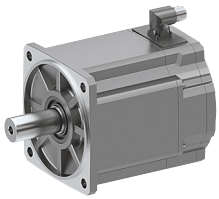
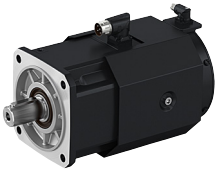
Selection and ordering data

	Static torque M_0 Nm (lb_f-ft)	Maximum torque M_{max} Nm (lb_f-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1/3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia (without brake) J_{Mot} kg cm² (lb_f-in²)		SIMOTICS S-1FT2 servomotor Article No.
Compact for high precision applications								
Shaft height 100								
	20 (14.75)	60 (44.26)	4050	1000	2000	62 (21.185)		1FT2210-2AC■■-■■A0
	20 (14.75)	60 (44.26)	5000	1500	3000	62 (21.185)		1FT2210-2AF■■-■■A0
	30 (22.13)	90 (66.38)	2500	750	1500	89 (30.411)		1FT2210-3AB■■-■■A0
	30 (22.13)	90 (66.38)	4400	1000	2000	89 (30.411)		1FT2210-3AC■■-■■A0
	40 (29.50)	120 (88.51)	2500	750	1500	120 (41.004)		1FT2210-4AB■■-■■A0
	40 (29.50)	120 (88.51)	3300	1000	2000	120 (41.004)		1FT2210-4AC■■-■■A0
	50 (36.88)	150 (110.64)	2850	750	1500	150 (51.255)		1FT2210-5AB■■-■■A0
Compact for high precision applications– forced ventilation								
Shaft height 63								
	14.5	36	6300	1500	3000	15	NEW	1FT2206-4SF■■-■■A0
	14.5	36	8000	2500	4500	15	NEW	1FT2206-4SH■■-■■A0
Shaft height 80								
	22 (16.23)	51 (37.62)	3350	750	1500	30 (10.251)		1FT2208-3SB■■-■■A0
	22 (16.23)	51 (37.62)	4500	1000	2000	30 (10.251)		1FT2208-3SC■■-■■A0
	22 (16.23)	51 (37.62)	6000	1500	3000	30 (10.251)		1FT2208-3SF■■-■■A0
	28 (20.65)	66 (48.68)	3150	750	1500	39 (13.326)		1FT2208-4SB■■-■■A0
	28 (20.65)	66 (48.68)	4950	1000	2000	39 (13.326)		1FT2208-4SC■■-■■A0
	35 (25.82)	80 (59.01)	2900	750	1500	48 (16.402)		1FT2208-5SB■■-■■A0
Shaft height 100								
	53	120	2800	750	1500	120	NEW	1FT2210-4SB■■-■■A0

Article No. supplements			
Holding brake			
Without holding brake	0		
With holding brake	1		
With reinforced holding brake (only for 1FT2208-2, 1FT2208-3, 1FT2210-2 and 1FT2210-3)	2		
Degree of protection			
IP64 (without shaft sealing ring)		0	
IP65 (with shaft sealing ring)		1	
IP67 (with shaft sealing ring and spring lock washer)		2	
Shaft end / feather key			
Plain shaft			0
Shaft with feather key			1
Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03)		0	2
Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			2
Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)			3
Encoder			
Absolute encoder 22-bit singleturn			S
Absolute encoder 22-bit + 12-bit multiturn			M
Absolute encoder 26-bit singleturn			B
Absolute encoder 26-bit + 12-bit multiturn			C

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Selection and ordering data

Accessories

Description	For motor	Article No.
Shaft sealing ring	1FT2102	**1FY2902-0GC00**
Degree of protection kit to achieve degree of protection IP65 for mounting on the motor – for retrofitting or as spare part	1FT2.03	**1FY2903-0GC00**
	1FT2.04	**1FY2904-0GC00**

Structure of the Article No. of the SIMOTICS S-1FT2 servomotors

Data position in Article No.	1	2	3	4	5	6	7		8	9	10	11	12		13	14	15	16
	1	**F**	**T**	**2**	■	■	■	-	■	■	■	■	■	-	■	■	**A**	■
1st to 4th positions: digit, letter, letter, digit	**Motor**	1	F	T	2													
5th position: digit	**Moment of inertia**																	
	High Dynamic				1													
	Compact				2													
6th and 7th positions: digit, digit	**Shaft height**																	
	20				1	0	2											
	30				1/2	0	3											
	40				1/2	0	4											
	52				1	0	5											
	48				2	0	5											
	63				1/2	0	6											
	80				1/2	0	8											
	100				2	1	0											
8th position: digit	**Overall length**																	
	See specific technical specifications								0 ... 8									
9th position: letter	**Cooling**																	
	Natural cooling									A								
	Forced ventilation									S								
10th position: letter	**Winding/rated speed**																	
	For converters connected to max. 240 V										**For converters connected to max. 480 V**							
	750 r/min at 230 V										1500 r/min at 400 V							
	1000 r/min at 230 V										2000 r/min at 400 V							
	1500 r/min at 230 V										3000 r/min at 400 V							
	3000 r/min at 230 V										Not permissible							
	2500 r/min at 230 V										4500 r/min at 400 V							
	3000 r/min at 230 V										6000 r/min at 400 V							
											B							
											C							
											F							
											G							
											H							
											K							
11th position: digit	**Holding Brake**																	
	Without holding brake											0						
	With Holding brake											1						
	Reinforced holding brake											2						
12th position: digit	**Degree of protection**																	
	IP64 (without shaft sealing ring)												0					
	IP65 (with shaft sealing ring)												1					
	IP67 (with shaft sealing ring and spring lock washer)												2					
13th position: digit	**Shaft end / feather key**																	
	Plain shaft														0			
	Shaft with feather key														1			
	Plain shaft, reduced shaft diameter														2			
	Shaft with feather key, reduced shaft diameter														3			
14th position: letter	**Encoder**																	
	Absolute encoder 22-bit singleturn (AS22DQC)															S		
	Absolute encoder 22-bit + 12-bit multiturn (AM22DQC)															M		
	Absolute encoder 26-bit singleturn (AS26DQC)															B		
	Absolute encoder 26-bit + 12-bit multiturn (AM26DQC)															C		
15th position: letter	**One Cable Connection**																A	
16th position: digit	Reserved																	0

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Options

Option	Additional identification code **-Z** with order code and plain text where applicable 1FT2 . . . - . . . . . - . . A . **-Z** Order code
Low temperature -30 °C	**Q30**
Suitable for dry room environments and certification for clean rooms	**Q40**
Customer-specific text on rating plate	**Y84** with plain text
Planetary gearboxes	SIMOTICS S-1FT2 servomotors can optionally be ordered as SIMOTICS S-1FT2 servo planetary geared motors via the corresponding order codes – see chapter 3.4.
Paint finish	
• Without	**X00**
• Jet black RAL 9005	**X01**
• Cream white RAL 9001	**X02**
• Reseda green RAL 6011	**X03**
• Pebble gray RAL 7032	**X04**
• Sky blue RAL 5015	**X05**
• Light ivory RAL 1015	**X06**
• White aluminum RAL 9006	**X08**
Resistance	
• Special paint finish with additional primer	**K23**
• Increased detergent resistance	**N16**
• Metal rating plate instead of adhesive label	**Q31**
• Pressure equalization	**Q20**

Ordering example:

1FT2104-4AF00-1SA0-Z N16+Q31+X03

Low temperature -30 °C – order code **Q30**

The permissible temperature range is defined as -15 °C to +40 °C as standard (without power reduction).

A version of the 1FT2 motors that can handle an extended temperature range down to -30 °C is also available as an option via the order code **Q30**. Typical applications of this version include cold stores.

However, the extended operating temperature range is not available for the following versions:

- Degree of protection IP67
- Motors with gearbox
- Motors with forced ventilation

Suitable for dry room conditions and certification for clean rooms – order code **Q40**

The permissible range for relative ambient air humidity is 5 % to 95 % as standard, suitability for use in clean rooms is not certified. The 1FT2 motors can optionally be designed for use in extremely dry environments and with certification for use in clean rooms via order code **Q40**.

The following clean room classes are met according to ISO 156441-14 and have been certified accordingly by the TÜV (German Technical Inspectorate):

- Motors without gearbox, with degree of protection IP64: ISO class 7 or better
- Motors without gearbox, with degree of protection IP65: ISO class 6 or better
- Motors with gearbox NRB(W), NRK(W), or NLC(W): ISO class 7 or better

The corresponding certificates can be viewed here: https://support.industry.siemens.com/cs/document/109815586

These motors feature extended specifications for use in relative air humidity: Operation from a relative humidity level of just 0.3 % (dew point -50 °C at 20 °C ambient air temperature) is permitted.

Customer-specific text on the rating plate – order code **Y84** with plain text

A text (maximum of 20 characters), which can be freely selected by the person placing the order, can optionally be printed on the rating plate of the 1FT2 motors. Labels can then, for example, be used for the name of the axis, the installation location or customer-specific spare part numbers. The order is placed with the order code Y84 and the plain text for the desired print.

Planetary gearboxes – order codes see chapter 3.4

SIMOTICS S-1FT2 servomotors can optionally be ordered as SIMOTICS S-1FT2 servo planetary geared motors with economy gearbox or economy angular gearbox or with precision gearbox via the corresponding order codes.

SIMOTICS S-1FT2 servo planetary geared motors are highly dynamic, compact, and efficient drive units. The combinations, each comprising a servomotor with a high-performance coaxial or angular planetary gearbox, are suitable for a wide range of applications in industrial environments.

These planetary geared motors are specified and supplied as a complete unit. All outstanding performance data are matched to the motor-gearbox combination.

For more information see chapter 3.4 "SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors".

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Options

Paint finish –
order codes **X00** ... **X08**

If no specific color or paint finish data are specified when placing the order, the 1FT2 motors are finished in the standard anthracite gray color (RAL 7016). Various special colors are available as options. Special colors are ordered via the order codes **X00** ... **X08**.

The paint finish in standard and special colors meets the requirements for environmental conditions of climate class 3K4 according to IEC 60721-3-3, with the exception of the influencing variables "low air temperature", "condensation", and "low air pressure". It satisfies the requirements of corrosivity category C1 according to EN ISO 12944-2.

Special paint finish with additional primer –
order code **K23**

- Additional primer with paint finish in the standard anthracite gray color (RAL 7016).
- Properties same as standard paint finish - in addition, condensation is permitted on the external surfaces of the motor.
- A combination with a special color (order codes **X01** ... **X08**) as per the color table is permitted - however, a combination with the order code X00 (no paint finish) is not permitted.

Increased detergent resistance –
order code **N16**
(includes the properties special paint finish with additional primer – order code **K23**)

The 1FT2 motors are available with increased chemical resistance via order code **N16**. These have the following additional properties:

- 4-layer paint system (PS Premium paint system)
- Nickel-plated plug connectors
- Resistant to greases, mineral oils, aliphatic solvents (10 %), caustic soda (10 %)

Systems used in the foodstuff industry are typical applications for these versions. With this option, the motor satisfies the requirements of corrosivity category C4(M) according to EN ISO 12944-2.

Certification in terms of the resistance to common ECOLAB cleaners and disinfectants can be viewed here:
https://support.industry.siemens.com/cs/document/58657336

Metal rating plate instead of adhesive label –
order code **Q31**

The rating plate of the motor is designed as an adhesive label as standard. However, a metal rating plate made of aluminum can be ordered instead via order code **Q31**. The labeling is lasered on. This ensures legibility for a long time even under poor environmental conditions.

Pressure equalization –
order code **Q20**

When a motor with degree of protection IP67 cools down following operation, this can lead to underpressure in the motor. This may result in moisture ingress. Moisture ingress of this kind can be prevented by using a defined air supply via a connected pressure equalization tube.

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Technical specifications

General technical specifications

SIMOTICS S-1FT2 High Dynamic/Compact motors	
Motor type	Permanent-magnet synchronous motor
Permissible operating conditions without derating	
• Ambient temperature	-15 ... +40 °C (5 ... 104 °F), optional from -30 °C (-22 °F)
• Installation altitude, max.	1000 m (3281 ft)
Degree of protection According to EN 60034-5 (IEC 60034-5)	IP64; for forced ventilated motors, fan degree of protection: IP66 IP65 optional or retrofittable optional IP67
Cooling According to EN 60034-6	Natural cooling (IC410), forced ventilation
Type of construction According to EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3)
Shaft end According to DIN 748-3 (IEC 60072-1)	Plain shaft, reduced shaft diameter (only with IP64 and without feather key for 1FT2.03) Plain shaft, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10) Shaft with feather key, reduced shaft diameter (only for 1FT2.04, 1FT2.08 and 1FT2.10)
Shaft and flange accuracy According to DIN 42955 (IEC 60072-1)	Tolerance N In each case for radial eccentricity of the shaft end, concentricity of the centering ring, and axial eccentricity of the mounting flange to the axis of the shaft end.
Vibration severity grade According to EN 60034-14 (IEC 60034-14)	Grade A is maintained up to rated speed
Stator winding insulation	
According to EN 60034-1 (IEC 60034-1)	
• 1FT2102, 1FT2.03	Thermal class 130 (B) for a winding overtemperature of ΔT = 80 K
• 1FT2.04, 1FT2.05, 1FT2.06, 1FT2.08, 1FT2210	Thermal class 155 (F) for a winding overtemperature of ΔT = 100 K
Sound pressure level L_{pA} (1 m), max. According to ISO 1680	
Natural cooling	
• 1FT2102, 1FT2.03, 1FT2.04	55 dB(A) + 3 dB(A) tolerance
• 1FT2.05 and 1FT2.06	65 dB(A) + 3 dB(A) tolerance
• 1FT22.8 and 1FT2210	70 dB(A) + 3 dB(A) tolerance
Forced ventilation	
• 1FT2.06, 1FT2.08, 1FT2210	73 dB(A) + 3 dB(A) tolerance
Encoder system	• AS22DQC (absolute encoder 22-bit singleturn) • AM22DQC (absolute encoder 22-bit + 12-bit multiturn) • AS26DQC (absolute encoder 26-bit singleturn) • AM26DQC (absolute encoder 26-bit + 12-bit multiturn)
Holding brake	Optional integrated holding brake
Connection	One Cable Connection (OCC) for signals and power Rotatable connector
Coating color	RAL 7016 (anthracite gray) Note: All motors may be repainted using commercially available coatings. Do not apply more than two additional layers of paint. See Options for more colors
Certificates of suitability	cURus, CE, EAC, CEL

Note:

SIMOTICS motors are designed for operation with frequency converters and non-periodic load and speed changes.

Typical applications include machine tools or production machines with non-periodic speed and load cycles. This corresponds to IEC 60034-1 operating mode S9.

In operating mode S9, a correspondingly selected constant load, similar to operating mode S1, is used as a reference value.

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Technical specifications

Regulations, standards, specifications

The motors comply with the appropriate standards and regulations, see table below.

As a result of the fact that in many countries the national regulations have been completely harmonized with the international IEC 60034-1 recommendation, there are no longer any differences with respect to coolant temperatures, temperature classes and temperature rise limits.

General specifications for rotating electrical machines	IEC 60034-1
Terminal designations and direction of rotation for electrical machines	IEC 60034-8
Types of construction of rotating electrical machines	IEC 60034-7
Cooling methods of rotating electrical machines	IEC 60034-6
Degrees of protection of rotating electrical machines	IEC 60034-5
Vibration severity of rotating electrical machines	IEC 60034-14
Noise limit values for rotating electrical machines	IEC 60034-9
Cylindrical shaft ends for electrical machines	DIN 748-3/IEC 60072-1

SIMOTICS S-1FT2 motors have UL approval from Underwriters Laboratories Inc. and are marked with the "UL Recognized Component" test symbol. This is used for components which are part of a larger product or system. This confirmed compliance with the corresponding US American and Canadian regulations, and allowed access to the North American market.

For SIMOTICS S-1FT2 motors, conformity with the relevant EC directives 2006/95/EC and 2014/35/EU and the relevant standards EN 60034-1:2010 and EN 60204-1:2006 is confirmed. By applying the CE mark to the product, Siemens AG confirms this for the product, and secures the free movement of goods within the European Union.

Degree of protection acc. to IEC 60034-5

A suitable degree of protection must be selected according to the operating and environmental conditions to protect the motor against damage caused by the ingress of water and other liquids, as well as dust and foreign bodies.

SIMOTICS S-1FT2 motors have degree of protection IP64 as standard.

The motor can be optionally supplied with a radial shaft seal ring with degree of protection IP65. This increases the protection against the ingress of liquids.

Contrary to degree of protection IP65, degree of protection IP67 has increased protection against jet and splashing water as well as brief immersion. The mounting position of the motor must be chosen so that the stagnant water at the shaft exit is avoided.

The degree of protection designation is composed from the code **IP** (for International Protection) and two code numbers for the protection against touching and penetration of foreign bodies, and the degree of protection against the ingress of water.

First code number

6: Protection against dust ingress and complete protection against touching

Second code number

4: Protection against splashwater from any direction

5: Protection against jet water from any direction

7: Protection against brief immersion

Recommended degrees of protection for three-phase motors

When cooling lubricants are used, protection against water alone is inadequate. The IP rating should only be considered as a guide value in this case. The motors may have to be protected by suitable covers. Attention must be paid to providing suitable sealing of the motor shaft for the selected degree of protection for the motor.

The following table can serve as a decision aid for selecting the proper degree of protection for motors. A permanent covering of liquid on the flange must be avoided when the motor is mounted with the shaft end facing upwards (IM V3).

Effect	General workshop environment	Water/ general cooling lubricant (95 % water, 5 % oil)
Dry	IP64	–
Water-enriched environment	–	IP64
Mist	–	IP65
Spraying water	–	IP65
Water jet	–	IP67
Splash/brief immersion/ constant inundation	–	IP67

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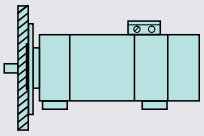
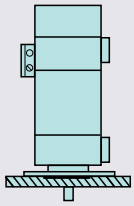
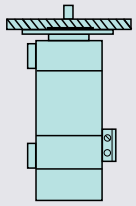
Technical specifications

Design format, mounting position according to IEC 60034-7

SIMOTICS S-1FT2 motors are designed in type of construction IM B5. It can also be used in mounting positions IM V1 and IM V3.

Code 1	IM B5	IM V1	IM V3
Code 2	IM 3001	IM 3011	IM 3031
			
	Horizontal flange mounting	Flange mounting, output shaft pointing vertically downwards	Flange mounting, output shaft pointing vertically upwards

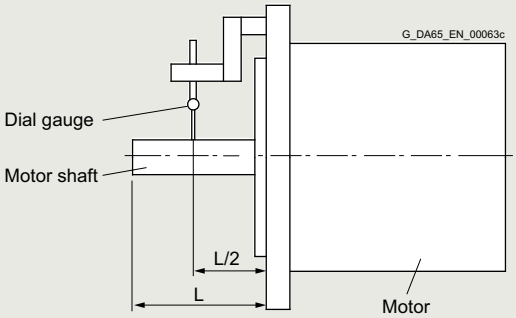
Shaft and flange accuracy in accordance with IEC 60072-1

Radial eccentricity tolerance of shaft in relation to housing axis

(referred to cylindrical shaft ends)

Motor	Shaft ends D × L mm (in)	Radial eccentricity Tolerance N µm
1FT2102	8 × 25 (0.31 × 0.98)	30
1FT2.03	14 × 30 (0.55 × 1.18)	35
	11 × 23 (0.43 × 0.91)	35
1FT2.04	19 × 40 (0.75 × 1.57)	40
	14 × 30 (0.55 × 1.18)	35
1FT2.05	19 × 40 (0.75 × 1.57)	40
1FT2.06	24 × 50 (0.94 × 1.97)	40
1FT2.08	24 × 50 (0.94 × 1.97)	40
	32 × 58 (1.26 × 2.28)	50
1FT2210	32 × 58 (1.26 × 2.28)	50
	38 × 80 (1.50 × 3.15)	50

Test: runout

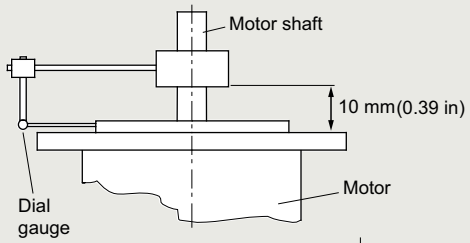


Concentricity and axial eccentricity tolerance of the flange surface for the shaft axis

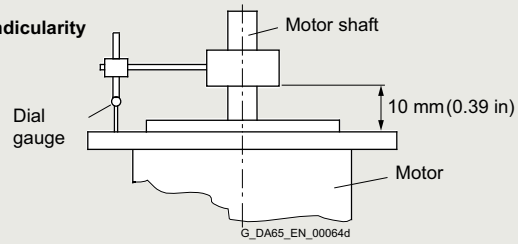
(referred to the centering diameter of the mounting flange)

Motor	Centering diameter mm (in)	Concentricity and axial eccentricity Tolerance N µm
1FT2102	30 (1.18)	80
1FT2.03	50 (1.97)	
1FT2.04	70 (2.76)	
1FT2205	80 (3.15)	
1FT2105	95 (3.74)	
1FT2.06	110 (4.33)	100
1FT2.08	130 (5.12)	
1FT2210	130 (5.12)	

Test: concentricity



Test: perpendicularity



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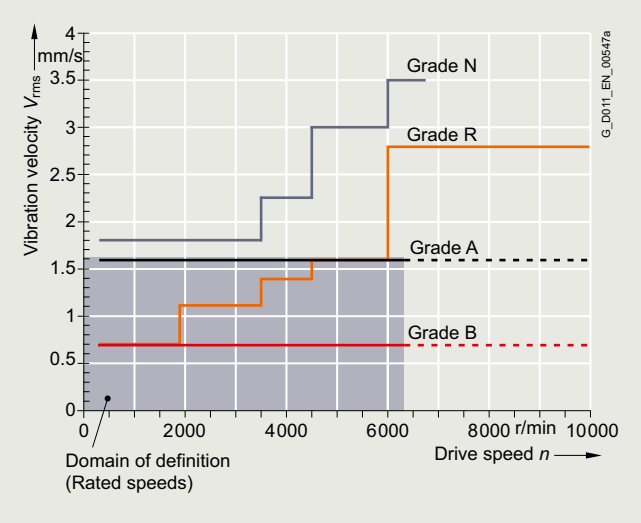
Technical specifications

Vibration severity and vibration severity grade A according to IEC 60034-14

The vibration severity is the RMS value of the vibration velocity (frequency range from 10 Hz to 1000 Hz). The vibration severity is measured using electrical measuring devices according to DIN 45666.

The specified values refer only to the motor. These values can increase as a result of the overall system vibrational behavior due to installation.



Vibration severity limit values

The speeds of 1800 r/min and 3600 r/min and the associated limit values are specified according to IEC 60034-14.
The speeds of 4500 r/min and 6000 r/min and the specified values are defined by the motor manufacturer.

The motors maintain vibration severity grade A up to the rated speed.

Balancing according to ISO 21940-32

Apart from the balance quality of the motor, the vibrational quality of motors with attached pulleys is mainly determined by the balance state of the mounted component. If the motor and the mounted component are balanced separately before being joined, the balancing process of the pulley is to be adapted to the motor's balancing type.

SIMOTICS S-1FT2 motors with feather keys are always half-key balanced. In general, motors with a plain shaft are recommended for systems with the most stringent vibrational quality requirements.

Vibration stress, immitted vibration values

The requirements of environmental class 3M8 (according to EN 60721-3-3 Table 6) must be maintained for proper function and safeguard the bearing life. The following limits are valid for (immitted) vibration values introduced into the motor from outside:

- Vibration velocity V_{rms} according to ISO 10816, max. 4.5 mm/s (0.18 in/s)
- Vibration acceleration a_{peak} axial and radial 50 m/s^2 (164 ft/s^2)

During transport, the motors withstand single shocks (6 ms) of up to 250 m/s^2 (820 ft/s^2).

Ambient temperature and installation altitude

Operating range without restrictions:

Temperature range from -15 °C to +40 °C (5.0 °F to 104 °F), installation altitude up to 1000 m (3281 ft).

If deviating conditions are encountered, the S1 characteristic of the motor must be adapted with regard to speed and torque.

Use the following equation to calculate the reduced S1 characteristic:
$S1_{red}\,(n) = x_D \times S1_{40°C;\ 1000m}\,(n/x_D)$

Installation altitude above sea level	Derating factor x_D at an ambient temperature of				
m (ft)	30 °C (86 °F)	40 °C (104 °F)	45 °C (113 °F)	50 °C (122 °F)	55 °C (131 °F)
1000 (3281)	1.05	1	0.95	0.89	0.84
2000 (6562)	1	0.95	0.86	0.8	0.73
3000 (9843)	0.95	0.89	0.76	0.69	0.62
4000 (13123)	0.89	0.84	0.65	0.57	0.47

Encoder systems

In motors with integrated OCC/DRIVE-CLiQ interface, the sensor signal is already digitally prepared in the motor, and then transferred quickly and without loss to the drive system. Motors with an OCC/DRIVE-CLiQ interface simplify commissioning and diagnostics, as the motor parameters and encoder system are identified automatically.

Singleturn absolute encoder

This encoder outputs an absolute angular position between 0° and 360° in the specified resolution. In contrast to the multiturn absolute encoder, it does not have a revolution counter, and can therefore only supply the position value within one revolution. It does not have a traversing range.

Multiturn absolute encoder

This encoder outputs an absolute angular position between 0° and 360° in the specified resolution. It can also count 4096 revolutions. So with a ball screw, for example, the absolute position of the slide can be determined over a longer distance.

14th position in the Article No. of the motor	Designation	
1FT2 ...-.....-.**S**..	AS22DQC	Absolute encoder 22-bit singleturn (resolution 4194304)
1FT2 ...-.....-.**M**..	AM22DQC	Absolute encoder 22-bit + 12-bit multiturn (resolution 4194304, traversing range 4096 revolutions)
1FT2 ...-.....-.**B**..	AS26DQC	Absolute encoder 26-bit singleturn (resolution 67108864)
1FT2 ...-.....-.**C**..	AM26DQC	Absolute encoder 26-bit + 12-bit multiturn (resolution 67108864, traversing range 4096 revolutions)

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Technical specifications

Holding brake

Many drives need a holding brake with an EMERGENCY STOP function for safety reasons or to meet process requirements. The brakes used on the SIMOTICS S-1FT2 motors function according to the closed-circuit principle. A spring or permanent magnet exerts a tensile force on the brake armature disk, i.e. in a state of zero current, the brake is closed and the motor shaft thereby stopped.

An electric current that flows through a coil generates an opposing field that counteracts the force effect of the spring or permanent magnet and releases or holds open the brake. Only a limited number of braking operations can be performed for an EMERGENCY STOP or power failure without causing excessive wear on the holding brake. The holding brake is not an operational brake. Regular dynamic braking leads to increased wear and premature brake failure. In order to ensure the functionality and specification of the brake, neither the total operating energy nor the maximum switching energy per braking operation may be exceeded. For the 1FT2108, 1FT2208-2, 1FT2208-3, 1FT2210-2 and 1FT2210-3 motors, a reinforced holding brake is also available.

The brake control is already fully integrated into the SINAMICS S210 converter system, so that an external circuit is not necessary.

After an EMERGENCY STOP sequence with the maximum single switching energy, a cooling time of at least 5 minutes must be allowed.

The following table contains technical specifications of the holding brakes for operating on a SINAMICS S210 (for 1-AC converters, hardware version 2 or higher) and firmware V5.2 or higher.

Motor	Shaft height	Holding torque at 120 °C (248 °F)	Average dynamic braking torque at 120 °C (248 °F)	Maximum dynamic braking torque at 120 °C (248 °F)	Opening time	Closing time	Maximum permissible single switching energy	Total operating energy (service life)	Holding current	Break-induced current, typ. [1] for 500 ms
		Nm (lb_f-ft)	Nm (lb_f-ft)	Nm (lb_f-ft)	ms	ms	J	kJ	A	A
Spring-loaded brake, maximum backlash 1°										
1FT2102	20	0.32 (0.24)	0.32 (0.24)	1 (0.74)	25	20	7.4	1.75	0.1	0.6
1FT2.03	30	1.3 (0.96)	1.3 (0.96)	3.9 (2.88)	40	30	62	17.5	0.15	0.8
1FT2.04	40	3.3 (2.43)	3.3 (2.43)	9 (6.64)	50	40	270	120	0.2	1.2
Permanent magnet brake, backlash-free										
1FT2.05	48/52	8 (5.90)	5 (3.69)	18 (13.3)	35	20	570	284	0.3	1.1
1FT2106	63	16 (11.8)	9 (6.64)	35 (25.8)	70	35	1065	774	0.35	1.1
1FT2206	63	13 (9.59)	6.5 (4.79)	35 (25.8)	70	35	1550	774	0.35	1.1
1FT2108	80	36 (26.6)	15 (11.06)	70 (51.6)	120	40	1300	2400	0.5	1.4
1FT2208-2	80	19 (14.0)	12 (8.85)	37 (27.3)	70	35	2000	1800	0.4	1.2
1FT2208-3	80	19 (14.0)	12 (8.85)	37 (27.3)	70	35	2000	1800	0.4	1.2
1FT2208-4	80	32 (23.6)	17 (12.5)	70 (51.6)	120	40	4800	2400	0.5	1.4
1FT2208-5	80	32 (23.6)	17 (12.5)	70 (51.6)	120	40	4800	2400	0.5	1.4
1FT2210-2	100	32 (23.6)	17 (12.5)	70 (51.6)	120	40	6600	2400	0.5	1.4
1FT2210-3	100	32 (23.6)	17 (12.5)	70 (51.6)	120	40	6600	2400	0.5	1.4
1FT2210-4	100	55 (40.6)	26 (19.2)	100 (73.8)	130	65	8700	3800	0.5	1.5
1FT2210-5	100	55 (40.6)	26 (19.2)	100 (73.8)	130	65	8700	3800	0.5	1.5
Reinforced permanent magnet brake, backlash-free										
1FT2108	80	32 (23.6)	17 (12.5)	70 (51.6)	120	40	4800	2400	0.5	1.4
1FT2208-2	80	32 (23.6)	17 (12.5)	70 (51.6)	120	40	4800	2400	0.5	1.4
1FT2208-3	80	32 (23.6)	17 (12.5)	70 (51.6)	120	40	4800	2400	0.5	1.4
1FT2210-2	100	55 (40.6)	26 (19.2)	100 (73.8)	130	65	8700	3800	0.5	1.5
1FT2210-3	100	55 (40.6)	26 (19.2)	100 (73.8)	130	65	8700	3800	0.5	1.5

[1] Typical values at an ambient temperature of 20 °C (68° F).
At -15 °C (5 °F), the break-induced currents can increase by up to 30 %.

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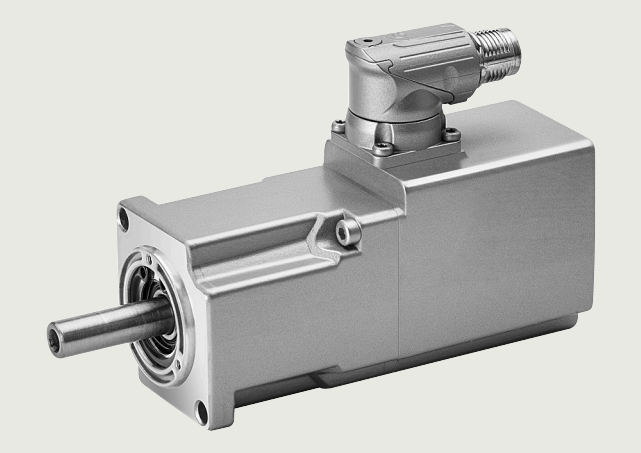
SIMOTICS S-1FT2 shaft height 20

Technical specifications

SIMOTICS S-1FT2 shaft height 20



Specific technical specifications

SIMOTICS S-1FT2 servomotors		**High Dynamic**	
Shaft height 20		**1FT2102-0AG**	**1FT2102-1AG**
Static torque M_0	Nm (lb_f-ft)	0.16 (0.12)	0.32 (0.24)
Stall current I_0	A	0.75	0.76
Maximum torque M_{max}	Nm (lb_f-ft)	0.56 (0.41)	1.11 (0.82)
Maximum current I_{max}	A	3.1	2.95
Maximum speed n_{max}	r/min	8000	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.025 (0.009)	0.036 (0.012)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.029 (0.010)	0.040 (0.014)
Weight m_{Mot}	kg (lb)	0.47 (1.04)	0.60 (1.32)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	0.73 (1.61)	0.86 (1.90)
200 ... 240 V 1 AC / 3 AC			
Rated speed n_N	r/min	3000	3000
Rated torque M_N	Nm (lb_f-ft)	0.16 (0.12)	0.32 (0.24)
Rated current I_N	A	0.75	0.76
Rated power P_N	W	50	100
Suitable for SINAMICS S210 (6SL5...) servo converters			
• 200 ... 240 V 1 AC		6SL5310-1BB10-1CF0	6SL5310-1BB10-1CF0
• 200 ... 240 V 3 AC		6SL5310-1BE10-4DF1	6SL5310-1BE10-4DF1

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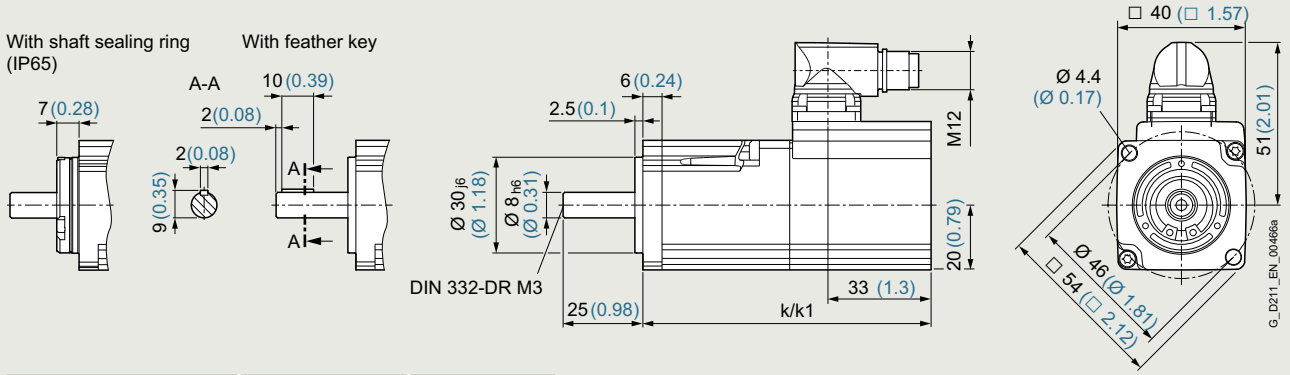
Technical specifications

Dimensional drawing

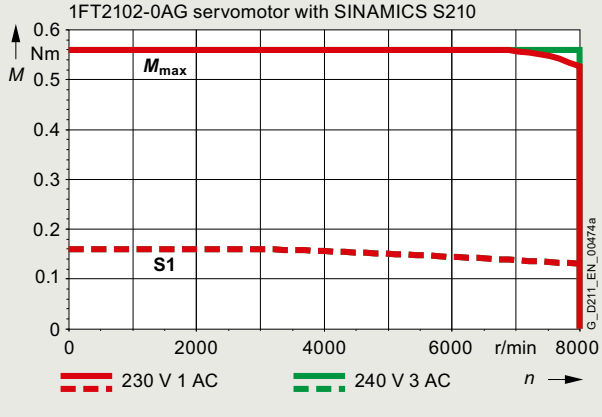


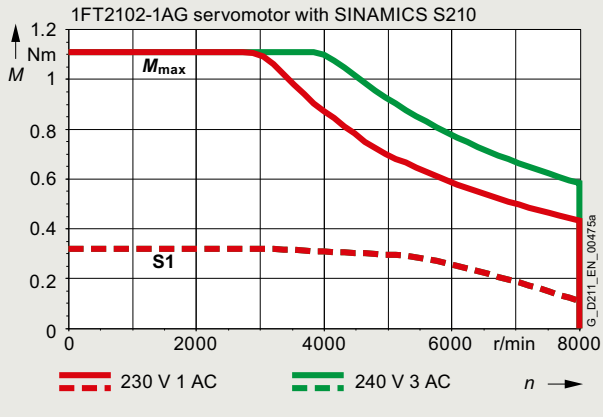
Shaft height 20 DIN IEC	Without brake k LB	With brake k1 LB1
1FT2102-0A...	90 (3.54)	121 (4.76)
1FT2102-1A...	106 (4.17)	137 (5.39)

All dimensions in mm (values in brackets are in inches).

Speed/torque characteristics

High Dynamic





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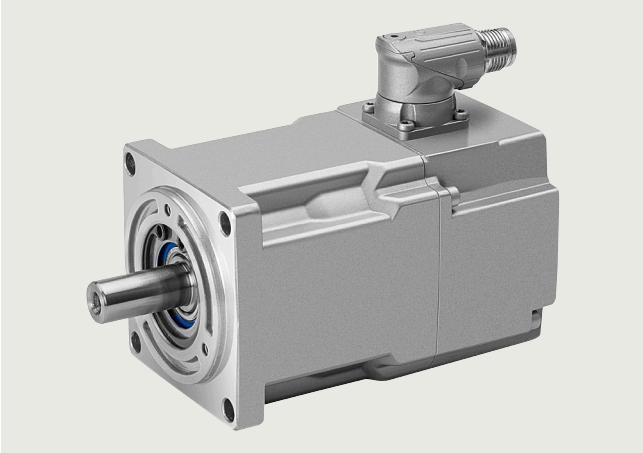
SIMOTICS S-1FT2 shaft height 30

Technical specifications

SIMOTICS S-1FT2 shaft height 30



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic				Compact			
Shaft height 30		**1FT2103-2AG**	**1FT2103-2AH**	**1FT2103-4AG**	**1FT2103-4AH**	**1FT2203-2AG**	**1FT2203-2AK**	**1FT2203-4AG**	**1FT2203-4AK**
Static torque M_0	Nm (lb_f-ft)	0.64 (0.47)	0.64 (0.47)	1.27 (0.94)	1.27 (0.94)	0.64 (0.47)	0.64 (0.47)	1.27 (0.94)	1.27 (0.94)
Stall current I_0	A	1.36	1.06	2.4	1.87	1.38	1.05	2.52	2.05
Maximum torque M_{max}	Nm (lb_f-ft)	1.95 (1.44)	1.95 (1.44)	4.05 (2.99)	4.05 (2.99)	1.85 (1.36)	1.85 (1.36)	3.75 (2.77)	3.75 (2.77)
Maximum current I_{max}	A	4.8	3.95	8.7	7.1	4.2	3.4	7.8	6.7
Maximum speed n_{max}	r/min	8000	8000	7300	8000	8000	8000	7800	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.093 (0.032)	0.093 (0.032)	0.14 (0.048)	0.14 (0.048)	0.20 (0.068)	0.20 (0.068)	0.35 (0.120)	0.35 (0.120)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.11 (0.038)	0.11 (0.038)	0.16 (0.055)	0.16 (0.055)	0.22 (0.075)	0.22 (0.075)	0.37 (0.126)	0.37 (0.126)
Weight m_{Mot}	kg (lb)	1.17 (2.58)	1.18 (2.60)	1.64 (3.62)	1.65 (3.64)	1.15 (2.54)	1.16 (2.56)	1.48 (3.26)	1.49 (3.29)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	1.54 (3.40)	1.55 (3.42)	1.98 (4.37)	1.99 (4.39)	1.52 (3.35)	1.53 (3.37)	1.96 (4.32)	1.97 (4.34)
200 ... 240 V 1 AC / 3 AC									
Rated speed n_N	r/min	3000	–	3000	–	3000	–	3000	–
Rated torque M_N	Nm (lb_f-ft)	0.64 (0.47)	–	1.27 (0.94)	–	0.64 (0.47)	–	1.27 (0.94)	–
Rated current I_N	A	1.36	–	2.4	–	1.38	–	2.52	–
Rated power P_N	W	200	–	400	–	200	–	400	–
380 ... 480 V 3 AC									
Rated speed n_N	r/min	–	4500	–	4500	–	6000	–	6000
Rated torque M_N	Nm (lb_f-ft)	–	0.59 (0.44)	–	1.01 (0.74)	–	0.405 (0.299)	–	0.68 (0.50)
Rated current I_N	A	–	1.05	–	1.56	–	0.75	–	1.24
Rated power P_N	W	–	280	–	480	–	255	–	430
Suitable for SINAMICS S210 (6SL5...) servo converters									
• 200 ... 240 V 1 AC		6SL5310-1BB10-2CF0	–	6SL5310-1BB10-4CF0	–	6SL5310-1BB10-2CF0	–	6SL5310-1BB10-4CF0	–
• 200 ... 240 V 3 AC		6SL5310-1BE10-8DF1	–	6SL5310-1BE11-0DF1	–	6SL5310-1BE10-8DF1	–	6SL5310-1BE11-0DF1	–
• 380 ... 480 V 3 AC		–	6SL5310-1BE10-4DF1	–	6SL5310-1BE10-8DF1	–	6SL5310-1BE10-4DF1	–	6SL5310-1BE10-8DF1

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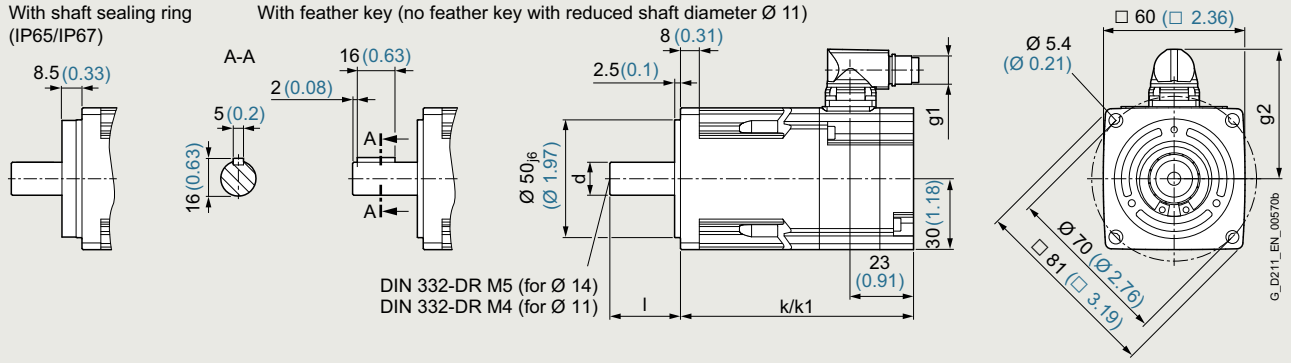
Technical specifications

Dimensional drawing

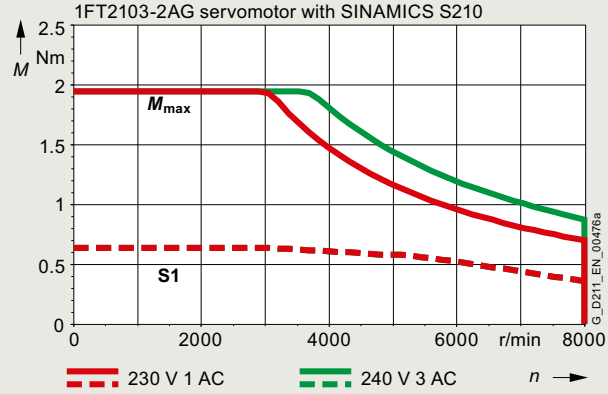


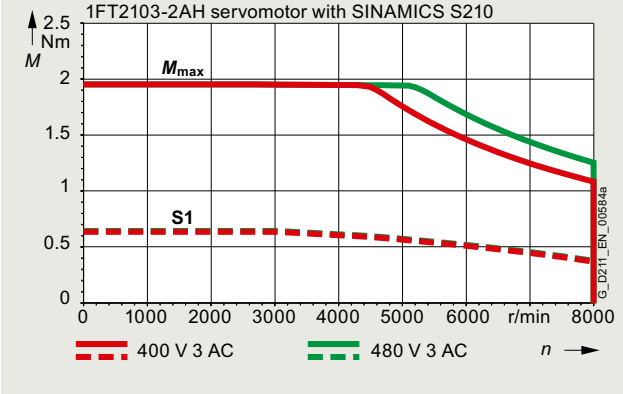
Shaft height 30	Without brake	With brake	With shaft Ø 14		With shaft Ø 11		Plug	
DIN IEC	k LB	k1 LB1	d D	l L	d D	l L	g1 G1	g2 G2
1FT2.03-2AG	99 (3.9)	131 (5.16)	Ø 14_{h6} (Ø 0.55)	30 (1.18)	Ø 11_{k6} (Ø 0.43)	23 (0.91)	M12	55 (2.17)
1FT2.03-2AH 1FT2.03-2AK							M17	60 (2.36)
1FT2.03-4AG	123 (4.84)	155 (6.1)	Ø 14_{h6} (Ø 0.55)	30 (1.18)	Ø 11_{k6} (Ø 0.43)	23 (0.91)	M12	55 (2.17)
1FT2.03-4AH 1FT2.03-4AK							M17	60 (2.36)

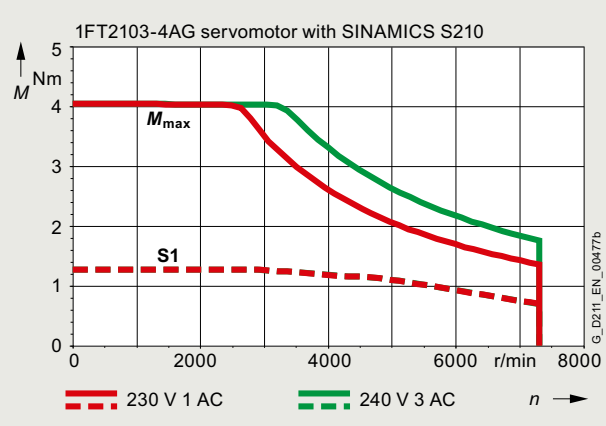
All dimensions in mm (values in brackets are in inches).

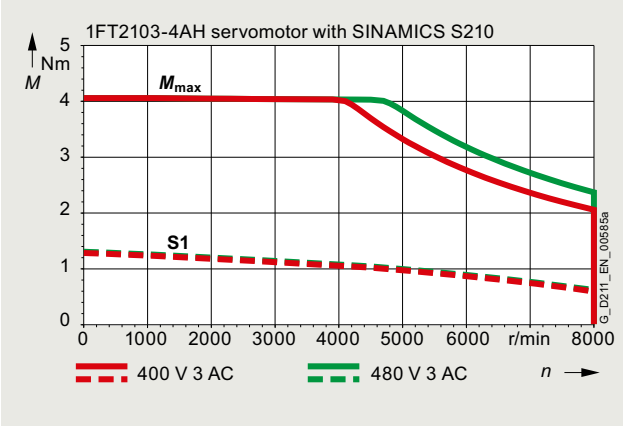
Speed/torque characteristics

High Dynamic









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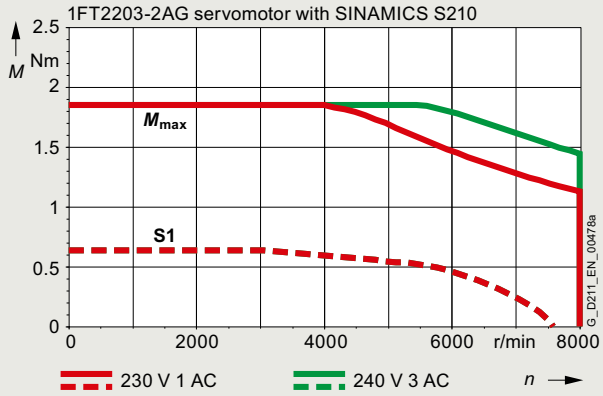
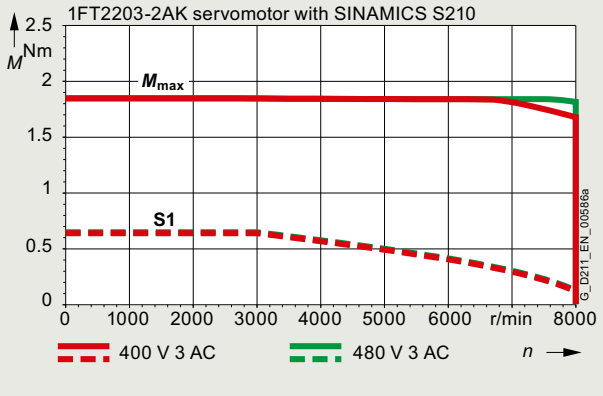
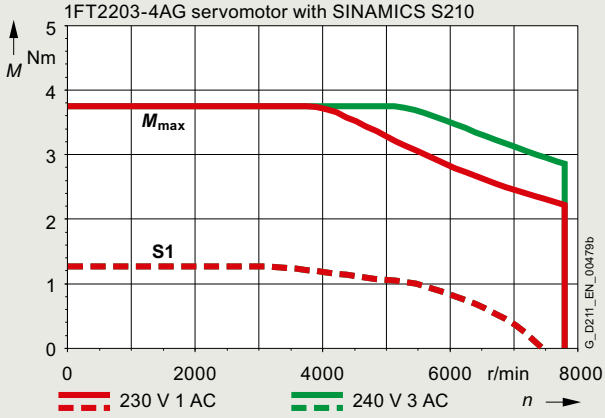
SIMOTICS S-1FT2 shaft height 30

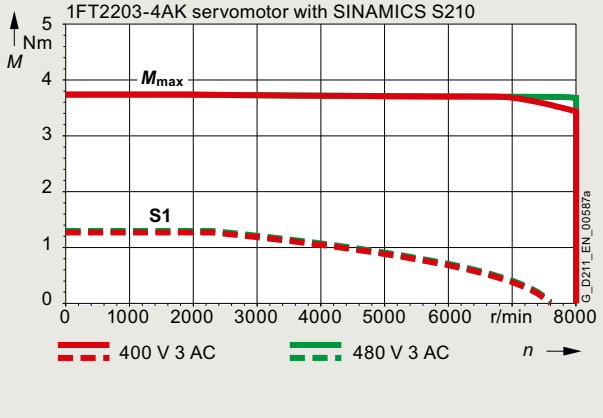
Technical specifications

Compact









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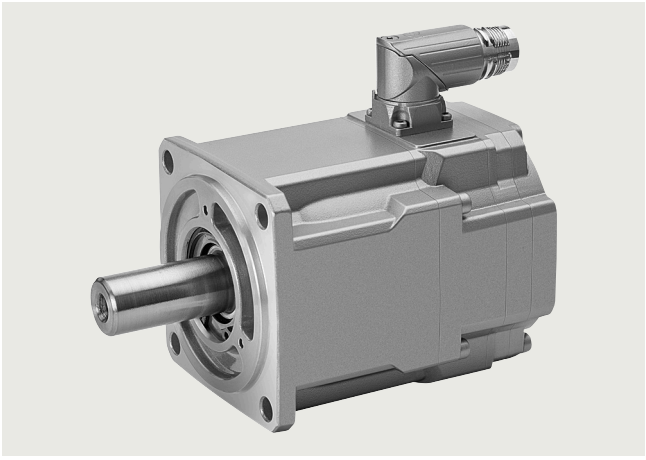
Technical specifications

SIMOTICS S-1FT2 shaft height 40



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic						Compact		
Shaft height 40		**1FT2104-4AF**	**1FT2104-4AK**	**1FT2104-5AF**	**1FT2104-5AK**	**1FT2104-6AF**	**1FT2104-6AH**	**1FT2204-5AF**	**1FT2204-5AK**	**1FT2204-6AF**
Static torque M_0	Nm (lb_f-ft)	1.27 (0.94)	1.27 (0.94)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)	3.6 (2.66)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)
Stall current I_0	A	1.19	2.4	2.1	4.4	3	4.95	2.25	4.4	3
Maximum torque M_{max}	Nm (lb_f-ft)	3.75 (2.77)	3.85 (2.84)	7.5 (5.53)	7.6 (5.61)	10 (7.38)	10 (7.38)	7.1 (5.24)	7.1 (5.24)	9.5 (7.01)
Maximum current I_{max}	A	4.2	8.7	7.6	16	10.9	16.3	7.1	14.2	9.9
Maximum speed n_{max}	r/min	7200	8000	6700	8000	7200	9000	7500	8000	7600
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.35 (0.120)	0.35 (0.120)	0.56 (0.191)	0.56 (0.191)	0.76 (0.260)	0.76 (0.260)	1.2 (0.410)	1.2 (0.410)	1.6 (0.547)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.43 (0.147)	0.43 (0.147)	0.65 (0.222)	0.65 (0.222)	0.84 (0.287)	0.84 (0.287)	1.3 (0.444)	1.3 (0.444)	1.7 (0.581)
Weight m_{Mot}	kg (lb)	2.1 (4.63)	2.1 (4.63)	2.9 (6.39)	2.9 (6.39)	3.4 (7.50)	3.4 (7.50)	2.9 (6.39)	2.9 (6.39)	3.5 (7.72)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	2.9 (6.39)	2.9 (6.39)	3.7 (8.16)	3.7 (8.16)	4.3 (9.48)	4.3 (9.48)	3.8 (8.38)	3.8 (8.38)	4.4 (9.70)
200 ... 240 V 1 AC / 3 AC										
Rated speed n_N	r/min	1500	3000	1500	3000	1500	2500	1500	3000	1500
Rated torque M_N	Nm (lb_f-ft)	1.27 (0.94)	1.27 (0.94)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)	3.25 (2.40)	2.4 (1.77)	2.4 (1.77)	3.2 (2.36)
Rated current I_N	A	1.19	2.4	2.1	4.4	3	4.6	2.25	4.4	3
Rated power P_N	W	200	400	375	750	500	860	375	750	500
380 ... 480 V 3 AC										
Rated speed n_N	r/min	3000	6000	3000	6000	3000	4500	3000	6000	3000
Rated torque M_N	Nm (lb_f-ft)	1.27 (0.94)	0.95 (0.70)	2.4 (1.77)	1.7 (1.25)	3.2 (2.36)	2.8 (2.07)	2.4 (1.77)	0.9 (0.66)	3.2 (2.36)
Rated current I_N	A	1.19	1.88	2.1	3.20	3	4	2.25	1.95	3
Rated power P_N	W	400	600	750	1070	1000	1320	750	570	1000
Suitable for SINAMICS S210 (6SL5...) servo converters										
• 200 ... 240 V 1 AC		6SL5310-1BB10-2CF0	6SL5310-1BB10-4CF0	6SL5310-1BB10-4CF0	6SL5310-1BB10-8CF0	6SL5310-1BB10-8CF0	–	6SL5310-1BB10-4CF0	6SL5310-1BB10-8CF0	6SL5310-1BB10-8CF0
• 200 ... 240 V 3 AC		6SL5310-1BE10-4DF1	6SL5310-1BE11-0DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE10-4DF1	6SL5310-1BE11-0DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE10-8DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-0DF1

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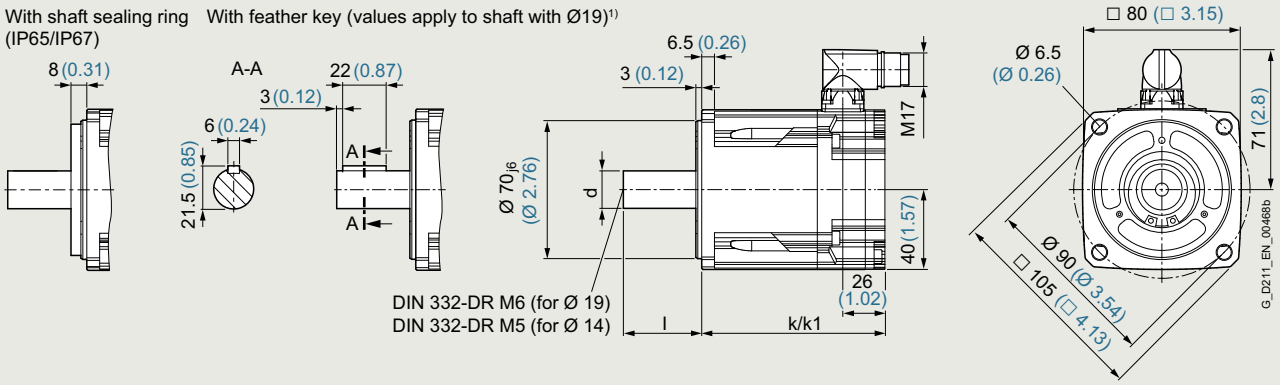
SIMOTICS S-1FT2 shaft height 40

Technical specifications

Dimensional drawing



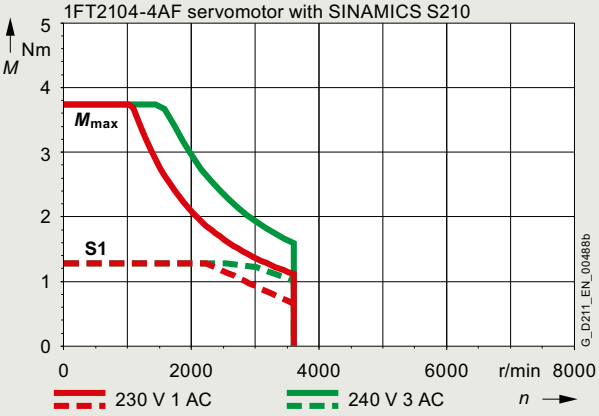
Shaft height 40 DIN IEC	Without brake k LB	With brake k1 LB1	With shaft Ø 19 d D	l L	With shaft Ø 14 d D	l L
1FT2.04-4A...	98 (3.86)	142 (5.59)				
1FT2.04-5A...	126 (4.96)	170 (6.69)	Ø 19_{k6} (Ø 0.75)	40 (1.57)	Ø 14_{k6} (Ø 0.55)	30 (1.18)
1FT2.04-6A...	144 (5.67)	188 (7.4)				

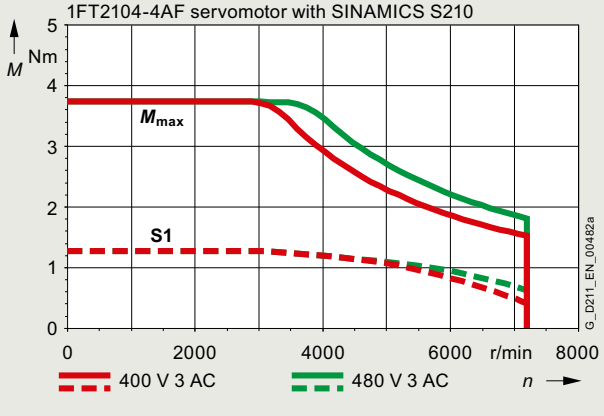
1) Dimensions for feather key with reduced shaft diameter Ø14, see dimensional drawing 1F.203

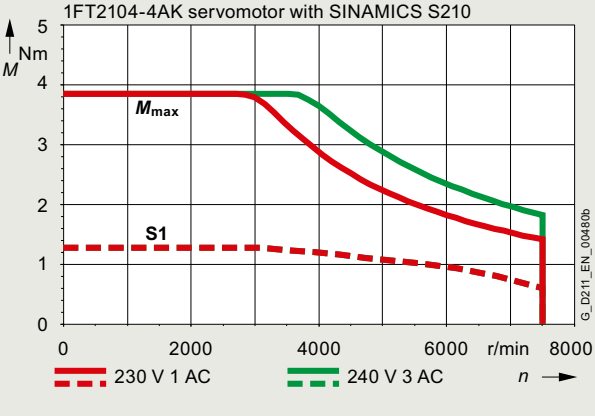
All dimensions in mm (values in brackets are in inches).

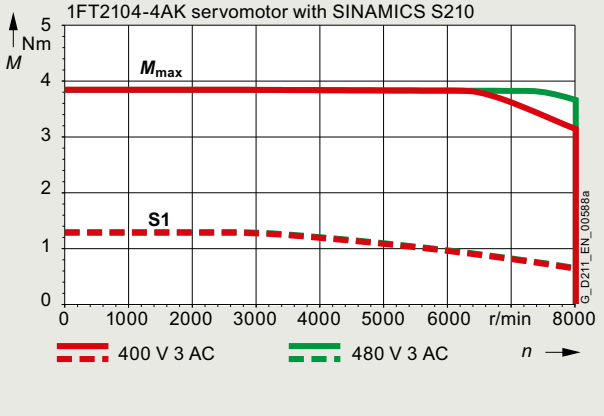
Speed/torque characteristics

High Dynamic









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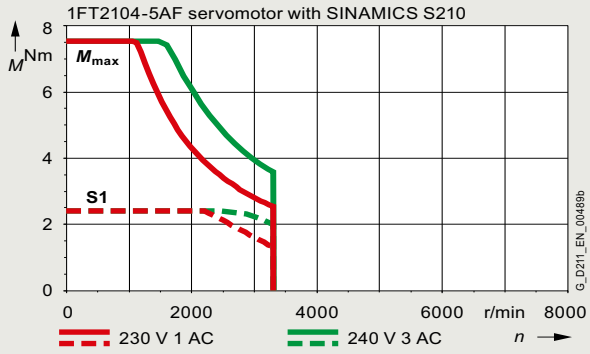
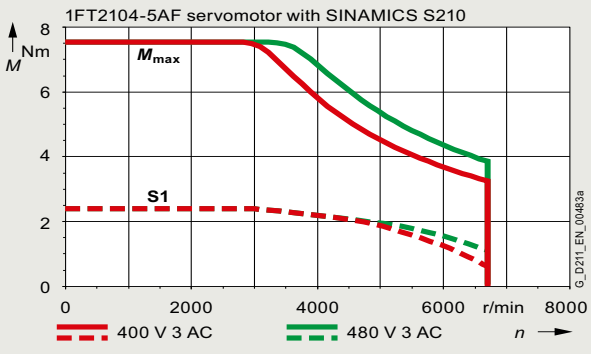
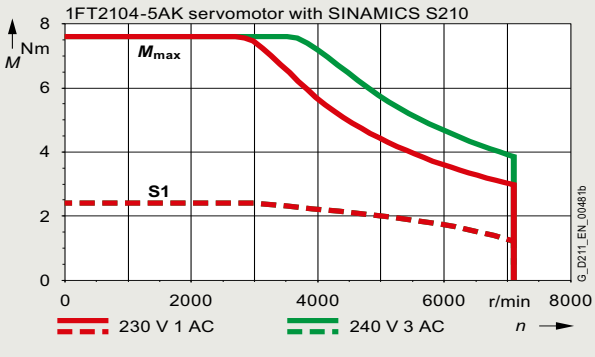
Technical specifications

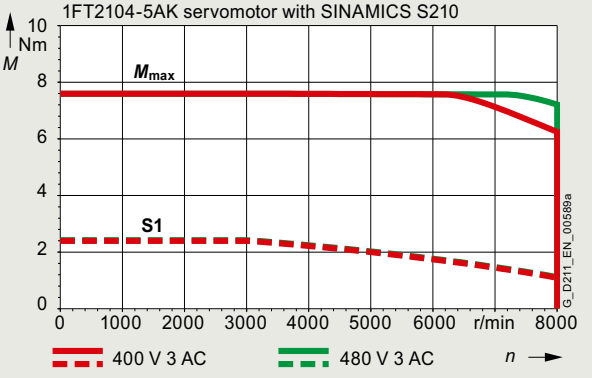
Speed/torque characteristics (continued)

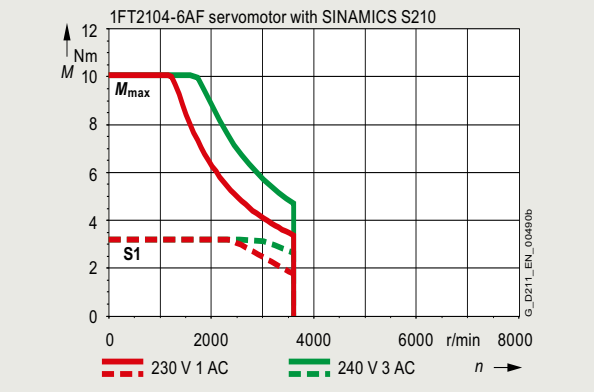
High Dynamic (continued)

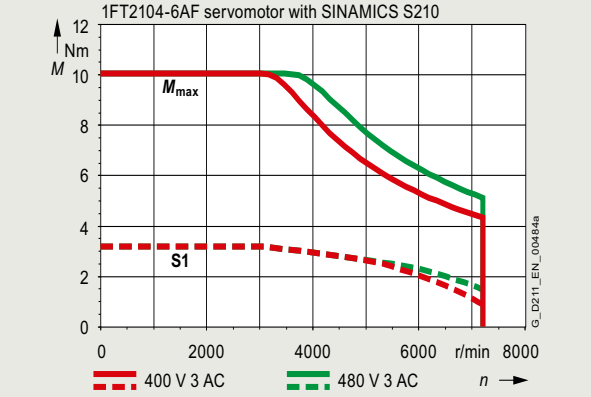


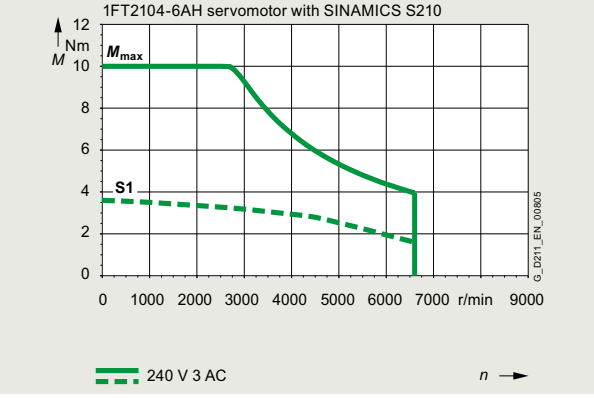


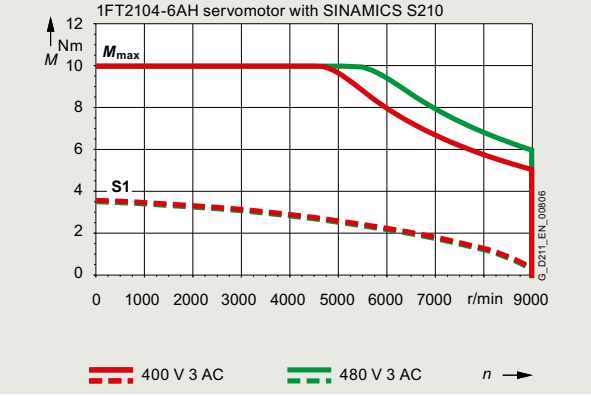












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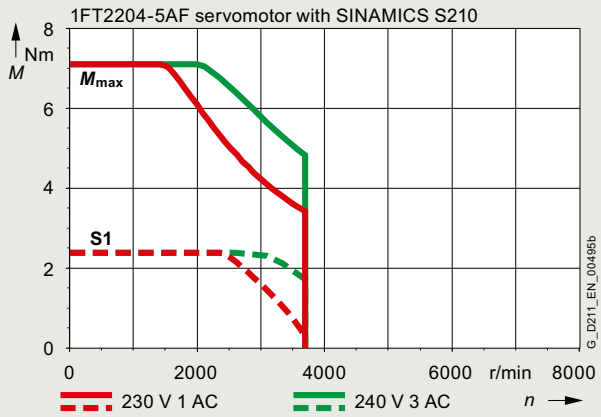
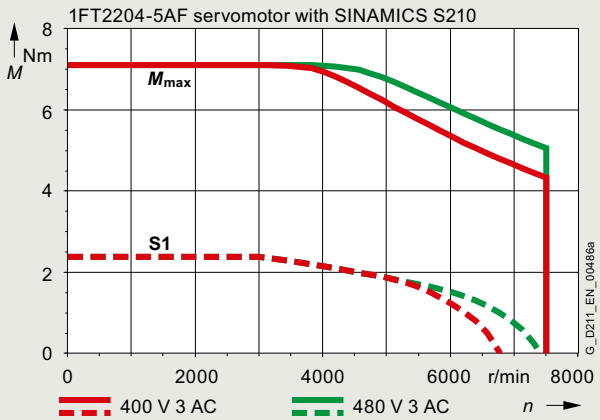
SIMOTICS S-1FT2 shaft height 40

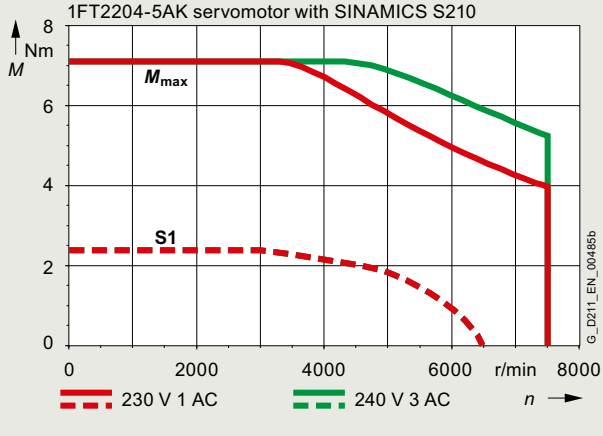
Technical specifications

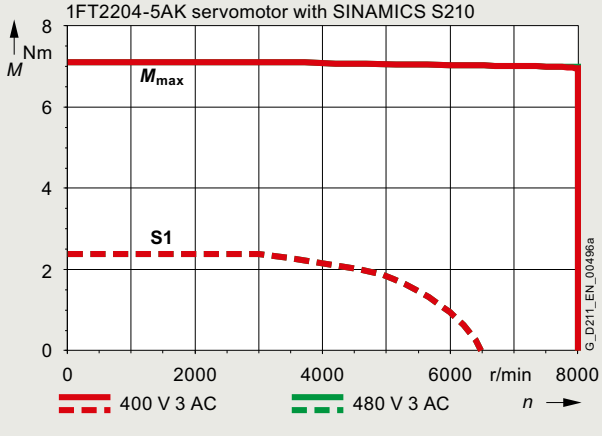
Speed/torque characteristics (continued)

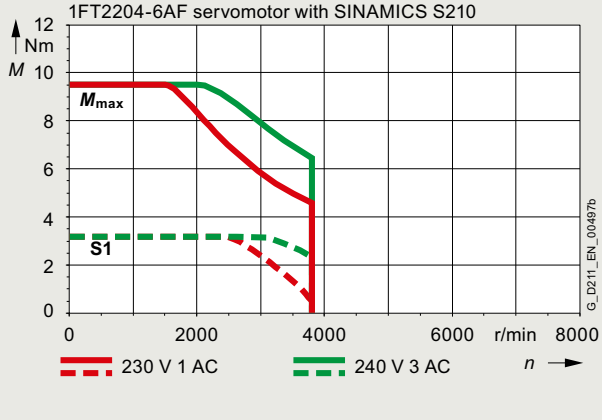
Compact

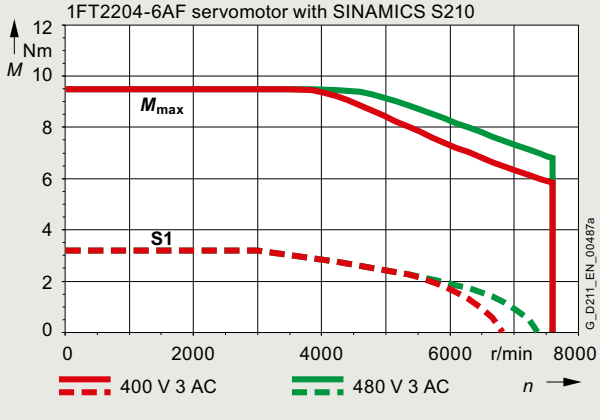












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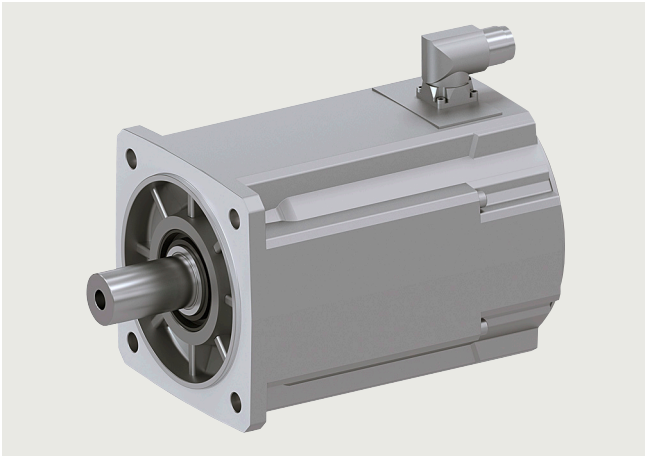
Technical specifications

SIMOTICS S-1FT2 shaft height 48



Specific technical specifications

SIMOTICS S-1FT2 servomotors		Compact			
Shaft height 48		**1FT2205-2AC**	**1FT2205-2AF**	**1FT2205-2AH**	**1FT2205-4AF**
Static torque M_0	Nm (lb_f-ft)	3.6 (2.66)	3.6 (2.66)	3.6 (2.66)	6 (4.43)
Stall current I_0	A	1.84	2.9	3.8	4.7
Maximum torque M_{max}	Nm (lb_f-ft)	10.8 (7.97)	10.8 (7.97)	10.8 (7.97)	18 (13.28)
Maximum current I_{max}	A	6	9.5	12.1	15.1
Maximum speed n_{max}	r/min	4850	6500	8300	6200
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	3.2 (1.093)	3.2 (1.093)	3.2 (1.093)	5.1 (1.743)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	4.1 (1.401)	4.1 (1.401)	4.1 (1.401)	6.0 (2.050)
Weight m_{Mot}	kg (lb)	3.8 (8.38)	3.8 (8.38)	3.8 (8.38)	5.2 (11.47)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	4.8 (10.58)	4.8 (10.58)	4.8 (10.58)	6.2 (13.67)
200 ... 240 V 1 AC / 3 AC					
Rated speed n_N	r/min	1000	1500	2500	1500
Rated torque M_N	Nm (lb_f-ft)	3.45 (2.54)	3.4 (2.51)	3.15 (2.33)	5.5 (4.06)
Rated current I_N	A	1.79	2.8	3.45	4.35
Rated power P_N	W	360	530	820	860
380 ... 480 V 3 AC					
Rated speed n_N	r/min	2000	3000	4500	3000
Rated torque M_N	Nm (lb_f-ft)	3.3 (2.43)	3 (2.21)	2.3 (1.70)	4.6 (3.39)
Rated current I_N	A	1.74	2.5	2.55	3.75
Rated power P_N	W	690	940	1100	1450
Suitable for SINAMICS S210 (6SL5...) servo converters					
• 200 ... 240 V 1 AC		6SL5310-1BB10-8CF0	6SL5310-1BB10-8CF0	6SL5310-1BB10-8CF0	–
• 200 ... 240 V 3 AC		6SL5310-1BE10-8DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-5DF1
• 380 ... 480 V 3 AC		6SL5310-1BE10-8DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-5DF1

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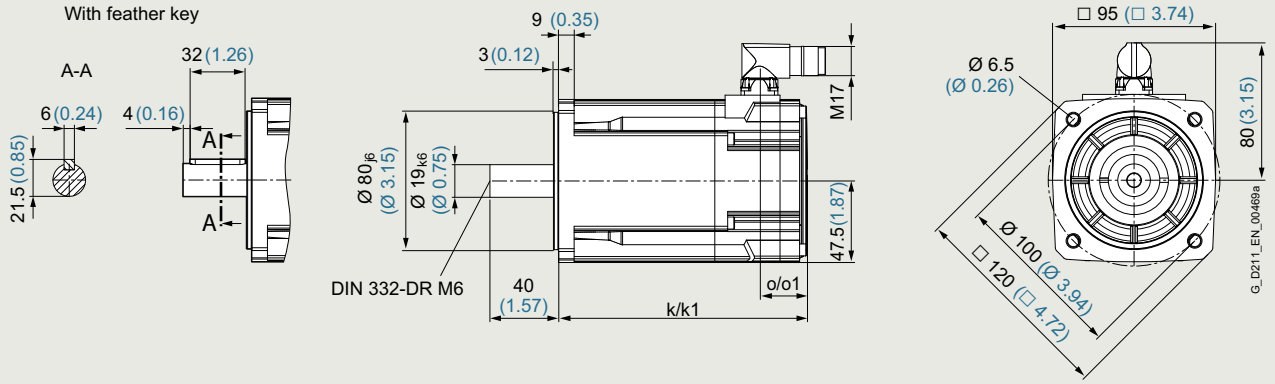
SIMOTICS S-1FT2 shaft height 48

Technical specifications

Dimensional drawing

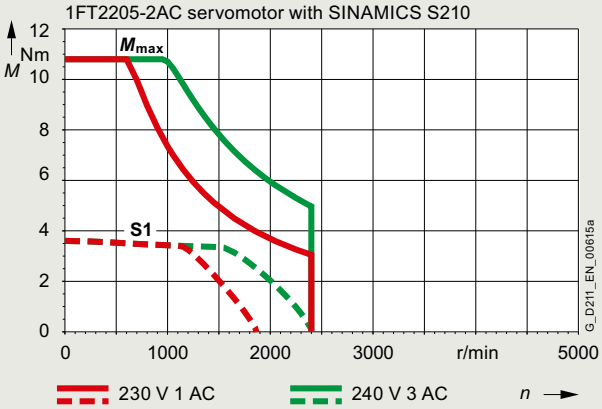


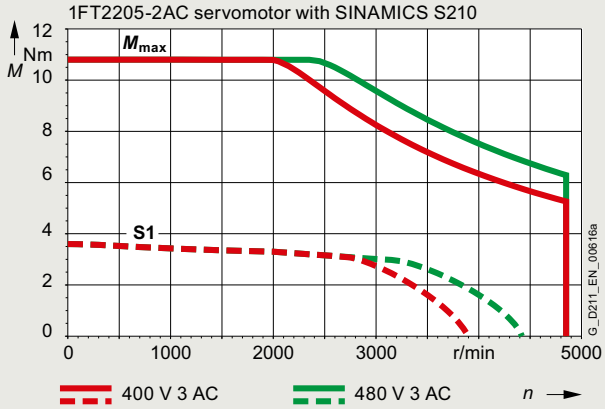
Shaft height 48 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FT2205-2A...	145 (5.71)	188 (7.4)	28 (1.1)	34 (1.34)
1FT2205-4A...	177 (6.97)	220 (8.66)		

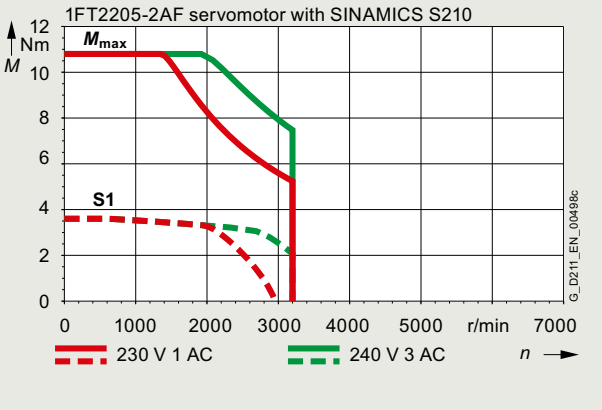
All dimensions in mm (values in brackets are in inches).

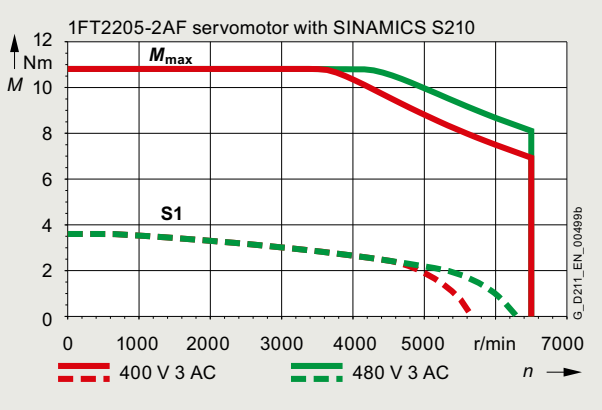
Speed/torque characteristics

Compact









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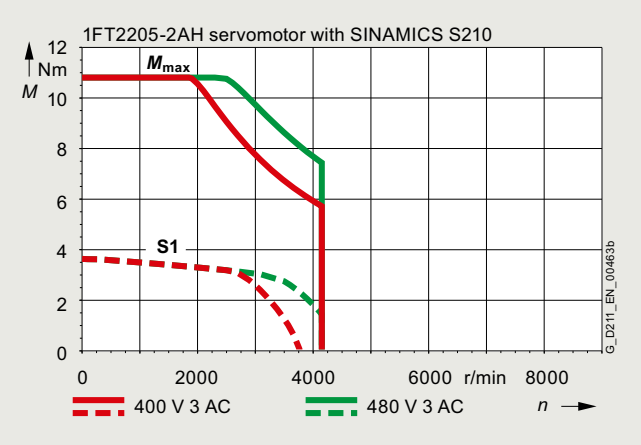
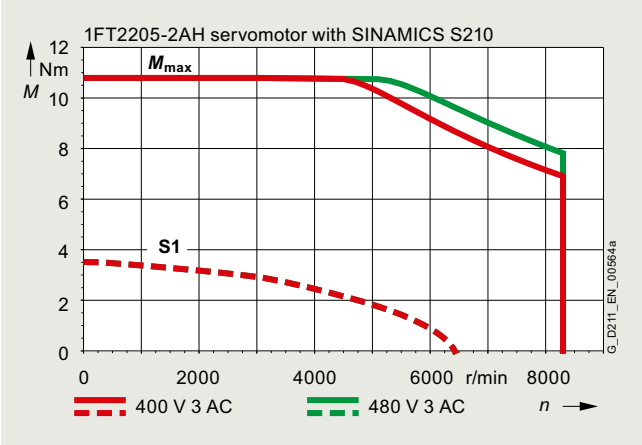
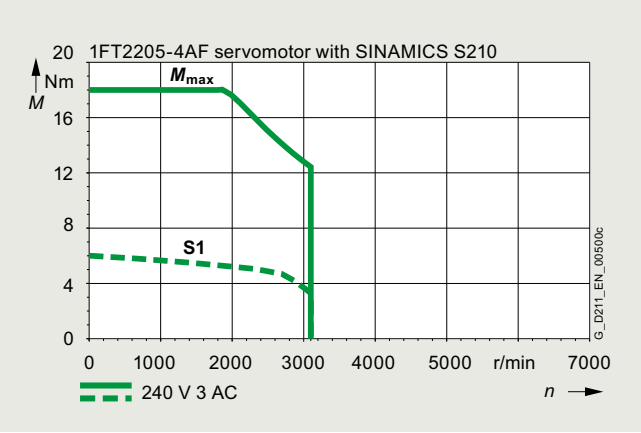
Technical specifications

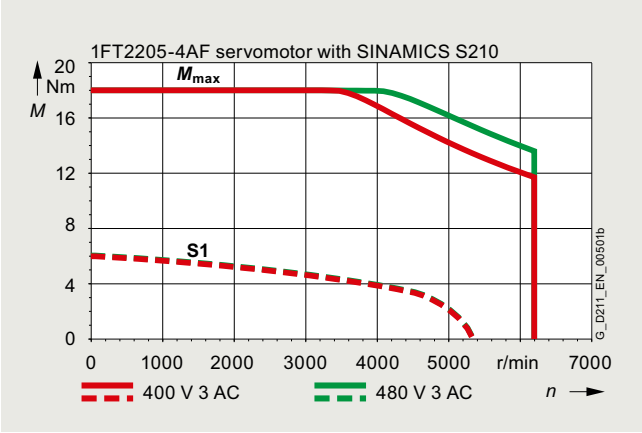
Speed/torque characteristics (continued)

Compact (continued)









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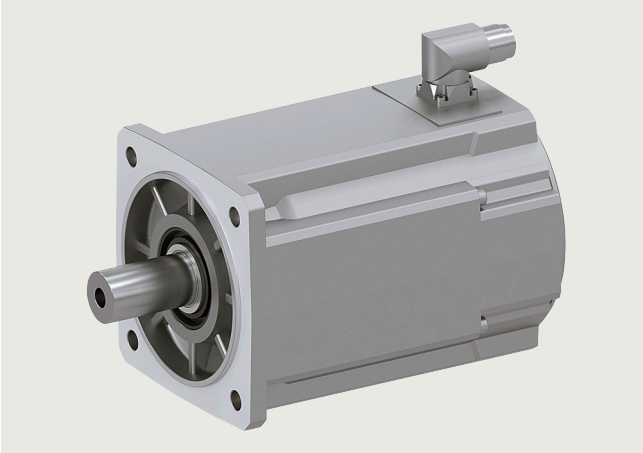
SIMOTICS S-1FT2 shaft height 52

Technical specifications

SIMOTICS S-1FT2 shaft height 52



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic		
Shaft height 52		**1FT2105-4AF**	**1FT2105-4AH**	**1FT2105-6AF**
Static torque M_0	Nm (lb_f-ft)	5 (3.69)	5 (3.69)	8 (5.90)
Stall current I_0	A	4.65	6.9	6.7
Maximum torque M_{max}	Nm (lb_f-ft)	15 (11.06)	15 (11.06)	24 (17.70)
Maximum current I_{max}	A	18	27	24
Maximum speed n_{max}	r/min	7400	9000	6600
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	1.7 (0.581)	1.7 (0.581)	2.7 (0.923)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	2.6 (0.888)	2.6 (0.888)	3.5 (1.196)
Weight m_{Mot}	kg (lb)	5.6 (12.35)	5.6 (12.35)	7.7 (16.98)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	6.6 (14.55)	6.6 (14.55)	8.7 (19.18)
200 ... 240 V 3 AC				
Rated speed n_N	r/min	1500	2500	1500
Rated torque M_N	Nm (lb_f-ft)	5 (3.69)	4.85 (3.58)	8 (5.90)
Rated current I_N	A	4.65	6.9	6.7
Rated power P_N	W	790	1270	1260
380 ... 480 V 3 AC				
Rated speed n_N	r/min	3000	4500	3000
Rated torque M_N	Nm (lb_f-ft)	4.6 (3.39)	3.7 (2.73)	6.6 (4.87)
Rated current I_N	A	4.35	5.4	5.6
Rated power P_N	W	1450	1740	2100
Suitable for SINAMICS S210 (6SL5...) servo converters				
• 200 ... 240 V 3 AC		6SL5310-1BE11-5DF1	6SL5310-1BE13-5DF1	6SL5310-1BE12-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE11-5DF1	6SL5310-1BE13-5DF1	6SL5310-1BE12-0DF1

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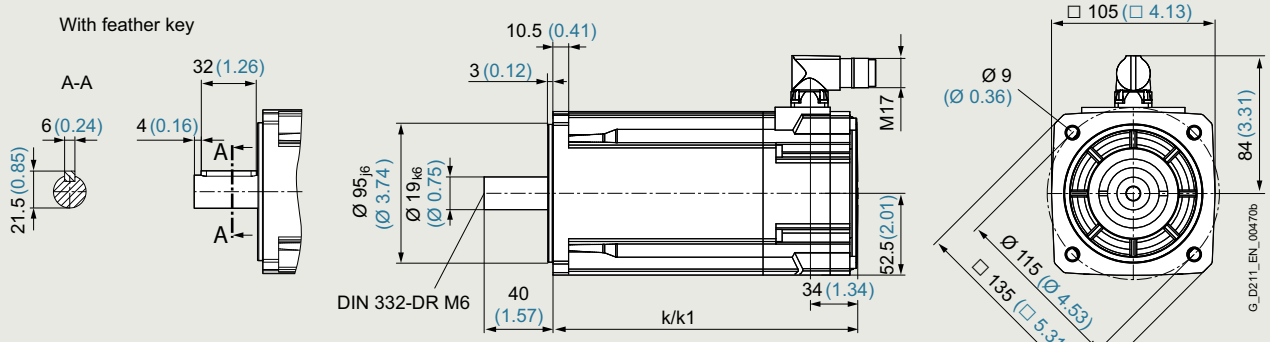
Technical specifications

Dimensional drawing

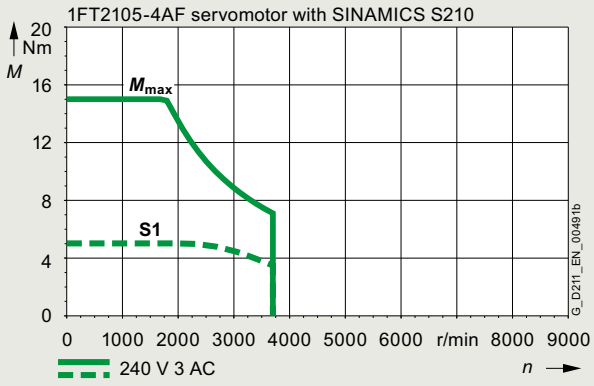


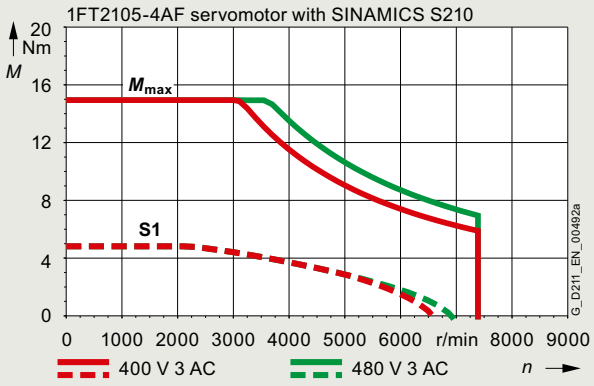
Shaft height 52 DIN IEC	Without brake k LB	With brake k1 LB1
1FT2105-4A...	173 (6.81)	200 (7.87)
1FT2105-6A...	215 (8.46)	242 (9.53)

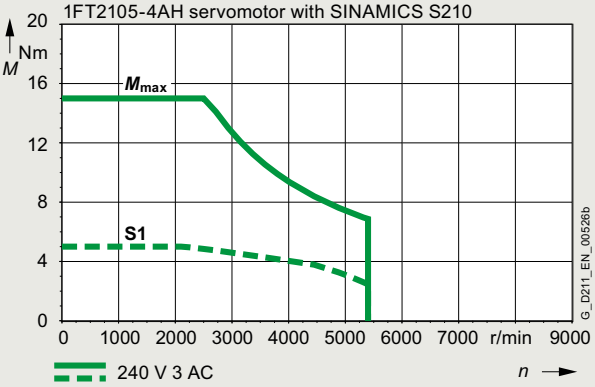
All dimensions in mm (values in brackets are in inches).

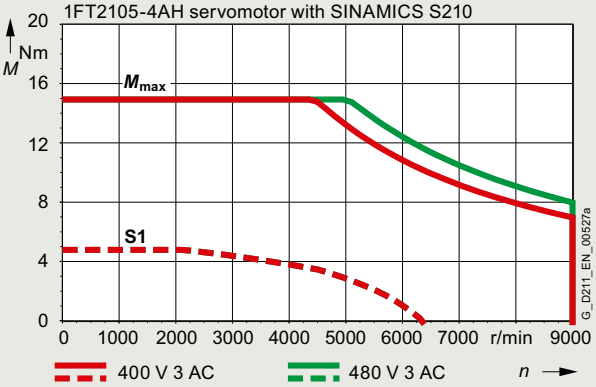
Speed/torque characteristics

High Dynamic









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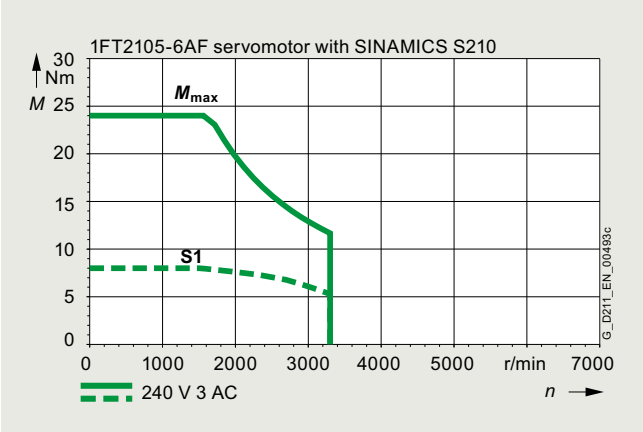
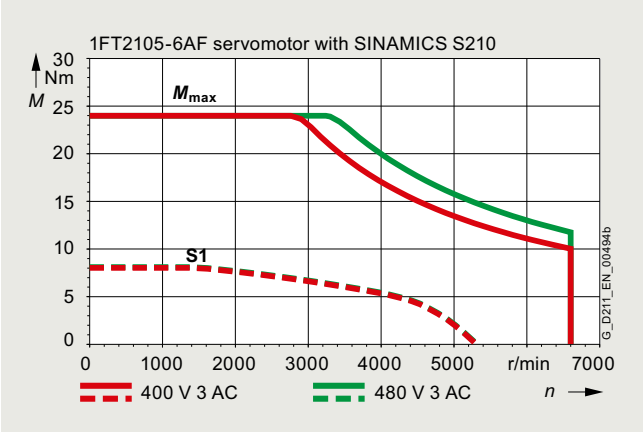
SIMOTICS S-1FT2 shaft height 52

Technical specifications

Speed/torque characteristics (continued)

High Dynamic (continued)





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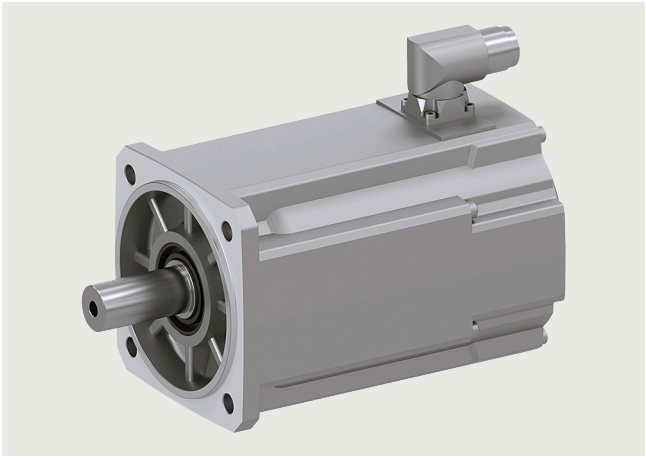
Technical specifications

SIMOTICS S-1FT2 shaft height 63



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic			Compact		
Shaft height 63		**1FT2106-3AF**	**1FT2106-4AF**	**1FT2106-6AF**	**1FT2206-2AC**	**1FT2206-2AF**	**1FT2206-2AH**
Static torque M_0	Nm (lb_f-ft)	9 (6.64)	12 (8.85)	16 (11.80)	6 (4.43)	6.5 (4.79)	6.5 (4.79)
Stall current I_0	A	9.2	10.7	14.3	2.8	5	6.5
Maximum torque M_{max}	Nm (lb_f-ft)	26 (19.18)	33 (24.34)	45.5 (33.56)	18 (13.28)	18 (13.28)	18 (13.28)
Maximum current I_{max}	A	43	42	49	10.3	17.8	22.5
Maximum speed n_{max}	r/min	8000	7800	7600	4300	6800	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	4.6 (1.572)	6.0 (2.050)	8.7 (2.973)	7.8 (2.665)	7.8 (2.665)	7.8 (2.665)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	6.3 (2.153)	7.6 (2.597)	10 (3.417)	9.4 (3.212)	9.4 (3.212)	9.4 (3.212)
Weight m_{Mot}	kg (lb)	7.4 (16.32)	9,0 (19.85)	12 (26.46)	6.3 (13.89)	6.3 (13.89)	6.3 (13.89)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	9,0 (19.85)	11 (24.26)	13 (28.67)	7.9 (17.42)	7.9 (17.42)	7.9 (17.42)
200 ... 240 V 3 AC							
Rated speed n_N	r/min	1500	1500	1500	1000	1500	2500
Rated torque M_N	Nm (lb_f-ft)	8.3 (6.12)	10.5 (7.74)	13.8 (10.18)	5.85 (4.31)	6.1 (4.50)	5.5 (4.06)
Rated current I_N	A	8.7	9.6	12.5	3.75	4.8	5.7
Rated power P_N	W	1300	1640	2150	610	970	1450
380 ... 480 V 3 AC							
Rated speed n_N	r/min	3000	3000	3000	2000	3000	4500
Rated torque M_N	Nm (lb_f-ft)	7.3 (5.38)	8.6 (6.34)	10.6 (7.82)	5.5 (4.06)	5.4 (3.98)	3.9 (2.90)
Rated current I_N	A	7.9	8.1	9.7	2.8	4.35	4.1
Rated power P_N	W	2300	2700	3300	1150	1710	1800
Suitable for SINAMICS S210 (6SL5...) servo converters							
• 200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE11-5DF1
• 380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE11-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE12-0DF1

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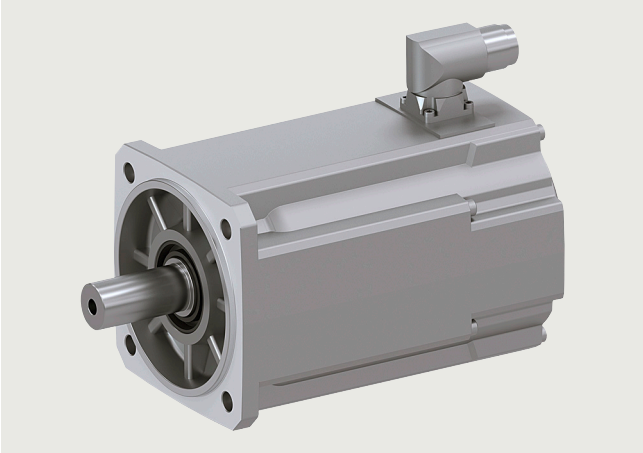
SIMOTICS S-1FT2 shaft height 63

Technical specifications

SIMOTICS S-1FT2 shaft height 63 (continued)



Specific technical specifications (continued)

SIMOTICS S-1FT2 servomotors		Compact				
Shaft height 63		**1FT2206-3AB**	**1FT2206-3AF**	**1FT2206-4AC**	**1FT2206-4AF**	**1FT2206-4AH**
Static torque M_0	Nm (lb_f-ft)	9 (6.64)	9 (6.64)	12 (8.85)	12 (8.85)	12 (8.85)
Stall current I_0	A	3.15	5.4	4.5	7.9	12
Maximum torque M_{max}	Nm (lb_f-ft)	27 (19.92)	27 (19.92)	38 (28.03)	36 (26.55)	36 (26.55)
Maximum current I_{max}	A	11.4	19.7	17	29.5	44
Maximum speed n_{max}	r/min	3300	5700	3300	5800	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	12 (4.100)	12 (4.100)	15.1 (5.160)	15 (5.126)	15 (5.126)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	13 (4.442)	13 (4.442)	16.8 (5.741)	17 (5.809)	17 (5.809)
Weight m_{Mot}	kg (lb)	7.4 (16.32)	7.4 (16.32)	8.9 (19.62)	8.9 (19.62)	8.9 (19.62)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	9 (19.85)	9 (19.85)	10.6 (23.37)	11 (24.26)	11 (24.26)
200 ... 240 V 3 AC						
Rated speed n_N	r/min	750	1500	1000	1500	2500
Rated torque M_N	Nm (lb_f-ft)	8.7 (6.42)	8.2 (6.05)	11.5 (8.48)	10.9 (8.04)	9.3 (6.86)
Rated current I_N	A	3.05	5.0	4.32	7.3	9.8
Rated power P_N	W	680	1290	1200	1720	2400
380 ... 480 V 3 AC						
Rated speed n_N	r/min	1500	3000	2000	3000	4500
Rated torque M_N	Nm (lb_f-ft)	8.3 (6.12)	7.5 (5.53)	10.5 (7.74)	9.1 (6.71)	4.7 (3.47)
Rated current I_N	A	2.9	4.65	4.1	6.2	5.2
Rated power P_N	W	1300	2350	2200	2850	2200
Suitable for SINAMICS S210 (6SL5...) servo converters						
• 200 ... 240 V 3 AC		6SL5310-1BE11-5DF1	6SL5310-1BE12-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE11-5DF1	6SL5310-1BE12-0DF1	6SL5310-1BE11-5DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1

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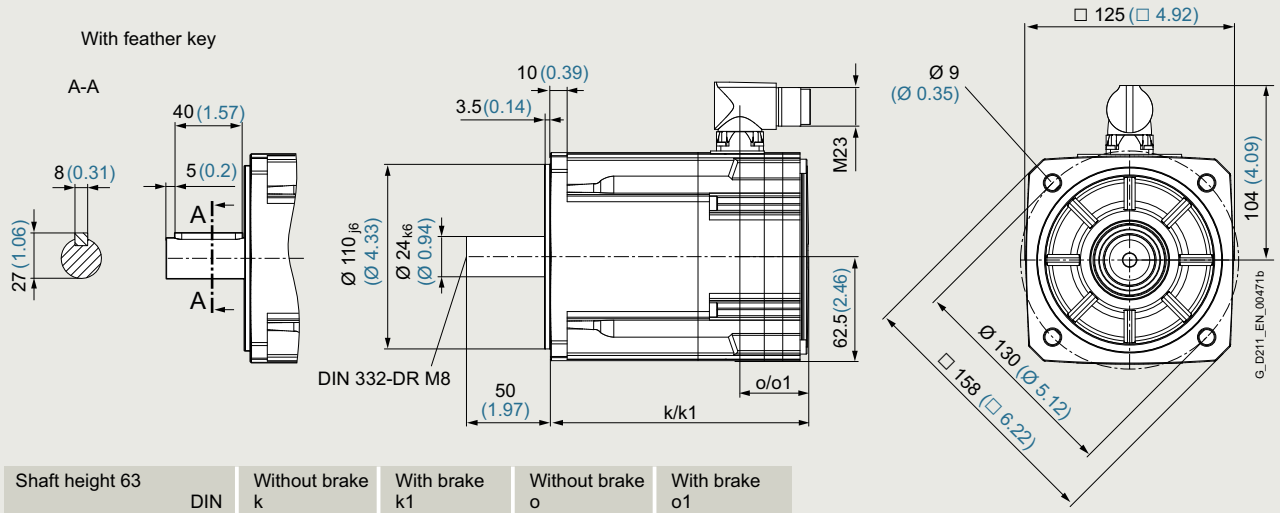
Technical specifications

Dimensional drawing

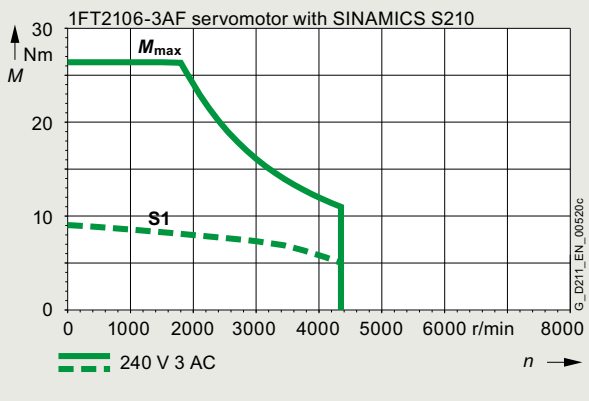


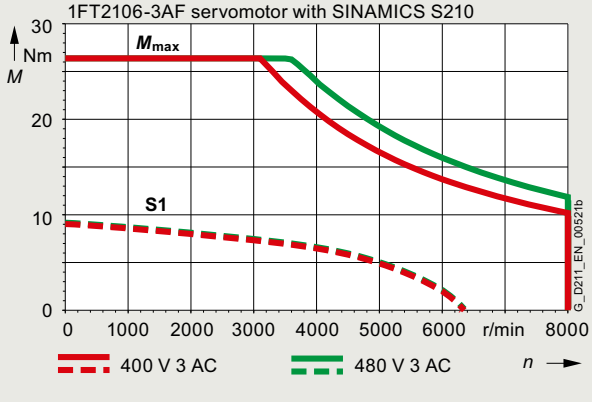
Shaft height 63 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FT2206-2A…	154 (6.06)	205 (8.07)	41 (1.61)	53 (2.09)
1FT2.06-3A…	174 (6.85)	225 (8.86)		
1FT2.06-4A…	193 (7.6)	244 (9.61)		
1FT2106-6A…	232 (9.13)	283 (11.14)		

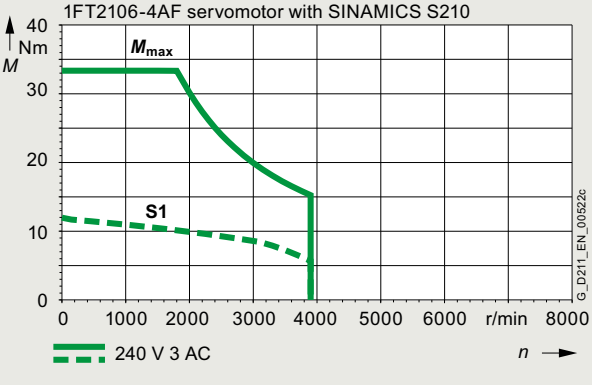
All dimensions in mm (values in brackets are in inches).

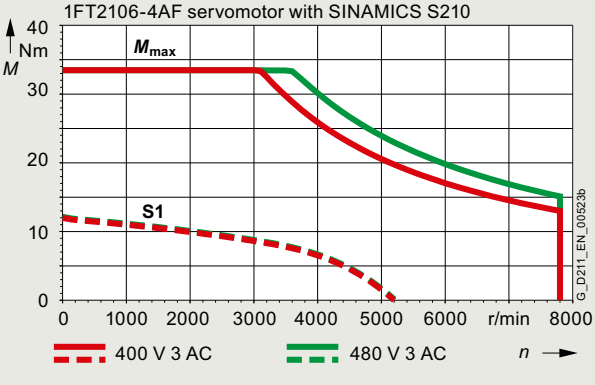
Speed/torque characteristics

High Dynamic









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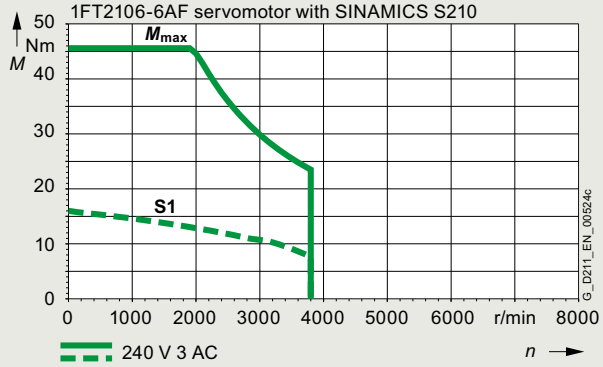
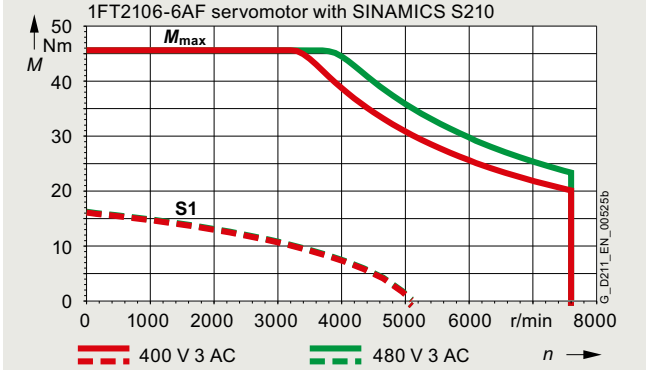
SIMOTICS S-1FT2 shaft height 63

Technical specifications

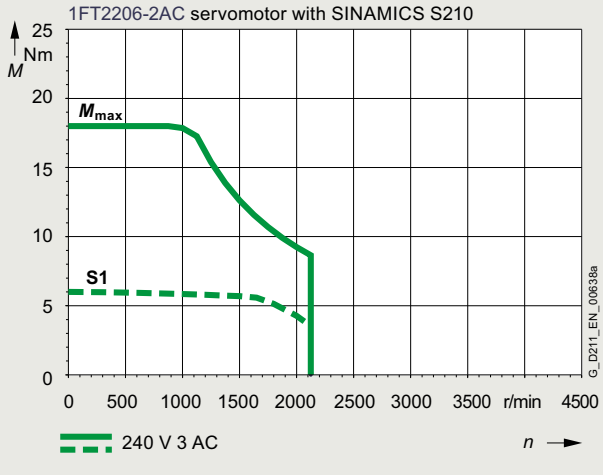
Speed/torque characteristics (continued)

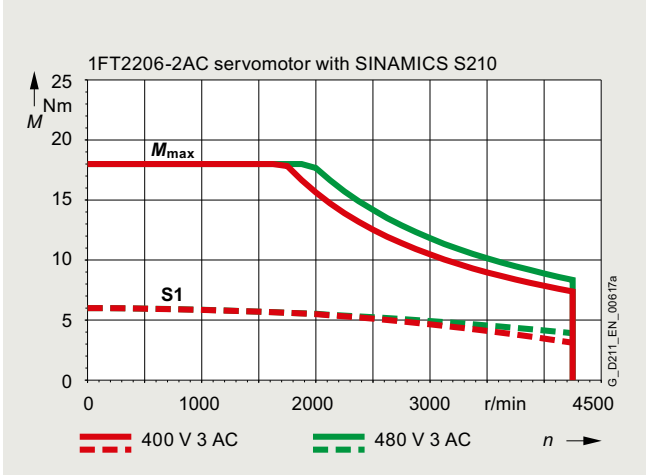
High Dynamic (continued)

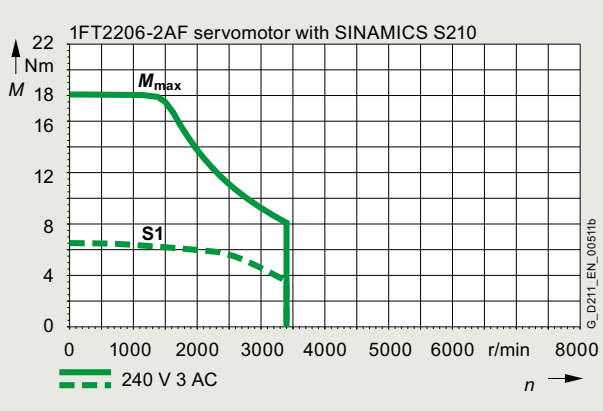


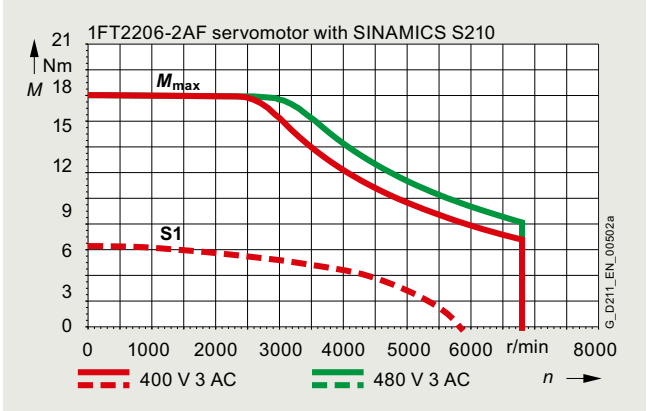


Compact









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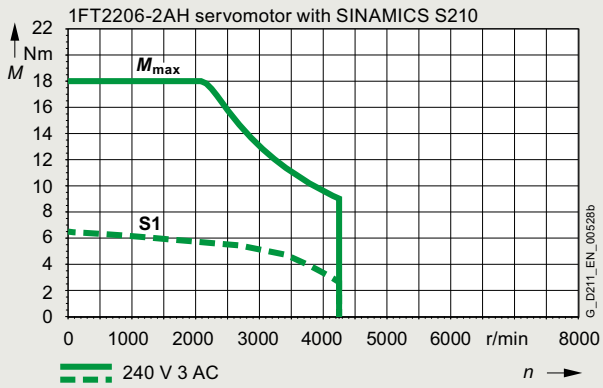
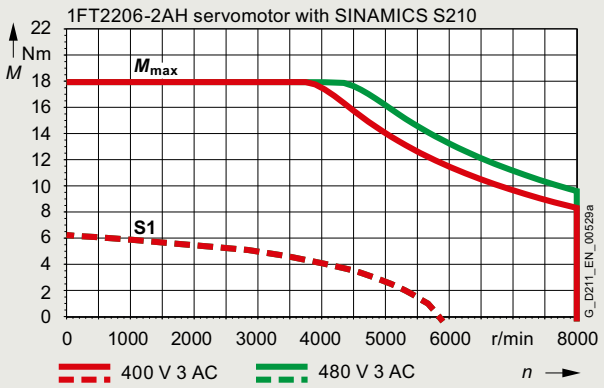
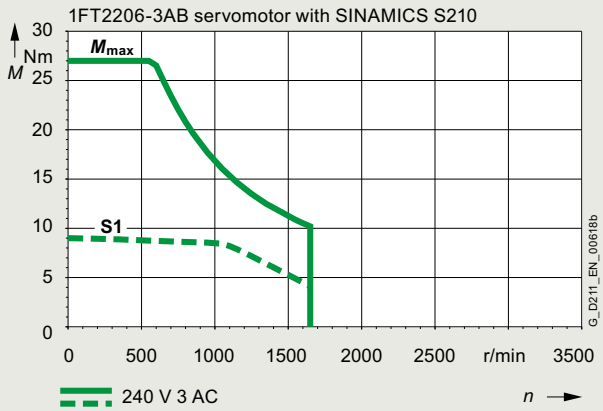
Technical specifications

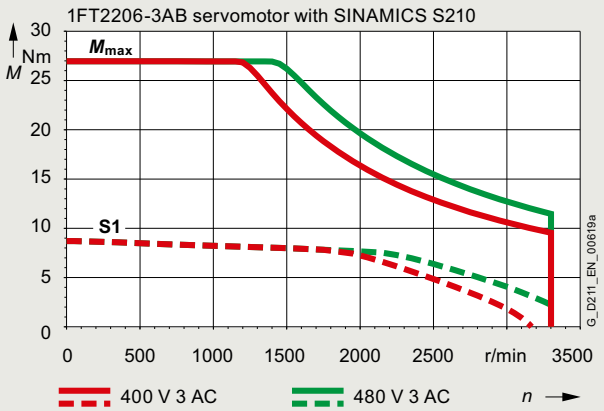
Speed/torque characteristics (continued)

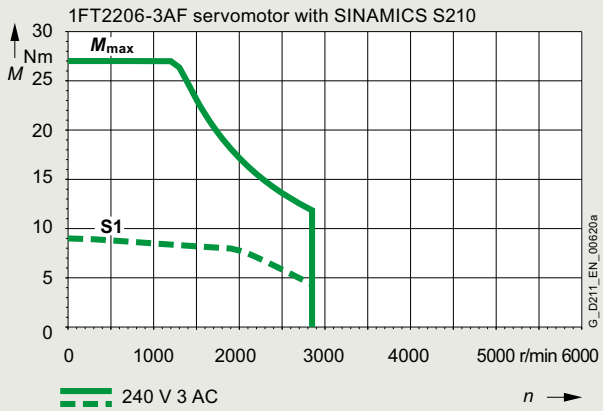
Compact (continued)

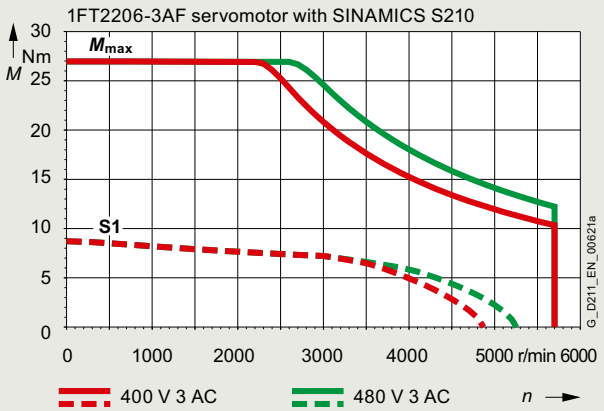












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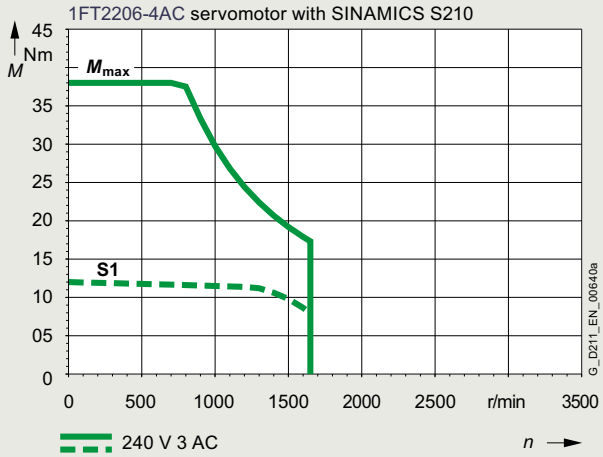
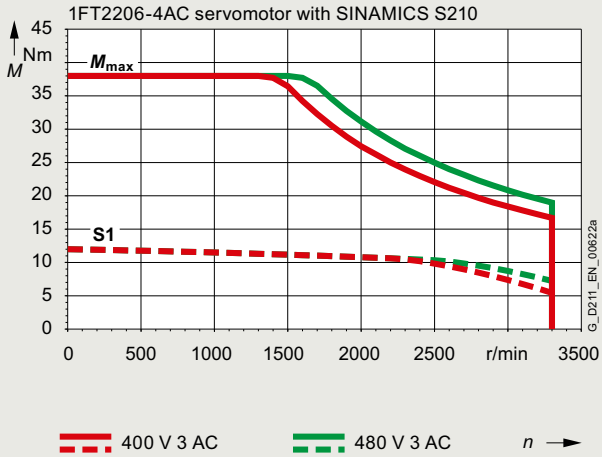
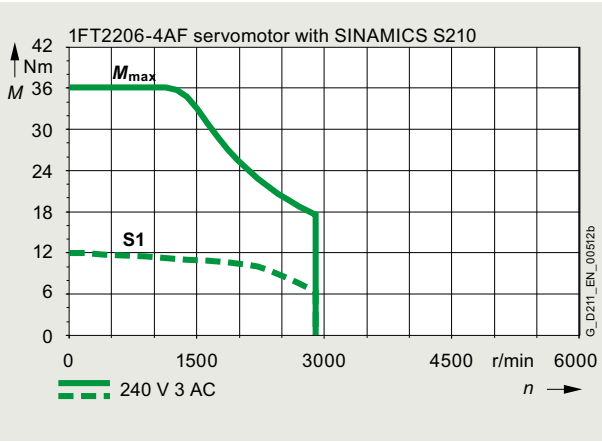
Technical specifications

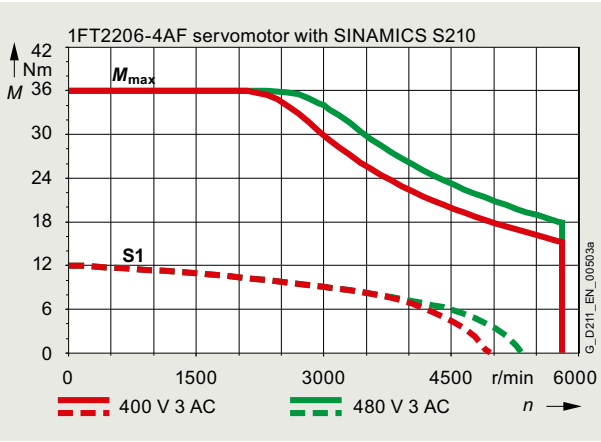
Speed/torque characteristics (continued)

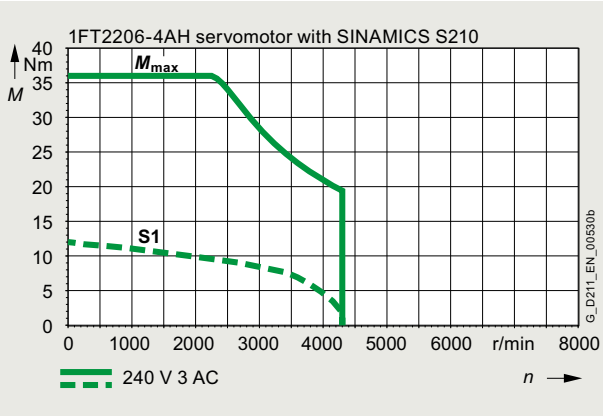
Compact (continued)

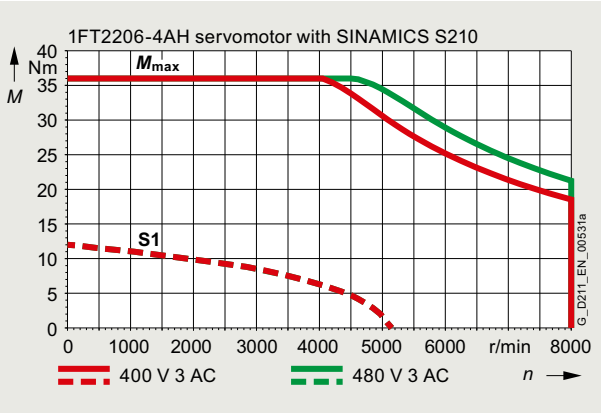












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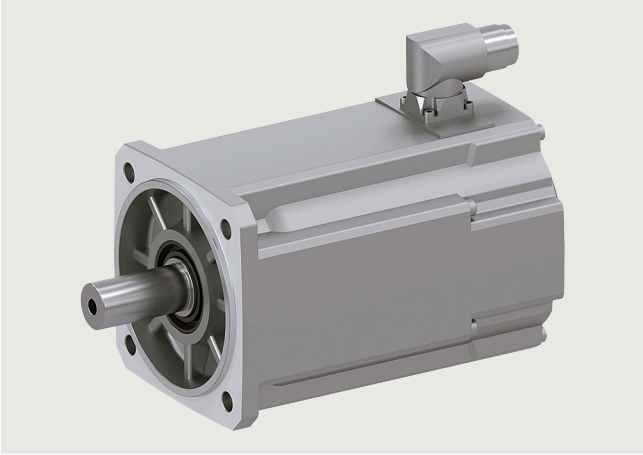
Technical specifications

SIMOTICS S-1FT2 shaft height 63 forced ventilation



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic		Compact	
Shaft height 63 forced ventilation		**1FT2106-3SF**	**1FT2106-4SF**	**1FT2206-4SF**	**1FT2206-4SH**
Static torque M_0	Nm (lb_f-ft)	11.5 (8.48)	16 (11.80)	14.5 (10.69)	14.5 (10.69)
Stall current I_0	A	11.6	14.6	9.6	14.3
Maximum torque M_{max}	Nm (lb_f-ft)	26 (19.18)	33 (24.34)	36 (26.55)	36 (26.55)
Maximum current I_{max}	A	43	42	29.5	44
Maximum speed n_{max}	r/min	8000	8000	6300	8000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	4.6 (1.572)	6.0 (2.050)	15.1 (5.16)	15.1 (5.16)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	6.3 (2.153)	7.6 (2.597)	17 (5.81)	16.8 (5.74)
Weight m_{Mot}	kg (lb)	9.5 (20.94)	11.1 (24.47)	11 (24.25)	11 (24.25)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	11.1 (24.47)	12.7 (28.00)	12.7 (28.00)	12.7 (28.00)
200 ... 240 V 3 AC					
Rated speed n_N	r/min	1500	1500	1500	2500
Rated torque M_N	Nm (lb_f-ft)	10.7 (7.89)	14.5 (10.69)	13.4 (9.88)	11.9 (8.79)
Rated current I_N	A	11	13.6	9.1	12.3
Rated power P_N	W	1680	2300	2100	3100
380 ... 480 V 3 AC					
Rated speed n_N	r/min	3000	3000	3000	4500
Rated torque M_N	Nm (lb_f-ft)	9.8 (7.23)	12.9 (9.51)	12.2 (8.99)	10 (7.38)
Rated current I_N	A	10.3	12.4	8.6	10.6
Rated power P_N	W	3100	4050	3850	4700
Suitable for SINAMICS S210 (6SL5...) servo converters					
• 200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1

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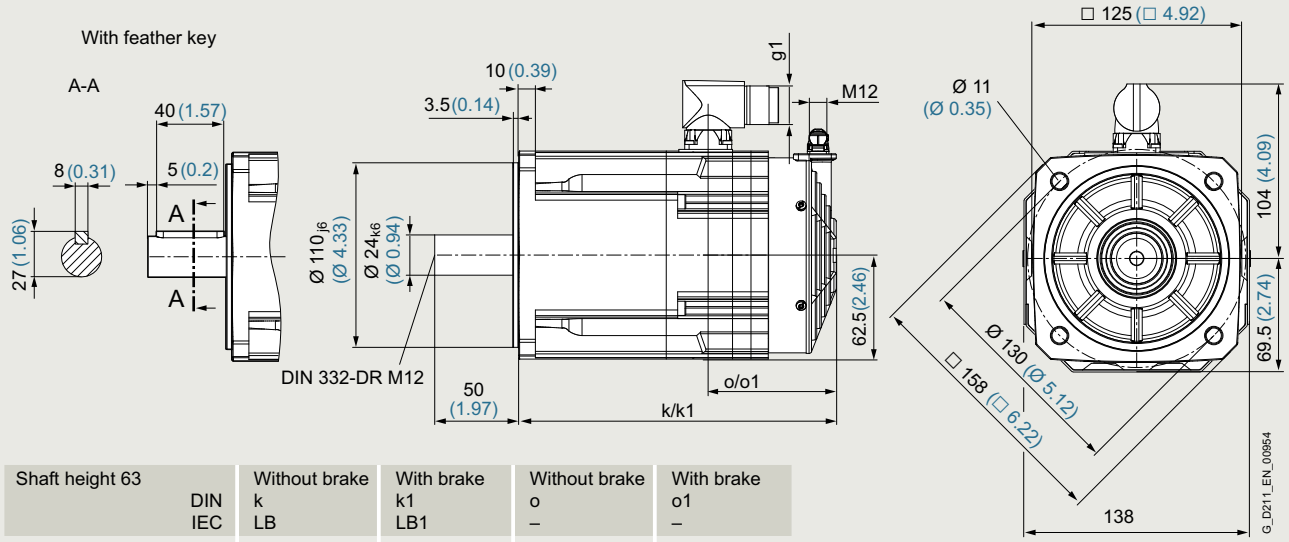
SIMOTICS S-1FT2 Achshöhe 63 forced ventilation

Technical specifications

Dimensional drawing

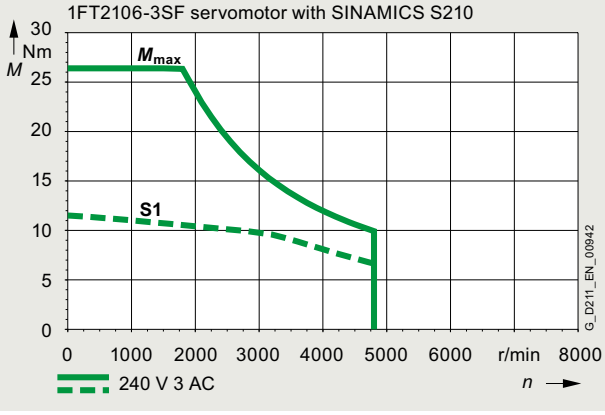


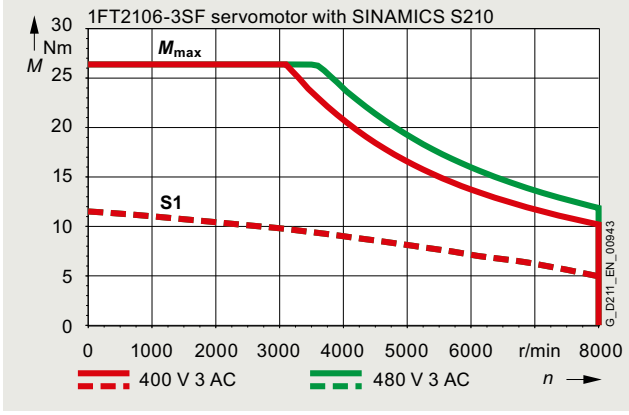
Shaft height 63 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FT2106-3SF...	279 (10.98)	330 (12.99)	132 (5.19)	172 (6.77)
1FT2106-4SF...	298 (11.73)	349 (13.74)	152 (5.98)	191 (7.52)
1FT2206-4S...	396 (15.59)	349 (13.74)		

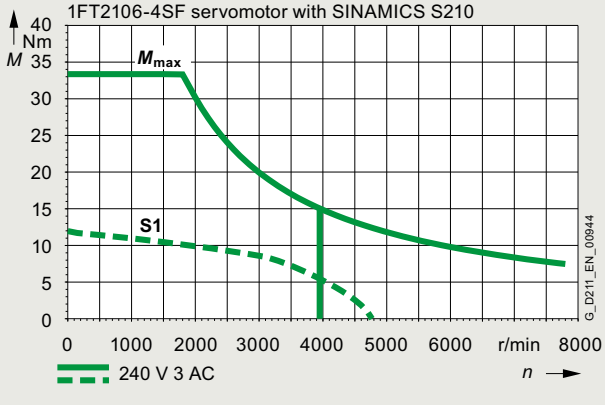
All dimensions in mm (values in brackets are in inches).

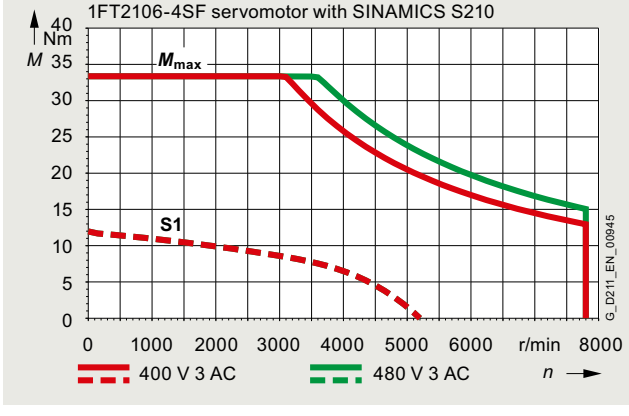
Speed/torque characteristics

High Dynamic









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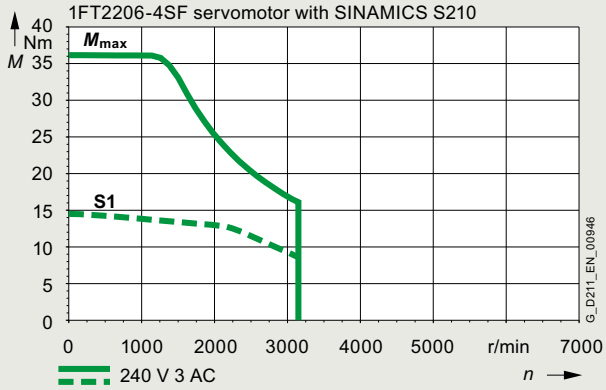
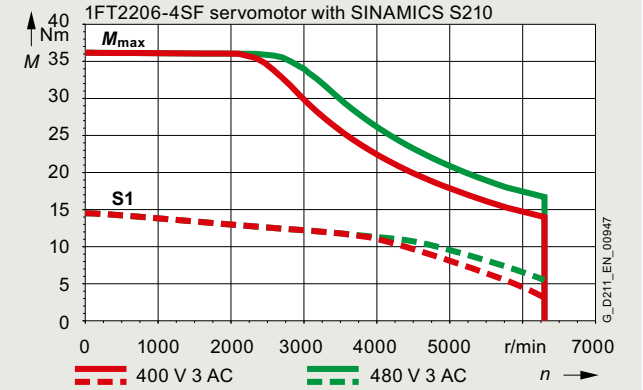
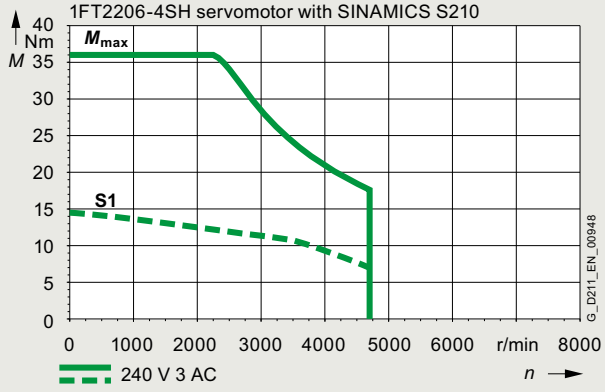
Technical specifications

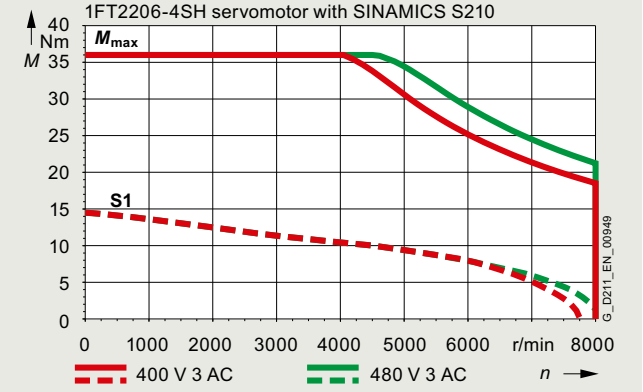
Speed/torque characteristics (continued)

Compact









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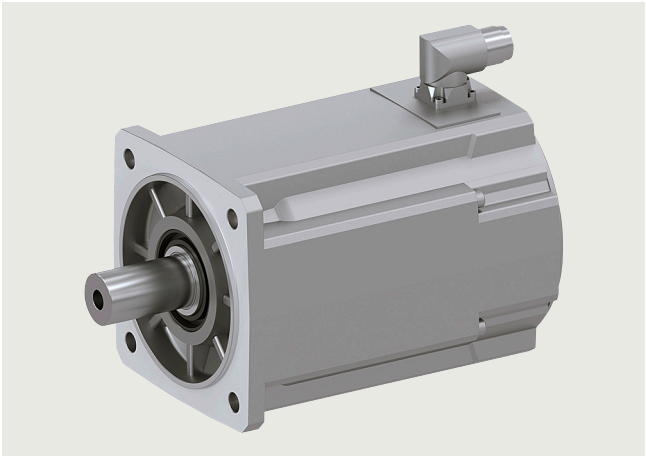
SIMOTICS S-1FT2 shaft height 80

Technical specifications

SIMOTICS S-1FT2 shaft height 80



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic		
Shaft height 80		**1FT2108-4AC**	**1FT2108-5AB**	**1FT2108-7AB**
Static torque M_0	Nm (lb_f-ft)	25 (18.44)	30 (22.13)	37.5 (27.66)
Stall current I_0	A	14.8	11.8	14
Maximum torque M_{max}	Nm (lb_f-ft)	74 (54.58)	100 (73.73)	118 (87.04)
Maximum current I_{max}	A	55	55	55
Maximum speed n_{max}	r/min	5600	3750	3550
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	18 (6.151)	22 (7.517)	28 (9.568)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	22 (7.517)	26 (8.884)	32 (10.934)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	24 (8.201)	27 (9.226)	34 (11.618)
Weight m_{Mot}	kg (lb)	17 ((37.49))	19.7 (43.44)	24.5 (54.02)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	20 (44.10)	22 (48.51)	27 (59.54)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	20 (44.10)	23 (50.72)	27 (59.54)
200 ... 240 V 3 AC				
Rated speed n_N	r/min	1000	750	750
Rated torque M_N	Nm (lb_f-ft)	23.5 (17.33)	28 (20.65)	33 (24.34)
Rated current I_N	A	14.2	11.1	13
Rated power P_N	W	2450	2200	2600
380 ... 480 V 3 AC				
Rated speed n_N	r/min	2000	1500	1500
Rated torque M_N	Nm (lb_f-ft)	20.5 (15.12)	25.5 (18.81)	30 (22.13)
Rated current I_N	A	12.8	10.3	11.5
Rated power P_N	W	4300	4000	4700
Suitable for SINAMICS S210 (6SL5...) servo converters				
• 200 ... 240 V 3 AC		6SL5310-1BE17-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE17-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE17-0DF1

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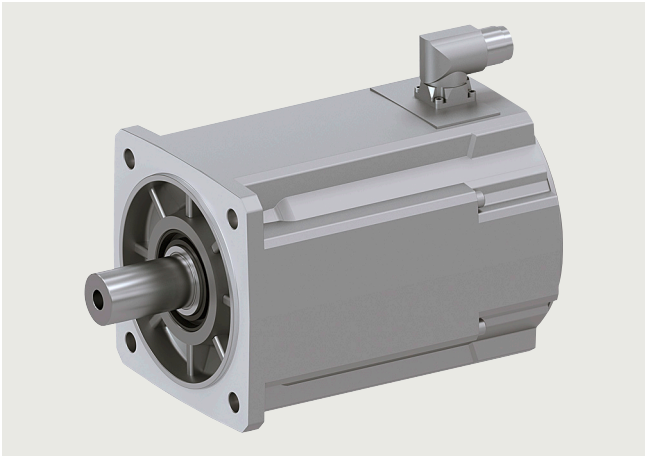
Technical specifications

SIMOTICS S-1FT2 shaft height 80 (continued)



Specific technical specifications

SIMOTICS S-1FT2 servomotors		Compact				
Shaft height 80		**1FT2208-2AF**	**1FT2208-3AB**	**1FT2208-3AC**	**1FT2208-3AF**	**1FT2208-4AB**
Static torque M_0	Nm (lb_f-ft)	12.5 (9.22)	18 (13.28)	18 (13.28)	18 (13.28)	22 (16.23)
Stall current I_0	A	8.3	6.2	8.4	11.9	7.1
Maximum torque M_{max}	Nm (lb_f-ft)	38 (28.03)	51 (37.62)	51 (37.62)	51 (37.62)	66 (48.68)
Maximum current I_{max}	A	31	20.5	29.5	40	25
Maximum speed n_{max}	r/min	6000	3000	4100	5600	3000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	23 (7.859)	30 (10.251)	30 (10.251)	30 (10.251)	39 (13.326)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	26 (8.884)	33 (11.276)	33 (11.276)	33 (11.276)	44 (15.035)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	28 (9.568)	35 (11.960)	35 (11.960)	35 (11.960)	–
Weight m_{Mot}	kg (lb)	11 (24.26)	13 (28.6)	13 (28.6)	13 (28.6)	15 (33.08)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	13 (28.6)	15 (33.08)	15 (33.08)	15 (33.08)	17 (37.49)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	13 (28.6)	15 (33.08)	15 (33.08)	15 (33.08)	17 (37.49)
200 ... 240 V 3 AC						
Rated speed n_N	r/min	1500	750	1000	1500	750
Rated torque M_N	Nm (lb_f-ft)	10.7 (7.89)	17 (12.54)	16.6 (12.24)	15 (11.10)	20.7 (15.27)
Rated current I_N	A	8.1	5.9	7.9	10.4	6.7
Rated power P_N	W	1680	1340	1740	2400	1620
380 ... 480 V 3 AC						
Rated speed n_N	r/min	3000	1500	2000	3000	1500
Rated torque M_N	Nm (lb_f-ft)	9 (6.64)	16 (11.80)	14.5 (10.70)	11.1 (8.19)	18.6 (13.72)
Rated current I_N	A	6.5	5.7	7	7.7	6.4
Rated power P_N	W	2850	2500	3050	3500	2900
Suitable for SINAMICS S210 (6SL5...) servo converters						
• 200 ... 240 V 3 AC		6SL5310-1BE13-5DF1	6SL5310-1BE12-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE13-5DF1
• 380 ... 480 V 3 AC		6SL5310-1BE13-5DF1	6SL5310-1BE12-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE13-5DF1

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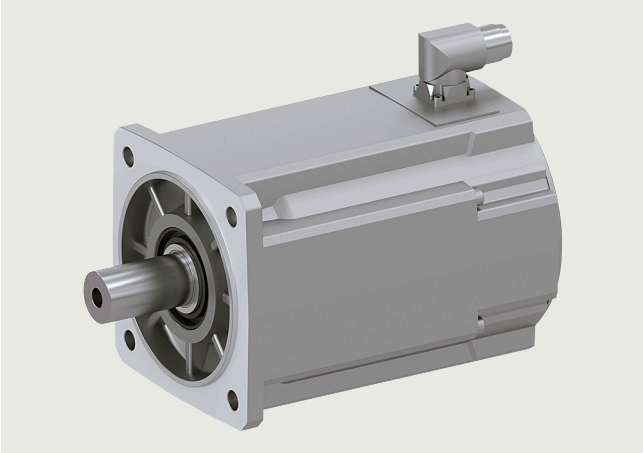
Technical specifications

SIMOTICS S-1FT2 shaft height 80 (continued)



Specific technical specifications (continued)

SIMOTICS S-1FT2 servomotors		Compact			
Shaft height 80		**1FT2208-4AC**	**1FT2208-4AF**	**1FT2208-5AB**	**1FT2208-5AC**
Static torque M_0	Nm (lb_f-ft)	22 (16.23)	22 (16.23)	27 (19.92)	27 (19.92)
Stall current I_0	A	11.7	15	8.6	15
Maximum torque M_{max}	Nm (lb_f-ft)	66 (48.68)	66 (48.68)	80 (59.01)	80 (59.01)
Maximum current I_{max}	A	43.5	55	29.5	51.5
Maximum speed n_{max}	r/min	4600	5900	3000	4700
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	39 (13.326)	39 (13.326)	48 (16.402)	48 (16.402)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	44 (15.035)	44 (15.035)	54 (18.452)	54 (18.452)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	–	–	–	–
Weight m_{Mot}	kg (lb)	15 (33.08)	15 (33.08)	17 (37.49)	17 (37.49)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	17 (37.49)	17 (37.49)	19 (41.90)	19 (41.90)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	–	–	–	–
200 ... 240 V 3 AC					
Rated speed n_N	r/min	1000	1500	750	1000
Rated torque M_N	Nm (lb_f-ft)	20 (14.75)	18 (13.30)	24.5 (18.07)	23.5 (17.33)
Rated current I_N	A	10.9	12.4	7.9	13.2
Rated power P_N	W	2150	2750	1920	2500
380 ... 480 V 3 AC					
Rated speed n_N	r/min	2000	3000	1500	2000
Rated torque M_N	Nm (lb_f-ft)	17 (12.54)	12 (8.90)	22 (16.23)	19.1 (14.09)
Rated current I_N	A	9.3	8.5	7.2	10.8
Rated power P_N	W	3550	3700	3450	4000
Suitable for SINAMICS S210 (6SL5...) servo converters					
• 200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE17-0DF1

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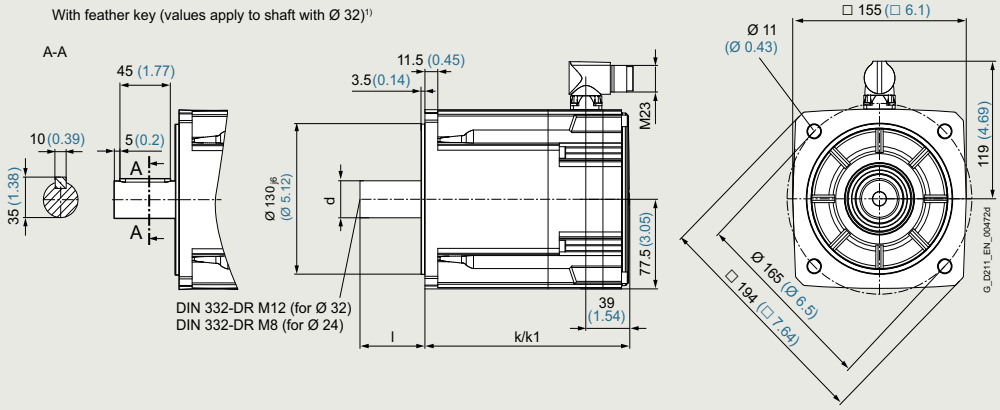
Technical specifications

Dimensional drawing



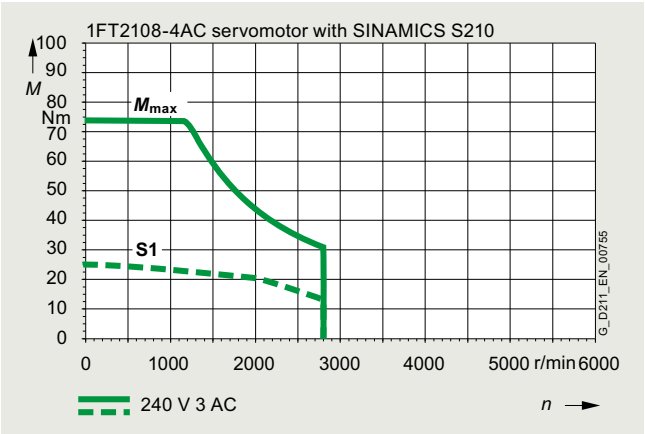
Shaft height 80	Without brake	With brake	With shaft Ø 32		With shaft Ø 24	
DIN / IEC	k / LB	k1 / LB1	d / D	l / L	d / D	l / L
1FT2208-2A…	168 (7.32)	221 (8.7)				
1FT2208-3A…	183 (7.2)	236 (9.29)	Ø 32_{k6} (Ø 1.26)	58 (2.28)	Ø 24_{k6} (Ø 0.94)	50 (1.97)
1FT2208-4A…	203 (7.99)	256 (10.08)				
1FT2108-4A…	227 (8.94)	280 (11.02)				
1FT2208-5A…	223 (8.78)	276 (10.87)				
1FT2108-5A…	247 (9.72)	300 (11.81)	Ø 32_{k6} (Ø 1.26)	58 (2.28)	Ø 24_{k6} (Ø 0.94)	50 (1.97)
1FT2108-7A…	287 (11.29)	340 (13.39)				

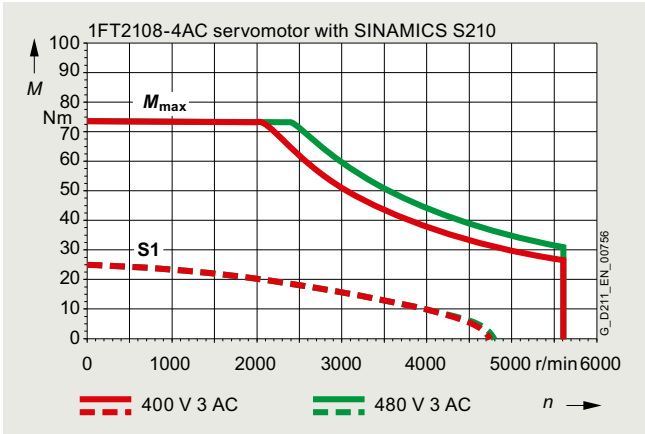
1) Dimensions for feather key with reduced shaft diameter Ø 24, see dimensional drawing 1F.206

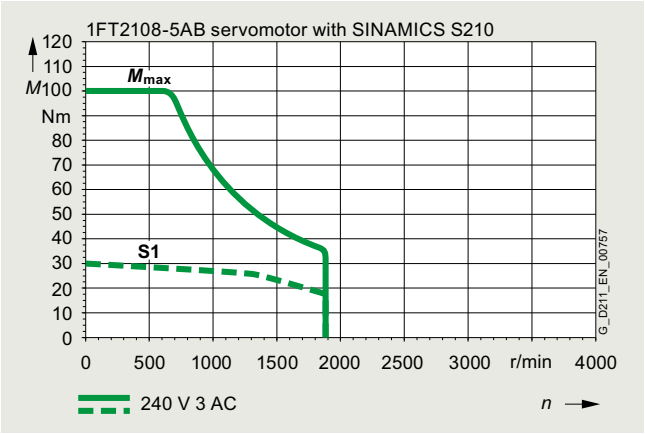
All dimensions in mm (values in brackets are in inches).

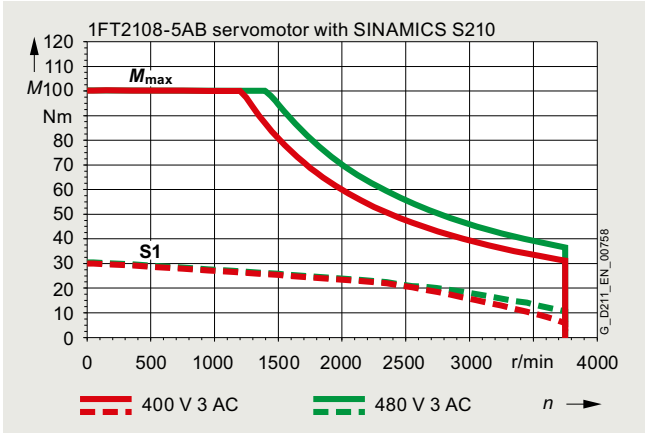
Speed/torque characteristics

High Dynamic









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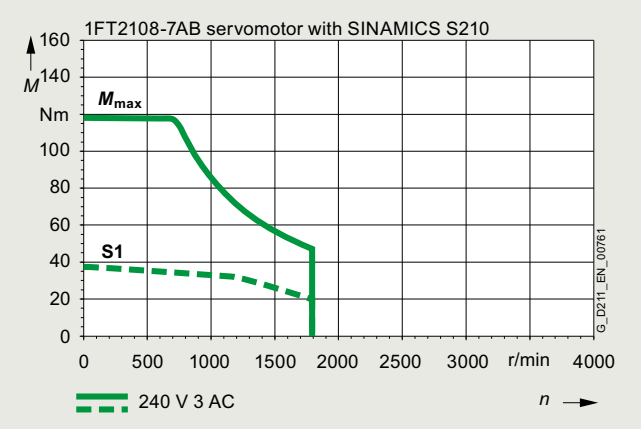
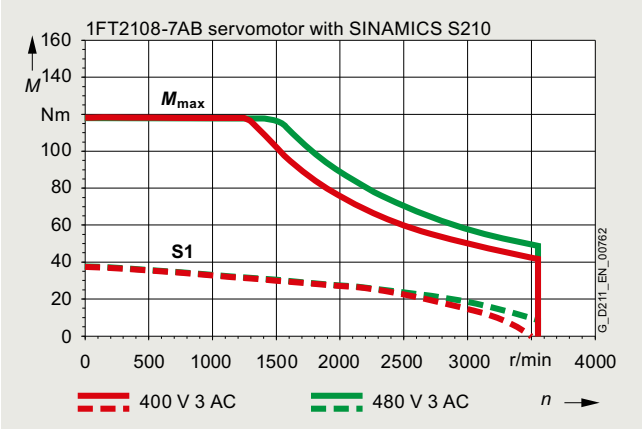
SIMOTICS S-1FT2 shaft height 80

Technical specifications

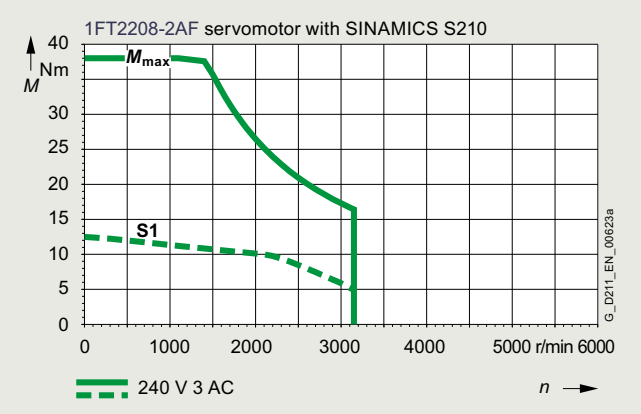
Speed/torque characteristics (continued)

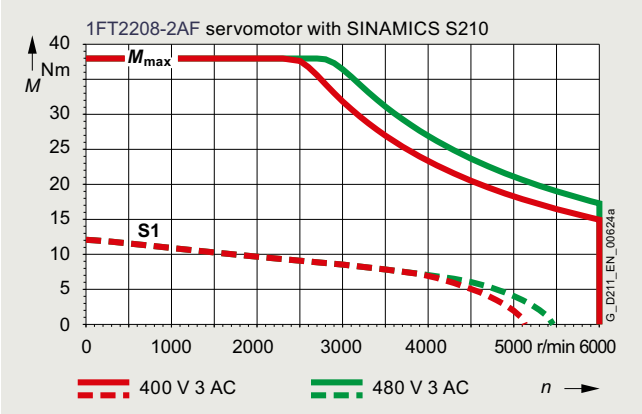
High Dynamic (continued)

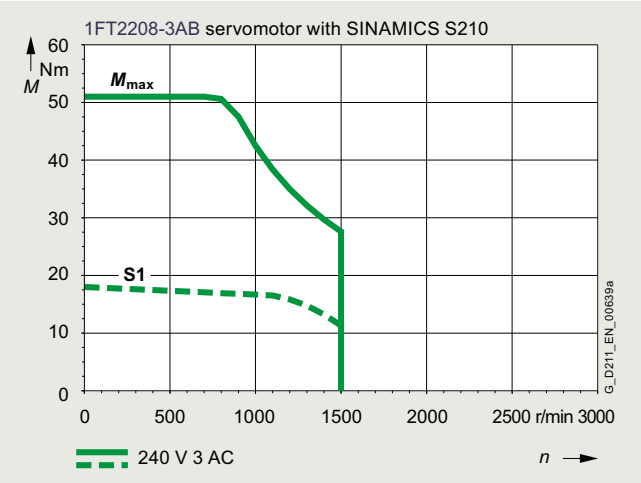


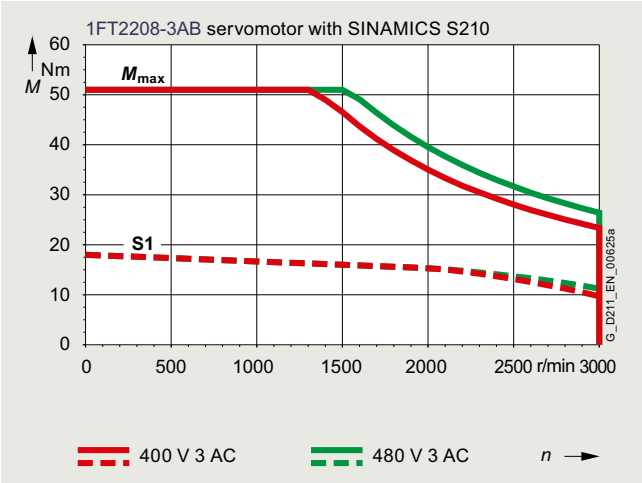


Compact









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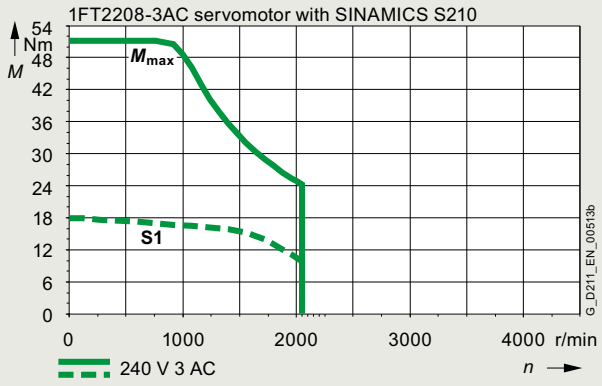
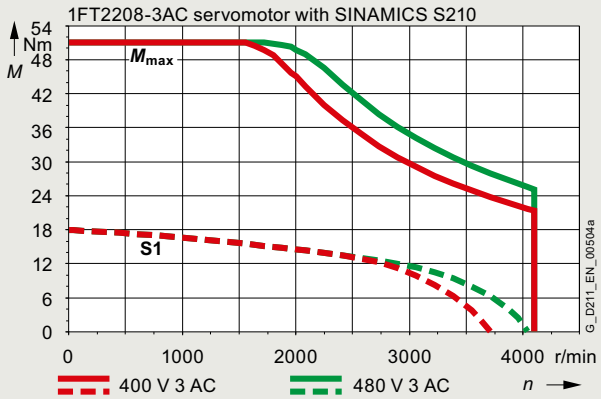
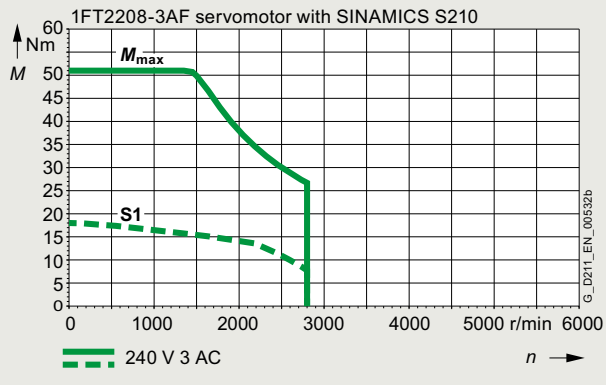
Technical specifications

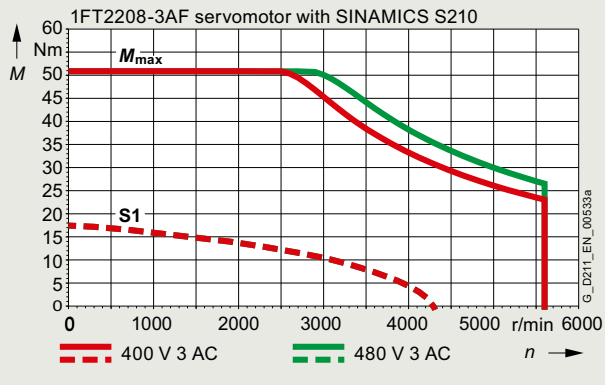
Speed/torque characteristics (continued)

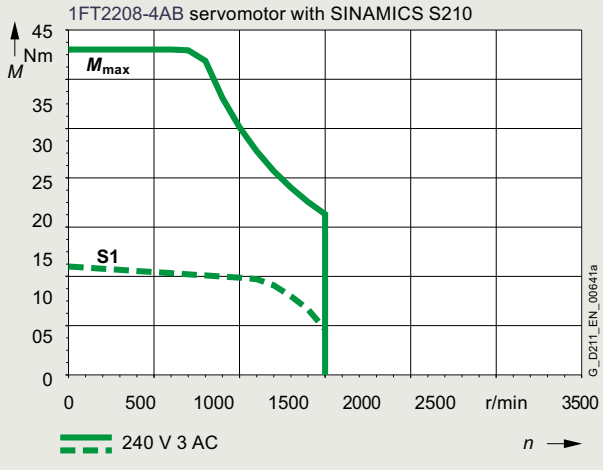
Compact (continued)

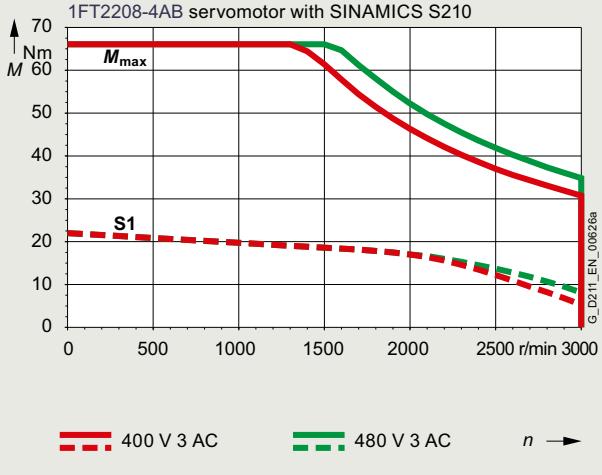












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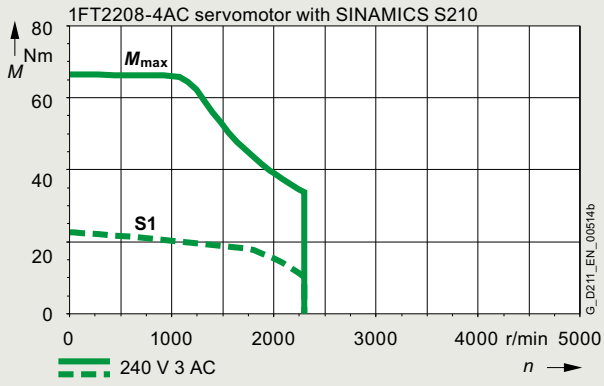
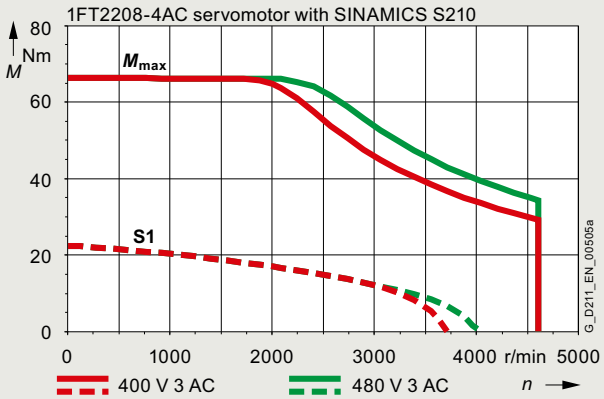
SIMOTICS S-1FT2 shaft height 80

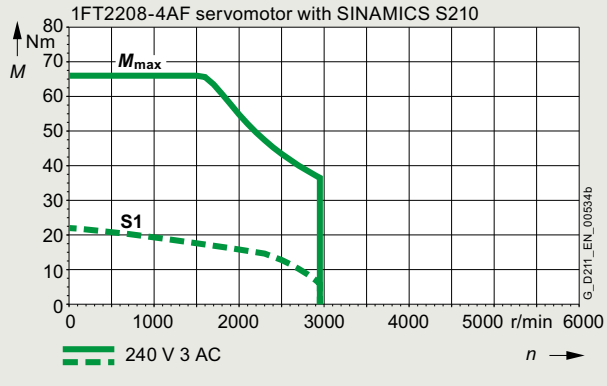
Technical specifications

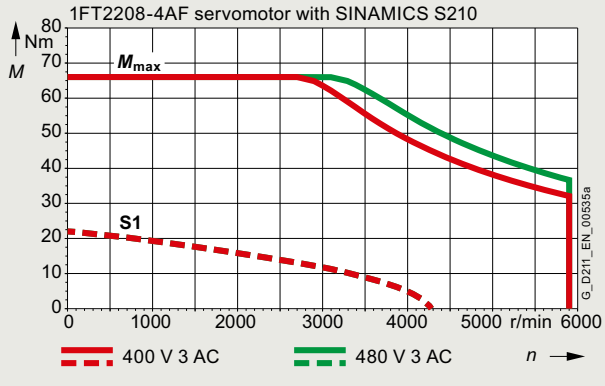
Speed/torque characteristics (continued)

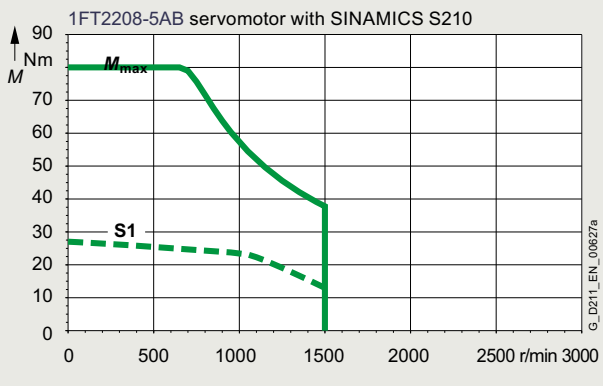
Compact (continued)

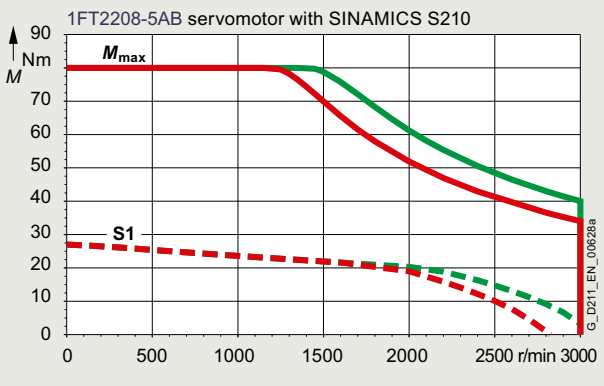












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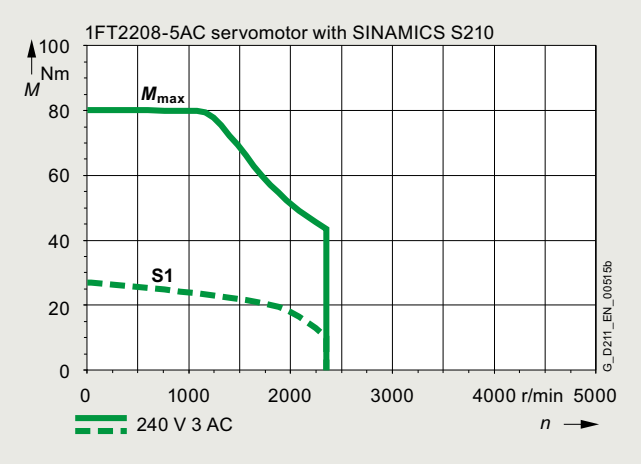
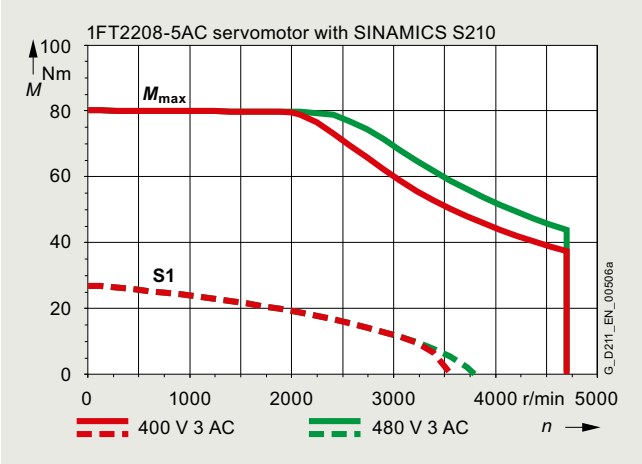
Technical specifications

Speed/torque characteristics (continued)

Compact (continued)





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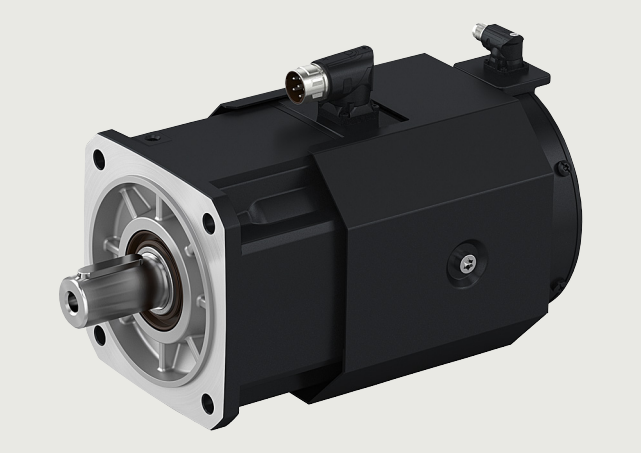
SIMOTICS S-1FT2 shaft height 80 forced ventilation

Technical specifications

SIMOTICS S-1FT2 shaft height 80 forced ventilation



Specific technical specifications

SIMOTICS S-1FT2 servomotors		High Dynamic	Compact		
Shaft height 80 forced ventilation		1FT2108-5SB	1FT2208-3SB	1FT2208-3SC	1FT2208-3SF
Static torque M_0	Nm (lb_f-ft)	40 (29.5)	22 (16.23)	22 (16.23)	22 (16.23)
Stall current I_0	A	15.5	7.8	10.4	14.1
Maximum torque M_{max}	Nm (lb_f-ft)	100 (73.73)	51 (37.62)	51 (37.62)	51 (37.62)
Maximum current I_{max}	A	55	20.5	29.5	40
Maximum speed n_{max}	r/min	3700	3350	4500	6000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	22 (7.517)	30 (10.251)	30 (10.251)	30 (10.251)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	26 (8.884)	33 (11.276)	33 (11.276)	33 (11.276)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	27 (9.226)	35 (11.960)	35 (11.960)	35 (11.960)
Weight m_{Mot}	kg (lb)	22 (48.51)	15 (33.08)	15 (33.08)	15 (33.08)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	25 (55.13)	17 (37.49)	17 (37.49)	17 (37.49)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	25 (55.13)	18 (39.69)	18 (39.69)	18 (39.69)
200 ... 240 V 3 AC					
Rated speed n_N	r/min	750	750	1000	1500
Rated torque M_N	Nm (lb_f-ft)	38 (28.03)	20.5 (15.12)	20.5 (15.12)	19.9 (14.68)
Rated current I_N	A	14.6	7.6	9.9	13.2
Rated power P_N	W	3000	1620	2150	3100
380 ... 480 V 3 AC					
Rated speed n_N	r/min	1500	1500	2000	3000
Rated torque M_N	Nm (lb_f-ft)	35.5 (26.18)	19.9 (14.68)	19.1 (14.09)	17.6 (12.98)
Rated current I_N	A	14.9	7.3	9.5	12.2
Rated power P_N	W	5600	3100	4000	5500
Suitable for SINAMICS S210 (6SL5...) servo converters					
• 200 ... 240 V 3 AC		6SL5310-1BE17-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE17-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1

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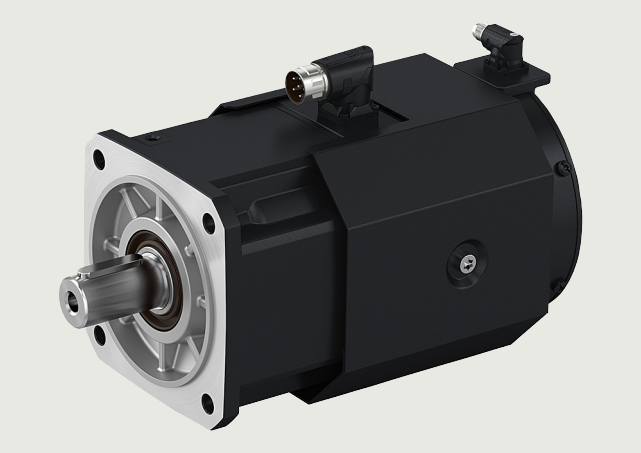
Technical specifications

SIMOTICS S-1FT2 shaft height 80 forced ventilation (continued)



Specific technical specifications (continued)

SIMOTICS S-1FT2 servomotors		Compact		
Shaft height 80 forced ventilation		**1FT2208-4SB**	**1FT2208-4SC**	**1FT2208-5SB**
Static torque M_0	Nm (lb_f-ft)	28 (20.65)	28 (20.65)	35 (25.82)
Stall current I_0	A	9.3	14.6	10.7
Maximum torque M_{max}	Nm (lb_f-ft)	66 (48.68)	66 (48.68)	80 (59.01)
Maximum current I_{max}	A	25	43.5	29.5
Maximum speed n_{max}	r/min	3150	4950	2900
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	39 (13.326)	39 (13.326)	48 (16.402)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	44 (15.035)	44 (15.035)	54 (18.452)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	–	–	–
Weight m_{Mot}	kg (lb)	18 (39.69)	18 (39.69)	20 (44.10)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	20 (44.10)	20 (44.10)	23 (50.72)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	–	–	–
200 ... 240 V 3 AC				
Rated speed n_N	r/min	750	1000	750
Rated torque M_N	Nm (lb_f-ft)	26.5 (19.55)	26 (19.55)	33.5 (24.71)
Rated current I_N	A	9	14	10.5
Rated power P_N	W	2100	2750	2600
380 ... 480 V 3 AC				
Rated speed n_N	r/min	1500	2000	1500
Rated torque M_N	Nm (lb_f-ft)	25.5 (18.81)	24 (17.70)	32 (23.60)
Rated current I_N	A	8.8	13.3	10.2
Rated power P_N	W	4000	5100	5000
Suitable for SINAMICS S210 (6SL5...) servo converters				
• 200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1

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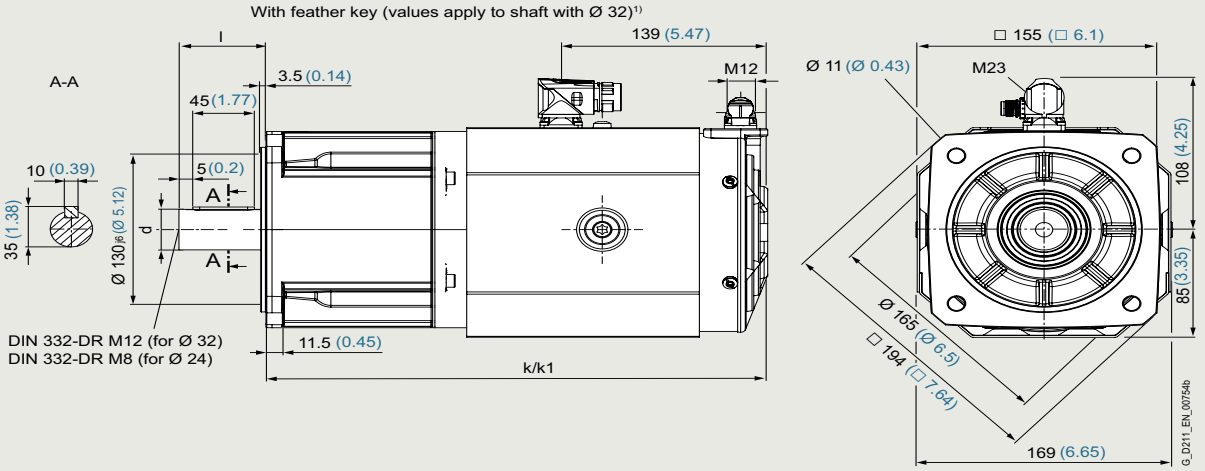
SIMOTICS S-1FT2 shaft height 80 forced ventilation

Technical specifications

Dimensional drawing



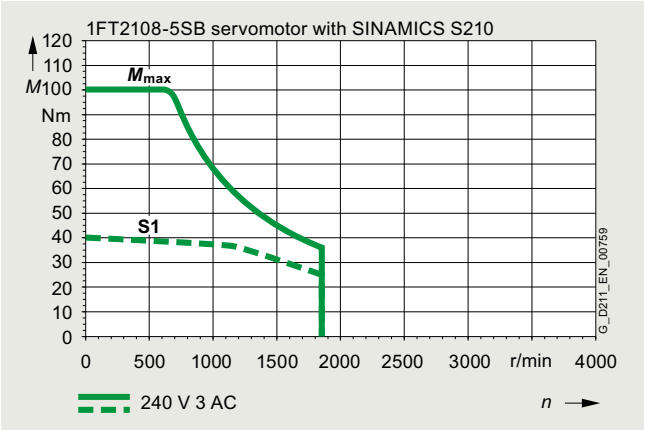
Shaft height 80 DIN IEC	Without brake k LB	With brake k1 LB1	With shaft Ø 32 d D	l L	With shaft Ø 24 d D	l L
1FT2108-5…	347 (13.66)	400 (15.75)				
1FT2208-3…	283 (11.14)	336 (13.23)	Ø 32_{k6} (Ø 1.26)	58 (2.28)	Ø 24_{k6} (Ø 0.94)	50 (1.97)
1FT2208-4…	303 (11.93)	356 (14.01)				
1FT2208-5…	323 (12.72)	376 (14.80)				

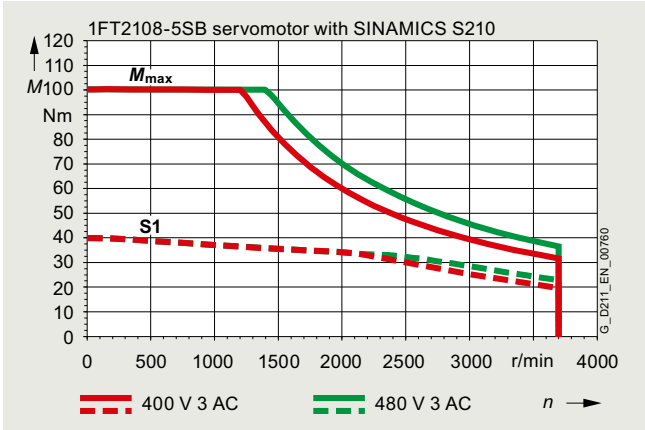
1) Dimensions for feather key with reduced shaft diameter Ø 24, see dimensional drawing 1F.206

All dimensions in mm (values in brackets are in inches).

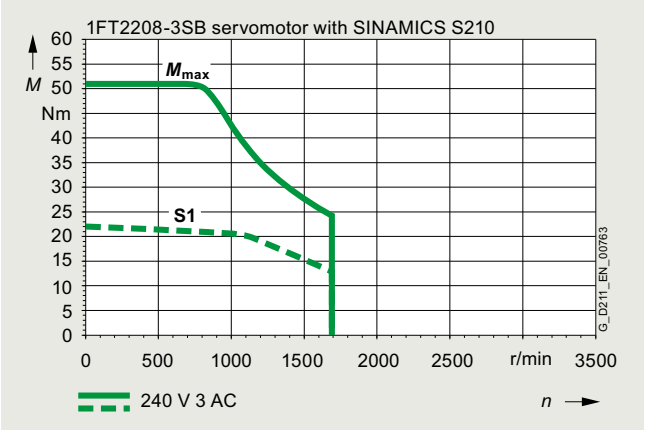
Speed/torque characteristics

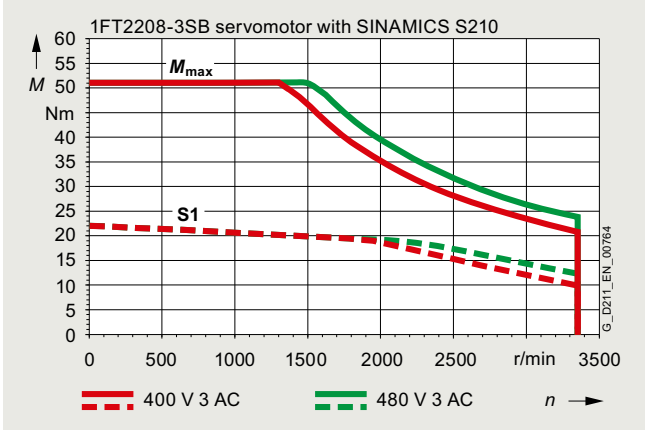
High Dynamic





Compact





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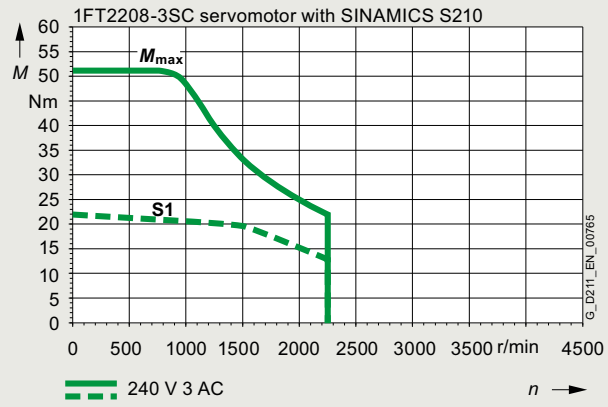
Technical specifications

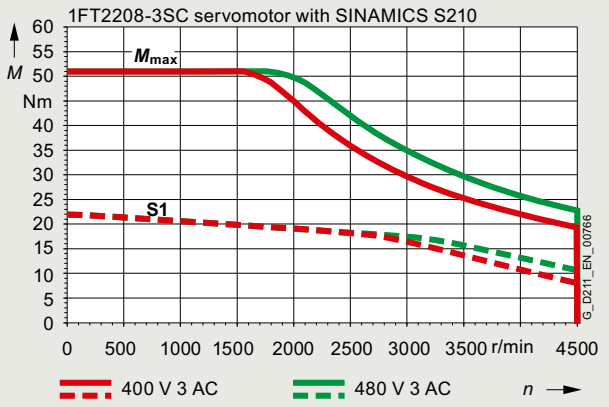
Speed/torque characteristics (continued)

Compact (continued)

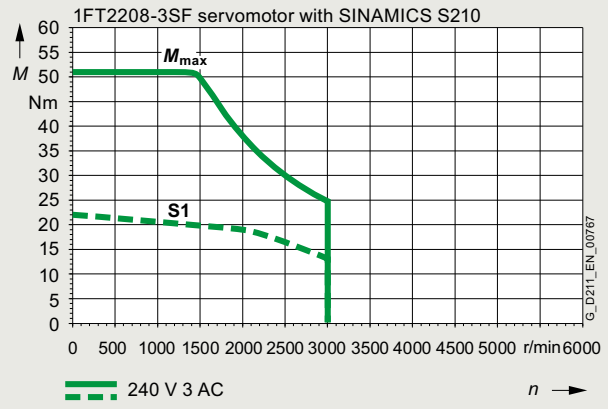
1FT2208-3SC servomotor with SINAMICS S210



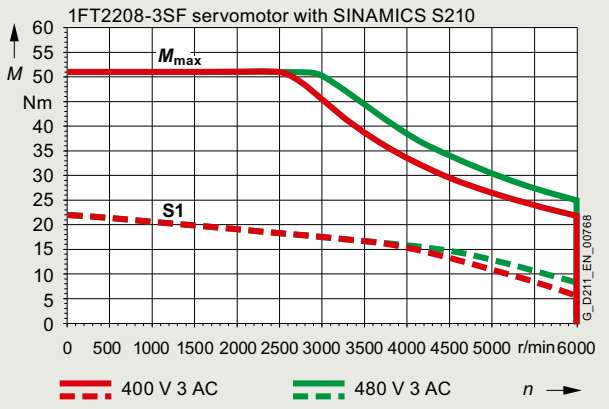
1FT2208-3SC servomotor with SINAMICS S210



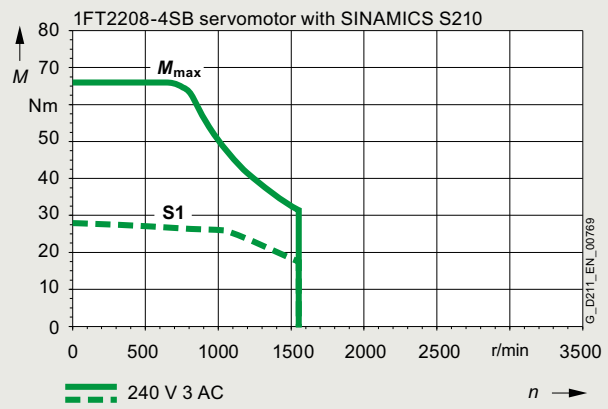
1FT2208-3SF servomotor with SINAMICS S210



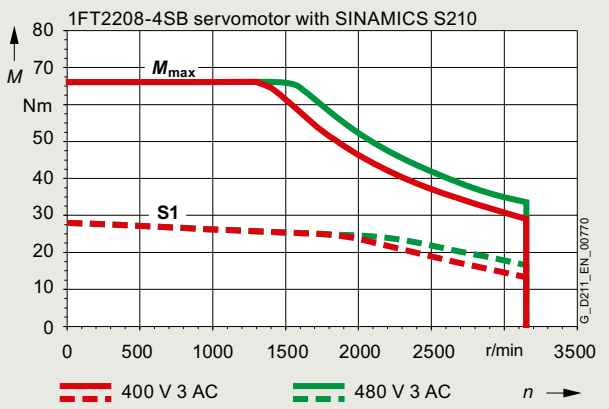
1FT2208-3SF servomotor with SINAMICS S210



1FT2208-4SB servomotor with SINAMICS S210



1FT2208-4SB servomotor with SINAMICS S210



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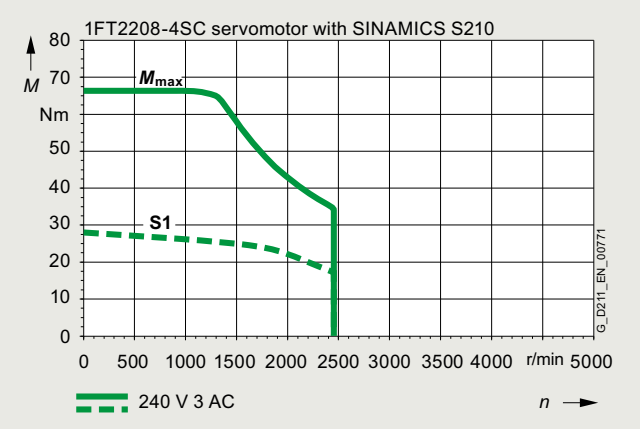
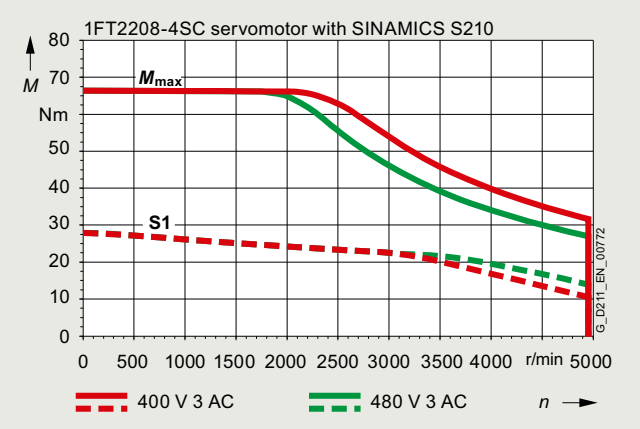
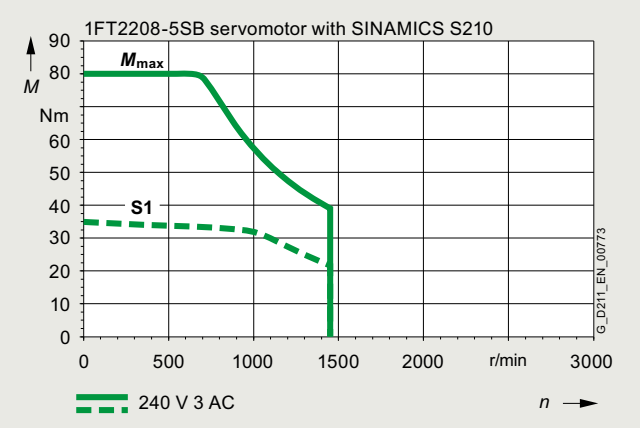
Technical specifications

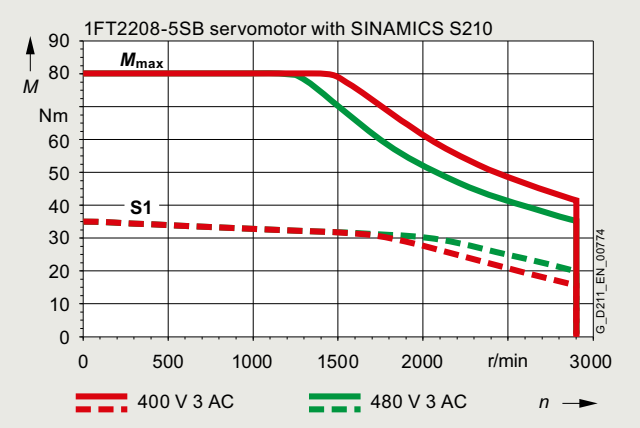
Speed/torque characteristics (continued)

Compact (continued)









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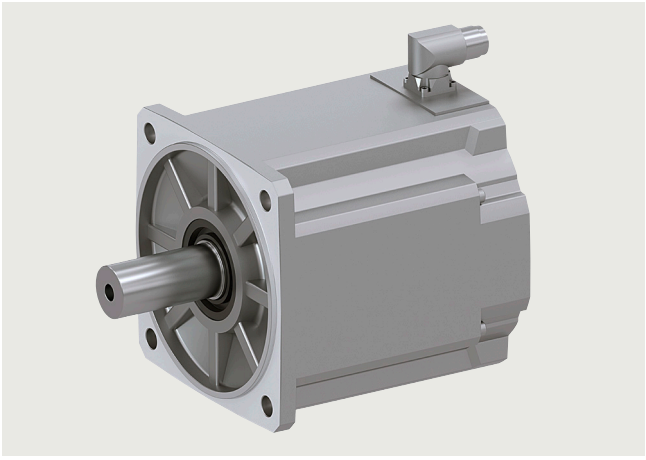
Technical specifications

SIMOTICS S-1FT2 shaft height 100



Specific technical specifications

SIMOTICS S-1FT2 servomotors		Compact						
Shaft height 100		**1FT2210-2AC**	**1FT2210-2AF**	**1FT2210-3AB**	**1FT2210-3AC**	**1FT2210-4AB**	**1FT2210-4AC**	**1FT2210-5AB**
Static torque M_0	Nm (lb_f-ft)	22 (16.23)	22 (16.23)	30 (22.13)	30 (22.13)	40 (29.50)	40 (29.50)	50 (36.88)
Stall current I_0	A	9.3	12.9	8.5	15	12	15	15
Maximum torque M_{max}	Nm (lb_f-ft)	60 (44.26)	60 (44.26)	90 (66.38)	90 (66.38)	120 (88.51)	120 (88.51)	150 (110.64)
Maximum current I_{max}	A	32	44.5	31.5	55	43.5	55	55
Maximum speed n_{max}	r/min	4050	5000	2500	4400	2500	3300	2850
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	62 (21.185)	62 (21.185)	89 (30.411)	89 (30.411)	120 (41.004)	120 (41.004)	150 (51.255)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	68 (23.236)	68 (23.236)	95 (32.462)	95 (32.462)	130 (44.421)	130 (44.421)	160 (54.672)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	77 (26.311)	77 (26.311)	100 (34.173)	100 (34.173)	–	–	–
Weight m_{Mot}	kg (lb)	16 (35.28)	16 (35.28)	22 (48.51)	22 (48.51)	27 (59.54)	27 (59.54)	32 (70.56)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	19 (41.90)	19 (41.90)	25 (55.13)	25 (55.13)	31 (68.36)	31 (68.36)	36 (79.38)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	20 (44.10)	20 (44.10)	26 (57.33)	26 (57.33)	–	–	–
200 ... 240 V 3 AC								
Rated speed n_N	r/min	1000	1500	750	1000	750	1000	750
Rated torque M_N	Nm (lb_f-ft)	20.5 (15.12)	19.6 (14.46)	30 (22.13)	30 (22.13)	39 (28.77)	37 (27.29)	44.5 (32.82)
Rated current I_N	A	9.0	11.9	8.6	15.5	11.6	14.3	13.6
Rated power P_N	W	2150	3100	2500	3200	3050	3900	
380 ... 480 V 3 AC								
Rated speed n_N	r/min	2000	3000	1500	2000	1500	2000	1500
Rated torque M_N	Nm (lb_f-ft)	18.4 (13.57)	16.2 (11.95)	28.5 (21.02)	26 (19.18)	34.5 (25.45)	30.5 (22.50)	39 (28.77)
Rated current I_N	A	8.1	10.1	8.3	13.5	10.4	11.8	12.1
Rated power P_N	W	3850	5100	4500	5500	5400	6400	6100
Suitable for SINAMICS S210 (6SL5...) servo converters								
• 200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE13-5DF1	6SL5310-1BE17-0DF1	6SL5310-1BE15-0DF1	6SL5310-1BE17-0DF1	6SL5310-1BE17-0DF1

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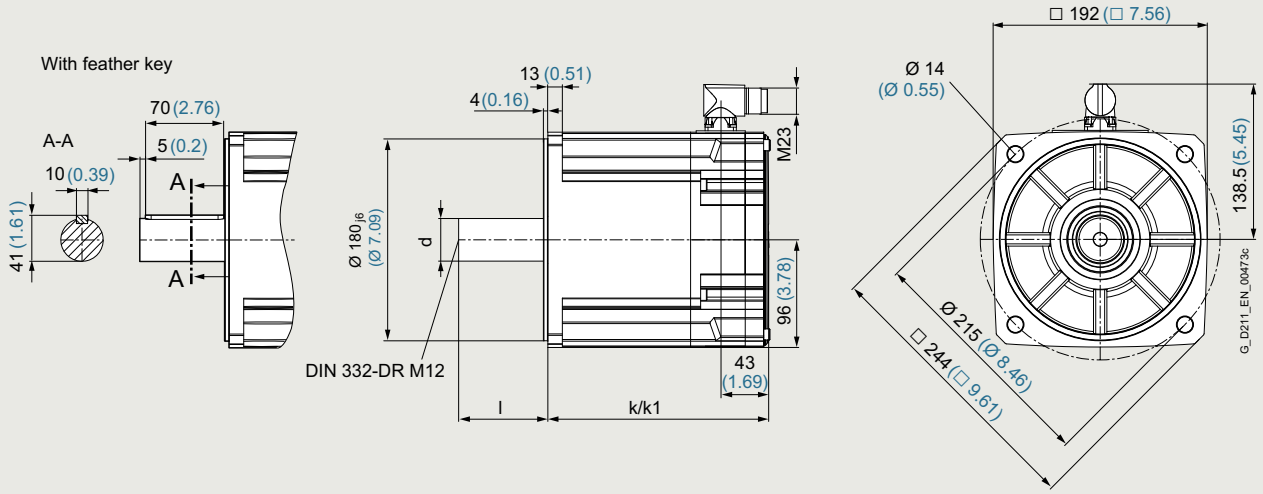
SIMOTICS S-1FT2 shaft height 100

Technical specifications

Dimensional drawing

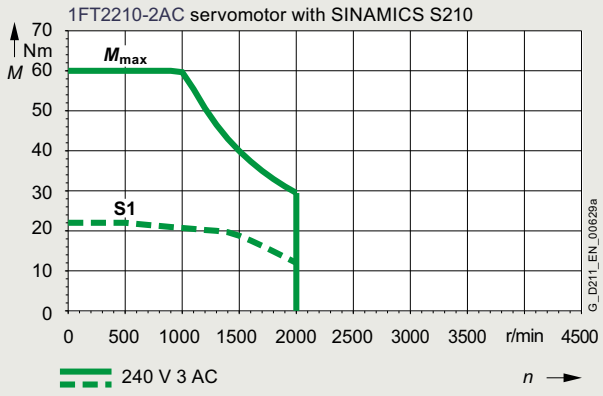


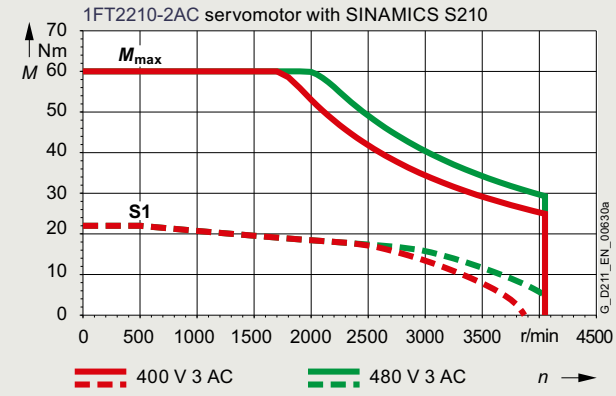
Shaft height 100	Without brake	With brake	With shaft Ø 32		With shaft Ø 38	
DIN	k	k1	d	l	d	l
IEC	LB	LB1	D	L	D	L
1FT2210-2A...	174 (6.85)	233 (9.17)				
1FT2210-3A...	198 (7.8)	257 (10.12)	Ø 32_{k6} (Ø 1.26)	58 (2.28)	Ø 38_{k6} (Ø 1.50)	80 (3.15)
1FT2210-4A...	223 (8.78)	282 (11.1)				

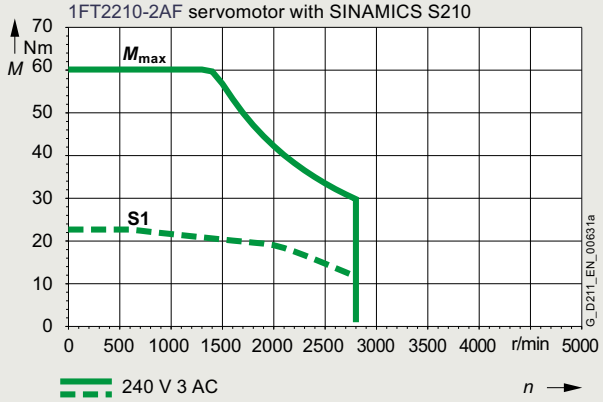
All dimensions in mm (values in brackets are in inches).

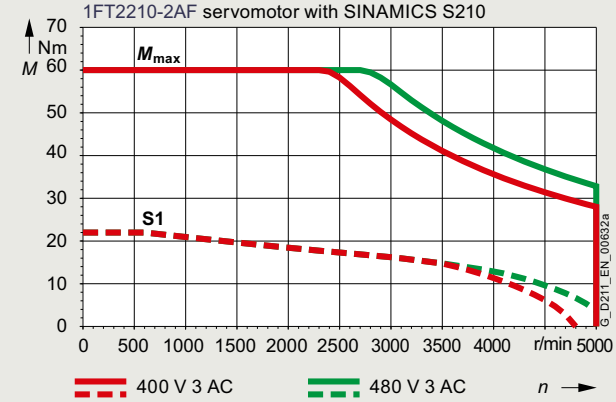
Speed/torque characteristics

Compact









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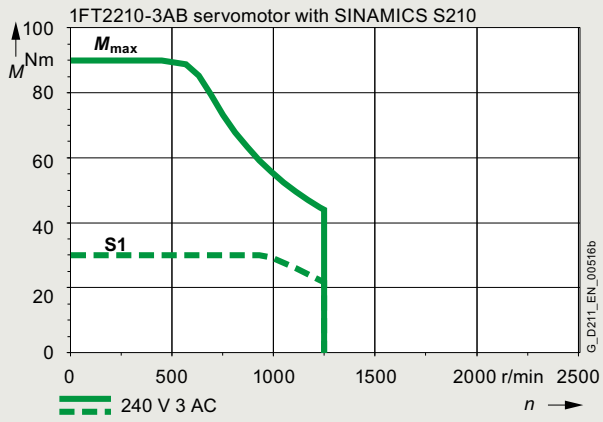
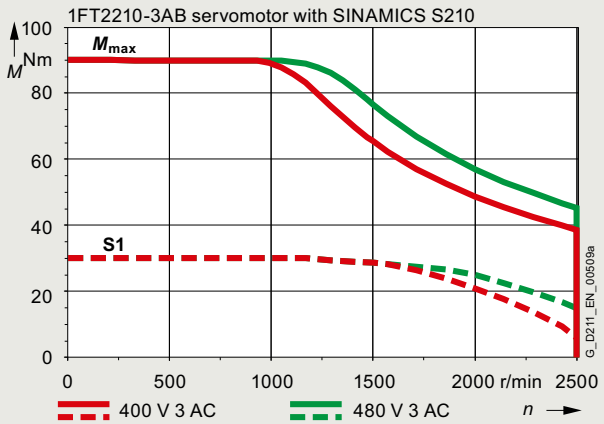
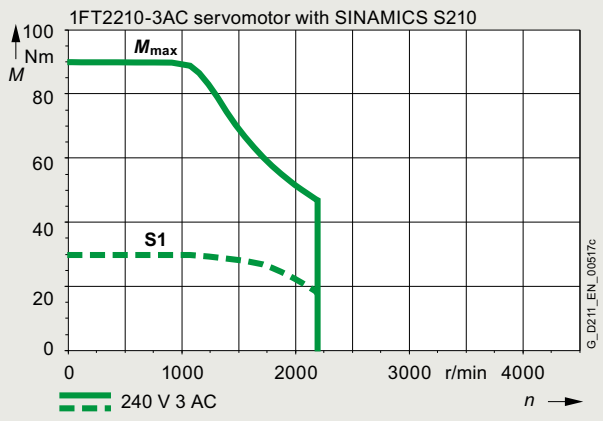
Technical specifications

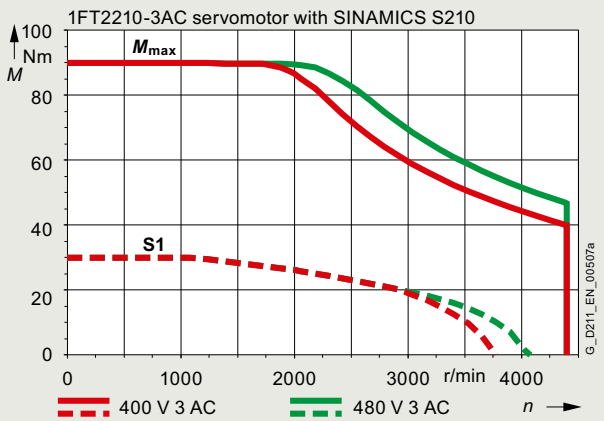
Speed/torque characteristics (continued)

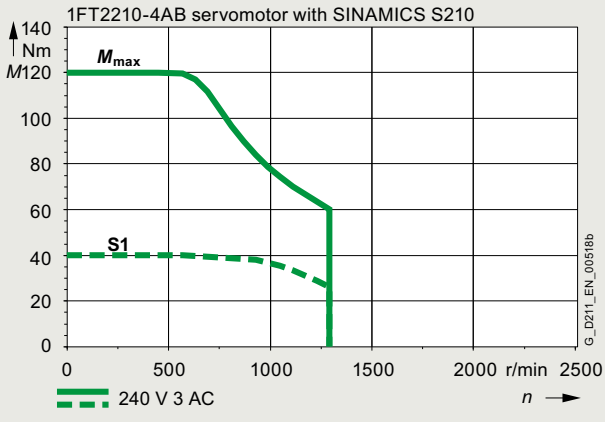
Compact (continued)

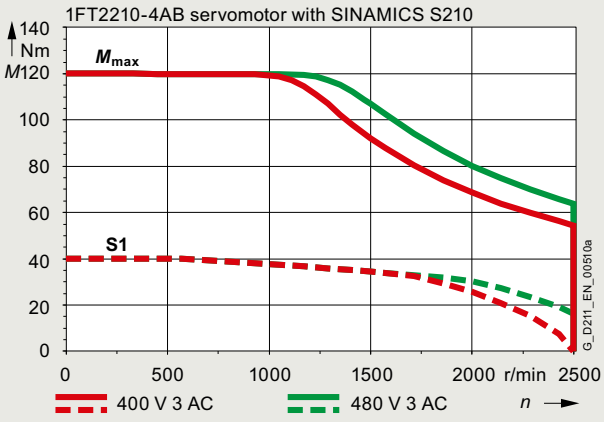












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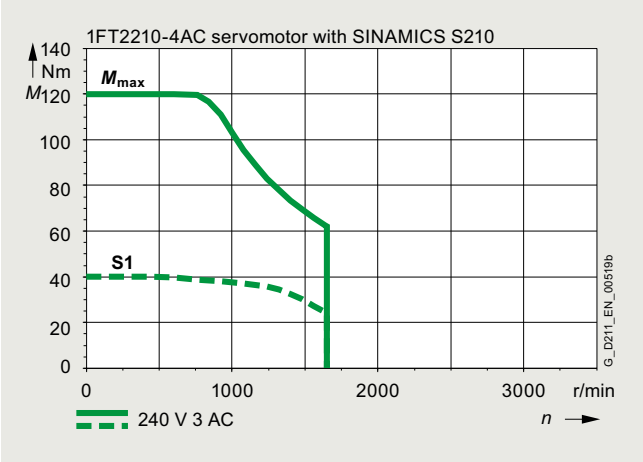
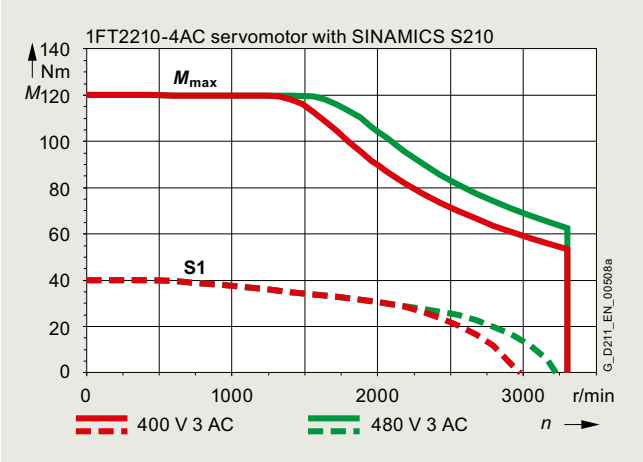
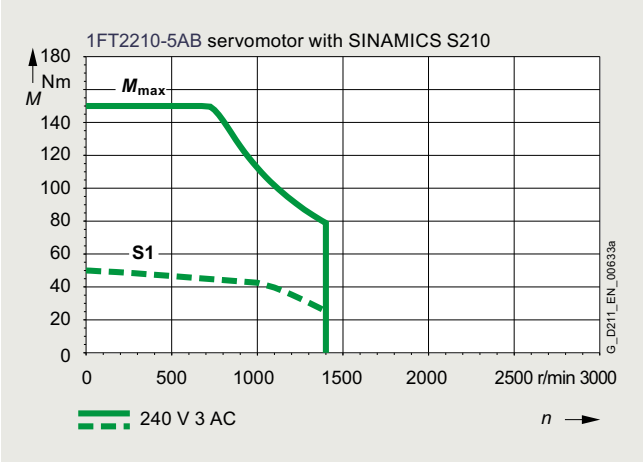
Technical specifications

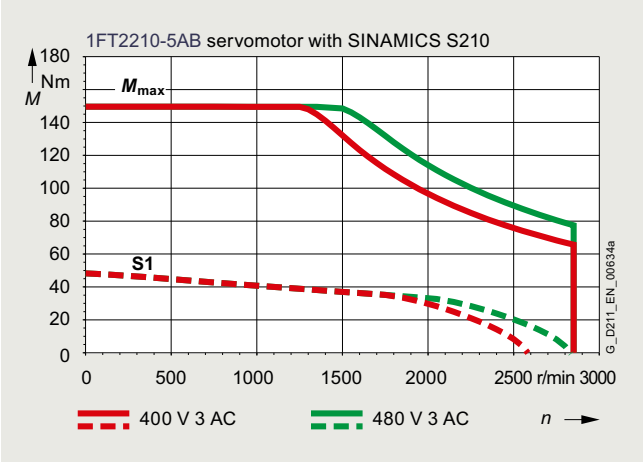
Speed/torque characteristics (continued)

Compact (continued)









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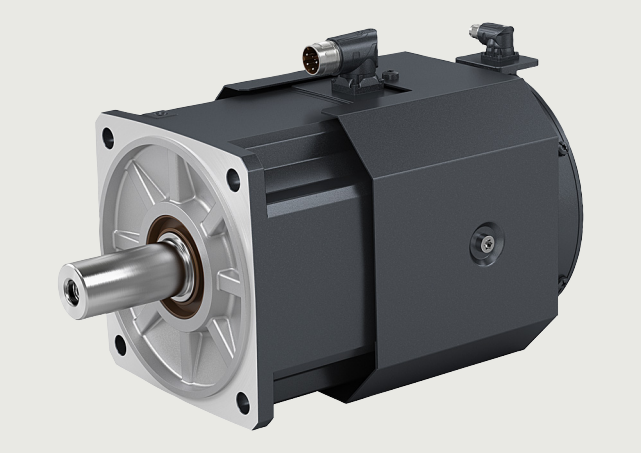
Technical specifications

SIMOTICS S-1FT2 shaft height 100 forced ventilation



Specific technical specifications

SIMOTICS S-1FT2 servomotors Shaft height 100 forced ventilation		Compact 1FT2210-4SB
Static torque M_0	Nm (lb_f-ft)	53 (39.09)
Stall current I_0	A	15.5
Maximum torque M_{max}	Nm (lb_f-ft)	120 (88.51)
Maximum current I_{max}	A	43.5
Maximum speed n_{max}	r/min	2800
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	117 (39.981)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	130 (44.421)
Moment of inertia (with reinforced brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	–
Weight m_{Mot}	kg (lb)	29 (63.93)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	34 (74.96)
Weight (with reinforced brake) $m_{Mot\ Br}$	kg (lb)	–
200 ... 240 V 3 AC		
Rated speed n_N	r/min	750
Rated torque M_N	Nm (lb_f-ft)	51 (37.61)
Rated current I_N	A	15
Rated power P_N	W	4000
380 ... 480 V 3 AC		
Rated speed n_N	r/min	1500
Rated torque M_N	Nm (lb_f-ft)	48 (35.40)
Rated current I_N	A	14.5
Rated power P_N	W	7600
Suitable for SINAMICS S210 (6SL5...) servo converters		
• 200 ... 240 V 3 AC		6SL5310-1BE17-0DF1
• 380 ... 480 V 3 AC		6SL5310-1BE17-0DF1

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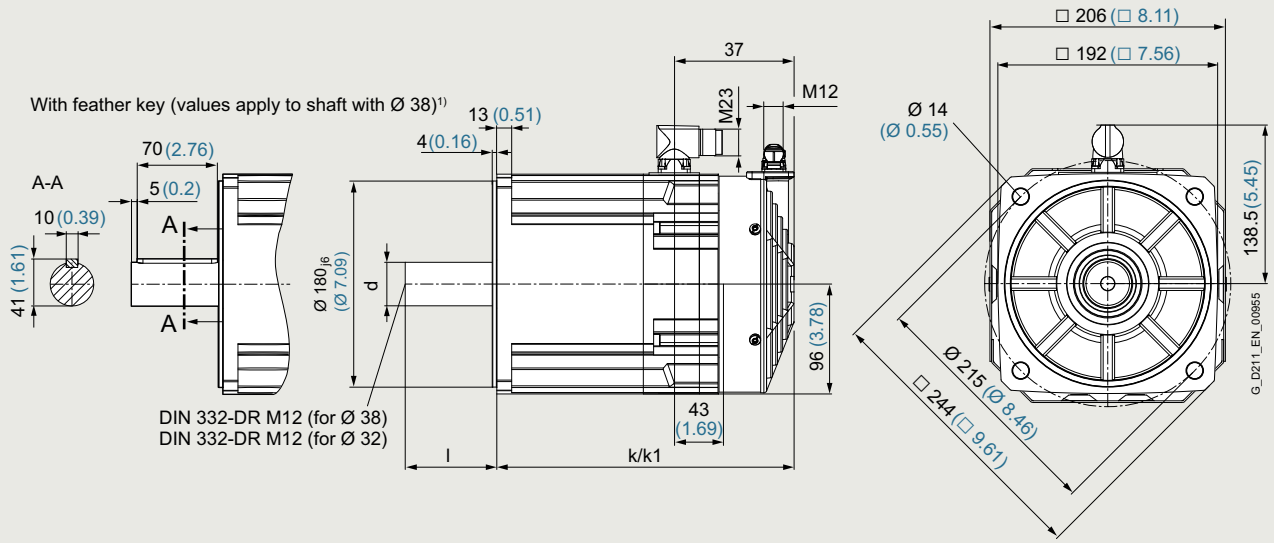
SIMOTICS S-1FT2 shaft height 100 forced ventilation

Technical specifications

Dimensional drawing



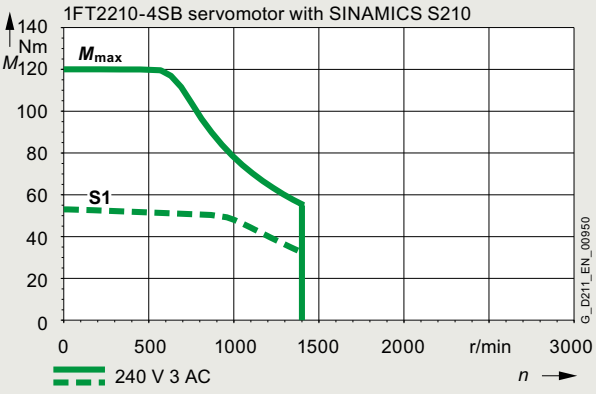
Shaft height 100	Without brake	With brake	With shaft Ø 38		With shaft Ø 32	
DIN	k	k1	d	l	d	l
IEC	LB	LB1	D	L	D	L
1FT2210-4SB...	338 (13.31)	397 (15.63)	Ø 38_{k6} (Ø 1.50)	80 (3.15)	Ø 32_{k6} (Ø 1.26)	58 (2.28)

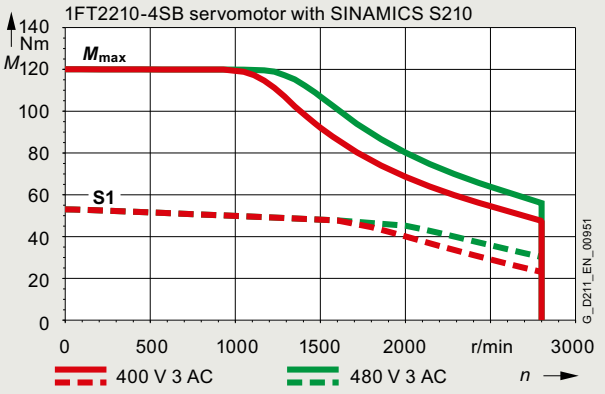
1) Dimensions for feather key with reduced shaft diameter Ø 32, see dimensional drawing 1F.208

All dimensions in mm (values in brackets are in inches).

Speed/torque characteristics

Compact





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3.3/2	Overview
3.3/2	Benefits
3.3/2	Application
3.3/2	More Information
3.3/3	Selection and ordering data
3.3/4	Technical specifications
3.3/4	General technical specifications
3.3/8	Shaft height 40
3.3/10	Shaft height 52
3.3/12	Shaft height 63
3.3/14	Shaft height 80

Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at:
www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator for the SINAMICS S210 drive system can be used on the internet at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FS2 servo motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1fs2/configuration

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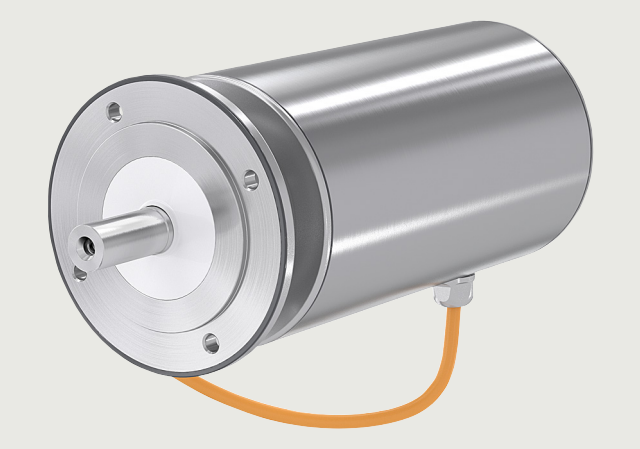
Overview



The SIMOTICS S-1FS2 servomotors are compact and highly dynamic synchronous motors, especially designed for use in food and pharmaceutical environments with the most stringent requirements for hygiene and cleanliness. They are characterized by high power density, degree of protection and overload capability, a design suitable for cleaning and the use of materials that are approved to be used in food processing.

Benefits

The SIMOTICS S-1FS2 servomotors fully exploit their strengths in the system with the SINAMICS S210 converter:

- Short adjustment and positioning times
- Quick and precise compensation of disturbances
- Stable closed loop control with high dynamic response
- Maximum flexibility in the selection
- Increased ruggedness
- Simplified cleaning

This is achieved by:

- Rapid control cycle
- High pulse frequency
- Complex rule algorithms
- Highest resolution optical encoders
- Low moment of inertia of the motors
- High overload capability
- One cable connection system

Application

- Food and beverage industry
- Pharmaceutical industry
- Packaging machines
- Handling equipment
- Feed and withdrawal devices

More information

More technical information

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-s210/documentation

Detailed information on the SINAMICS S210 drive system, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates, manuals and operating instructions), is available on the internet at:
www.siemens.com/sinamics-s210
and is also available via the Siemens Product Configurator on the internet.

Configuration in the Siemens Product Configurator

The Siemens Product Configurator for the SINAMICS S210 drive system can be found in SiePortal at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FS2 servo motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1fs2/configuration

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Selection and ordering data

	Static torque M_0 Nm (lb$_f$-ft)	Maximum torque M_{max} Nm (lb$_f$-ft)	Maximum speed n_{max} r/min	Rated speed for 200 ... 240 V 1/3 AC n_N r/min	Rated speed for 380 ... 480 V 3 AC n_N r/min	Rotor moment of inertia without/with brake J_{Mot} kg cm^2 (lb$_f$-in^2)	**SIMOTICS S-1FS2 servomotor with connection cable** Article No.	Additional order code for cable end and cable length Order code
Shaft height 40								
	3.1 (2.29)	10 (7.38)	7200	1500	3000	0.72/0.8 (0.246/0.273)	**1FS2104-6AF ■ 7- ■ MZ0**	**Q■ ■**
Shaft height 52								
	7.6 (5.61)	24 (17.7)	6000	1500	3000	2.8/3.6 (0.957/1.230)	**1FS2105-6AF ■ 7- ■ MZ0**	**Q■ ■**
Shaft height 63								
	14 (10.3)	42 (31)	6000	1250	2500	–/11 (–/3.759)	**1FS2106-6AE 1 7- ■ MZ0**	**Q■ ■**
	14 (10.3)	42 (31)	6000	1500	3000	9/– (3.075/–)	**1FS2106-6AF 0 7- ■ MZ0**	**Q■ ■**
Shaft height 80								
	23.5 (17.33)	80 (59.01)	4750	1000	2000	49/55 (16.743/18.794)	**1FS2208-5AC ■ 7- ■ MZ0**	**Q■ ■**

Article No. supplements			
Holding brake			
Without holding brake	**0**		
With holding brake	**1**		
Shaft end / feather key			
Plain shaft		**0**	
Shaft with feather key		**1**	
Supplements for the additional order code			
Cable end			
Free cable ends for direct connection to the converter			**0**
Cable end with SPEED-CONNECT coupling M17 (1FS2104 and 1FS2105) or M23 (1FS2106 and 1FS2208)			**1**
Cable length			

0.5 m (1.64 ft)	**A**	6 m (19.69 ft)	**M**
1 m (3.28 ft)	**B**	6.5 m (21.33 ft)	**N**
1.5 m (4.92 ft)	**C**	7 m (22.97 ft)	**P**
2 m (6.56 ft)	**D**	7.5 m (24.61 ft)	**Q**
2.5 m (8.20 ft)	**E**	8 m (26.25 ft)	**R**
3 m (9.84 ft)	**F**	8.5 m (27.89 ft)	**S**
3.5 m (11.48 ft)	**G**	9 m (29.53 ft)	**T**
4 m (13.12 ft)	**H**	9.5 m (31.17 ft)	**U**
4.5 m (14.76 ft)	**J**	10 m (32.81 ft)	**V**
5 m (16.41 ft)	**K**	10.5 m (34.45 ft)	**W**
5.5 m (18.05 ft)	**L**	11 m (36.09 ft)	**X**

The connection cable of the SIMOTICS S-1FS2 servomotors can be extended with additional cables up to a total cable length of 50 m (164 ft). This applies to motors with the additional order code Q1.
(Cable end with SPEED-CONNECT coupling).
For further information see section MOTION-CONNECT connection systems from page 4/1.

Spare parts

Description	For motor	Article No.
Gasket External flange gasket on the drive side (DE) of the motor	1FS2104	**1FY2904-1GF00**
	1FS2105	**1FY2905-1GF00**
	1FS2106	**1FY2906-1GF00**
	1FS2208	**1FY2908-1GF00**

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Technical specifications

General technical specifications

SIMOTICS S-1FS2 motors	
Motor type	Permanent-magnet synchronous motor
Permissible operating conditions without derating	
• Ambient temperature	-15 ... +40 °C (5 ... 104 °F)
• Installation altitude, max.	1000 m (3281 ft)
Degree of protection According to EN 60034-5 (IEC 60034-5), ISO 20653	IP66, IP67 IP69K (does not apply to the shaft outlet)
Cooling According to EN 60034-6	Natural cooling (IC410)
Type of construction According to EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3)
Shaft end According to DIN 748-3 (IEC 60072-1)	Plain shaft Optional shaft with feather key (half-key balancing)
Shaft and flange accuracy According to DIN 42955 (IEC 60072-1)	Tolerance N In each case for radial eccentricity of the shaft end, concentricity of the centering edge, and axial eccentricity of the mounting flange to the axis of the shaft end
Vibration severity grade According to EN 60034-14 (IEC 60034-14)	Grade A is maintained up to rated speed
Stator winding insulation According to EN 60034-1 (IEC 60034-1)	Thermal class 155 (F) for a winding overtemperature of ΔT = 100 K
Sound pressure level L_{pA} (1 m), max. According to ISO 1680	
• 1FS2104	55 dB(A) + 3 dB(A) tolerance
• 1FS2105 and 1FS2106	65 dB(A) + 3 dB(A) tolerance
• 1FS2208	70 dB(A) + 3 dB(A) tolerance
Encoder system	AM22DQC (absolute encoder 22-bit + 12-bit multiturn)
Holding brake	Optional integrated holding brake
Connection	One Cable Connection (OCC) for signals and power, open cable end for direct connection to SINAMICS converter or cable end with plug connector to connect a MOTION-CONNECT basic line
Surface	Stainless steel 1.4404, roughness < 0.8 µm
Certificates of suitability	cURus, CE, EAC, CEL, EHEDG

Note:

SIMOTICS motors are designed for operation with frequency converters and non-periodic load and speed changes.

Typical applications include machine tools or production machines with non-periodic speed and load cycles. This corresponds to IEC 60034-1 operating mode S9.

In operating mode S9, a correspondingly selected constant load, similar to operating mode S1, is used as a reference value.

Regulations, standards, specifications

The motors comply with the appropriate standards and regulations, see table below.

As a result of the fact that in many countries the national regulations have been completely harmonized with the international IEC 60034-1 recommendation, there are no longer any differences with respect to coolant temperatures, temperature classes and temperature rise limits.

General specifications for rotating electrical machines	IEC 60034-1
Terminal designations and direction of rotation for electrical machines	IEC 60034-8
Types of construction of rotating electrical machines	IEC 60034-7
Cooling methods of rotating electrical machines	IEC 60034-6
Degrees of protection of rotating electrical machines	IEC 60034-5
Vibration severity of rotating electrical machines	IEC 60034-14
Noise limit values for rotating electrical machines	IEC 60034-9
Cylindrical shaft ends for electrical machines	DIN 748-3/IEC 60072-1

SIMOTICS S-1FS2 motors have UL approval from Underwriters Laboratories Inc. and are marked with the "UL Recognized Component" test symbol. This is used for components which are part of a larger product or system. This confirmed compliance with the corresponding US American and Canadian regulations, and allowed access to the North American market.

For SIMOTICS S-1FS2 motors, conformity with the relevant EC directives 2006/95/EC and 2014/35/EU and the relevant standards EN 60034-1:2010 and EN 60204-1:2006 is confirmed. By applying the CE mark to the product, Siemens AG confirms this for the product, and secures the free movement of goods within the European Union.

Specific standards for the food industry

The SIMOTICS S-1FS2 motors meet the EHEDG directives for "Class I EL AUX". FDA-listed plastic materials are used in the relevant exterior areas. The bearing grease is approved in accordance with NSF H1.

EHEDG certificate:
https://support.industry.siemens.com/cs/document/109805184

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Technical specifications

Degree of protection according to IEC 60034-5

A suitable degree of protection must be selected according to the operating and environmental conditions to protect the motor against damage caused by the ingress of water and other liquids, as well as dust and foreign bodies.

SIMOTICS S-1FS2 motors have degree of protection IP66/IP67 as standard.

In contrast to the degree of protection IP65, the degree of protection IP67 provides increased protection against water jets and splashing water as well as brief immersion. The mounting position of the motor must be chosen so that the stagnant water at the shaft exit is avoided.

The degree of protection designation is composed from the code IP (for International Protection) and two code numbers for the protection against touching and penetration of foreign bodies, and the degree of protection against the ingress of water.

First code number

6 Protection against dust ingress and complete protection against touching

Second code number

4: Protection against splashwater from any direction

5: Protection against jet water from any direction

6: Increased protection against powerful water jets from any direction

7: Protection against brief immersion

Degree of protection according to ISO 20653

The motor meets the IP69K requirements of the ISO 20653 standard. Using a much higher pressure for cleaning is generally not advisable in the food sector, as there is a risk of re-contaminating already cleaned system parts with the spray mist.

Chemical resistance and cleaning agents

The SIMOTICS S-1FS2 motor is resistant to a wide range of cleaning agents and processes used in the food industry.

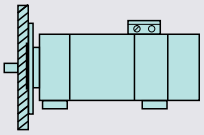
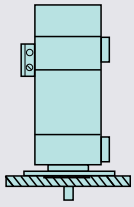
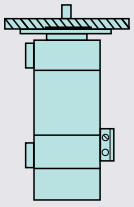
For detailed information, such as admissible cleaning agents, see operating instructions "SINAMICS servo drive system with 1FS2":
https://support.industry.siemens.com/cs/document/109796333

Type of construction, mounting position according to IEC 60034-7

SIMOTICS S-1FS2 motors are designed in type of construction IM B5. They may also be used in the mounting positions IM V1 and IM V3.

Note:

An EHEDG-compliant V3 mounting position requires additional measures, such as a cover for the motor flange.

Code 1	IM B5	IM V1	IM V3
Code 2	IM 3001	IM 3011	IM 3031
			
	Horizontal flange mounting	Flange mounting, output shaft pointing vertically downwards	Flange mounting, output shaft pointing vertically upwards

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Technical specifications

Shaft and flange accuracy in accordance with IEC 60072-1

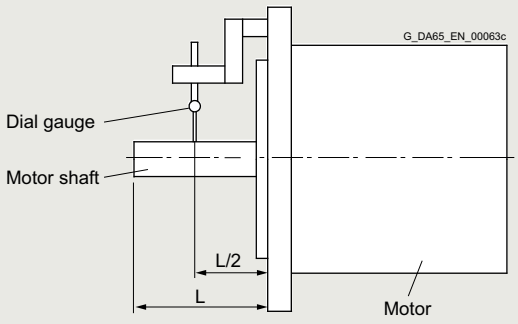
Radial eccentricity tolerance of shaft in relation to housing axis (referred to cylindrical shaft ends)

Motor	Shaft end D × L mm (in)	Radial eccentricity Tolerance N µm
1FS2104	19 × 40 (0.75 × 1.57)	40
1FS2105		
1FS2106	24 × 50 (0.94 × 1.97)	
1FS2208	32 × 58 (1.26 × 2.28)	50

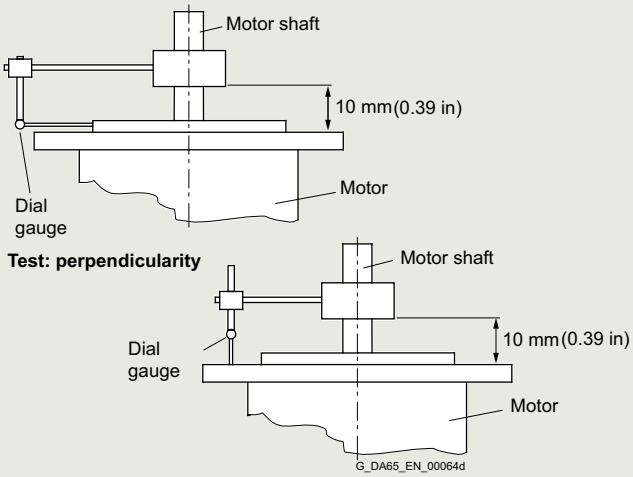
Concentricity and axial eccentricity tolerance of the flange surface for the shaft axis (referred to the centering diameter of the mounting flange)

Motor	Centering diameter mm (in)	Concentricity and axial eccentricity Tolerance N µm
1FS2104	70 (2.76)	80
1FS2105	95 (3.74)	
1FS2106	110 (4.33)	100
1FS2208	130 (5.12)	

Test: runout



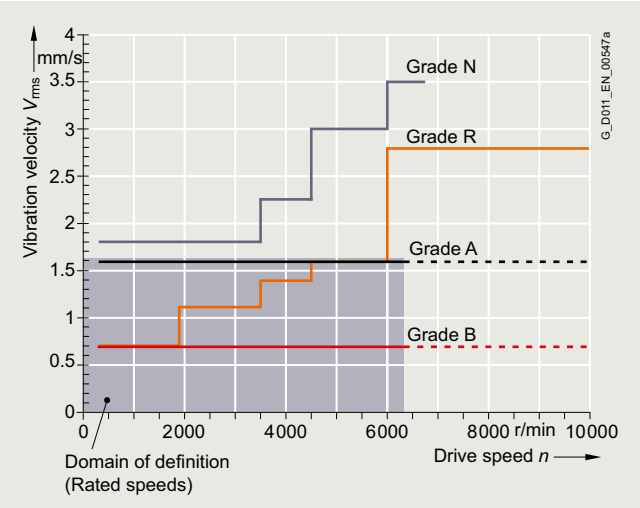
Test: concentricity



Vibration severity and vibration severity grade A according to IEC 60034-14

The vibration severity is the RMS value of the vibration velocity (frequency range from 10 Hz to 1000 Hz). The vibration severity is measured using electrical measuring devices according to DIN 45666.

The specified values refer only to the motor. These values can increase as a result of the overall system vibrational behavior due to installation.



Vibration severity limit values

The speeds of 1800 r/min and 3600 r/min and the associated limit values are specified according to IEC 60034-14.
The speeds of 4500 r/min and 6000 r/min and the specified values are defined by the motor manufacturer.

The motors maintain vibration severity grade A up to the rated speed.

Balancing according to ISO 21940-32

Apart from the balance quality of the motor, the vibrational quality of motors with attached belt pulleys is mainly determined by the balance state of the mounted component. If the motor and the mounted component are balanced separately before being joined, the balancing process of the belt pulley is to be adapted to the motor's balancing type.

SIMOTICS S-1FS2 motors with feather keys are always half-key balanced. In general, motors with a plain shaft are recommended for systems with the most stringent vibrational quality requirements.

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Technical specifications

Vibration stress, immitted vibration values

The requirements of environmental class 3M8 (according to EN 60721-3-3 Table 6) must be maintained for proper function and safeguard the bearing life. The following limits are valid for (immitted) vibration values introduced into the motor from outside:

- Vibration velocity V_{rms} according to ISO 10816, max. 4.5 mm/s (0.18 in/s)
- Vibration acceleration a_{peak} axial and radial 50 m/s^2 (164 ft/s^2)

During transport, the motors withstand single shocks (6 ms) of up to 250 m/s^2 (820 ft/s^2).

Ambient temperature and installation altitude

Operating range without restrictions:

Temperature range from -15 °C to +40 °C (5.0 °F to 104 °F), installation altitude up to 1000 m (3281 ft).

If deviating conditions are encountered, the S1 characteristic of the motor must be adapted with regard to speed and torque.

Use the following equation to calculate the reduced S1 characteristic:
$S1_{red}\,(n) = x_D \times S1_{40°C;\ 1000m}\,(n/x_D)$

Installation altitude above sea level	Derating factor x_D at an ambient temperature of				
m (ft)	30 °C (86 °F)	40 °C (104 °F)	45 °C (113 °F)	50 °C (122 °F)	55 °C (131 °F)
1000 (3281)	1.05	1	0.95	0.89	0.84
2000 (6562)	1	0.95	0.86	0.8	0.73
3000 (9843)	0.95	0.89	0.76	0.69	0.62
4000 (13123)	0.89	0.84	0.65	0.57	0.47

Larger installation heights with boundary conditions possible, see operating instructions. Operation up to 80 °C (176 °F) ambient temperature is possible with extended derating, design via TIA Selection Tool required.

Holding brake

Many drives need a holding brake with an EMERGENCY STOP function for safety reasons or to meet process requirements. The brakes used on the SIMOTICS S-1FS2 motors operate on the quiescent current principle. A spring or permanent magnet exerts a tensile force on the brake armature disk. This means that the brake is closed and the motor shaft thereby stopped in a state of zero current.

An electric current that flows through a coil generates an opposing field that counteracts the force effect of the spring or permanent magnet and releases or holds open the brake. Only a limited number of braking operations can be performed for an EMERGENCY STOP or voltage failure without causing excessive wear on the holding brake. The holding brake is not an operational brake. Regular dynamic braking leads to increased wear and premature brake failure. In order to ensure the functionality and specification of the brake, neither the total operating energy nor the maximum switching energy per braking operation may be exceeded.

Encoder system

In motors with integrated OCC/DRIVE-CLiQ interface, the sensor signal is already digitally prepared in the motor, and then transferred quickly and without loss to the drive system. Motors with an OCC/DRIVE-CLiQ interface simplify commissioning and diagnostics, as the motor parameters and encoder system are identified automatically.

Multiturn absolute encoder

AM22DQC: absolute encoder 22-bit + 12-bit multiturn

This encoder outputs an absolute angular position between 0° and 360° in the specified resolution. It can also count 4096 revolutions. The absolute position is also sensed in the de-energized state. With a ball screw, for example, the absolute position of the slide can be determined over a longer distance.

The brake control is already fully integrated into the SINAMICS S210 converter system, so that an external circuit is not necessary.

After an EMERGENCY STOP at the maximum single switching energy, a cooling time of at least 5 minutes is required.

The following table contains technical specifications of the holding brakes for operating on a SINAMICS S210.

Motor	Shaft height	Holding torque at 120 °C (248 °F)	Average dynamic braking torque at 120 °C (248 °F)	Maximum dynamic braking torque at 120 °C (248 °F)	Opening time	Closing time	Maximum permissible single switching energy	Total operating energy (service life)	Holding current	Break-induced current, typ. [1] for 500 ms
		Nm (lb$_f$-ft)	Nm (lb$_f$-ft)	Nm (lb$_f$-ft)	ms	ms	J	kJ	A	A
1FS2104	40	3.3 (2.43)	3.3 (2.43)	9 (6.64)	50	40	270	120	0.2	1.2
1FS2105	52	8 (5.90)	5 (3.69)	18 (13.28)	35	20	570	284	0.3	1.1
1FS2106	63	16 (11.80)	9 (6.64)	35 (25.82)	70	35	1065	774	0.35	1.1
1FS2208	80	32 (23.60)	17 (12.54)	70 (51.63)	120	40	4800	2400	0.5	1.4

[1] Typical values at an ambient temperature of 20 °C (68 °F). At -15 °C (5 °F), the break-induced currents can increase by up to 30 %.

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SIMOTICS S-1FS2 shaft height 40

Technical specifications

SIMOTICS S-1FS2 shaft height 40

Specific technical specifications

SIMOTICS S-1FS2 servomotors		
Shaft height 40		**1FS2104-6AF**
Static torque M_0	Nm (lb_f-ft)	3.1 (2.29)
Stall current I_0	A	2.75
Maximum torque M_{max}	Nm (lb_f-ft)	10 (7.38)
Maximum current I_{max}	A	10.9
Maximum speed n_{max}	r/min	7200
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	0.72 (0.246)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	0.8 (0.273)
Weight m_{Mot}	kg (lb)	7.2 (15.88)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	8.7 (19.18)
200 ... 240 V 1 AC / 3 AC		
Rated speed n_N	r/min	1500
Rated torque M_N	Nm (lb_f-ft)	2.85 (2.10)
Rated current I_N	A	2.7
Rated power P_N	W	450
380 ... 480 V 3 AC		
Rated speed n_N	r/min	3000
Rated torque M_N	Nm (lb_f-ft)	2.55 (1.88)
Rated current I_N	A	2.4
Rated power P_N	W	800
Suitable for SINAMICS S210 (6SL5...) servo converters		
200 ... 240 V 1 AC		6SL5310-1BB10-8CF0
200 ... 240 V 3 AC		6SL5310-1BE11-0DF1
380 ... 480 V 3 AC		6SL5310-1BE11-0DF1

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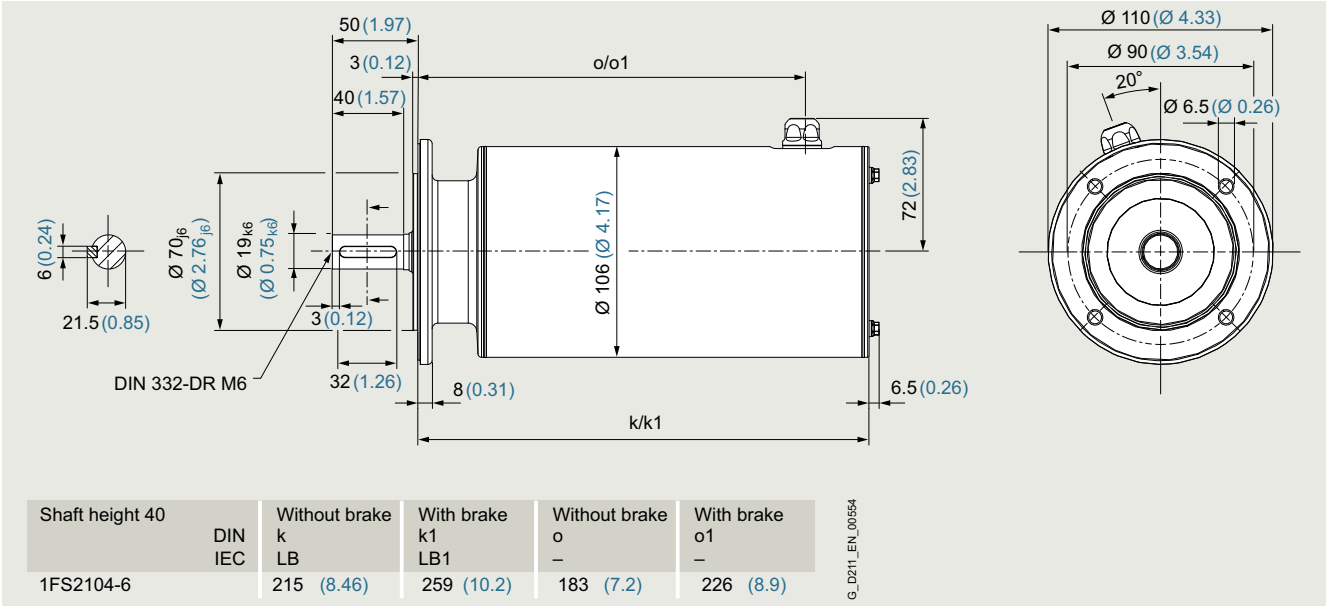
Technical specifications

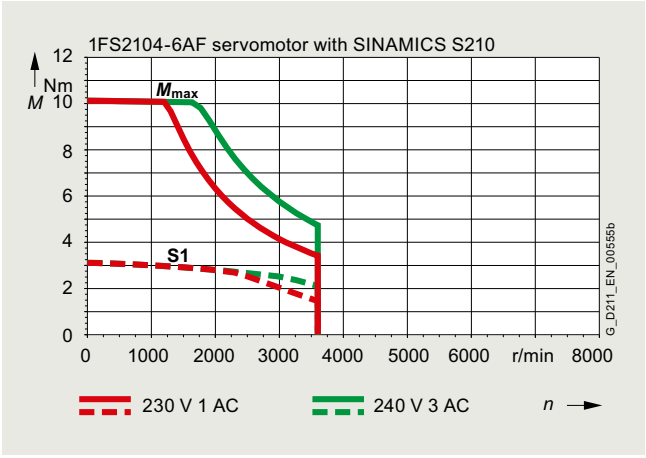
Dimensional drawing

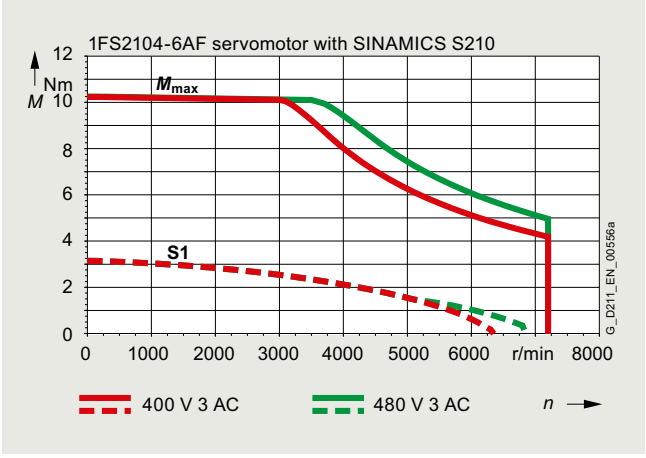


Shaft height 40	Without brake	With brake	Without brake	With brake
DIN	k	k1	o	o1
IEC	LB	LB1	–	–
1FS2104-6	215 (8.46)	259 (10.2)	183 (7.2)	226 (8.9)

All dimensions in mm (values in brackets are in inches).

Speed/torque characteristics





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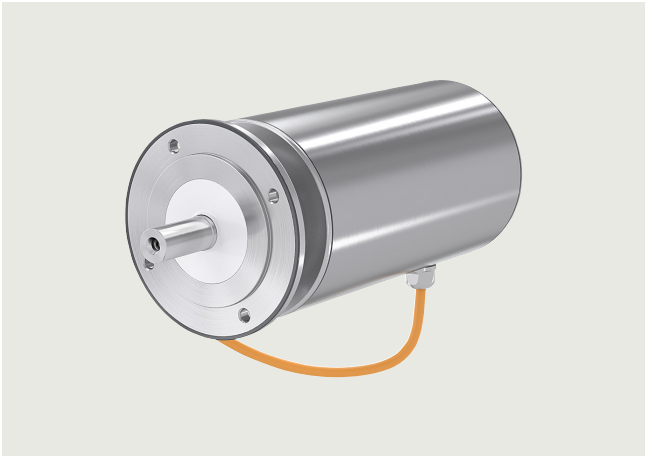
SIMOTICS S-1FS2 shaft height 52

Technical specifications

SIMOTICS S-1FS2 shaft height 52



Specific technical specifications

SIMOTICS S-1FS2 servomotors		
Shaft height 52		**1FS2105-6AF**
Static torque M_0	Nm (lb_f-ft)	7.6 (5.61)
Stall current I_0	A	6.2
Maximum torque M_{max}	Nm (lb_f-ft)	24 (17.70)
Maximum current I_{max}	A	24
Maximum speed n_{max}	r/min	6000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	2.8 (0.957)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	3.6 (1.230)
Weight m_{Mot}	kg (lb)	13.3 (29.33)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	14.6 (32.19)
200 ... 240 V 3 AC		
Rated speed n_N	r/min	1500
Rated torque M_N	Nm (lb_f-ft)	6.2 (4.57)
Rated current I_N	A	5.5
Rated power P_N	W	980
380 ... 480 V 3 AC		
Rated speed n_N	r/min	3000
Rated torque M_N	Nm (lb_f-ft)	4.1 (3.02)
Rated current I_N	A	3.7
Rated power P_N	W	1290
Suitable for SINAMICS S210 (6SL5...) servo converters		
200 ... 240 V 3 AC		6SL5310-1BE12-0DF1
380 ... 480 V 3 AC		6SL5310-1BE12-0DF1

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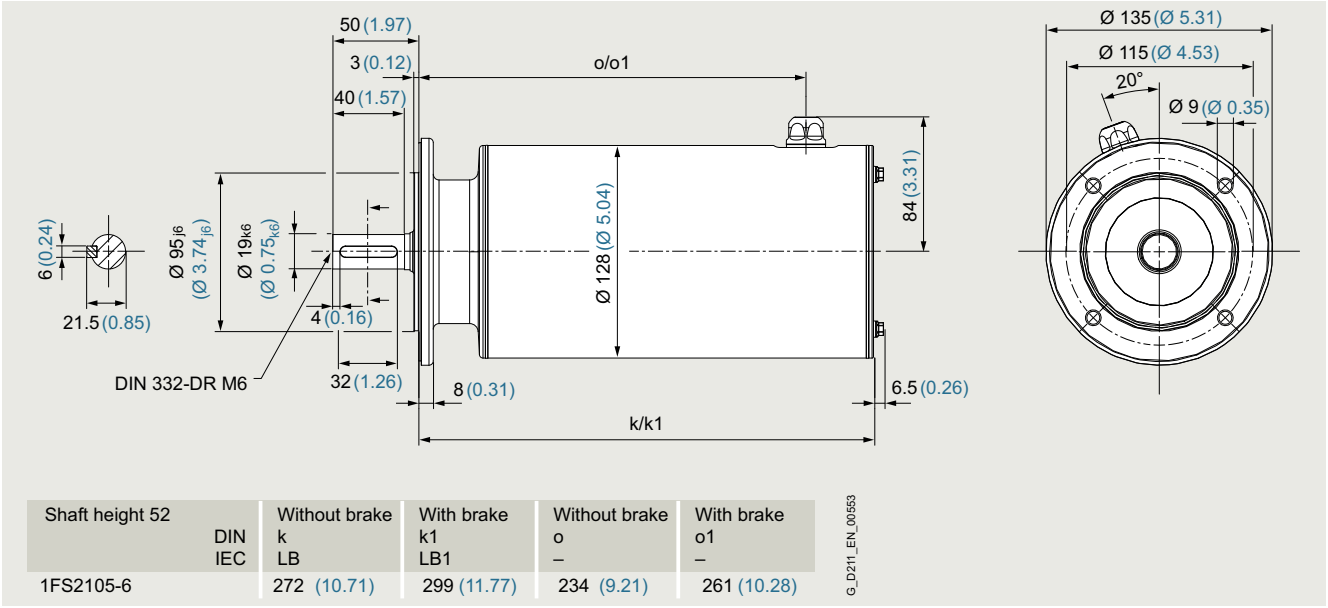
Technical specifications

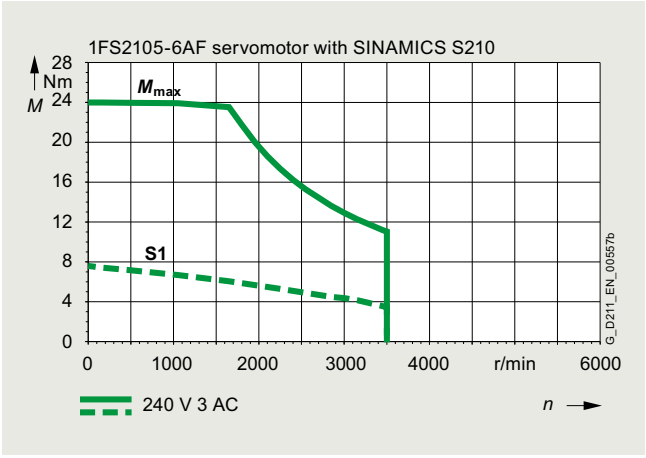
Dimensional drawing

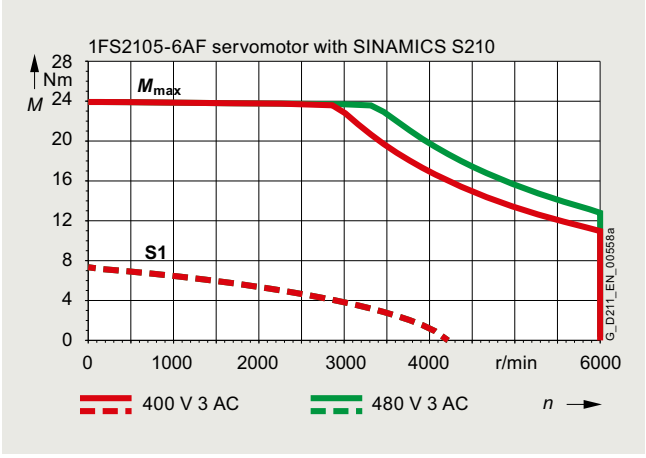


Shaft height 52	Without brake	With brake	Without brake	With brake
DIN	k	k1	o	o1
IEC	LB	LB1	–	–
1FS2105-6	272 (10.71)	299 (11.77)	234 (9.21)	261 (10.28)

All dimensions in mm (values in brackets are in inches).

Speed/torque characteristics





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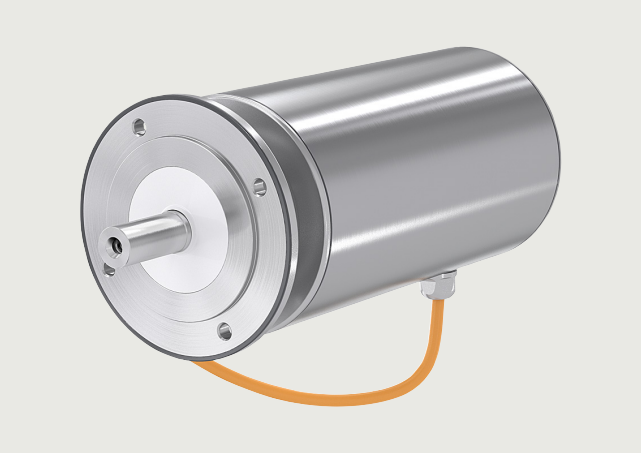
SIMOTICS S-1FS2 shaft height 63

Technical specifications

SIMOTICS S-1FS2 shaft height 63



Specific technical specifications

SIMOTICS S-1FS2 servomotors			
Shaft height 63		**1FS2106-6AE1**	**1FS2106-6AF0**
Static torque M_0	Nm (lb_f-ft)	14 (10.33)	14 (10.33)
Stall current I_0	A	12.4	12.4
Maximum torque M_{max}	Nm (lb_f-ft)	42 (30.98)	42 (30.98)
Maximum current I_{max}	A	44	44
Maximum speed n_{max}	r/min	6000	6000
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	–	9 (3.075)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	11 (3.759)	–
Weight m_{Mot}	kg (lb)	–	18.6 (41.01)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	21 (46.31)	–
200 ... 240 V 3 AC			
Rated speed n_N	r/min	1250	1500
Rated torque M_N	Nm (lb_f-ft)	11.2 (8.26)	11 (8.11)
Rated current I_N	A	10	10.3
Rated power P_N	W	1470	1730
380 ... 480 V 3 AC			
Rated speed n_N	r/min	2500	3000
Rated torque M_N	Nm (lb_f-ft)	6.9 (5.09)	6.2 (4.57)
Rated current I_N	A	6.5	6
Rated power P_N	W	1810	1950
Suitable for SINAMICS S210 (6SL5...) servo converters			
200 ... 240 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1
380 ... 480 V 3 AC		6SL5310-1BE15-0DF1	6SL5310-1BE15-0DF1

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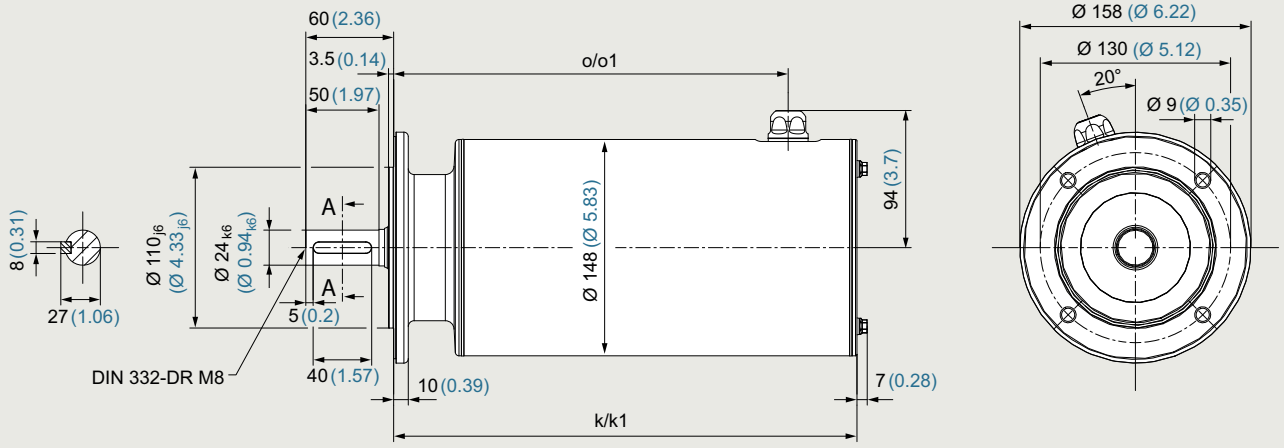
Technical specifications

Dimensional drawing

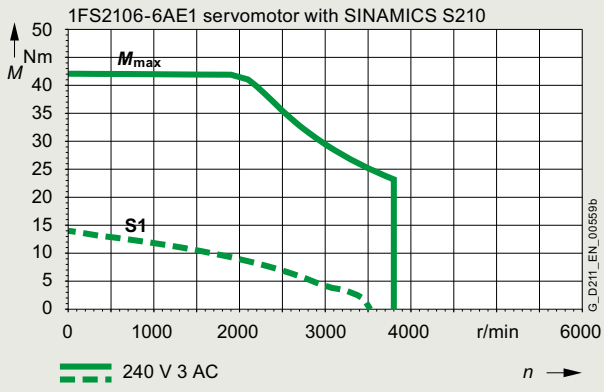


Shaft height 63 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FS2106-6AF07	265 (10.43)	-	230 (9.06)	-
1FS2106-6AE17	-	317 (12.48)	-	282 (11.1)

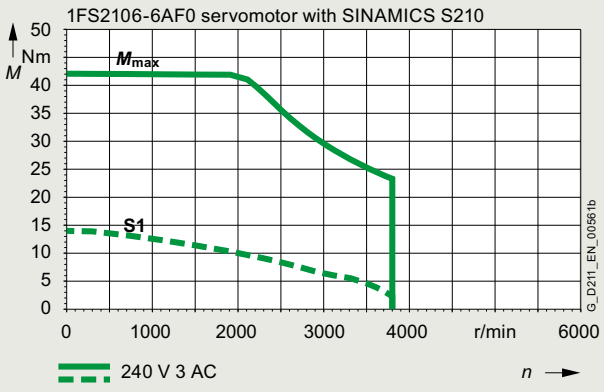
All dimensions in mm (values in brackets are in inches).

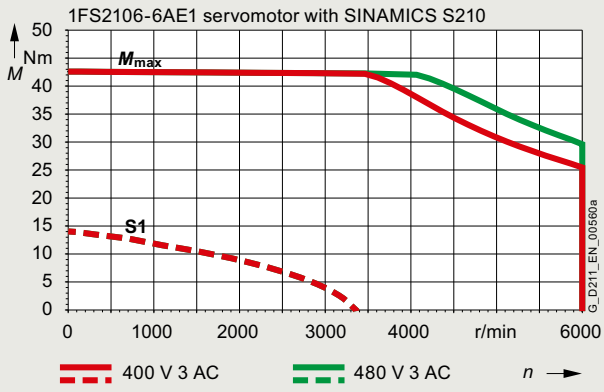
Speed/torque characteristics

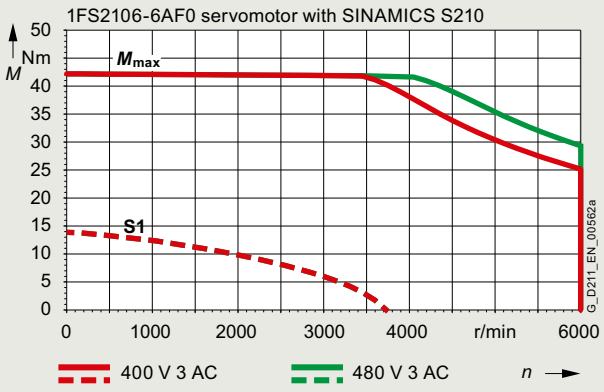
Motor with holding brake



Motor without holding brake







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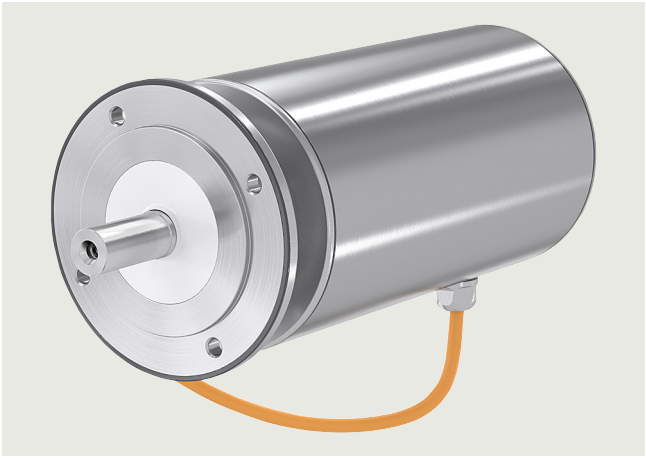
SIMOTICS S-1FS2 shaft height 80

Technical specifications

SIMOTICS S-1FS2 shaft height 80



Specific technical specifications

SIMOTICS S-1FS2 servomotors		
Shaft height 80		**1FS2208-5AC**
Static torque M_0	Nm (lb_f-ft)	23.5 (17.33)
Stall current I_0	A	12.8
Maximum torque M_{max}	Nm (lb_f-ft)	80 (59.01)
Maximum current I_{max}	A	51.5
Maximum speed n_{max}	r/min	4750
Rotor moment of inertia J_{Mot}	kg cm^2 (lb_f-in^2)	49.1 (16.777)
Moment of inertia (with brake) $J_{Mot\ Br}$	kg cm^2 (lb_f-in^2)	54.7 (18.691)
Weight m_{Mot}	kg (lb)	28 (61.74)
Weight (with brake) $m_{Mot\ Br}$	kg (lb)	32 (70.56)
200 ... 240 V 3 AC		
Rated speed n_N	r/min	1000
Rated torque M_N	Nm (lb_f-ft)	19.5 (14.38)
Rated current I_N	A	11.1
Rated power P_N	W	2040
380 ... 480 V 3 AC		
Rated speed n_N	r/min	2000
Rated torque M_N	Nm (lb_f-ft)	12 (8.85)
Rated current I_N	A	7.1
Rated power P_N	W	2510
Suitable for SINAMICS S210 (6SL5...) servo converters		
200 ... 240 V 3 AC		6SL5310-1BE17-0DF1
380 ... 480 V 3 AC		6SL5310-1BE17-0DF1

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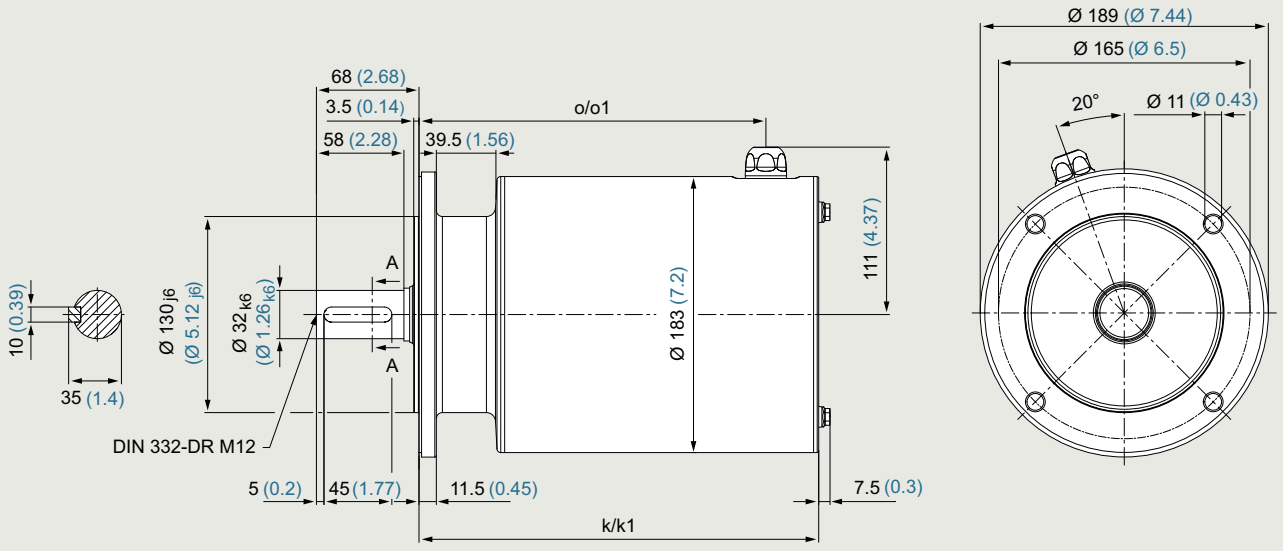
Technical specifications

Dimensional drawing

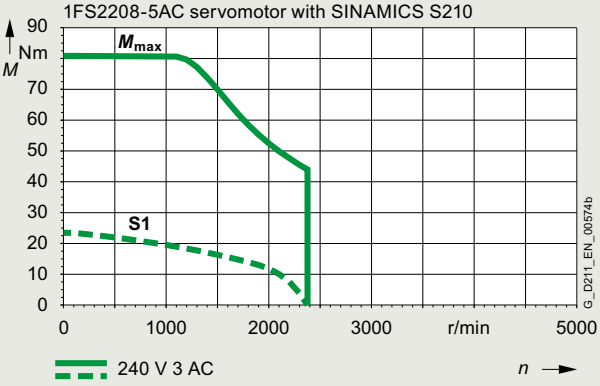


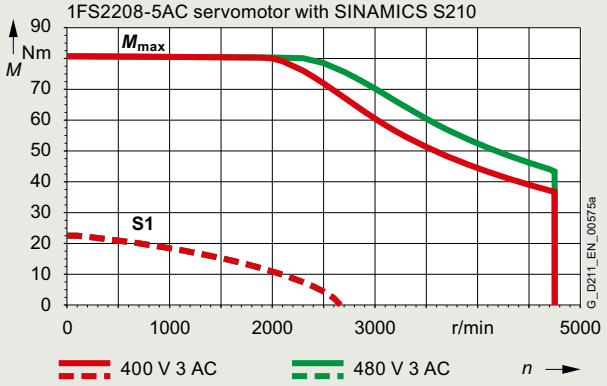
Shaft height 80 DIN IEC	Without brake k LB	With brake k1 LB1	Without brake o –	With brake o1 –
1FS2208-5AC07	265 (10.43)	-	230 (9.06)	-
1FS2208-5AC17	-	318 (12.52)	-	283 (11.14)

G_D211_EN_00576

All dimensions in mm (values in brackets are in inches).

Speed/torque characteristics





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Notes

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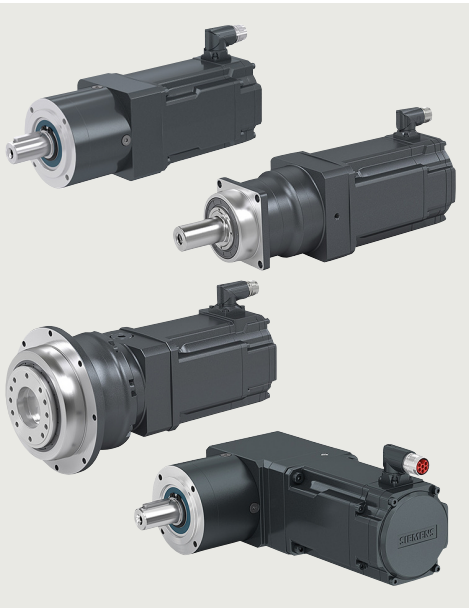

3.4/2 Overview
3.4/10 Technical specifications
3.4/10 General technical specifications for planetary gearboxes NRB(W), NRK(W), NLC(W), SP+ and TP+
3.4/13 Economy gearbox type NRB
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3.4/27 Economy angular gearbox type NRBW
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3.4/52 Selection and ordering data
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3.4/56 **Economy geared motors** for servo converters with line connection 230 V 1 AC / 240 V 3 AC
Gearbox types:
3.4/57 NRB040
3.4/60 NRB060
3.4/66 NRB080
3.4/74 NRB120
3.4/84 NRB160
3.4/88 NRK050
3.4/90 NRK070
3.4/93 NRK090
3.4/97 NRK120
3.4/102 NRK155
3.4/107 NLC060
3.4/110 NLC080
3.4/114 NLC120
3.4/119 **Economy geared motors** for servo converters with line connection 400 V 3 AC
Gearbox types:
3.4/120 NRB040
3.4/122 NRB060
3.4/127 NRB080
3.4/134 NRB120
3.4/144 NRB160
3.4/148 NRK050
3.4/149 NRK070
3.4/152 NRK090
3.4/156 NRK120
3.4/161 NRK155
3.4/166 NLC060
3.4/169 NLC080
3.4/173 NLC120
3.4/178 **Economy angular geared motors** for servo converters with line connection 230 V 1 AC / 240 V 3 AC
Gearbox types:
3.4/179 NRBW040
3.4/181 NRBW060
3.4/186 NRBW080
3.4/192 NRBW120
3.4/200 NRKW050
3.4/201 NRKW070
3.4/204 NRKW090
3.4/207 NRKW120
3.4/211 NLCW060
3.4/214 NLCW080
3.4/217 NLCW120
3.4/222 **Economy angular geared motors** for servo converters with line connection 400 V 3 AC
Gearbox types:
3.4/222 NRBW060
3.4/226 NRBW080
3.4/231 NRBW120
3.4/238 NRKW070
3.4/240 NRKW090
3.4/243 NRKW120
3.4/247 NLCW060
3.4/249 NLCW080
3.4/252 NLCW120
3.4/256 **Precision geared motors** NEW for servo converters with line connection 400 V 3 AC
Gearbox types:
3.4/257 SP+ 060
3.4/259 SP+ 075
3.4/262 SP+100
3.4/268 SP+140
3.4/274 SP+180
3.4/279 SP+210
3.4/283 SP+240
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3.4/289 TP+010
3.4/292 TP+025
3.4/298 TP+050
3.4/304 TP+110
3.4/304 TP+300
3.4/314 TP+500

Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at:
www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator for the SINAMICS S210 drive system can be used on the internet at the following address:
www.siemens.com/sinamics-s210/configuration

In addition, the SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors can be found at the following address in the Siemens Product Configurator in SiePortal:
www.siemens.com/simotics-1fk2-servogearedmotors/configuration
www.siemens.com/simotics-1ft2-servogearedmotors/configuration

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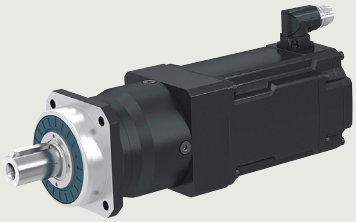
Overview

Servo planetary geared motors

– SIMOTICS S-1FK2 and S-1FT2 with economy gearbox

• gearbox NRB

• gearbox NRK



• gearbox NLC

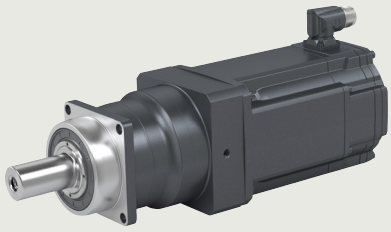
– SIMOTICS S-1FT2 with economy angular gearbox

• gearbox NRBW

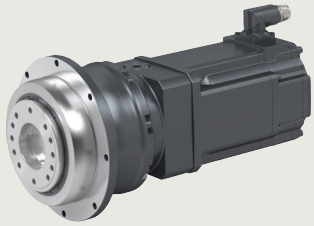
• gearbox NRKW

• gearbox NLCW

– SIMOTICS S-1FT2 with precision gearbox



• gearbox SP+



• gearbox TP+

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors with the NRB, NRK, NLC economy gearboxes and SIMOTICS S-1FT2 servo planetary geared motors with the NRBW, NRKW, NLCW economy angular gearboxes are highly dynamic, compact and cost-effective drive units. The combinations, each composed of a servomotor with a high-performance planetary gearbox, are suitable for a wide range of applications in an industrial environment.
These planetary geared motors are specified and delivered completely as a unit. All outstanding performance data are matched to the motor-gearbox combination.

Motors

High Dynamic

Wherever small masses have to be moved with maximum dynamics and precision, the 1FK2 and 1FT2 High Dynamic servomotors with low inertia really come into their own.
The lightweight and low-friction gearboxes in conjunction with inertia-optimized clamping systems allow the highest cycle rates in the application.

Compact

If larger loads need to be moved with precision and dynamically, a motor version with higher inertia is unavoidable for controllable operations. The 1FK2 and 1FT2 Compact servomotors with medium inertia and planetary gearboxes with higher transmission ratios enable even difficult inertia conditions to be mastered in terms of the control technology.

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Overview

Planetary gearboxes

The three planetary gearboxes NRB(W), NRK(W) and NLC(W) can be mounted in all spatial positions without restriction and are maintenance-free thanks to their life-long lubrication.

Economy gearboxes

NRB

NRB is the lightest gearbox with the highest power density. Thanks to its low friction bearing design it is suitable for high speeds and only generates a slight amount of heat.

Application areas:
- Packaging
- Food industry
- Pharmaceutical and medical systems
- Auxiliary axes in machine tools

NRK

The NRK series gearbox is suitable for higher radial and axial forces due to the large output bearing. This gearbox is also suitable for higher speeds thanks to low internal friction.

Application areas:
- Automation and mounting technology
- Packaging
- Auxiliary axes in machine tools

NLC

Thanks to the preloaded tapered roller bearing, the NLC gearbox has a high degree of rigidity and is perfectly suited for high radial and axial loads. The IP65 cover provides protection against dust and water.

Application areas:
- Automation and mounting technology
- Packaging
- Food industry
- Printing industry
- Auxiliary axes in machine tools

Economy angular gearboxes

With a pre-built bevel gear stage, the planetary gearboxes NRB, NRK and NLC are also available as economy angular gearboxes NRBW, NRKW and NLCW.

The angled versions are suitable for confined spaces.

Due to the additional angular stage, the losses in the angular gearbox are slightly higher, and the nominal data is reduced, compared to the corresponding coaxial version.

Precision gearboxes

Precision gearboxes are helical toothed, lubricated with oil and have a further reduced torsional backlash compared to the economy gearboxes NRB(W), NRK(W) and NLC(W).

SP+

The low-backlash coaxial SP+ precision gearbox impresses with its high positioning accuracy and is suitable for highly dynamic cycle operation. Thanks to the preloaded tapered roller bearing, it is perfect for high radial and axial loads.

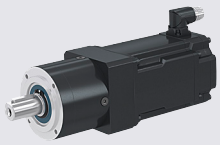
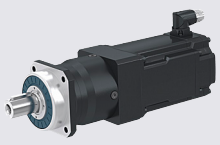
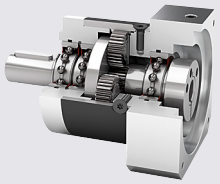
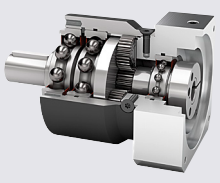
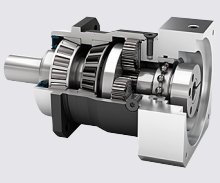
Due to the IP65 sealing, it offers protection against dust and water.

Applications:
- Automation and assembly technology
- Packaging
- Pharmaceutical and medical technology
- Food industry
- Auxiliary axes in machine tools
- Woodworking
- Plastics Machines
- Paper industry

TP+

The TP+ coaxial gearbox is characterised by a very compact design with an output flange. It offers low backlash with maximum torsional rigidity and is intended for demanding tasks with high torque and large external loads.

Applications:
- Main axes in machine tools
- Packaging
- Pressure
- Robotics

		Economy gearbox		
		NRB	**NRK**	**NLC**
SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors				
Transmission ratio *i*		3 ... 512	3 ... 100	3 ... 100
Gearbox stages *z*		1, 2 and 3-stage	1 and 2-stage	1 and 2-stage
Torsional backlash φ_2	'	6 ... 22	6 ... 19	7 ... 12
Gearbox type • Economy planetary gearbox • Straight gearing • Life-long grease lubrication • Average torsional backlash		IM B14 / IM V18 / IM V19 IP64 High input speeds thanks to low-friction bearing design 	IM B14 / IM V18 / IM V19 IP64 Large ball bearing, optimized for high radial and axial forces 	IM B5 / IM V1 / IM V3 IP65 Preloaded tapered roller bearing for best rigidity at highest loads 
Geared motor data for 200 ... 240 V 1/3 AC				
Maximum torque M_{2max}	Nm (lb_f-ft)	1.5 ... 1280 (1.11 ... 944)	1.4 ... 736 (1.03 ... 543)	3 ... 416 (2.21 ... 307)
Rated torque M_{2N}	Nm (lb_f-ft)	0.2 ... 650 (0.15 ... 479)	0.1 ... 460 (0.07 ... 339)	0.14 ... 260 (0.10 ... 192)
Rated speed n_{2N}	r/min	3 ... 1000	15 ... 1000	15 ... 500

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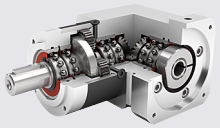
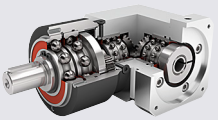
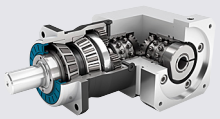
Overview (Continued)

Geared motor data for 380 ... 480 V 3 AC				
Maximum torque M_{2max}	Nm (lb_f-ft)	4.9 ... 1280 (3.61 ... 944)	4.7 ... 736 (3.47 ... 376)	4.7 ... 416 (3.47 ... 307)
Rated torque M_{2N}	Nm (lb_f-ft)	0.8 ... 650 (0.59 ... 479)	0.54 ... 460 (0.40 ... 339)	0.36 ... 260 (0,27 ... 192)
Rated speed n_{2N}	r/min	3 ... 1000	20 ... 750	25 ... 500
Suitability				
Power density		+++	++	++
Bearing loading capacity		+	++	+++
Suitable for high speeds		++	++	+
Degree of protection		IP64	IP64	IP65
Options				
Plain shaft / solid shaft with feather key		✓ / ✓	✓ / ✓	✓ / ✓
Standard lubrication / food-grade lubricant		✓ / ✓	✓ / ✓	✓ / ✓

		Economy angular gearbox		
		NRBW	**NRKW**	**NLCW**
SIMOTICS S-1FT2 servo planetary geared motors				
Transmission ratio i		3 ... 512	3 ... 100	3 ... 100
Gearbox stages z		1, 2 and 3-stage	1 and 2-stage	1 and 2-stage
Torsional backlash φ_2	'	11 ... 28	11 ... 25	11 ... 18
Gearbox type • Economy planetary gearbox • Straight gearing • Life-long grease lubrication • Average torsional backlash		IM B14 / IM V18 / IM V19 IP64 High input speeds thanks to low-friction bearing design 	IM B14 / IM V18 / IM V19 IP64 Large ball bearing, optimized for high radial and axial forces 	IM B5 / IM V1 / IM V3 IP65 Preloaded tapered roller bearing for best rigidity at highest loads 
Geared motor data for 200 ... 240 V 1/3 AC				
Maximum torque M_{2max}	Nm (lb_f-ft)	1.4 ... 416 (1.03 ... 307)	1.5 ... 312 (1.11 ... 230)	3.5 ... 416 (2.58 ... 307)
Rated torque M_{2N}	Nm (lb_f-ft)	0.1 ... 260 (0.07 ... 192)	0.11 ... 195 (0.08 ... 144)	0.12 ... 230 (0.09 ... 170)
Rated speed n_{2N}	r/min	3 ... 1000	15 ... 1000	15 ... 375
Geared motor data for 380 ... 480 V 3 AC				
Maximum torque M_{2max}	Nm (lb_f-ft)	4.6 ... 416 (3.39 ... 307)	4.35 ... 312 (3.21 ... 230)	4.6 ... 416 (3.39 ... 307)
Rated torque M_{2N}	Nm (lb_f-ft)	0.52 ... 260 (0.38 ... 192)	0.34 ... 195 (0.25 ... 144)	0.26 ... 230 (0.19 ... 170)
Rated speed n_{2N}	r/min	6 ... 1000	15 ... 750	15 ... 375
Suitability				
Power density		++	+	+
Bearing loading capacity		+	++	+++
Suitable for high speeds		+	+	+
Degree of protection		IP64	IP64	IP65
Options				
Plain shaft / solid shaft with feather key		✓ / ✓	✓ / ✓	✓ / ✓
Standard lubrication / food-grade lubricant		✓ / ✓	✓ / ✓	✓ / ✓

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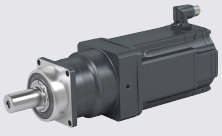
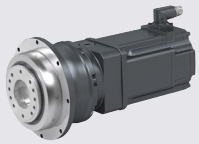
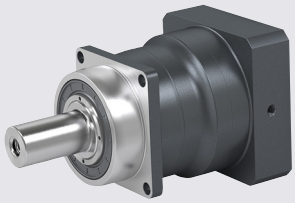
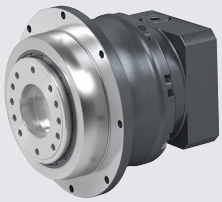
Overview

		Precision gearbox type	
		SP+	**TP+**
SIMOTICS S-1FT2 servo planetary geared motors			
Transmission ratio *i*		3 ... 100	4 ... 100
Gearbox stages z		1- and 2-stage	1- and 2-stage
Torsional backlash φ_2	'	3 ... 6	3 ... 4
Reduced torsional backlash φ_2		1 ... 4	1 ... 2
Gearbox type • Planetary gearbox • Helical gearing • Life-long oil lubrication • Low torsional backlash		IMB5 / IMV1 / IMV3 IP65 Smooth-running gearbox with very low torsional backlash and preloaded tapered roller bearing for the best stiffness at the highest loads 	IMB5 / IMV1 / IMV3 IP65 Smooth-running gearbox with very low torsional backlash and preloaded tapered roller bearing for the best stiffness at the highest loads, flange output 
Geared motor data for 200 ... 240 V 1/3 AC			
Maximum torque M_{2max}	Nm	1,5 ... 5700	2,1 ... 5500
Rated torque M_{2N}	Nm	0,197 ... 2550	0,12 ... 2500
Rated speed n_{2N}	r/min	5 ... 750	5 ... 600
Geared motor data for 380 ... 480 V 3 AC			
Maximum torque M_{2max}	Nm	4,55 ... 5700	6,6 ... 5500
Rated torque M_{2N}	Nm	0,54 ... 2050	0,41 ... 1980
Rated speed n_{2N}	r/min	5 ... 750	5 ... 600
Suitability			
Power density		+++	++++
Bearing loading capacity		+++	++++
Suitable for high speeds		+++	+++
Degree of protection		IP65	IP65
Options			
Plain shaft / solid shaft with feather key / toothed shaft		✓ / ✓ / ✓	- / - / -
Standard lubricant/ Food-grade lubricant		✓ / ✓	✓ / ✓
Reduced torsional backlash		✓	✓

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Overview

Structure of the Article No.

Configuration in the Siemens Product Configurator
www.siemens.com/simotics-1fk2-servogearedmotors/configuration
www.siemens.com/simotics-1ft2-servogearedmotors/configuration

SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Basic motor Article No. | Planetary gearbox Order codes

1 F ■ 2 . 0 . - . A . ■ ■ - . ■ ■ 0 -Z ■■■ + ■■■ + ■■■ + ■■■

Basic servomotor				K / T
Holding brake	Without holding brake			0
	With holding brake			1
	Reinforced holding brake (only for 1FT2208-2, 1FT2208-3, 1FT2210-2 and 1FT2210-3)			2
Degree of protection motor	IP64			0
	IP65			1
Motor shaft	Assignment depends on the gearbox size			
Encoder	Absolute encoder 22-bit single-turn (AS22DQC)			S
	Absolute encoder 22-bit + 12-bit multi-turn (AM22DQC)			M
	Absolute encoder 26-bit single-turn (AS26DQC)	T	(only for 1FT2)	B
	Absolute encoder 26-bit + 12-bit multi-turn (AM26DQC)	T	(only for 1FT2)	C
Connection technology	One-cable technology for SINAMICS S210 servo converters			A
	Two-cable technology for SINAMICS S120 servo converters (see Catalog D 21.4)			B

Gearbox type, gearbox size, number of gearbox stages, transmission ratio, lubrication and gearbox shaft

1. Order code – gearbox type, gearbox size and number of gearbox stages

• Gearbox type	Economy gearbox NRB or economy angular gearbox NRBW	A
	Economy gearbox NRK or economy angular gearbox NRKW	B
	Economy gearbox NLC or economy angular gearbox NLCW	C
	Precision gearbox SP+	J
	Precision gearbox TP+	H

• Gearbox size	040/050/-/-/-	1	160/155/-/140/050	5
	060/070/060/060/004	2	-/-/-/180/110	6
	080/090/080/075/010	3	-/-/-/210/300	7
	120/120/120/100/025	4	-/-/-/240/500	8

	Coaxial gearboxes		Angular gearboxes (only for 1FT2)	
• Number of gearbox stages		1-stage 1		1-stage 6
		2-stage 2		2-stage 7
		3-stage 3		3-stage 8

2. Order code – transmission ratio *i*

1-stage				2-stage						3-stage			
3	R03	10	R10	9	R09	25	R25	50	R50	60	R60	200	R02
4	R04			12	R12	28	R28	64	R64	80	R80	256	R52
5	R05			15	R15	32	R32	70	R70	100	R01	320	R23
7	R07			16	R16	35	R35	100	R00	120	R21	512	R51
8	R08			20	R20	40	R40			160	R61		

3. Order code – gearbox lubrication, shaft version and torsional backlash

Lubrication	Shaft end at gearbox		Torsional backlash	
Standard lubrication	+ Plain solid shaft	M00	+ reduced-backlash version	M05
	+ Solid shaft with feather key	M01		M06
	+ Splined shaft	M02		M07
Food-safe lubricant	+ Plain solid shaft	M10		M15
	+ Solid shaft with feather key	M11		M16
	+ Splined shaft	M12		M17

4. Order code (optional) – different orientation of the output for angular gearboxes (only for 1FT2)

–	Q91	Q92	Q93
Standard orientation	Connector on the output side	Connector offset through 180° with respect to the standard	Connector opposite the output

Notes:
- The geared motor can only be delivered as a unit – motor plus gearbox – (no individual gearboxes).
- Not all combinations are possible.
- For shaft design with feather key, the gearbox data only applies to pulsating loads. With alternating load / reversal of direction of rotation, limitation of the torque as a function of the number of load cycles is required (see Configuration Manual).

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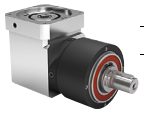
Overview

Possible motor-gearbox combinations

Economy gearbox	Gearbox size	Motor 1FK2102 1FT2102	1FK2 . 03 1FT2 . 03	1FK2 . 04 1FT2 . 04	1FK2 . 05 1FT2 . 05	1FK2 . 06 1FT2 . 06	1FK2208 1FT2 . 08	1FK2210 1FT2210	Order code 1-stage	2-stage	3-stage
		For servo converters connected to 200 ... 240 V	200 ... 240 V and 380 ... 480 V						Number of gearbox stages		
NRB	040	✓	✓	–	–	–	–	–	**A11**	**A12**	**A13**
	060	✓	✓	✓	✓	–	–	–	**A21**	**A22**	**A23**
	080	–	✓	✓	✓	✓	–	–	**A31**	**A32**	**A33**
	120	–	✓	✓	✓	✓	✓	–	**A41**	**A42**	**A43**
	160	–	–	–	✓	✓	✓	–	**A51**	**A52**	**A53**
NRK	050	✓	✓	–	–	–	–	–	**B11**	**B12**	–
	070	✓	✓	✓	✓	–	–	–	**B21**	**B22**	–
	090	–	✓	✓	✓	✓	–	–	**B31**	**B32**	–
	120	–	✓	✓	✓	✓	✓	–	**B41**	**B42**	–
	155	–	–	–	✓	✓	✓	✓	**B51**	**B52**	–
NLC	060	✓	✓	✓	✓	–	–	–	**C21**	**C22**	–
	080	–	✓	✓	✓	✓	–	–	**C31**	**C32**	–
	120	–	✓	✓	✓	✓	✓	–	**C41**	**C42**	–

Economy angular gearbox	Gearbox size	Motor 1FT2102	1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2 . 06	1FT2208	1FT2210	Order code 1-stage	2-stage	3-stage
		For servo converters connected to 200 ... 240 V	200 ... 240 V and 380 ... 480 V						Number of gearbox stages		
NRBW	040	✓	–	–	–	–	–	–	**A16**	**A17**	**A18**
	060	✓	✓	✓	–	–	–	–	**A26**	**A27**	**A28**
	080	–	✓	✓	✓	–	–	–	**A36**	**A37**	**A38**
	120	–	✓	✓	✓	✓	–	–	**A46**	**A47**	**A48**
NRKW	050	✓	–	–	–	–	–	–	**B16**	**B17**	–
	070	✓	✓	✓	–	–	–	–	**B26**	**B27**	–
	090	–	✓	✓	✓	–	–	–	**B36**	**B37**	–
	120	–	✓	✓	✓	✓	–	–	**B46**	**B47**	–
NLCW	060	✓	✓	✓	–	–	–	–	**C26**	**C27**	–
	080	–	✓	✓	✓	–	–	–	**C36**	**C37**	–
	120	–	✓	✓	✓	✓	–	–	**C46**	**C47**	–

Precision gearbox	Gearbox size	Motor 1FT2102	1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2 . 06	1FT2 . 08	1FT2210	Order code 1-stage	2-stage
		For servo converters connected to 200 ... 240 V	200 ... 240 V and 380 ... 480 V						Number of gearbox stages	
SP+	060	✓	✓	✓	–	–	–	–	**J21**	**J22**
	075	✓	✓	✓	✓	–	–	–	**J31**	**J32**
	100	–	✓	✓	✓	✓	–	–	**J41**	**J42**
	140	–	–	✓	✓	✓	✓	–	**J51**	**J52**
	180	–	–	✓	✓	✓	✓	✓	**J61**	**J62**
	210	–	–	–	–	✓	✓	✓	**J71**	**J72**
	240	–	–	–	–	✓	✓	✓	**J81**	**J82**
TP+	004	✓	✓	✓	–	–	–	–	**H21**	**H22**
	010	✓	✓	✓	✓	–	–	–	**H31**	**H32**
	025	–	✓	✓	✓	✓	–	–	**H41**	**H42**
	050	–	–	✓	✓	✓	✓	–	**H51**	**H52**
	110	–	–	✓	✓	✓	✓	✓	**H61**	**H62**
	300	–	–	–	–	✓	✓	✓	**H71**	**H72**
	500	–	–	–	–	✓	✓	✓	**H81**	**H82**

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Overview

Gearbox ratio

Number of gearbox stages	Transmission ratio *i*	Order code
1-stage	3	**R03**
	4	**R04**
	5	**R05**
	7	**R07**
	8	**R08**
	10	**R10**
2-stage	9	**R09**
	12	**R12**
	15	**R15**
	16	**R16**
	20	**R20**
	25	**R25**
	28	**R28**
	32	**R32**
	35	**R35**
	40	**R40**
	50	**R50**
	64	**R64**
	100	**R00**
3-stage	60	**R60**
	70	**R70**
	80	**R80**
	100	**R01**
	120	**R21**
	160	**R61**
	200	**R02**
	256	**R52**
	320	**R23**
	512	**R51**

Option for shaft

Shaft end as "plain shaft"

For dynamic loads, particularly with reversals in operation, it is preferable to select a friction-locked and zero-backlash connection with a plain gearbox shaft.

Shaft extension as "shaft with feather key"

Alternatively, a positively driven connection with feather key is also suitable for pulsating loads without reversals. The feather key connection must be implemented according to DIN6885-1/DIN 6880 (keyway P9, feather key h9). If you would still like to configure a feather key connection for changing application loads, then limit the application torque as a function of the expected load change according to the following tables:

Gearbox	**Max. application torque M_2 in feather key design in Nm**	
	up to 10 million load changes	up to 100 million load changes
NRB040, NRBW040	9	7
NRB060, NRBW060	31	25
NRB080, NRBW080	68	54
NRB120, NRBW120	132	105
NRB160	401	319
NRK050, NRKW050	12	9
NRK070, NRKW070	No restriction	29
NRK090, NRKW090	84	67
NRK120, NRKW120	No restriction	190
NRK155	389	309

Gearbox	**Max. application torque M_2 in feather key design in Nm**	
	up to 10 million load changes	up to 100 million load changes
NLC060, NLCW060	37	29
NLC080, NLCW080	76	60
NLC120, NLCW120	239	190
SP060S	36	28
SP075S	86	68
SP100S	279	220
SP140S	450	355
SP180S	850	680
SP210S	1200	960
SP240S	2400	1900

Shaft end as splined shaft according to DIN 5480 for SP+ gearboxes

For dynamic applications with fluctuating loads, which require a precise positively driven connection, a connection that can be axially shifted or a connection that can be easily released, then an SP+ gearbox as output option offers a splined shaft with involute flanks and a reference diameter according to DIN 5480. With this solution, it is not necessary to reduce the output torque depending on the load change.

Option for backlash-reduced design for precision gearboxes

SP+ and TP+ gearboxes are optionally available in a backlash-reduced version.

Option for lubrication

Planetary gearboxes can be optionally ordered with a food-grade lubricant.
This lubricant was developed for the food and pharmaceutical industries for unpredictable contact with products and packaging in the food, cosmetics, pharmaceutical and animal feed industries. NSF H1 registration ensures that the lubricant is compliant with FDA 21 CFR §178.3570.

For the angular planetary gearboxes NRBW, NRKW, NLCW, the choice of the food-grade lubricant leads to a reduction in the rating data from the following data tables.In this case, the exact performance and rating data can be found in the data sheet from the online configurator:
www.siemens.com/spc

Lubrication	Shaft design on the gearbox	Order code	Torsional backlash	Order code
Standard lubrication	+ Smooth solid shaft	**M00**	+ reduced-backlash version	**M05**
	+ Solid shaft with feather key	**M01**		**M06**
	+ Splined shaft	**M02**		**M07**
Food-grade lubricant [1)]	+ Smooth solid shaft	**M10**		**M15**
	+ Solid shaft with feather key	**M11**		**M16**
	+ Splined shaft	**M12**		**M17**

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Overview

Option for the orientation of the output for angular gearboxes

For angular geared motors, the gearbox output in relation to the connector points to the right by default (viewing the motor from the front). A different assembly can optionally be produced in accordance with the following table.

Note: The geared motor can be mounted in any spatial position.

Orientation of the gearbox		Order code
	Gearbox output to the right, standard orientation	–
	Gearbox output upwards	**Q91**
	Gearbox output left	**Q92**
	Gearbox output to the bottom	**Q93**

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General technical specifications for planetary gearboxes NRB(W), NRK(W), NLC(W), SP+ and TP+

Technical specifications

General technical specifications for planetary gearboxes NRB(W), NRK(W), NLC(W), SP+ and TP+

Largest average input speed $n_{1av,G}$ and maximum input speed $n_{1max,G}$

$n_{1av,G}$ – largest average input speed:
In each time window of 15 minutes (for NRB(W), NRK(W) and NLC(W), or 10 minutes (for SP+ and TP+), the average input speed must be below $n_{1av,G}$

$n_{1max,G}$ – maximum input speed:
The maximum input speed $n_{1max,G}$ must never be exceeded.

The maximum speeds of the mounted motor can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Economy gearbox type	Motor	Largest average input speed $n_{1av,G}$ in r/min	Maximum input speed $n_{1max,G}$ in r/min
NRB040, NRK050	1FK2102, 1FT2102	5000	18000
	1FK2.03, 1FT2.03	4500	
NRB060, NRK070, NLC060	1FK2102, 1FT2102 1FK2.03, 1FT2.03 1FK2.04, 1FT2.04	4500	13000
	1FK2.05, 1FT2.05	4000	
NRB080, NRK090, NLC080	1FK2.03, 1FT2.03 1FK2.04, 1FT2.04 1FK2.05, 1FT2.05	4000	7000
	1FK2.06, 1FT2.06	3500	
NRB120, NRK120, NLC120	1FK2.03, 1FT2.03 1FK2.04, 1FT2.04 1FK2.05, 1FT2.05 1FK2.06, 1FT2.06	3500	6500
	1FK2208, 1FT2.08 1FK2210, 1FT2210	3000	
NRB160, NRK155	1FK2.05, 1FT2.05 1FK2.06, 1FT2.06 1FK2208, 1FT2.08 1FK2210, 1FT2210	3000	5500

Economy angular gearbox type	Motor	Largest average input speed $n_{1av,G}$ in r/min	Maximum input speed $n_{1max,G}$ in r/min
NRBW040, NRKW050	1FT2102	5000	18000
	1FT2.03	4500	
NRBW060, NRKW070, NLCW060	1FT2102 1FT2.03 1FT2.04	4500	13000
	1FT2.05	4000	
NRBW080, NRKW090, NLCW080	1FT2.03 1FT2.04 1FT2.05	4000	7000
	1FT2.06	3500	
NRBW120, NRKW120, NLCW120	1FT2.03 1FT2.04 1FT2.05 1FT2.06	3500	6500
	1FT2208 1FT2210	3000	

Precision gearbox type SP+	Number of gearbox stages	Transmission ratio i	Largest average input speed $n_{1av,G}$ in r/min	Maximum input speed $n_{1max,G}$ in r/min
SP060	1-stufig	3; 4; 5	3300	7500
		7; 10	4000	
	2-stufig	16; 20; 25; 28; 35; 40	4400	8500
		50	4800	
		70; 100	5500	
SP075	1-stufig	3; 4; 5	2900	7500
		7; 10	3100	
	2-stufig	16; 20; 25; 28; 35; 40	3500	8500
		50	3800	
		70; 100	4500	

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General technical specifications for planetary gearboxes NRB(W), NRK(W), NLC(W), SP+ and TP+

Precision gearbox type SP+	Number of gearbox stages	Transmission ratio *i*	Largest average input speed $n_{1av,\,G}$ in r/min	Maximum input speed $n_{1max,\,G}$ in r/min
SP100	1-stufig	3; 4; 5	2500	5500
		7; 10	2800	
	2-stufig	16; 20; 25; 28; 35; 40	3100	6500
		50	3500	
		70; 100	4200	
SP140	1-stufig	3; 4; 5	2100	5000
		7; 10	2600	
	2-stufig	16; 20; 25; 28; 35; 40	2900	6000
		50; 70	3200	
		100	3900	
SP180	1-stufig	3; 4; 5	1500	4500
		7; 10	2300	
	2-stufig	16; 20; 25; 28; 35; 40	2700	5000
		50	2900	
		70	3200	
		100	3400	
SP210	1-stufig	4	1200	3000
		5	1500	
		7	1700	
		10	2000	
	2-stufig	16; 20; 25; 28; 35; 40	2500	4500
		70; 100	3000	
SP240	1-stufig	4	1000	3000
		5	1200	
		7	1500	
		10	1700	
	2-stufig	16	2300	4500
		16; 20; 25; 28; 35; 40	2500	
		70; 100	2800	

Präzisionsgetriebetyp TP+	Anzahl der Getriebestufen	Übersetzung *i*	Größte mittlere Eintriebsdrehzahl $n_{1av,\,G}$ in r/min	Maximale Eintriebsdrehzahl $n_{1max,\,G}$ in r/min
TP004	1-stufig	3; 4; 5	3300	7500
		7; 10	4000	
	2-stufig	16; 20; 25; 28; 35; 40	4400	
		50	4800	
		70; 100	5500	
TP010	1-stufig	4	2600	
		5	2900	
		7; 10	3100	
	2-stufig	16; 20; 25; 28; 35; 40	3500	
		50	3800	
		70; 100	4500	
TP025	1-stufig	4	2300	5500
		5; 7; 10	2500	
	2-stufig	16; 20; 25; 28; 35; 40	2800	7500
		50	3100	
		70	3500	
		100	4200	

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General technical specifications for planetary gearboxes NRB(W), NRK(W), NLC(W), SP+ and TP+

Präzisionsgetriebetyp TP+	Anzahl der Getriebestufen	Übersetzung *i*	Größte mittlere Eintriebsdrehzahl $n_{1av, G}$ in r/min	Maximale Eintriebsdrehzahl $n_{1max, G}$ in r/min
TP050	1-stufig	4	1900	5000
		5	2000	
		7; 10	2500	
	2-stufig	16; 20; 25; 28; 35; 40	2900	6250
		50; 70	3200	
		100	3900	
TP110	1-stufig	4	1400	4500
		5	1500	
		7; 10	2000	
	2-stufig	16; 20; 25; 28; 35; 40	2500	5625
		50	2900	
		70	3200	
		100	3400	
TP300	1-stufig	5	1000	3000
		7	1400	
		10	1700	
	2-stufig	20; 25; 28; 35	2000	4375
		50	2300	
		70	2400	
		100	2500	
TP500	1-stufig	5	900	3000
		7	1300	
		10	1500	
	2-stufig	20; 25; 28; 35	1500	4375
		50	2000	
		70	2100	
		100	2200	

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Technical specifications

Technical specifications for NRB economy gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
1-stage					
3	11	28	85	115	400
4	15	38	115	155	450
5	14	40	110	195	450
7	8.5	25	65	135	–
8	6	18	50	120	450
10	5	15	38	95	–
2-stage					
9	16.5	44	130	210	–
12	20	44	120	260	800
15	18	44	110	230	700
16	20	44	120	260	800
20	20	44	120	260	800
25	18	40	110	230	700
32	20	44	120	260	800
40	18	40	110	230	700
64	7.5	18	50	120	450
3-stage					
60	20	44	110	260	–
80	20	44	120	260	–
100	20	44	120	260	–
120	18	44	110	230	–
160	20	44	120	260	–
200	18	40	110	230	–
256	20	44	120	260	–
320	18	40	110	230	–
512	7.5	18	50	120	–

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Economy gearbox type NRB

Technical specifications

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft. An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
1-stage					
3	17.5	45	136	184	640
4	24	61	184	248	720
5	22	64	176	312	720
7	13.5	40	104	216	–
8	10	29	80	192	720
10	8	24	61	152	–
2-stage					
9	26	70	208	336	–
12	32	70	192	416	1280
15	29	70	176	368	1120
16	32	70	192	416	1280
20	32	70	192	416	1280
25	29	64	176	368	1120
32	32	70	192	416	1280
40	29	64	176	368	1120
64	12	29	80	192	720
3-stage					
60	32	70	176	416	–
80	32	70	192	416	–
100	32	70	192	416	–
120	29	70	176	368	–
160	32	70	192	416	–
200	29	64	176	368	–
256	32	70	192	416	–
320	29	64	176	368	–
512	12	29	80	192	–

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Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
1-stage					
3	22.5	66	180	390	800
4	30	88	240	520	900
5	36	80	220	500	900
7	26	80	178	340	–
8	27	80	190	380	900
10	27	80	200	480	–
2-stage					
9	33	88	260	500	–
12	40	88	240	520	1600
15	36	88	220	500	1400
16	40	88	240	520	1600
20	40	88	240	520	1600
25	36	80	220	500	1400
32	40	88	240	520	1600
40	36	80	220	500	1400
64	27	80	190	380	900
3-stage					
60	40	88	220	520	–
80	40	88	240	520	–
100	40	88	240	520	–
120	36	88	220	500	–
160	40	88	240	520	–
200	36	80	220	500	–
256	40	88	240	520	–
320	36	80	220	500	–
512	27	80	190	380	–

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Economy gearbox type NRB

Technical specifications

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

Transmission ratio *i*	η_G – Efficiency of the gearbox components under full load in %				
	Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
1-stage					
3	98	98	98	98	98
4	98	98	98	98	98
5	97 ... 98	98	98	98	98
7	96 ... 97	96 ... 97	97	97	–
8	94 ... 96	95 ... 97	96 ... 97	97	97
10	92 ... 95	94 ... 96	94 ... 96	97	–
2-stage					
9	96 ... 97	96 ... 97	96 ... 97	97	–
12	95 ... 96	95 ... 96	96 ... 97	96	96
15	95 ... 96	95 ... 96	95 ... 96	96	96
16	95 ... 96	95 ... 96	95 ... 96	96	96
20	94 ... 96	94 ... 96	95 ... 96	96	96
25	93 ... 95	93 ... 95	94 ... 95	95	95
32	92 ... 95	92 ... 95	93 ... 95	95	95
40	91 ... 94	91 ... 94	92 ... 94	94	94
64	76 ... 86	78 ... 87	81 ... 89	89	90
3-stage					
60	88 ... 92	88 ... 92	88 ... 92	92	–
80	85 ... 90	86 ... 91	87 ... 91	91	–
100	83 ... 89	83 ... 89	85 ... 90	90	–
120	79 ... 87	81 ... 88	82 ... 89	88	–
160	77 ... 86	77 ... 86	80 ... 88	87	–
200	71 ... 82	72 ... 83	75 ... 85	84	–
256	69 ... 81	69 ... 81	73 ... 84	83	–
320	62 ... 76	63 ... 77	67 ... 80	79	–
512	31 ... 48	34 ... 51	38 ... 57	58	–

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Technical specifications

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	C_{T2} – Torsional rigidity of the gearbox in Nm/ ' Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
1-stage					
3	0.65 ... 0.75	2.2 ... 2.6	7.2 ... 7.9	17.5 ... 18.5	57.5 ... 59.5
4	0.85 ... 0.95	2.4 ... 2.8	9.2 ... 10.1	19 ... 20.5	65 ... 68
5	0.9 ... 0.95	2.5 ... 2.8	9.4 ... 10.2	19.5 ... 21	66 ... 69
7	0.8 ... 0.85	2.3 ... 2.5	8.1 ... 8.7	17.5 ... 18.5	–
8	0.8 ... 0.85	2.2 ... 2.5	8 ... 8.4	17 ... 18	60 ... 62
10	0.75	2 ... 2.2	7.5 ... 7.9	15.5 ... 16.4	–
2-stage					
9	0.75 ... 0.8	2.4 ... 2.7	7.9 ... 8.4	19 ... 20	–
12	0.9 ... 1	2.5 ... 2.8	9.6 ... 10.3	20.5 ... 22	70 ... 73
15	0.9 ... 1	2.4 ... 2.7	9.5 ... 10.2	20 ... 21.5	69 ... 73
16	0.95 ... 1	2.5 ... 2.8	9.8 ... 10.5	20.5 ... 22	72 ... 75
20	0.95 ... 1	2.5 ... 2.8	9.8 ... 10.4	20.5 ... 22	72 ... 75
25	0.95 ... 1	2.5 ... 2.8	9.7 ... 10.3	20 ... 21.5	70 ... 74
32	0.95 ... 1	2.5 ... 2.8	9.7 ... 10.3	20.5 ... 22	71 ... 75
40	0.95 ... 1	2.5 ... 2.8	9.6 ... 10.2	20 ... 21.5	70 ... 73
64	0.8 ... 0.85	2.3 ... 2.5	7.9 ... 8.3	17.5 ... 18.5	61 ... 63
3-stage					
60	0.95 ... 1	2.5 ... 2.8	9.7 ... 10.3	20.5 ... 22	–
80	0.95 ... 1	2.5 ... 2.8	9.8 ... 10.5	20.5 ... 22	–
100	0.95 ... 1	2.5 ... 2.8	9.8 ... 10.4	20.5 ... 22	–
120	0.95 ... 1	2.4 ... 2.7	9.6 ... 10.2	20 ... 21.5	–
160	0.95 ... 1	2.5 ... 2.8	9.8 ... 10.4	20.5 ... 22	–
200	0.95 ... 1	2.5 ... 2.8	9.7 ... 10.3	20 ... 21.5	–
256	0.95 ... 1	2.5 ... 2.8	9.7 ... 10.3	20.5 ... 22	–
320	0.95 ... 1	2.5 ... 2.8	9.6 ... 10.2	20 ... 21.5	–
512	0.8 ... 0.85	2.3 ... 2.5	7.9 ... 8.3	17.5 ... 18.5	–

φ_2 – Torsional backlash of the gearbox on the gearbox output

Gearbox stages *z*	φ_2 – Torsional backlash of the gearbox on the gearbox output in ' Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
1-stage	15	10	7	7	6
2-stage	19	12	9	9	10
3-stage	22	15	11	11	–

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N Gearbox				
	NRB040	NRB060	NRB080	NRB120	NRB160
Average radial force $F_{R\,eq}$					
• for L_{10h} = 20000 h	200	400	750	1750	5000
• for L_{10h} = 30000 h	160	340	650	1500	4200
Maximum radial force $F_{R\,max}$	200	700	1250	2000	5000
Average axial force $F_{A\,eq}$					
• for L_{10h} = 20000 h	200	500	1000	2500	7000
• for L_{10h} = 30000 h	160	450	900	2100	6000
Maximum axial force $F_{A\,max}$	240	800	1600	3800	11000

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Economy gearbox type NRB

Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg								
	Gearbox								
	NRB040		NRB060		NRB080		NRB120		NRB160
	Motor								
	1FK2102 1FT2102	1FK2 . 03 1FT2 . 03	1FK2102 1FT2102 1FK2 . 03 1FT2 . 03	1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05	1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05	1FK2 . 06 1FT2 . 06	1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05 1FK2 . 06 1FT2 . 06	1FK2208 1FT2 . 08	1FK2 . 05 1FT2 . 05 1FK2 . 06 1FT2 . 06 1FK2208 1FT2 . 08
1-stage									
3	0.34	0.60	0.87	1.7	2.1	3.2	5.7	7.4	17
4	0.35	0.60	0.88	1.4	2.1	3.2	5.7	7.8	17
5	0.35	0.60	0.89	1.4	2.2	3.2	5.8	7.8	17
7	0.35	0.60	0.88	1.4	2.1	3.2	5.7	7.8	–
8	0.35	0.68	0.88	1.4	2.1	3.2	5.7	7.0	17
10	0.35	0.61	0.89	1.4	2.2	3.2	5.7	7.8	–
2-stage									
9	0.43	0.69	1.1	1.9	2.6	3.7	7.4	9.2	–
12	0.43	0.69	1.1	1.9	2.6	3.7	7.4	9.2	23
15	0.43	0.69	1.1	1.6	2.6	3.7	7.5	9.3	23
16	0.44	0.69	1.1	1.6	2.6	3.7	7.5	9.5	23
20	0.44	0.69	1.1	1.6	2.6	3.7	7.5	9.6	23
25	0.44	0.69	1.1	1.6	2.7	3.7	7.5	9.6	23
32	0.44	0.77	1.1	1.6	2.7	3.7	7.5	8.9	23
40	0.44	0.77	1.1	1.6	2.7	3.7	7.6	8.9	23
64	0.44	0.78	1.1	1.6	2.7	3.7	7.6	8.9	23
3-stage									
60	0.52	0.78	1.3	1.8	3.1	4.2	9.2	11	–
80	0.53	0.78	1.3	1.8	3.1	4.2	9.2	11	–
100	0.53	0.78	1.3	1.8	3.1	4.2	9.3	11	–
120	0.53	0.78	1.3	1.8	3.2	4.2	9.3	11	–
160	0.53	0.86	1.3	1.8	3.1	4.2	9.3	11	–
200	0.53	0.86	1.3	1.8	3.2	4.2	9.4	11	–
256	0.54	0.87	1.3	1.8	3.2	4.2	9.4	11	–
320	0.53	0.87	1.3	1.8	3.2	4.3	9.4	11	–
512	0.54	0.87	1.3	1.8	3.2	4.3	9.4	11	–

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Technical specifications

Technical specifications for NRK economy gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
1-stage					
3	11	28	85	115	–
4	15	33	90	155	460
5	13	30	82	172	445
7	8.5	25	65	135	–
8	6	18	50	120	–
10	5	15	38	95	210
2-stage					
9	12	33	97	157	–
12	15	33	90	195	–
15	13	33	82	172	–
16	15	33	90	195	460
20	15	33	90	195	460
25	13	30	82	172	445
32	15	33	90	195	–
40	13	30	82	172	460
50	–	–	–	–	445
64	7.5	18	50	120	–
100	5	15	38	95	210

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft.
An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
1-stage					
3	17.5	45	136	184	–
4	24	53	144	248	736
5	21	48	131	275	712
7	13.5	40	104	216	–
8	9.5	29	80	192	–
10	8	24	61	152	336
2-stage					
9	19	53	155	251	–
12	24	53	144	312	–
15	21	53	131	275	–
16	24	53	144	312	736
20	24	53	144	312	736
25	21	48	131	275	712
32	24	53	144	312	–
40	21	48	131	275	736
50	–	–	–	–	712
64	12	29	80	192	–
100	8	24	61	152	336

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Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
1-stage					
3	22.5	66	180	390	–
4	30	88	240	520	920
5	36	80	220	500	890
7	26	80	178	340	–
8	27	80	190	380	–
10	27	80	200	480	420
2-stage					
9	33	88	260	500	–
12	40	88	240	520	–
15	36	88	220	500	–
16	40	88	240	520	920
20	40	88	240	520	920
25	36	80	220	500	890
32	40	88	240	520	–
40	36	80	220	500	920
50	–	–	–	–	890
64	27	80	190	380	–
100	27	80	200	480	420

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

Transmission ratio *i*	η_G – Efficiency of the gearbox components under full load in % Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
1-stage					
3	97 ... 98	97 ... 98	98	98	–
4	97 ... 98	97 ... 98	98	98	98
5	97 ... 98	97	97 ... 98	98	98
7	95 ... 97	96 ... 97	96 ... 97	97	–
8	94 ... 96	95 ... 96	96 ... 97	97	–
10	92 ... 95	93 ... 95	94 ... 96	96	97
2-stage					
9	95 ... 96	95 ... 96	96 ... 97	96	–
12	95 ... 96	95 ... 96	95 ... 96	96	–
15	94 ... 95	94 ... 95	94 ... 96	96	–
16	94 ... 95	94 ... 95	94 ... 96	96	96
20	93 ... 95	93 ... 95	94 ... 95	95	96
25	91 ... 94	92 ... 94	92 ... 95	95	95 ... 96
32	91 ... 94	91 ... 94	92 ... 94	94	–
40	88 ... 92	89 ... 93	90 ... 94	93	94 ... 95
50	–	–	–	–	94 ... 95
64	76 ... 86	78 ... 86	81 ... 89	89	–
100	60 ... 75	67 ... 80	69 ... 82	83	84 ... 88

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Technical specifications

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	C_{T2} – Torsional rigidity of the gearbox in Nm/ ' Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
1-stage					
3	0.7 ... 0.75	4 ... 5.1	9.7 ... 10.8	29.5 ... 31.5	–
4	0.9 ... 1	4.7 ... 5.7	13.6 ... 15.3	35.5 ... 38.5	65 ... 70
5	0.95 ... 1	5 ... 5.9	14 ... 15.5	36.5 ... 39.5	68 ... 72
7	0.85	4.2 ... 4.6	11.4 ... 12.2	29.5 ... 31	–
8	0.85	4.1 ... 4.5	11.1 ... 11.8	28.5 ... 30.5	–
10	0.75 ... 0.8	3.5 ... 3.8	10.1 ... 10.6	24.5 ... 25.5	54.5 ... 56.5
2-stage					
9	0.8 ... 0.85	4.7 ... 5.2	11 ... 11.7	34 ... 36.5	–
12	1 ... 1.05	5.1 ... 5.7	14.6 ... 15.7	39.5 ... 43	–
15	1 ... 1.05	4.8 ... 5.3	14.4 ... 15.5	37.5 ... 40.5	–
16	1 ... 1.05	5.2 ... 5.8	15 ... 16.1	40 ... 43.5	69 ... 73
20	1 ... 1.05	5.2 ... 5.7	15 ... 16.1	40 ... 43.5	70 ... 73
25	1 ... 1.05	5.3 ... 5.8	14.7 ... 15.8	37.5 ... 41	70 ... 73
32	1 ... 1.05	5.1 ... 5.6	14.8 ... 15.8	39.5 ... 43	–
40	1 ... 1.05	5.2 ... 5.8	14.6 ... 15.6	37.5 ... 40.5	69 ... 72
50	–	–	–	–	69 ... 73
64	0.85 ... 0.9	4.2 ... 4.6	11 ... 11.5	30 ... 31.5	–
100	0.7	3.3 ... 3.6	9.7 ... 10.1	21 ... 22	55 ... 57

φ_2 – Torsional backlash of the gearbox on the gearbox output

Gearbox stages *z*	φ_2 – Torsional backlash of the gearbox on the gearbox output in ' Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
1-stage	15	10	7	7	6
2-stage	19	12	9	9	9

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N Gearbox				
	NRK050	NRK070	NRK090	NRK120	NRK155
Average radial force $F_{R\,eq}$					
• for L_{10h} = 20000 h	800	1050	1900	2500	5200
• for L_{10h} = 30000 h	700	900	1700	2150	4600
Maximum radial force $F_{R\,max}$	1300	1650	3100	4000	8400
Average axial force $F_{A\,eq}$					
• for L_{10h} = 20000 h	1000	1350	2000	4000	7000
• for L_{10h} = 30000 h	800	1000	1500	3000	6000
Maximum axial force $F_{A\,max}$	1000	2100	3800	5900	11000

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Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg									
	Gearbox									
	NRK050		NRK070		NRK090		NRK120		NRK155	
	Motor									
	1FK2102 1FT2102	1FK2 . 03 1FT2 . 03	1FK2102 1FT2102 1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04	1FK2 . 05 1FT2 . 05	1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05	1FK2 . 06 1FT2 . 06	1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05 1FK2 . 06 1FT2 . 06	1FK2208 1FT2 . 08	1FK2 . 05 1FT2 . 05 1FK2 . 06 1FT2 . 06 1FK2208 1FT2 . 08	1FK2210 1FT2210
1-stage										
3	0.61	0.86	1.4	2.2	3.3	4.3	7.5	9.2	–	–
4	0.61	0.87	1.4	1.9	3.3	4.3	7.5	9.6	17	22
5	0.61	0.87	1.4	2	3.3	4.3	7.5	9.6	17	22
7	0.62	0.87	1.4	2	3.3	4.3	7.5	9.6	–	–
8	0.61	0.95	1.4	2	3.3	4.4	7.5	8.9	–	–
10	0.63	0.88	1.4	2	3.3	4.4	7.6	9.7	17	22
2-stage										
9	0.77	1.0	1.7	2.5	3.9	5.0	9.4	11	–	–
12	0.77	1.0	1.7	2.5	3.9	5.0	9.4	11	–	–
15	0.77	1.0	1.7	2.2	3.9	5.0	9.4	11	–	–
16	0.77	1.0	1.7	2.2	3.9	5.0	9.4	11	22	28
20	0.77	1.0	1.7	2.2	3.9	5.0	9.4	12	22	28
25	0.77	1.0	1.7	2.3	4.0	5.0	9.5	12	22	28
32	0.77	1.1	1.7	2.3	4.0	5.0	9.5	11	–	–
40	0.78	1.1	1.7	2.3	4.0	5.0	9.5	11	22	28
50	–	–	–	–	–	–	–	–	22	28
64	0.78	1.1	1.7	2.3	4.0	5.1	9.6	11	–	–
100	0.81	1.1	1.9	2.4	4.1	5.1	9.7	12	22	28

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Technical specifications

Technical specifications for NLC economy coaxial gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm Gearbox		
	NLC060	NLC080	NLC120
1-stage			
3	28	85	115
4	38	115	155
5	40	110	195
7	25	65	135
8	18	50	120
10	15	38	95
2-stage			
9	44	130	210
12	44	120	260
15	44	110	230
16	44	120	260
20	44	120	260
25	40	110	230
32	44	120	260
40	40	110	230
64	18	50	120
100	15	38	95

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft.
An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm Gearbox		
	NLC060	NLC080	NLC120
1-stage			
3	45	136	184
4	61	148	248
5	64	176	312
7	40	104	216
8	29	80	192
10	24	61	152
2-stage			
9	70	208	336
12	70	192	416
15	70	176	368
16	70	192	416
20	70	192	416
25	64	176	368
32	70	192	416
40	64	176	368
64	29	80	192
100	24	61	152

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Economy gearbox type NLC

Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm Gearbox		
	NLC060	NLC080	NLC120
1-stage			
3	66	180	390
4	88	240	520
5	80	220	500
7	80	178	340
8	80	190	380
10	80	200	480
2-stage			
9	88	260	500
12	88	240	520
15	88	220	500
16	88	240	520
20	88	240	520
25	80	220	500
32	88	240	520
40	80	220	500
64	80	190	380
100	80	200	480

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

Transmission ratio *i*	η_G – Efficiency of the gearbox components under full load in % Gearbox		
	NLC060	NLC080	NLC120
1-stage			
3	96	97	97
4	96 ... 97	97	97
5	96 ... 97	97	97
7	94 ... 95	95 ... 96	96
8	93 ... 94	94 ... 96	96
10	91 ... 93	92 ... 94	96
2-stage			
9	95 ... 96	96	96
12	94 ... 95	95 ... 96	96
15	94 ... 95	94 ... 95	96
16	94 ... 95	94 ... 96	96
20	93 ... 95	94 ... 95	95
25	92 ... 94	93 ... 95	95
32	91 ... 94	93 ... 95	95
40	90 ... 93	91 ... 94	94
64	77 ... 85	80 ... 88	89
100	66 ... 78	68 ... 81	83

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Technical specifications

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	C_{T2} – Torsional rigidity of the gearbox in Nm/ ' Gearbox		
	NLC060	NLC080	NLC120
1-stage			
3	3,4 ... 4,1	8,2 ... 8,9	21,5 ... 22
4	3,9 ... 4,5	10,9 ... 11,8	24,5 ... 25,5
5	4 ... 4,6	11,2 ... 11,9	25 ... 26
7	3.5 ... 3.8	9.4 ... 9.9	21.5 ... 22
8	3.4 ... 3.7	9.2 ... 9.6	21 ... 22
10	3 ... 3.2	8.5 ... 8.9	18.5 ... 19.5
2-stage			
9	3.8 ... 4.2	9.2 ... 9.6	23.5 ... 24.5
12	4.1 ... 4.5	11.5 ... 12.1	26 ... 27.5
15	3.9 ... 4.2	11.4 ... 12	25.5 ... 26.5
16	4.2 ... 4.6	11.8 ... 12.3	26.5 ... 27.5
20	4.1 ... 4.5	11.8 ... 12.3	26.5 ... 27.5
25	4.2 ... 4.6	11.6 ... 12.1	25.5 ... 26.5
32	4.1 ... 4.5	11.5 ... 12.2	26 ... 27.5
40	4.2 ... 4.5	11.5 ... 12	25.5 ... 26.5
64	3.5 ... 3.8	9.2 ... 9.5	21.5 ... 22.5
100	2.9 ... 3.1	8.2 ... 8.5	16.7 ... 17

φ_2 – Torsional backlash of the gearbox on the gearbox output

Gearbox stages *z*	φ_2 – Torsional backlash of the gearbox on the gearbox output in ' Gearbox		
	NLC060	NLC080	NLC120
1-stage	10	7	7
2-stage	12	9	9

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N Gearbox		
	NLC060	NLC080	NLC120
Average radial force $F_{R\,eq}$			
• for L_{10h} = 20000 h	3200	5500	6000
• for L_{10h} = 30000 h	3200	4800	5400
Maximum radial force $F_{R\,max}$	3200	5500	6000
Average axial force $F_{A\,eq}$			
• for L_{10h} = 20000 h	4400	6400	8000
• for L_{10h} = 30000 h	3900	5700	7000
Maximum axial force $F_{A\,max}$	4400	6400	8000

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Economy gearbox type NLC

Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg					
	Gearbox					
	NLC060		NLC080		NLC120	
	Motor					
	1FK2102 1FT2102 1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04	1FK2 . 05 1FT2 . 05	1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05	1FK2 . 06 1FT2 . 06	1FK2 . 03 1FT2 . 03 1FK2 . 04 1FT2 . 04 1FK2 . 05 1FT2 . 05 1FK2 . 06 1FT2 . 06	1FK2208 1FT2 . 08
1-stage						
3	1.6	2.4	3.0	4.1	6.9	8.7
4	1.6	2.1	3.0	4.1	6.9	9.0
5	1.6	2.1	3.1	4.1	7.0	9.1
7	1.6	2.1	3.0	4.1	7.0	9.1
8	1.6	2.1	3.0	4.1	6.9	8.2
10	1.6	2.1	3.1	4.1	7.0	9.1
2-stage						
9	1.7	2.6	3.6	4.6	8.6	10
12	1.8	2.6	3.5	4.6	8.6	10
15	1.7	2.3	3.5	4.6	8.7	10
16	1.8	2.3	3.5	4.6	8.6	11
20	1.8	2.3	3.5	4.6	8.7	11
25	1.8	2.3	3.6	4.6	8.7	11
32	1.8	2.3	3.6	4.6	8.7	10
40	1.8	2.3	3.6	4.6	8.8	10
64	1.8	2.3	3.6	4.6	8.7	10
100	1.8	2.3	3.6	4.7	8.9	11

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Technical specifications

Technical specifications for NRBW economy angular gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
1-stage				
3	4.5	14	40	80
4	6	19	53	105
5	7.5	24	67	130
7	8.5	25	65	135
8	6	18	50	120
10	5	15	38	95
2-stage				
9	16.5	44	130	210
12	20	44	120	260
15	18	44	110	230
16	20	44	120	260
20	20	44	120	260
25	18	40	110	230
32	20	44	120	260
40	18	40	110	230
64	7.5	18	50	120
3-stage				
60	20	44	110	260
80	20	44	120	260
100	20	44	120	260
120	18	44	110	230
160	20	44	120	260
200	18	40	110	230
256	20	44	120	260
320	18	40	110	230
512	7.5	18	50	120

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Economy angular gearbox type NRBW

Technical specifications

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft. An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
1-stage				
3	7	22	64	128
4	10	30	85	168
5	12	38	107	208
7	13.5	40	104	216
8	10	29	80	192
10	8	24	61	152
2-stage				
9	26	70	208	336
12	32	70	192	416
15	29	70	176	368
16	32	70	192	416
20	32	70	192	416
25	29	64	176	368
32	32	70	192	416
40	29	64	176	368
64	12	29	80	192
3-stage				
60	32	70	176	416
80	32	70	192	416
100	32	70	192	416
120	29	70	176	368
160	32	70	192	416
200	29	64	176	368
256	32	70	192	416
320	29	64	176	368
512	12	29	80	192

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Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
1-stage				
3	22.5	66	180	360
4	28	86	240	474
5	35	80	220	500
7	26	80	178	340
8	27	80	190	380
10	25	70	170	430
2-stage				
9	33	88	260	500
12	40	88	240	520
15	36	88	220	500
16	40	88	240	520
20	40	88	240	520
25	36	80	220	500
32	40	88	240	520
40	36	80	220	500
64	27	80	190	380
3-stage				
60	40	88	220	520
80	40	88	240	520
100	40	88	240	520
120	36	88	220	500
160	40	88	240	520
200	36	80	220	500
256	40	88	240	520
320	36	80	220	500
512	27	80	190	380

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Technical specifications

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

Transmission ratio *i*	η_G – Efficiency of the gearbox components under full load in %			
	Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
1-stage				
3	94	95	95	95
4	94	95	95	95
5	94	95	95	95
7	94	94	95	95
8	92	93	94	95
10	90	92	93	94
2-stage				
9	94	94	94	94
12	94	94	94	94
15	93	93	93	94
16	93	93	93	94
20	92	92	93	93
25	91	91	92	92
32	91	91	92	92
40	89	89	90	91
64	75	77	80	84
3-stage				
60	86	86	87	88
80	84	84	86	87
100	82	82	84	85
120	78	80	81	82
160	76	76	79	81
200	70	71	74	77
256	68	68	72	75
320	61	62	66	70
512	31	33	38	46

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Technical specifications

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	C_{T2} – Torsional rigidity of the gearbox in Nm/ ' Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
1-stage				
3	0.45	1.6	4.1	10
4	0.63	2.0	6.0	14
5	0.73	2.2	7.0	15
7	0.78	2.2	7.5	17
8	0.78	2.2	7.5	17
10	0.73	2.2	7.8	16
2-stage				
9	0.73	2.4	7.4	18
12	0.93	2.6	9.3	20
15	0.93	2.5	9.5	20
16	0.95	2.6	9.7	21
20	0.98	2.6	9.9	21
25	0.95	2.7	9.8	20
32	0.98	2.7	10	21
40	0.98	2.7	9.9	21
64	0.83	2.4	8.1	18
3-stage				
60	0.98	2.7	10	21
80	0.98	2.7	10	21
100	0.98	2.7	10	21
120	0.98	2.6	9.9	21
160	0.98	2.7	10	21
200	0.98	2.7	10	21
256	0.98	2.7	10	21
320	0.98	2.7	9.9	21
512	0.83	2.4	8.1	18

φ_2 – Torsional backlash of the gearbox on the gearbox output

Gearbox stages *z*	φ_2 – Torsional backlash of the gearbox on the gearbox output in ' Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
1-stage	21	16	13	11
2-stage	25	18	15	13
3-stage	28	21	17	15

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N Gearbox			
	NRBW040	NRBW060	NRBW080	NRBW120
Average radial force $F_{R\,eq}$				
• for L_{10h} = 20000 h	200	400	750	1750
• for L_{10h} = 30000 h	160	340	650	1500
Maximum radial force $F_{R\,max}$	200	700	1250	2000
Average axial force $F_{A\,eq}$				
• for L_{10h} = 20000 h	200	500	1000	2500
• for L_{10h} = 30000 h	160	450	900	2100
Maximum axial force $F_{A\,max}$	240	800	1600	3800

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Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg							
	Gearbox							
	NRBW040	NRBW060		NRBW080			NRBW120	
	Motor							
	1FT2102	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 03 1FT2 . 04	1FT2105	1FT2205	1FT2 . 03 1FT2 . 04 1FT2 . 05	1FT2 . 06
1-stage								
3	0.55	1.6	1.8	3.6	4.0	3.8	9.6	10
4	0.56	1.6	1.8	3.6	4.0	3.8	9.7	10
5	0.56	1.6	1.8	3.6	4.0	3.8	9.7	10
7	0.56	1.6	1.8	3.6	4.0	3.8	9.7	10
8	0.56	1.6	1.8	3.6	4.0	3.8	9.7	10
10	0.56	1.6	1.8	3.6	4.0	3.8	9.7	10
2-stage								
9	0.64	1.8	2.0	4.1	4.5	4.3	11	12
12	0.64	1.8	2.0	4.1	4.5	4.3	11	12
15	0.64	1.8	2.0	4.1	4.5	4.3	11	12
16	0.64	1.8	2.0	4.0	4.5	4.2	11	12
20	0.65	1.8	2.0	4.1	4.5	4.3	11	12
25	0.64	1.8	2.0	4.1	4.5	4.3	12	12
32	0.65	1.8	2.0	4.1	4.5	4.3	12	12
40	0.65	1.8	2.0	4.1	4.5	4.3	12	12
64	0.65	1.8	2.0	4.1	4.5	4.3	12	12
3-stage								
60	0.74	2.0	2.2	4.5	5.0	4.7	13	14
80	0.74	2.0	2.2	4.5	5.0	4.7	13	14
100	0.74	2.0	2.2	4.6	5.0	4.8	13	14
120	0.74	2.0	2.2	4.6	5.0	4.8	13	14
160	0.74	2.0	2.2	4.6	5.0	4.8	13	14
200	0.74	2.0	2.2	4.6	5.0	4.8	13	14
256	0.74	2.0	2.2	4.6	5.0	4.8	13	14
320	0.74	2.0	2.2	4.6	5.1	4.8	13	14
512	0.75	2.0	2.2	4.6	5.1	4.8	13	14

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Technical specifications

Technical specifications for NRKW economy angular gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm Gearbox			
	NRKW050	NRKW070	NRKW090	NRKW120
1-stage				
3	4.5	14	40	80
4	6	19	53	105
5	7.5	24	67	130
7	8.5	25	65	135
8	6	18	50	120
10	5	15	38	95
2-stage				
9	12	33	97	157
12	15	33	90	195
15	13	33	82	172
16	15	33	90	195
20	15	33	90	195
25	13	30	82	172
32	15	33	90	195
40	13	30	82	172
64	7.5	18	50	120
100	5	15	38	95

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft.
An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm Gearbox			
	NRKW050	NRKW070	NRKW090	NRKW120
1-stage				
3	7	22	64	128
4	10	30	85	168
5	12	38	107	208
7	13.5	40	104	216
8	10	29	80	192
10	8	24	61	152
2-stage				
9	19	53	155	251
12	24	53	144	312
15	21	53	131	275
16	24	53	144	312
20	24	53	144	312
25	21	48	131	275
32	24	53	144	312
40	21	48	131	275
64	12	29	80	192
100	8	24	61	152

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Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm Gearbox			
	NRKW050	NRKW070	NRKW090	NRKW120
1-stage				
3	22.5	66	180	360
4	28	86	240	474
5	35	80	220	500
7	26	80	178	340
8	27	80	190	380
10	25	70	170	430
2-stage				
9	33	88	260	500
12	40	88	240	520
15	36	88	220	500
16	40	88	240	520
20	40	88	240	520
25	36	80	220	500
32	40	88	240	520
40	36	80	220	500
64	27	80	190	380
100	27	80	170	430

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

Transmission ratio *i*	η_G – Efficiency of the gearbox components under full load in % Gearbox			
	NRKW050	NRKW070	NRKW090	NRKW120
1-stage				
3	94	94	95	95
4	94	94	95	95
5	94	95	95	95
7	94	94	95	95
8	92	93	94	94
10	90	91	92	94
2-stage				
9	93	93	94	94
12	93	93	93	94
15	92	92	93	93
16	92	92	93	93
20	91	91	92	93
25	90	90	91	91
32	89	89	90	91
40	87	87	89	90
64	75	76	80	84
100	59	65	69	75

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Technical specifications

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	C_{T2} – Torsional rigidity of the gearbox in Nm/ ' Gearbox			
	NRK0W50	NRKW070	NRKW090	NRKW120
1-stage				
3	0.45	2.3	4.8	13
4	0.65	3.2	7.5	20
5	0.75	3.8	9.2	24
7	0.80	4.0	10	27
8	0.80	4.0	10	27
10	0.78	3.7	11	25
2-stage				
9	0.75	4.4	10	31
12	0.98	5.0	14	37
15	0.98	4.8	14	37
16	1.0	5.3	15	39
20	1.0	5.3	15	40
25	1.0	5.5	15	39
32	1.0	5.4	15	41
40	1.0	5.5	15	39
64	0.88	4.4	11	31
100	0.70	3.5	9.9	22

φ_2 – Torsional backlash of the gearbox on the gearbox output

Gearbox stages *z*	φ_2 – Torsional backlash of the gearbox on the gearbox output in ' Gearbox			
	NRKW050	NRKW070	NRKW090	NRKW120
1-stage	21	16	13	11
2-stage	25	18	15	13

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N Gearbox			
	NRKW050	NRKW070	NRKW090	NRKW120
Average radial force $F_{R\,eq}$				
• for L_{10h} = 20000 h	800	1050	1900	2500
• for L_{10h} = 30000 h	700	900	1700	2150
Maximum radial force $F_{R\,max}$	1300	1650	3100	4000
Average axial force $F_{A\,eq}$				
• for L_{10h} = 20000 h	1000	1350	2000	4000
• for L_{10h} = 30000 h	800	1000	1500	3000
Maximum axial force $F_{A\,max}$	1000	2100	3800	5900

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Economy angular gearbox type NRKW

Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg							
	Gearbox							
	NRKW050	NRKW070		NRKW090			NRKW120	
	Motor							
	1FT2102	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 03 1FT2 . 04	1FT2105	1FT2205	1FT2 . 03 1FT2 . 04 1FT2 . 05	1FT2 . 06
1-stage								
3	0.82	2.1	2.3	4.7	5.1	4.9	11	12
4	0.82	2.1	2.3	4.7	5.1	4.9	11	12
5	0.82	2.1	2.3	4.7	5.2	4.9	11	12
7	0.83	2.1	2.3	4.7	5.1	4.9	12	12
8	0.82	2.1	2.3	4.7	5.2	4.9	12	12
10	0.84	2.1	2.3	4.8	5.2	5.0	12	12
2-stage								
9	0.98	2.4	2.6	5.4	5.8	5.6	13	14
12	0.98	2.4	2.6	5.4	5.8	5.6	13	14
15	0.98	2.4	2.6	5.4	5.8	5.6	13	14
16	0.98	2.4	2.6	5.4	5.8	5.6	13	14
20	0.98	2.4	2.6	5.4	5.8	5.6	13	14
25	0.98	2.4	2.6	5.4	5.8	5.6	13	14
32	0.98	2.4	2.6	5.4	5.8	5.6	13	14
40	0.99	2.4	2.6	5.4	5.8	5.6	13	14
64	0.99	2.4	2.6	5.4	5.9	5.6	14	14
100	1.0	2.6	2.8	5.5	5.9	5.7	14	14

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Technical specifications

Technical specifications for NLCW economy angular gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm Gearbox		
	NLCW060	NLCW080	NLCW120
1-stage			
3	14	40	80
4	19	53	105
5	24	67	130
7	25	65	135
8	18	50	120
10	15	38	95
2-stage			
9	44	130	210
12	44	120	260
15	44	110	230
16	44	120	260
20	44	120	260
25	40	110	230
32	44	120	260
40	40	110	230
64	18	50	120
100	15	38	95

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft.
An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm Gearbox		
	NLCW060	NLCW080	NLCW120
1-stage			
3	22	64	128
4	30	85	168
5	38	107	208
7	40	104	216
8	29	80	192
10	24	61	152
2-stage			
9	70	208	336
12	70	192	416
15	70	176	368
16	70	192	416
20	70	192	416
25	64	176	368
32	70	192	416
40	64	176	368
64	29	80	192
100	24	61	152

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Economy angular gearbox type NLCW

Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm Gearbox		
	NLCW060	NLCW080	NLCW120
1-stage			
3	66	180	360
4	86	240	474
5	80	220	500
7	80	178	340
8	80	190	380
10	70	170	430
2-stage			
9	88	260	500
12	88	240	520
15	88	220	500
16	88	240	520
20	88	240	520
25	80	220	500
32	88	240	520
40	80	220	500
64	80	190	380
100	80	200	430

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

Transmission ratio *i*	η_G – Efficiency of the gearbox components under full load in % Gearbox		
	NLCW060	NLCW080	NLCW120
1-stage			
3	91	93	94
4	92	93	94
5	92	94	94
7	92	93	94
8	90	92	93
10	88	90	92
2-stage			
9	93	94	94
12	93	94	94
15	93	93	94
16	92	93	94
20	92	93	93
25	91	92	92
32	90	91	92
40	88	90	91
64	75	78	83
100	64	67	74

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Technical specifications

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	C_{T2} – Torsional rigidity of the gearbox in Nm/ '		
	Gearbox		
	NLCW060	NLCW080	NLCW120
1-stage			
3	2,1	4,4	11
4	2,8	6,6	16
5	3,2	7,9	18
7	3,3	8,5	20
8	3,3	8,6	20
10	3,1	8,9	19
2-stage			
9	3,7	8,4	22
12	4,1	11	25
15	4,0	11	25
16	4,2	11	26
20	4,3	12	26
25	4,4	12	26
32	4,3	12	27
40	4,4	12	26
64	3,7	9,3	22
100	3,0	8,4	17

φ_2 – Torsional backlash of the gearbox on the gearbox output

Gearbox stages *z*	φ_2 – Torsional backlash of the gearbox on the gearbox output in '		
	Gearbox		
	NLCW060	NLCW080	NLCW120
1-stage	16	13	11
2-stage	18	15	13

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N		
	Gearbox		
	NLCW060	NLCW080	NLCW120
Average radial force $F_{R\,eq}$			
• for L_{10h} = 20000 h	3200	5500	6000
• for L_{10h} = 30000 h	3200	4800	5400
Maximum radial force $F_{R\,max}$	3200	5500	6000
Average axial force $F_{A\,eq}$			
• for L_{10h} = 20000 h	4400	6400	8000
• for L_{10h} = 30000 h	3900	5700	7000
Maximum axial force $F_{A\,max}$	4400	6400	8000

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Economy angular gearbox type NLCW

Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg						
	Gearbox						
	NLCW060		NLCW080			NLCW120	
	Motor						
	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 03 1FT2 . 04	1FT2105	1FT2205	1FT2 . 03 1FT2 . 04 1FT2 . 05	1FT2206
1-stage							
3	2.3	2.5	4.5	4.9	4.7	11	11
4	2.3	2.5	4.5	4.9	4.7	11	11
5	2.3	2.5	4.5	4.9	4.7	11	11
7	2.3	2.5	4.5	4.9	4.7	11	11
8	2.3	2.5	4.5	4.9	4.7	11	11
10	2.3	2.5	4.5	4.9	4.7	11	11
2-stage							
9	2.4	2.6	5.0	5.4	5.2	12	13
12	2.5	2.7	5.0	5.4	5.2	13	13
15	2.4	2.6	5.0	5.4	5.2	13	13
16	2.5	2.7	5.0	5.4	5.2	13	13
20	2.5	2.7	5.0	5.4	5.2	13	13
25	2.5	2.7	5.0	5.4	5.2	13	13
32	2.5	2.7	5.0	5.4	5.2	13	13
40	2.5	2.7	5.0	5.4	5.2	13	13
64	2.5	2.7	5.0	5.4	5.2	13	13
100	2.5	2.7	5.0	5.5	5.2	13	13

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Technical specifications

Technical specifications for SP+ precision gearbox

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm										
	Gearbox										
	SP060		SP075		SP100		SP140		SP180	SP210	SP240
	Motor										
	1FT2102 1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 03 1FT2 . 04	1FT2 . 05 1FT2 . 06	1FT2 . 03 1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 04 1FT2 . 05 1FT2 . 06	1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 08 1FT2210	1FT2210
1-stage											
3	29	36	96	102	139	282	454	468	1164	–	–
4	38	50	113	132	185	378	605	792	1452	3000	5400
5	48	50	132	132	232	378	681	792	1452	3000	5400
7	50	50	132	132	292	378	792	792	1452	2880	5160
10	38	38	114	114	282	282	636	636	1164	2280	4000

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm									
	Gearbox									
	SP060	SP075		SP100		SP140		SP180	SP210	SP240
	Motor									
	1FT2102 1FT2 . 03 1FT2 . 04	1FT2102 1FT2 . 03 1FT2 . 04 1FT2205	1FT2105	1FT2 . 03	1FT2 . 04 1FT2 . 05 1FT2 . 06	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 04 1FT2 . 05 1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08 1FT2210
2-stage										
16	50	126	126	232	347	536	726	1452	2880	5400
20	50	126	126	232	347	536	726	1452	3000	5400
25	50	132	132	290	347	670	670	1452	3000	5400
28	50	126	126	232	347	536	726	1452	2880	5400
35	50	132	132	290	347	670	670	1452	2880	5400
40	50	126	126	232	347	536	726	1452	2840	4400
50	50	132	132	290	347	670	670	1452	2880	5160
70	50	113	113	181	347	367	726	1356	2457	4730
100	38	105	–	193	259	376	583	1164	2043	3642

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Technical specifications

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft. An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm										
	Gearbox	SP060			SP075				SP100			
	Motor	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2102	1FT2 . 03 1FT2 . 04	1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210
1-stage												
3		29	38	38	–	96	109	109	139	139	301	301
4		38	54	54	–	113	141	141	185	185	396	396
5		48	54	54	–	141	141	141	232	232	396	396
7		54	54	54	–	141	141	141	292	292	342	342
10		41	41	41	–	122	122	122	301	301	301	301
2-stage												
16		46	46	–	101	101	101	–	232	278	278	–
20		46	46	–	101	101	101	–	232	278	278	–
25		54	54	–	126	126	126	–	278	278	278	–
28		46	46	–	101	101	101	–	232	278	278	–
35		54	54	–	126	126	126	–	278	278	278	–
40		46	46	–	101	101	101	–	232	278	278	–
50		54	54	–	126	126	126	–	278	278	278	–
70		45	45	–	90	90	90	–	181	278	278	–
100		38	38	–	84	84	105	–	193	207	207	–

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm								
	Gearbox	SP140			SP180		SP210		SP240	
	Motor	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 06	1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08	1FT2210
1-stage										
3		454	454	499	–	1242	–	–	–	–
4		605	605	845	–	1549	–	3200	–	4560
5		681	681	845	–	1549	–	3200	–	4560
7		660	660	660	–	1549	–	3072	–	4560
10		576	576	576	–	1242	–	2240	–	3200
2-stage										
16		536	581	581	1188	1188	2527	2527	4357	4357
20		536	581	581	1188	1188	2527	2527	4357	4357
25		536	536	536	1486	1486	3159	3159	4560	4560
28		536	581	581	1188	1188	2527	2527	4357	4357
35		536	536	536	1486	1486	3072	3072	4560	4560
40		536	581	581	1188	1188	2304	2304	4357	4357
50		536	536	536	1486	1486	2880	2880	4560	4560
70		367	581	581	1085	1085	1966	1966	4560	4560
100		376	466	583	990	990	1634	1634	2914	2914

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Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio i	$M_{2Em.Off}$ – Emergency Off output torque of the gear components in Nm										
	Gearbox	SP060			SP075				SP100			
	Motor	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2102	1FT2 . 03 1FT2 . 04	1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210
1-stage												
3		40	96	100	–	100	139	250	250	250	500	625
4		50	109	109	–	125	185	250	313	313	625	625
5		50	109	109	–	160	250	250	313	313	625	625
7		67	109	109	–	213	250	250	324	324	625	625
10		95	100	100	–	213	250	250	463	463	625	625
2-stage												
16		109	109	–	152	250	250	–	512	625	625	–
20		109	109	–	190	250	250	–	599	625	625	–
25		109	109	–	213	250	250	–	599	625	625	–
28		109	109	–	213	250	250	–	599	625	625	–
35		109	109	–	213	250	250	–	625	625	625	–
40		109	109	–	250	250	250	–	625	625	625	–
50		109	109	–	250	250	250	–	625	625	625	–
70		109	109	–	250	250	250	–	625	625	625	–
100		100	100	–	250	250	250	–	625	625	625	–

Transmission ratio i	$M_{2Em.Off}$ – Emergency Off output torque of the gear components in Nm									
	Gearbox	SP140			SP180			SP210	SP240	
	Motor	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 06	1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08	1FT2210
1-stage											
3		500	500	1250	–	2400	2400	–	–	–	–
4		625	625	1350	–	2750	2750	–	5900	–	8500
5		756	756	1350	–	2750	2750	–	5900	–	8500
7		1059	1059	1350	–	2750	2750	–	5900	–	8500
10		1250	1250	1250	–	2750	2750	–	5900	–	6850
2-stage											
16		741	1350	1350	2420	2420	2750	5900	5900	8500	8500
20		926	1350	1350	2750	2750	2750	5900	5900	8500	8500
25		1158	1350	1350	2750	2750	2750	5900	5900	8500	8500
28		1297	1350	1350	2750	2750	2750	5900	5900	8500	8500
35		1350	1350	1350	2750	2750	2750	5900	5900	8500	8500
40		1350	1350	1350	2750	2750	2750	5900	5900	8500	8500
50		1350	1350	1350	2750	2750	2750	5900	5900	8500	8500
70		1350	1350	1350	2750	2750	2750	5900	5900	8500	8500
100		1250	1250	1250	2750	2750	2750	5900	5900	6850	6850

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Technical specifications

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

	η_G – Efficiency of the gearbox components under full load in % **Gearbox** **SP060, SP075, SP100, SP140, SP180, SP210, SP240**
1-stage	97
2-stage	94

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

C_{T2} – Torsional rigidity of the gearbox in Nm/ ' **Gearbox**						
SP060	**SP075**	**SP100**	**SP140**	**SP180**	**SP210**	**SP240**
3,5	10	31	53	175	400	550

φ_2 – Torsional backlash of the gearbox on the gear output

	C_{T2} – Torsional backlash of the gearbox on the gearbox output in ' **Gearbox**	
	SP060, SP075	**SP100, SP140, SP180, SP210, SP240**
1-stage	4	3
2-stage	6	5

φ_2 – Optional: Reduced torsional backlash of the gearbox on the gearbox output

	φ_2 – Optional: Reduced torsional backlash of the gearbox on the gearbox output in ' **Gearbox**	
	SP060, SP075	**SP100, SP140, SP180, SP210, SP240**
1-stufig	2	1
2-stufig	4	3

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition.
They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N **Gearbox**						
	SP060	**SP075**	**SP100**	**SP140**	**SP180**	**SP210**	**SP240**
Average radial force $F_{R\,eq}$							
• for L_{10h} = 20000 h	1700	2400	3800	6300	11300	20700	22100
• for L_{10h} = 30000 h	1500	2100	3400	5500	10000	18400	19600
Maximum radial force $F_{R\,max}$	2800	4200	6300	9600	15000	21000	30000
Average axial force $F_{A\,eq}$							
• for L_{10h} = 20000 h	2400	3350	5650	9870	15570	30000	33000
• for L_{10h} = 30000 h	2100	3000	5000	8700	13800	26600	29200
Maximum axial force $F_{A\,max}$	2400	3350	5650	9870	15570	30000	33000
Speed for average axial forces $n_{2F\,av}$	833	506	318	323	373	174	188

Values for pure radial force at the center of the shaft or pure centric axial force. Average values for a given speed.

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Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg										
	Gearbox										
	SP060			SP075				SP100			
	Motor										
	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2102	1FT2 . 03 1FT2 . 04	1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 10
1-stage											
3	0,21	0,28	0,61	–	0,86	1,03	2,4	3,29	3,29	3,99	11,05
4	0,15	0,22	0,55	–	0,61	0,78	2,15	2,35	2,35	3,04	10,11
5	0,12	0,2	0,52	–	0,51	0,68	2,05	1,92	1,92	2,61	9,68
7	0,1	0,18	0,5	–	0,42	0,59	1,96	1,6	1,6	2,29	9,36
10	0,09	0,16	0,49	–	0,38	0,54	1,91	1,38	1,38	2,07	9,14
2-stage											
16	0,08	0,17	–	0,16	0,23	0,55	–	0,64	0,81	2,18	–
20	0,07	0,16	–	0,13	0,2	0,53	–	0,54	0,7	2,07	–
25	0,07	0,16	–	0,13	0,2	0,52	–	0,52	0,68	2,05	–
28	0,06	0,16	–	0,1	0,18	0,5	–	0,43	0,6	1,97	–
35	0,06	0,16	–	0,1	0,18	0,5	–	0,43	0,59	1,96	–
40	0,06	0,15	–	0,09	0,16	0,49	–	0,38	0,55	1,92	–
50	0,06	0,15	–	0,09	0,16	0,49	–	0,38	0,54	1,91	–
70	0,06	0,15	–	0,09	0,16	0,49	–	0,37	0,54	1,91	–
100	0,06	0,15	–	0,09	0,16	0,49	–	0,37	0,54	1,91	–

Transmission ratio *i*	m_G – Weight of the gearbox components in kg									
	Gearbox									
	SP140			SP180			SP210		SP240	
	Motor									
	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 10	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 10	1FT2 . 06	1FT2 . 08 1FT2 . 10	1FT2 . 06 1FT2 . 08	1FT2 . 10
1-stage										
3	10,68	10,68	14,92	–	50,84	50,84	–	–	–	–
4	7,82	7,82	12,06	–	33,91	33,91	–	94,3	–	198,2
5	6,79	6,79	11,02	–	27,93	27,93	–	76,9	–	163
7	5,84	5,84	10,08	–	22,23	22,23	–	61,5	–	138,3
10	5,28	5,28	9,51	–	19,16	19,16	–	53,1	–	124,7
2-stage										
16	2,5	3,19	10,25	9,27	9,27	13,51	34,5	34,5	39,2	39,2
20	2,01	2,71	9,77	7,72	7,72	11,95	31,5	31,5	34,6	34,6
25	1,97	2,67	9,73	7,48	7,48	11,72	30,8	30,8	33,2	33,2
28	1,65	2,34	9,41	6,32	6,32	10,55	30	30	30,5	30,5
35	1,63	2,32	9,39	6,2	6,2	10,43	29,7	29,7	29,7	29,7
40	1,4	2,1	9,16	5,51	5,51	9,74	28,5	28,5	28,2	28,2
50	1,39	2,08	9,15	5,45	5,45	9,68	28,3	28,3	27,9	27,9
70	1,38	2,08	9,14	5,39	5,39	9,63	28,1	28,1	27,6	27,6
100	1,38	2,07	9,14	5,36	5,36	9,6	28	28	27,5	27,5

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Precision gearbox type TP+

Technical specifications

Technical specifications for TP+ precision gearbox type

$M_{2N,G}$ – Rated torque for gearbox components

An endurance strength calculation becomes necessary if this torque is exceeded (see Configuration Manual).
For the feather key version, the gearbox nominal torque is only permissible as a pulsating load or a reduction must be carried out depending on the number of load changes (see Components and Options).

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm										
	Gearbox										
	TP004		TP010		TP025		TP050		TP110	TP300	TP500
	Motor										
	1FT2102 1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 03 1FT2 . 04	1FT2 . 05 1FT2 . 06	1FT. . 03 1FT. . 04 1FT. . 05	1FT2 . 06 1FT2 . 08 1FT2 . 10	1FT2 . 04 1FT2 . 05 1FT2 . 06	1FT2 . 08 1FT2 . 10	1FT2 . 06 1FT2 . 08 1FT2 . 10	1FT2 . 08 1FT2 . 10	1FT2 . 10
1-stage											
3	–	–	–	–	–	–	–	–	–	–	–
4	38	66	115	172	185	352	605	840	1920	–	–
5	48	66	144	172	232	380	681	840	1920	4200	7200
7	60	66	172	172	292	352	840	840	1920	3960	6000
10	42	42	126	126	318	318	648	648	1680	2280	4000

Transmission ratio *i*	$M_{2N,G}$ – Rated torque for gearbox components in Nm									
	Gearbox									
	TP004	TP010			TP025	TP050		TP110	TP300	TP500
	Motor									
	1FT2102 1FT2 . 03 1FT2 . 04	1FT2102	1FT2 . 03 1FT2 . 04 1FT2205	1FT2105	1FT2 . 03 1FT2 . 04 1FT2 . 05 1FT2 . 06	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08 1FT2 . 10	1FT2 . 04 1FT2 . 05 1FT2 . 06 1FT2 . 08 1FT2 . 10	1FT2 . 06 1FT2 . 08 1FT2 . 10	1FT2 . 06 1FT2 . 08 1FT2 . 10
2-stage										
9	57	137	157	157	352	667	825	1760	–	–
12	57	126	126	126	352	825	825	1760	3850	5446
15	66	158	158	158	380	825	825	1760	3949	6808
16	57	157	157	157	352	825	825	1760	–	–
20	66	158	158	158	380	825	825	1760	3949	6808
25	57	154	154	154	352	825	825	1760	–	–
32	66	158	158	158	380	825	825	1760	3600	4975
40	56	157	157	157	352	770	770	1760	3630	5500
64	42	105	105	–	292	594	594	1540	2800	4800

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Technical specifications

$M_{2max,G}$ – Maximum output torque of the gearbox components

This torque must not be exceeded during operation. It is permissible for a maximum of 30000 revolutions of the output shaft. An endurance strength configuration of the gearbox becomes necessary, if the output torques up to $M_{2max,G}$ are used (see Configuration Manual).

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm									
	Gearbox	TP004			TP010				TP025		
	Motor	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2102	1FT2 . 03 1FT2 . 04	1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 03 1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210
1-stage											
4		38	66	66	–	115	148	168	185	282	282
5		48	66	66	–	144	168	168	232	304	304
7		60	66	66	–	168	168	168	282	282	282
10		45	45	45	–	134	134	134	282	282	282
2-stage											
16		46	46	–	126	126	126	–	282	282	–
20		46	46	–	101	101	101	–	282	282	–
25		58	58	–	126	126	126	–	304	304	–
28		46	46	–	126	126	126	–	282	282	–
35		58	58	–	126	126	126	–	304	304	–
40		46	46	–	123	123	123	–	282	282	–
50		58	58	–	126	126	126	–	304	304	–
70		45	45	–	126	126	126	–	282	282	–
100		38	38	–	84	84	105	–	282	282	–

Transmission ratio *i*	$M_{2max,G}$ – Maximum output torque of the gearbox components in Nm							
	Gearbox	TP050		TP110		TP300		TP500	
	Motor	1FT2 . 04 1FT2 . 05 1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08 1FT2210	1FT2 . 06	1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08	1FT2210
1-stage									
4		605	794	–	2048	–	–	–	–
5		681	794	–	2048	–	4480	–	7680
7		694	694	–	2048	–	4200	–	5432
10		576	576	–	1792	–	2240	–	3200
2-stage									
16		660	660	1408	1408	–	–	–	–
20		660	660	1408	1408	3080	3080	4357	4357
25		660	660	1408	1408	3159	3159	5446	5446
28		660	660	1408	1408	–	–	–	–
35		660	660	1408	1408	3159	3159	5446	5446
40		660	660	1408	1408	–	–	–	–
50		660	660	1408	1408	2880	2880	3980	3980
70		616	616	1408	1408	2904	2904	4400	4400
100		475	475	1232	1232	2240	2240	3840	3840

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Technical specifications

$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components

The Emergency Off torque can be tolerated a maximum of 1000 times within the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether the torques, caused by very rare operating faults, can damage the gearbox.

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm										
	Gearbox	TP004			TP010				TP025			
	Motor	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2102	1FT2 . 03 1FT2 . 04	1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210
1-stage												
4		50	100	100	–	128	250	251	313	313	625	625
5		50	100	100	–	160	250	251	313	313	625	625
7		67	100	100	–	224	251	251	324	324	625	625
10		95	100	100	–	251	251	251	424	424	625	625
2-stage												
16		100	100	–	152	251	251	–	512	625	625	–
20		100	100	–	190	251	251	–	625	625	625	–
25		100	100	–	238	251	251	–	625	625	625	–
28		100	100	–	251	251	251	–	625	625	625	–
35		100	100	–	251	251	251	–	625	625	625	–
40		100	100	–	251	251	251	–	625	625	625	–
50		100	100	–	251	251	251	–	625	625	625	–
70		100	100	–	251	251	251	–	625	625	625	–
100		100	100	–	251	251	251	–	625	625	625	–

Transmission ratio *i*	$M_{2Em.Off}$ – Emergency Off output torque of the gearbox components in Nm									
	Gearbox	TP050			TP110			TP300	TP500	
	Motor	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 06	1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08	1FT2210
1-stage											
4		625	625	1250	–	3075	3075	–	–	–	–
5		756	756	1250	–	3075	3075	–	9900	–	15000
7		1059	1059	1250	–	3075	3075	–	9900	–	15000
10		1190	1190	1250	–	3075	3075	–	8750	–	15000
2-stage											
16		741	1250	1250	2420	2420	3075	–	–	–	–
20		926	1250	1250	3025	3025	3075	9900	9900	15000	15000
25		1158	1250	1250	3075	3075	3075	9900	9900	15000	15000
28		1250	1250	1250	3075	3075	3075	–	–	–	–
35		1250	1250	1250	3075	3075	3075	9900	9900	15000	15000
40		1250	1250	1250	3075	3075	3075	–	–	–	–
50		1250	1250	1250	3075	3075	3075	9900	9900	15000	15000
70		1250	1250	1250	3075	3075	3075	9900	9900	15000	15000
100		1250	1250	1250	3075	3075	3075	8750	8750	15000	15000

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Technical specifications

η_G – Efficiency of the gearbox components under full load

The exact values for the efficiency are, to some extent, dependent on the frame size of the mounted motor and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.
In the partial load range, especially when the gearbox is cold, the efficiency of the gearbox is always lower than at operating speed.
The gear losses are already taken into account in the characteristic curves and in the following characteristic data of the geared motor or its components: $M_{2,0}$, $M_{2,max}$, $M_{0,M}$, $M_{max,M}$.
A reduction of this characteristic curve and the characteristics on efficiency is not necessary.

	η_G – Efficiency of the gearbox components under full load in % Gearbox	
	TP004 – TP110	**TP300 – TP500**
1-stage	97	95
2-stage	94	93

C_{T2} – Torsional rigidity of the gearbox (related to the output)

The exact values for the torsional rigidity are dependent on the motor-gearbox combination and can be found in the data sheet resulting from the configuration on the Siemens Product Configurator.

Transmission ratio *i*	**C_{T2} – Torsional rigidity of the gearbox in Nm/ ’ Gearbox**						
	TP004	**TP010**	**TP025**	**TP050**	**TP110**	**TP300**	**TP500**
1-stage							
4	12	32	80	190	610	–	–
5	12	33	86	187	610	1000	1450
7	11	30	76	159	550	900	1300
10	8	23	62	123	445	700	1100
2-stage							
16	12	32	81	180	585	–	–
20	12	32	81	185	580	850	1400
25	12	32	83	180	570	950	1450
28	12	31	80	180	560	–	–
35	12	32	82	175	560	900	1400
40	11	30	76	175	520	–	–
50	12	30	80	175	525	800	1300
70	11	28	71	145	480	800	1250
100	8	22	60	115	395	650	1050

φ_2 – Torsional backlash of the gearbox on the gear output

	φ_2 – Torsional backlash of the gearbox at the gear output in ’ Gearbox TP004 – TP500
1-stage	4
2-stage	4

φ_2 – Optional: Reduced torsional backlash at the gear output

	φ_2 – Optional: Reduced torsional backlash of the gearbox at the gear output in ’ Gearbox		
	TP004	**TP010 – TP110**	**TP300 – TP500**
1-stage	2	1	1
2-stage	2	1	2

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Technical specifications

Permissible shaft loading capacity

The limit values shown for the bearing load refer to equivalent forces to be determined mathematically, whose effect is equivalent to the forces occurring in the load profile.
They only apply to radial and axial loads. Axial forces up to maximum $F_A = 0.24 \times F_R$ are permissible in case of superimposition. They apply to the output speed of 100 r/min and in case of radial force for a force application point in the center of the shaft or for centrally applied axial force. For other speeds or force application points, the permissible radial forces must be obtained from the radial force diagrams of the Configuration Manual.

	Permissible shaft loading capacity, radial and axial forces in N						
	Gearbox						
	TP004	**TP010**	**TP025**	**TP050**	**TP110**	**TP300**	**TP500**
Average axial force $F_{A\,eq}$							
• for L_{10h} = 20000 h	1630	2795	4800	6130	10050	33000	50000
• for L_{10h} = 30000 h	1400	2500	4300	5400	8900	29200	44300
Maximum axial force $F_{A\,max}$	1630	2795	4800	6130	10050	33000	50000
Speed for average axial forces $n_{2F\,av}$	5682	7620	2287	338	510	39	26

Values for pure centric axial force, average values for given speed.

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Technical specifications

m_G – Weight of the gearbox components

The weight of the assigned motors and the total weight of the geared motors are in the data sheet resulting from the configuration of the motor or the geared motor in the Siemens Product Configurator.

Transmission ratio *i*	m_G – Weight of the gearbox components in kg										
	Gearbox										
	TP004			TP010				TP025			
	Motor										
	1FT2102 1FT2 . 03	1FT2 . 04	1FT2 . 05	1FT2102	1FT2 . 03 1FT2 . 04	1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2 . 03	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210
1-stage											
4	0,172	0,245	0,569	–	0,779	0,945	2,315	2,589	2,589	3,282	10,347
5	0,139	0,213	0,537	–	0,622	0,788	2,158	2,111	2,111	2,804	9,869
7	0,11	0,184	0,508	–	0,478	0,645	2,015	1,69	1,69	2,382	9,449
10	0,095	0,168	0,492	–	0,402	0,568	1,94	1,448	1,448	2,14	9,208
2-stage											
16	0,078	0,174	–	0,167	0,24	0,564	–	0,661	0,828	2,198	–
20	0,07	0,165	–	0,136	0,21	0,533	–	0,548	0,714	2,084	–
25	0,068	0,164	–	0,13	0,204	0,527	–	0,529	0,695	2,065	–
28	0,062	0,157	–	0,108	0,181	0,506	–	0,44	0,607	1,977	–
35	0,061	0,157	–	0,104	0,178	0,502	–	0,431	0,597	1,968	–
40	0,057	0,153	–	0,093	0,167	0,491	–	0,383	0,549	1,922	–
50	0,057	0,153	–	0,091	0,165	0,489	–	0,378	0,545	1,917	–
70	0,056	0,152	–	0,09	0,164	0,488	–	0,374	0,54	1,913	–
100	0,056	0,152	–	0,089	0,163	0,487	–	0,372	0,538	1,91	–

Transmission ratio *i*	m_G – Weight of the gearbox components in kg									
	Gearbox									
	TP050			TP110			TP300		TP500	
	Motor									
	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 04 1FT2 . 05	1FT2 . 06 1FT2 . 08	1FT2210	1FT2 . 06	1FT2 . 08 1FT2210	1FT2 . 06 1FT2 . 08	1FT2210
1-stage										
4	9,471	9,471	13,708		44,452	44,452				
5	7,852	7,852	12,089		34,631	34,631		82,6		181,9
7	6,391	6,391	10,625		25,494	25,494		61,2		142
10	5,544	5,544	9,778		20,59	20,59		49,5		119,8
2-stage										
16	2,531	3,224	10,289	8,51	8,51	12,747				
20	2,075	2,768	9,833	8,214	8,214	12,451	27,5	27,5	35,9	35,9
25	2,01	2,703	9,768	7,821	7,821	12,058	25,9	25,9	33,7	33,7
28	1,672	2,365	9,432	6,57	6,57	10,803				
35	1,639	2,332	9,399	6,374	6,374	10,607	22,4	22,4	27,4	27,4
40	1,439	2,132	9,199	5,634	5,634	9,868				
50	1,423	2,115	9,183	5,536	5,536	9,769	21,5	21,5	25,4	25,4
70	1,408	2,101	9,168	5,444	5,444	9,678	21,3	21,3	25	25
100	1,4	2,093	9,16	5,395	5,395	9,629	21,2	21,2	24,8	24,8

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Selection and ordering data

Selection of holding brake, degree of protection motor, encoder, connection technology, gearbox lubrication and shaft design

Configuration in the Siemens Product Configurator
www.siemens.com/simotics-1fk2-servogearedmotors/configuration
www.siemens.com/simotics-1ft2-servogearedmotors/configuration

SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors
Basic motor — Planetary gearbox
Article No. — Order codes

1F■2...-.A.■■-.■■0-Z ■■■+■■■+■■■+■■■

Basic servomotor – See selection and ordering data tables			K	
			T	
Holding brake	Without holding brake		0	
	With holding brake		1	
	Reinforced holding brake (only for 1FT2208-2, 1FT2208-3, 1FT2210-2 and 1FT2210-3)		2	
Degree of protection motor	IP64		0	
	IP65		1	
Motor shaft – Assignment depends on the gearbox size, see selection and ordering data tables				
Encoder	Absolute encoder 22-bit single-turn (AS22DQC)			S
	Absolute encoder 22-bit + 12-bit multi-turn (AM22DQC)			M
	Absolute encoder 26-bit single-turn (AS26DQC)	T (only for 1FT2)		B
	Absolute encoder 26-bit + 12-bit multi-turn (AM26DQC)	T (only for 1FT2)		C
Connection technology	One-cable technology for SINAMICS S210 servo converters			A
	Two-cable technology for SINAMICS S120 servo converters (see Catalog D 21.4)			B

Gearbox type, gearbox size, number of gearbox stages, transmission ratio, lubrication and gearbox shaft

1. Order code – gearbox type, gearbox size and number of gearbox stages

- Gearbox type
  Order codes see selection and ordering data tables

Economy gearbox NRB or economy angular gearbox NRBW	A
Economy gearbox NRK or economy angular gearbox NRKW	B
Economy gearbox NLC or economy angular gearbox NLCW	C
Precision gearbox SP+	J
Precision gearbox TP+	H

- Gearbox size
  Order codes see selection and ordering data tables

040/050/-/-/-	1	160/155/-/140/050	5
060/070/060/060/004	2	-/-/-/180/110	6
080/090/080/075/010	3	-/-/-/210/300	7
120/120/120/100/025	4	-/-/-/240/500	8

- Number of gearbox stages
  Order codes see selection and ordering data tables

Coaxial gearboxes		Angular gearboxes (only for 1FT2)	
1-stage	1	1-stage	6
2-stage	2	2-stage	7
3-stage	3	3-stage	8

2. Order code – transmission ratio i – Order code, see selection and ordering data tables

1-stage				2-stage						3-stage			
3	R03	10	R10	9	R09	25	R25	50	R50	60	R60	200	R02
4	R04			12	R12	28	R28	64	R64	80	R80	256	R52
5	R05			15	R15	32	R32	70	R70	100	R01	320	R23
7	R07			16	R16	35	R35	100	R00	120	R21	512	R51
8	R08			20	R20	40	R40			160	R61		

3. Order code – gearbox lubrication, shaft version and torsional backlash

Lubrication	Shaft end at gearbox		Torsional backlash	
Standard lubrication	+ Plain solid shaft	M00	+ reduced-backlash version	M05
	+ Solid shaft with feather key	M01		M06
	+ Splined shaft	M02		M07
Food-safe lubricant	+ Plain solid shaft	M10		M15
	+ Solid shaft with feather key	M11		M16
	+ Splined shaft	M12		M17

4. Order code (optional) – different orientation of the output for angular gearboxes (only for 1FT2)

–	Q91	Q92	Q93
Standard orientation	Connector on the output side	Connector offset through 180° with respect to the standard	Connector opposite the output

Notes:
- The geared motor can only be delivered as a unit – motor plus gearbox (no individual gearboxes).
- Not all combinations are possible – See selection and ordering data tables.
- For shaft design with feather key, the gearbox data only applies to pulsating loads. With alternating load/reversal of direction of rotation, limitation of the torque as a function of the number of load cycles is required (see Configuration Manual).

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Selection and ordering data

Characteristic curves of the geared motor (available via the Siemens Product Configurator)

❶ $M_{S1,M}$ – Characteristic of the largest thermally permissible effective torque of the motor component minus the gear friction and with consideration of the thermal interactions of the gearbox attachment.
The effective operating point must be below this line to avoid thermal overload of the geared motor.

❷ $M_{max,M}$ – Characteristic of the largest torque that can be generated by the motor component for a short time minus the gear friction.

$M_{S1,M}$ and $M_{max,M}$ may exceed the mechanically permissible limits of the gearbox, depending on the selection of the motor-gearbox combination [1].

Important gearbox component data in this catalog:

❸ $M_{2N,G}$ – The rated torque of the gearbox component at the output. This represents the fatigue strength limit of the gear teeth (independently of the motor). If exceeded, the gearbox is partially damaged and a service life calculation is required.

❹ $M_{2max,G}$ – Maximum torque of the gearbox component. This is the limit of the time strength range (can be tolerated for 30000 revolutions of the output shaft).
There is a risk of breakage if the limit is exceeded.

❺ $n_{1av,G}$ – Greatest average input speed. In each time window of 15 minutes, the average input speed must be below $n_{1av,G}$.

Important motor component data in this catalog:

❻ $M_{0,M}$ – The motor component can deliver this torque thermally on a sustained basis at standstill and near standstill. It may exceed the mechanical limits of the gearbox component if necessary [1].

❼ $M_{max,M}$ – The motor component can deliver this torque for a short time. It may exceed the mechanical limits of the gearbox component if necessary [1].

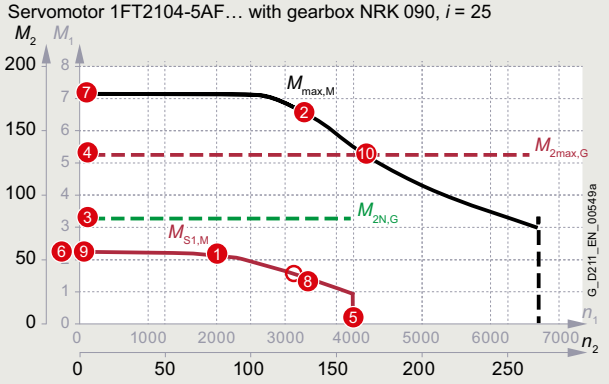
Important geared motor system data in this catalog:

❽ Rated operating point:
M_{2N} – Rated torque and
n_{2N} – rated speed.
This rated point can be permanently driven thermally and mechanically. If the S1 characteristic $M_{S1,M}$ at n_{2N} is greater than $M_{2N,G}$, M_{2N} is reduced accordingly. At the rated point, the geared motor has approximately its maximum power.

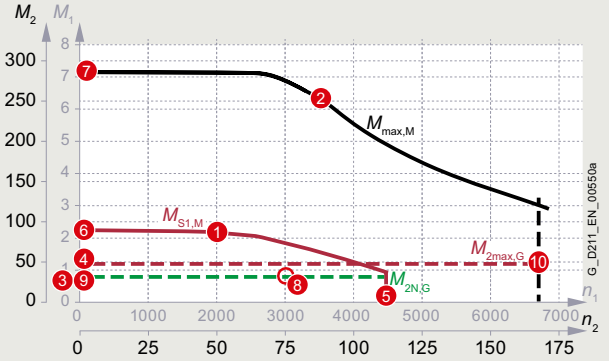
❾ $M_{2.0}$ – The geared motor can deliver this torque thermally on a sustained basis at standstill and near standstill.
It is reduced to $M_{2N,G}$ if necessary.

❿ M_{2max} – The geared motor can deliver this torque for a short time. It may be within the time strength range of the gearbox.

Servomotor 1FT2104-5AF… with gearbox NRK 090, i = 25



Servomotor 1FT2104-5AF… with gearbox NRK 070, i = 40



[1] In this case, it must be ensured that the torque effective at the gearbox output does not exceed the permissible limits (consideration of the load-to-motor inertia ratio during acceleration processes).
More information is provided in the Configuration Manual.

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Selection and ordering data

Glossary

Formula symbols	Unit	Designation	Explanation
i		Transmission ratio	Input-to-output speed transmission ratio
C_{T2}	Nm/ ‘	Torsional stiffness of the gearbox	Torsional stiffness of the gearbox related to the output
J_1	kg cm^2	Mass moment of inertia of the geared motor	Total mass moment of inertia of the geared motor related to the input or the motor shaft
$J_{1,G}$	kg cm^2	Mass moment of inertia of the gearbox component	Mass moment of inertia of the gearbox component of a geared motor related to the input of the gearbox
J_M	kg cm^2	Mass moment of inertia of the motor component without brake	Mass moment of inertia of the motor component of a geared motor
$J_{M,Br}$	kg cm^2	Mass moment of inertia of the motor component with brake	Mass moment of inertia of the motor component of a geared motor including motor holding brake
m	kg	Mass of the geared motor	Total mass of the geared motor
m_G	kg	Mass of the gearbox component	Mass of the gearbox component of a geared motor
m_M	kg	Mass of the motor component	Mass of the motor component of a geared motor
$m_{M,Br}$	kg	Mass of the motor component with brake	Mass of the motor component with motor holding brake
$M_{0,M}$	Nm	Static torque of the motor component on the geared motor	Torque of the motor component at standstill and near standstill that can be generated permanently electrically or on average. If this is above $M_{2max,G}$, it must be ensured that a maximum of $M_{2max,G}/ i$ is applied to the gearbox input (observe the gearbox inertia to load inertia ratio). If necessary, limit the acceleration, torque or current accordingly on the application side.
$M_{2.0}$	Nm	Geared motor static torque	The geared motor can deliver this torque thermally on a sustained basis at standstill and near standstill. It is within the fatigue strength range of the gearbox.
M_{2N}	Nm	Rated torque of the geared motor	The geared motor can deliver this torque thermally on a sustained basis at its rated speed. It is within the fatigue strength range of the gearbox.
$M_{2N,G}$	Nm	Rated torque of the gearbox component	Rated torque of the gearbox component at the output. This represents the fatigue strength limit of the gear teeth (independently of the motor). If exceeded, the gearbox is partially damaged and a service life calculation is required.
M_{max}	Nm	Maximum torque of the motor	Maximum torque of the motor that can be generated for a short time.
M_{2max}	Nm	Maximum torque of the geared motor	Maximum possible short-term and permissible torque at the output of the geared motor.
$M_{max,M}$	Nm	Maximum torque of the motor component	Electrically generated maximum torque of the motor component. If this is above $M_{2max,G}$, it must be ensured that a maximum of $M_{2max,G}/ i$ is applied to the gearbox input (observe the gearbox inertia to load inertia ratio). If necessary, limit the acceleration, torque or current accordingly on the application side.
$M_{2max,G}$	Nm	Maximum torque of the gearbox component	Maximum (very rare) permissible torque at the output of the gearbox. This is the limit of the time strength range. There is a risk of breakage if the limit is exceeded.
$M_{2Em.Off}$	Nm	Emergency Off torque	$M_{2Em.Off}$ can be tolerated a maximum of 1000 times during the gearbox service life without causing unacceptable damage to the gearbox. This code can be used to check whether high torques, caused by very rare operating faults, can damage the gearbox.
$n_{1av,G}$	r/min	Largest average input speed of the gearbox component	In each time window of 15 minutes, the average input speed must be below $n_{1av,G}$.
$n_{1max,G}$	r/min	Maximum input peed of the gearbox component	Maximum permissible short-term input speed of the gearbox component on a geared motor
$n_{max,M}$	r/min	Maximum speed of the motor component	Maximum achievable and maximum permissible speed of the motor component on a geared motor
$n_{2B,G}$	r/min	Reference speed of the gearbox	Reference speed relative to the rated torque $M_{2N,G}$ of the gearbox component. This is required to perform a service life calculation of the gearbox output bearings.
n_{2max}	r/min	Maximum speed of the geared motor	Maximum achievable and maximum permissible speed at the gearbox output of a geared motor
n_{2N}	r/min	Rated speed of the geared motor	The rated torque of the geared motor is specified at this speed
F_R	N	Radial force	Radial force perpendicular to the shaft axis
$F_{R\,eq}$	N	Average radial force	Radial force averaged over the cycle, perpendicular to the shaft axis. For ball bearings, use the cubic mean. For roller bearings, use the exponent 3.33 instead of the exponent 3.
$F_{R\,max}$	N	Maximum radial force	Maximum statically permissible radial force
F_A	N	Axial force	Axial force
$F_{A\,eq}$	N	Average axial force	Axial force averaged over the cycle. For ball bearings, use the cubic mean. For roller bearings, use the exponent 3.33 instead of the exponent 3.
$F_{A\,max}$	N	Maximum axial force	Maximum statically permissible axial force
M_b	Nm	Maximum permissible bending moment	Maximum permissible bending moment at the motor flange to gearbox adapter separation point
φ_2	’	Torsional backlash of the gearbox	Torsional backlash of the gearbox related to the output

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Selection and ordering data

Selection of servomotors with planetary gearbox

- Select gearbox type and gearbox size, e.g. on the basis of the required torque or the required shaft loads - Table *Permissible output shaft loads*.
- Select a suitable servomotor-gearbox combination from the *Selection data servomotors with planetary gearbox*, the *Servomotor data* and the *Planetary gearbox data*, e.g. on the basis of the rated speed of the servomotor with planetary gearbox, the associated transmission ratio and the rated torque.
  The fatigue strength of the motor and gearbox combination must be taken into account – see color background of the *Selection data servomotors with planetary gearbox* with associated color legend.

Structure of the tables for selection and ordering data

All combinations of servomotors with planetary gearbox including the transmission ratios available in each case can be found in the selection tables for SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors.

The selection tables are sorted according to the following criteria:

- Line supply voltage of the converter
- Gearbox type and size

The following views contain legends with explanations of the formula symbols and units specified in the selection and order tables.

Legend for "Servomotor data":

Servomotor data			Selection data servomotors with planetary gearbox	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)		
Nm	Nm	kg cm²		
				1F.2102-0AG..-0.A0-Z
			Rotor moment of inertia of the motor component (with holding brake) [1]	■■■ + ■■■ + . . .
			Maximum possible short-term torque of the motor component [2]	
			Maximum thermally permissible effective torque of the motor component at standstill or near standstill [2]	

Legend for "Selection data servomotors with planetary gearbox":

Servomotor data			**Selection data servomotors with planetary gearbox**			Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)				
Nm	Nm	kg cm²				
...	...	...	n_{2N}	r/min	Rated speed of the servo planetary geared motor	1F.2102-0AG..-0.A0-Z
			M_{2N}	Nm	Rated torque of the servo planetary geared motor	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	Static torque of the servo planetary geared motor	
			M_{2max}	Nm	Max. permissible short-term output torque of the servo planetary geared motor	

Legend for "Planetary gearbox data":

Servomotor data			Selection data servomotors with planetary gearbox	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)		
Nm	Nm	kg cm²		
Planetary gearbox data				1F.2102-0AG..-0.A0-Z
Gearbox type, gearbox stages:			Gearbox type and number of gearbox stages	■■■ + ■■■ + . . .
1. Order code			1. Order code for gearbox type, gearbox size and number of gearbox stages	
i			Transmission ratio	
2. Order code			2. Order code for transmission ratio	
$M_{2N,G}$		Nm	Rated torque of the gearbox component (fatigue strength)	
$M_{2max,G}$		Nm	Maximum permissible short-term output torque of the gearbox (fatigue strength, max. 30000 revolutions of the output shaft)	
$M_{2Em.Off}$		Nm	Emergency Off output torque of the gearbox (max. 1000 times)	
$J_{1,G}$		kg cm²	Moment of inertia of the gearbox related to the input [1]	
$\varphi_{2,G}$		'	Torsional backlash of the gearbox related to the output	

Color legend for the fatigue strength of the motor and gearbox combination:

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

[1] The total mass inertia is the sum of the motor and gearbox mass inertia. On some motors, the inertia of the gearbox clamping system is attributed to the motor.

[2] Exact values can be found in the data sheet of the motor-gearbox combination, available via the Siemens Product Configurator.

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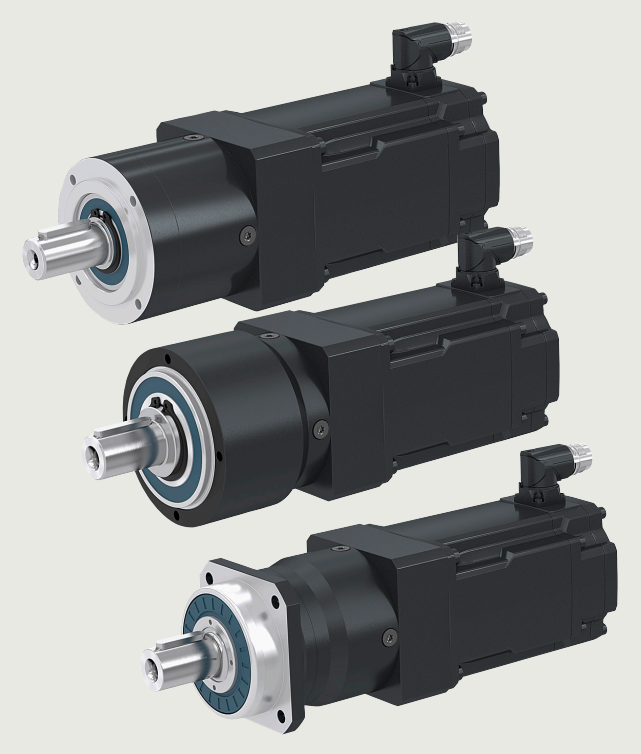
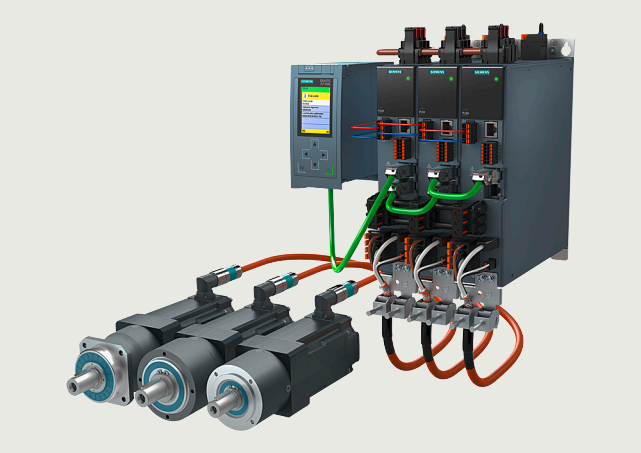
Selection and ordering data



SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors with economy gearbox



Example: SINAMICS S210 servo converter with SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

The following pages show the permissible combinations of **servo motors for 230 V 1 AC / 240 V 3 AC** converters

and coaxial economy planetary geared motors **NRB, NRK and NLC** geared motors.

They show the most important component data of the motor and gearbox as well as the rating of the system geared motor.

The rated operating points of the geared motors are adapted to the converter supply voltage.

More information on selection is provided in the section "Information on Selection".

Economy gearboxes have straight gearing, are grease-lubricated and have a low torsional backlash.

NRB

NRB is the lightest gearbox with the highest power density. Thanks to its low-friction bearing design it is suitable for high speeds and generates very little heat.

NRK

The NRK series gearbox is suitable for higher radial and axial forces due to the large output bearing. This gearbox is also suitable for higher speeds thanks to low internal friction.

NLC

Thanks to the preloaded tapered roller bearing, the NLC gearbox has a high degree of stiffness and is perfectly suited for high radial and axial loads. The IP65 seal provides protection against dust and water.

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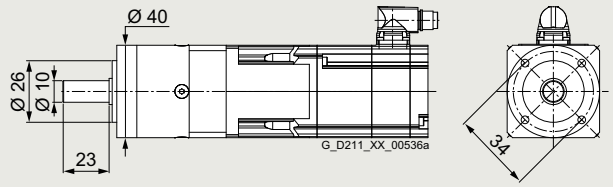
Selection and ordering data

NRB040



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	200 N
Average axial force for 20000 h	$F_{A,eq}$	200 N
Average radial force for 30000 h	$F_{R,eq}$	160 N
Average axial force for 30000 h	$F_{A,eq}$	160 N
Maximum radial force	$F_{R,max}$	200 N
Maximum axial force	$F_{A,max}$	240 N

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB040 1 and 2-stage																				
0.117	0.521	0.0245	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2102-0AG..-0.A0-Z
...	...	(0.0285)	M_{2N}	Nm	0.25	0.35	0.465	0.64	0.78	0.99	0.78	1.11	1.4	1.46	1.92	2.35	3.05	3.9	6.2	■■■ + ■■■ + . . .
0.124	0.535		$M_{2,0}$	Nm	0.35	0.475	0.6	0.85	0.98	1.23	1.07	1.43	1.8	1.92	2.4	3	3.85	4.8	7.5	
			M_{2max}	Nm	1.59	2.1	2.65	3.7	4.25	5.3	4.75	6.3	7.9	8.4	10.5	13.2	16.9	21	12	
0.247	1.05	0.036	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2102-1AG..-0.A0-Z
...	...	(0.04)	M_{2N}	Nm	0.62	0.84	1.07	1.47	1.77	2.2	1.82	2.5	3.15	3.3	4.25	5.2	6.8	8.6	7.5	■■■ + ■■■ + . . .
0.264	1.08		$M_{2,0}$	Nm	0.77	1.04	1.31	1.84	2.1	2.6	2.25	3.05	3.8	4.05	5.1	6.4	8.1	10.2	7.5	
			M_{2max}	Nm	3.2	4.25	5.3	7.5	8.5	8	9.5	12.7	15.9	17	21	26.5	32	29	12	
0.466	1.83	0.1396	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2103-2AG..-2.A0-Z
...	...	(0.1586)	M_{2N}	Nm	1.03	1.4	1.78	2.3	2.9	3.65	2.9	4.15	5.2	5.4	7	8.6	11	14.2	7.5	■■■ + ■■■ + . . .
0.496	1.89		$M_{2,0}$	Nm	1.47	1.97	2.45	3.45	3.95	4.95	4.3	5.7	7.2	7.7	9.6	12	15.4	18	7.5	
			M_{2max}	Nm	5.6	7.5	9.4	13.2	10	8	16.8	22	28	29.5	32	29	32	29	12	
0.452	1.83	0.1396	n_{2N}	r/min	1000	750	500	375	375	250	300	250	200	200	125	100	100	75	50	1F.2103-2AH..-2..0-Z
...	...	(0.1586)	M_{2N}	Nm	0.86	1.21	1.79	2.45	2.65	3.65	3	3.8	4.8	4.9	7	8.7	10	13	7.5	■■■ + ■■■ + . . .
0.482	1.89		$M_{2,0}$	Nm	1.43	1.91	2.35	3.35	3.8	4.8	4.2	5.6	7	7.4	9.3	11.6	14.9	18	7.5	
			M_{2max}	Nm	5.6	7.5	9.4	13.2	10	8	16.8	22	28	29.5	32	29	32	29	12	
0.976	3.85	0.1856	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	150	150	125	100	75	–	1F.2103-4AG..-2.A0-Z
...	...	(0.2046)	M_{2N}	Nm	2.3	3	3.7	5	5.1	5	6.5	7.7	9.7	12.6	13	15.5	19.4	18	–	■■■ + ■■■ + . . .
1.04	3.96		$M_{2,0}$	Nm	3.1	4.1	5.1	7.2	6	5	9	12	15.1	16.1	20	18	20	18	–	
			M_{2max}	Nm	11.8	15.8	19.7	13.5	10	8	26	32	29	32	32	29	32	29	–	
0.881	3.85	0.1856	n_{2N}	r/min	750	600	500	375	375	250	300	250	200	200	125	100	100	75	–	1F.2103-4AH..-2..0-Z
...	...	(0.2046)	M_{2N}	Nm	2.05	2.65	3.3	4.55	4.6	5	5.9	7	8.8	8.6	13.9	17.4	17.9	18	–	■■■ + ■■■ + . . .
0.933	3.96		$M_{2,0}$	Nm	2.75	3.7	4.65	6.5	6	5	8.1	10.8	13.6	14.5	18.1	18	20	18	–	
			M_{2max}	Nm	11.8	15.8	19.7	13.5	10	8	26	32	29	32	32	29	32	29	–	

Planetary gearbox data																	
Gearbox type:			NRB040, 1-stage						NRB040, 2-stage								
1. Order code			A11						A12								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	11	15	14	8.5	6	5	16.5	20	18	20	20	18	20	18	7.5
	$M_{2max,G}$	Nm	17.5	24	22	13.5	10	8	26	32	29	32	32	29	32	29	12
	$M_{2Em.Off}$	Nm	22.5	30	36	26	27	27	33	40	36	40	40	36	40	36	27
	$J_{1,G}$	kg cm²	0.027	0.021	0.019	0.015	0.015	0.014	0.026	0.025	0.025	0.02	0.018	0.018	0.015	0.015	0.015
	$\varphi_{2,G}$	'	15						19								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRB040

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB040 1 and 2-stage																			
0.53	1.74	0.2466	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2203-2AG..-2.A0-Z
...	...	(0.2666)	M_{2N}	Nm	0.99	1.35	1.73	2.05	2.8	3.55	2.65	4.05	5	5	6.8	8.2	10.4	13.8	7.5	■■■ + ■■■ + . . .
0.566	1.79		$M_{2,0}$	Nm	1.68	2.25	2.8	3.95	4.5	5	4.9	6.5	8.2	8.7	10.9	13.7	17.5	18	7.5	
			M_{2max}	Nm	5.3	7.1	8.9	12.5	10	8	15.9	21	26.5	28	32	29	32	29	12	
0.493	1.74	0.2466	n_{2N}	r/min	750	600	500	375	300	250	300	200	150	150	125	100	75	60	50	1F.2203-2AK..-2..0-Z
...	...	(0.2666)	M_{2N}	Nm	0.93	1.2	1.47	2	2.5	3.05	2.35	3.55	4.7	4.75	5.7	7.2	9.6	12.1	7.5	■■■ + ■■■ + . . .
0.527	1.79		$M_{2,0}$	Nm	1.56	2.05	2.6	3.65	4.2	5	4.6	6.1	7.6	8.1	10.2	12.7	16.3	18	7.5	
			M_{2max}	Nm	5.3	7.1	8.9	12.5	10	8	15.9	21	26.5	28	32	29	32	29	12	
1.13	3.56	0.3966	n_{2N}	r/min	1000	750	600	375	375	300	300	250	200	200	150	125	100	75	–	1F.2203-4AG..-2.A0-Z
...	...	(0.4166)	M_{2N}	Nm	2.3	3.15	4.05	6.5	6	5	7.9	9.8	12.2	11.9	16.4	18	20	18	–	■■■ + ■■■ + . . .
1.2	3.67		$M_{2,0}$	Nm	3.55	4.75	5.9	8.3	6	5	10.5	14	17.5	18.6	20	18	20	18	–	
			M_{2max}	Nm	10.9	14.6	18.3	13.5	10	8	26	32	29	32	32	29	32	29	–	
1	3.56	0.3966	n_{2N}	r/min	750	500	500	300	300	300	300	200	150	150	125	100	75	75	–	1F.2203-4AK..-2..0-Z
...	...	(0.4166)	M_{2N}	Nm	2.05	3.15	3.15	5.4	5.5	4.75	5.5	8.4	11	11.2	13.7	17.1	20	18	–	■■■ + ■■■ + . . .
1.06	3.67		$M_{2,0}$	Nm	3.15	4.2	5.3	7.4	6	5	9.3	12.4	15.5	16.5	20	18	20	18	–	
			M_{2max}	Nm	10.9	14.6	18.3	13.5	10	8	26	32	29	32	32	29	32	29	–	

Planetary gearbox data																	
Gearbox type:			NRB040, 1-stage						NRB040, 2-stage								
1. Order code			A11						A12								
i			3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$		Nm	11	15	14	8.5	6	5	16.5	20	18	20	20	18	20	18	7.5
$M_{2max,G}$		Nm	17.5	24	22	13.5	10	8	26	32	29	32	32	29	32	29	12
$M_{2Em.Off}$		Nm	22.5	30	36	26	27	27	33	40	36	40	40	36	40	36	27
$J_{1,G}$		kg cm²	0.027	0.021	0.019	0.015	0.015	0.014	0.026	0.025	0.025	0.02	0.018	0.018	0.015	0.015	0.015
$\varphi_{2,G}$		'	15						19								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB040

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB040 3-stage													
0.117 ... 0.124	0.521 ... 0.535	0.0245 (0.0285)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1F.2102-0AG..-0.A0-Z
			M_{2N}	Nm	5.5	7.5	9.3	11	15	18	20	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7	9.3	11.6	14	18.6	18	20	18	
			M_{2max}	Nm	31	32	32	29	32	29	32	29	
0.247 ... 0.264	1.05 ... 1.08	0.036 (0.04)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1F.2102-1AG..-0.A0-Z
			M_{2N}	Nm	12.2	16.5	20	18	20	18	20	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.8	19.8	20	18	20	18	20	18	
			M_{2max}	Nm	32	32	32	29	32	29	32	29	
0.466 ... 0.496	1.83 ... 1.89	0.1396 (0.1586)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	1F.2103-2AG..-2.A0-Z
			M_{2N}	Nm	20	20	20	18	20	18	20	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	18	20	18	20	–	
			M_{2max}	Nm	32	32	32	29	32	29	32	–	
0.452 ... 0.482	1.83 ... 1.89	0.1396 (0.1586)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	–	1F.2103-2AH..-2..0-Z
			M_{2N}	Nm	18.6	20	20	18	20	18	20	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	18	20	18	20	–	
			M_{2max}	Nm	32	32	32	29	32	29	32	–	
0.976 ... 1.04	3.85 ... 3.96	0.1856 (0.2046)	n_{2N}	r/min	50	37.5	30	–	–	–	–	–	1F.2103-4AG..-2.A0-Z
			M_{2N}	Nm	20	20	20	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	–	–	–	–	–	
			M_{2max}	Nm	32	32	32	–	–	–	–	–	
0.881 ... 0.933	3.85 ... 3.96	0.1856 (0.2046)	n_{2N}	r/min	50	37.5	25	–	–	–	–	–	1F.2103-4AH..-2..0-Z
			M_{2N}	Nm	20	20	20	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	–	–	–	–	–	
			M_{2max}	Nm	32	32	32	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB040 3-stage													
0.53 ... 0.566	1.74 ... 1.79	0.2466 (0.2666)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	1F.2203-2AG..-2.A0-Z
			M_{2N}	Nm	19.6	20	20	18	20	18	20	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	18	20	18	20	–	
			M_{2max}	Nm	32	32	32	29	32	29	32	–	
0.493 ... 0.527	1.74 ... 1.79	0.2466 (0.2666)	n_{2N}	r/min	37.5	37.5	30	25	20	15	12.5	–	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	18	17.1	20	18	20	18	20	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	18	20	18	20	–	
			M_{2max}	Nm	32	32	32	29	32	29	32	–	
1.13 ... 1.2	3.56 ... 3.67	0.3966 (0.4166)	n_{2N}	r/min	50	37.5	30	–	–	–	–	–	1F.2203-4AG..-2.A0-Z
			M_{2N}	Nm	20	20	20	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	–	–	–	–	–	
			M_{2max}	Nm	32	32	32	–	–	–	–	–	
1 ... 1.06	3.56 ... 3.67	0.3966 (0.4166)	n_{2N}	r/min	50	37.5	30	–	–	–	–	–	1F.2203-4AK..-2..0-Z
			M_{2N}	Nm	20	20	20	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	–	–	–	–	–	
			M_{2max}	Nm	32	32	32	–	–	–	–	–	

Planetary gearbox data									
Gearbox type:			**NRB040, 3-stage**						
1. Order code			**A13**						
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$		Nm	20	20	20	18	20	18	20	18
$M_{2max,G}$		Nm	32	32	32	29	32	29	32	29
$M_{2Em.Off}$		Nm	40	40	40	36	40	36	40	36
$J_{1,G}$		kg cm²	0.025	0.018	0.018	0.025	0.015	0.015	0.015	0.015
$\varphi_{2,G}$		'	22							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

3 4

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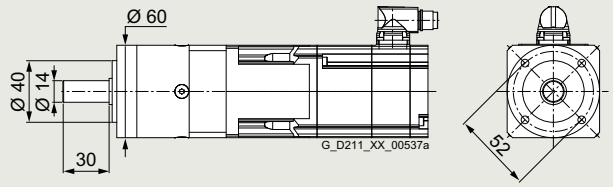
Gearbox type NRB060

Selection and ordering data

NRB060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	400 N
Average axial force for 20000 h	$F_{A,eq}$	500 N
Average radial force for 30000 h	$F_{R,eq}$	340 N
Average axial force for 30000 h	$F_{A,eq}$	450 N
Maximum radial force	$F_{R,max}$	700 N
Maximum axial force	$F_{A,max}$	800 N

3 4

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 1 and 2-stage																			
0.106 ... 0.122	0.506 ... 0.517	0.0245 (0.0285)	n_{2N}	r/min	750	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2102-0AG..-0.A0-Z**
			M_{2N}	Nm	0.194	0.255	0.365	0.52	0.67	0.87	0.54	0.85	1.25	1.25	1.7	2.1	2.8	3.6	5.7	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.315	0.44	0.56	0.81	0.93	1.18	1.05	1.41	1.78	1.91	2.4	3	3.85	4.8	7.7	
			M_{2max}	Nm	1.51	2	2.55	3.6	4.1	5.1	4.6	6.1	7.6	8.2	10.2	12.8	16.4	20.5	29	
0.258 ... 0.271	1.03 ... 1.06	0.036 (0.04)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2102-1AG..-0.A0-Z**
			M_{2N}	Nm	0.55	0.81	1.07	1.48	1.8	2.25	1.73	2.45	3.3	3.4	4.4	5.5	7.1	9	14.3	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.77	1.05	1.32	1.87	2.15	2.7	2.4	3.2	4	4.3	5.4	6.7	8.6	10.8	17.3	
			M_{2max}	Nm	3.1	4.2	5.2	7.3	8.4	10.5	9.4	12.5	15.7	16.7	20.5	26	33.5	41.5	29	
0.525 ... 0.554	1.83 ... 1.88	0.093 (0.112)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2103-2AG..-2.A0-Z**
			M_{2N}	Nm	1.13	1.61	2.05	2.8	3.45	4.35	3.35	4.8	6.2	6.4	8.4	10.3	13.3	17	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.62	2.15	2.7	3.85	4.4	5.5	4.85	6.4	8.1	8.6	10.8	13.5	17.3	21.5	18	
			M_{2max}	Nm	5.6	7.5	9.4	13.1	15	18.8	16.8	22	27.5	29.5	37	46.5	59	64	29	
0.51 ... 0.539	1.83 ... 1.88	0.093 (0.112)	n_{2N}	r/min	1000	750	500	375	375	250	300	250	200	200	125	100	100	75	50	**1F.2103-2AH..-2..0-Z**
			M_{2N}	Nm	1.06	1.53	2.1	2.95	3.25	4.35	3.5	4.5	5.9	6	8.4	10.5	12.5	16	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.58	2.1	2.65	3.75	4.3	5.3	4.7	6.2	7.8	8.4	10.5	13.1	16.8	21	18	
			M_{2max}	Nm	5.6	7.5	9.4	13.1	15	18.8	16.8	22	27.5	29.5	37	46.5	59	64	29	
1.09 ... 1.16	3.84 ... 3.95	0.139 (0.158)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2103-4AG..-2.A0-Z**
			M_{2N}	Nm	2.1	3.05	4	5.1	6.7	8.5	6.4	9.8	12.9	12.9	17.2	20.5	26.5	35	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.45	4.6	5.7	8.1	9.2	11.6	10.1	13.5	16.9	18	22.5	28	36	40	18	
			M_{2max}	Nm	11.8	15.8	19.7	27.5	29	24	35	46.5	58	62	70	64	70	64	29	
0.972 ... 1.03	3.84 ... 3.95	0.139 (0.158)	n_{2N}	r/min	1000	750	500	375	375	250	300	250	200	200	125	100	100	75	50	**1F.2103-4AH..-2..0-Z**
			M_{2N}	Nm	1.91	2.8	4.05	5.7	6.1	8.4	6.9	8.9	11.4	11.8	16.2	20	24	30.5	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.05	4.05	5.1	7.1	8.2	10.2	9	12	15	16	20	25	32	40	18	
			M_{2max}	Nm	11.8	15.8	19.7	27.5	29	24	35	46.5	58	62	70	64	70	64	29	
1.17 ... 1.2	3.56 ... 3.66	0.371 (0.451)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	3.35	4.5	5.7	7.9	9.1	11.5	9.7	13.3	16.8	17.7	22	28	35.5	40	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.55	4.75	5.9	8.3	9.5	11.9	10.6	14.2	17.8	19	23.5	29.5	37.5	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	

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Planetary gearbox data																
Gearbox type:			NRB060, 1-stage						NRB060, 2-stage							
1. Order code			A21						A22							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80
	$J_{1.G}$	kg cm²	0.128	0.092	0.08	0.069	0.067	0.065	0.121	0.118	0.076	0.085	0.075	0.075	0.066	0.066	0.066
	$\varphi_{2,G}$	'	10						12								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 1 and 2-stage (continued)																			
1.16 ... 1.19	3.65 ... 3.75	0.371 (0.451)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2104-4AK..-2..0-Z
			M_{2N}	Nm	3.1	4.25	5.4	7.3	8.8	11	8.9	12.5	16	16.6	21	26	33.5	40	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.55	4.7	5.9	8.3	9.5	11.9	10.6	14.1	17.7	18.8	23.5	29.5	37.5	40	18	
			M_{2max}	Nm	11.2	15	18.7	26	29	24	33	44.5	55	59	70	64	70	64	29	
2.25 ... 2.3	7.16 ... 7.36	0.581 (0.671)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	1F.2104-5AF..-2..0-Z
			M_{2N}	Nm	6.5	8.8	11	15.2	17.6	15	18.8	25.5	32	34	42.5	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.8	9.1	11.4	16	18	15	20.5	27	34	36	44	40	44	40	–	
			M_{2max}	Nm	22	29	36.5	40	29	24	65	70	70	70	70	64	70	64	–	
2.23 ... 2.28	7.25 ... 7.46	0.581 (0.671)	n_{2N}	r/min	1000	750	600	500	375	300	300	250	200	200	150	125	100	75	–	1F.2104-5AK..-2..0-Z
			M_{2N}	Nm	4.55	6.5	8.4	10.4	13.8	15	15.8	19.3	25	24.5	33.5	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.8	9.1	11.4	15.9	18	15	20	27	33.5	36	44	40	44	40	–	
			M_{2max}	Nm	22	29.5	37	40	29	24	66	70	70	70	70	64	70	64	–	
2.98 ... 3.05	9.56 ... 9.83	0.781 (0.861)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	1F.2104-6AF..-2..0-Z
			M_{2N}	Nm	8.2	11.1	14	18.8	18	15	23.5	33.5	42	43.5	44	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9.1	12.1	15.2	21	18	15	27	36	44	44	44	40	44	40	–	
			M_{2max}	Nm	29	39	49	40	29	24	70	70	70	70	70	64	70	64	–	
4.59 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	12.3	16.4	20.5	25	18	15	32.5	44	44	44	44	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	18.9	23.5	25	18	15	42	44	44	44	44	40	44	40	–	
			M_{2max}	Nm	44	58	64	40	29	24	70	70	70	70	70	64	70	64	–	
4.57 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	600	500	375	250	300	250	200	150	150	125	125	100	75	75	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10	12.1	16.5	24.5	17.9	15	29	38.5	36.5	44	38.5	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19	23.5	25	18	15	42	44	44	44	44	40	44	40	–	
			M_{2max}	Nm	44	58	64	40	29	24	70	70	70	70	70	64	70	64	–	
7.1 ... 7.25	23.2 ... 23.6	2.92 (3.77)	n_{2N}	r/min	500	375	300	250	200	150	–	125	100	100	75	60	50	–	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	16.5	22	27.5	25	18	15	–	44	44	44	44	40	44	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	28.5	36	25	18	15	–	44	44	44	44	40	44	–	–	
			M_{2max}	Nm	45	61	64	40	29	24	–	70	70	70	70	64	70	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 1 and 2-stage																			
0.561 ... 0.573	1.74 ... 1.79	0.2 (0.22)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2203-2AG..-2.A0-Z
			M_{2N}	Nm	1.14	1.64	2.1	2.75	3.55	4.5	3.25	4.9	6.4	6.5	8.6	10.5	13.5	17.5	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.68	2.25	2.8	3.95	4.55	5.7	5.1	6.8	8.5	9	11.3	14.2	18.2	22.5	18	
			M_{2max}	Nm	5.3	7.1	8.9	12.4	14.2	17.8	15.9	21	26.5	28	35	44	56	64	29	
0.527 ... 0.538	1.74 ... 1.79	0.2 (0.22)	n_{2N}	r/min	1000	750	600	375	375	300	300	250	200	200	150	125	100	75	50	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	0.85	1.26	1.66	2.7	2.8	3.55	3.1	3.75	5	4.9	6.7	8.1	10.3	13.9	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.57	2.1	2.65	3.7	4.25	5.3	4.75	6.3	8	8.5	10.6	13.3	17.1	21	18	
			M_{2max}	Nm	5.3	7.1	8.9	12.4	14.2	17.8	15.9	21	26.5	28	35	44	56	64	29	
1.17 ... 1.19	3.56 ... 3.66	0.35 (0.37)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2203-4AG..-2.A0-Z
			M_{2N}	Nm	2.8	3.95	5	6.6	8.2	10.3	8.1	11.5	14.7	15.2	19.7	24	30.5	39.5	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.55	4.75	5.9	8.3	9.5	11.9	10.6	14.1	17.7	18.9	23.5	29.5	37.5	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:			NRB060, 1-stage						NRB060, 2-stage							
1. Order code			A21						A22							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80
	$J_{1,G}$	kg cm²	0.128	0.092	0.08	0.069	0.067	0.065	0.121	0.118	0.076	0.085	0.075	0.075	0.066	0.066	0.066
	$\varphi_{2,G}$	'	10						12								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 1 and 2-stage (continued)																			
1.11	3.56	0.35	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	**1F.2203-4AK..-2..0-Z**
...	...	(0.37)	M_{2N}	Nm	2.55	3.4	4.25	5.9	5.9	7.6	7	8.6	11.1	11	14.8	17.9	22.5	29.5	18	■■■ + ■■■ + . . .
1.15	3.66		$M_{2,0}$	Nm	3.4	4.55	5.7	8	9.2	11.5	10.2	13.7	17.1	18.2	22.5	28.5	36.5	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	
2.21	6.78	1.251	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1F.2204-5AF..-2..0-Z**
...	...	(1.331)	M_{2N}	Nm	6.2	8.4	10.5	14.4	16.7	15	17.8	24.5	30.5	32	41	40	44	40	–	■■■ + ■■■ + . . .
2.26	6.96		$M_{2,0}$	Nm	6.7	9	11.2	15.7	18	15	20	26.5	33.5	35.5	44	40	44	40	–	
			M_{2max}	Nm	20.5	27.5	34.5	40	29	24	61	70	70	70	70	64	70	64	–	
2.22	6.78	1.251	n_{2N}	r/min	750	600	600	375	375	300	300	200	200	150	150	125	100	75	–	**1F.2204-5AK..-2..0-Z**
...	...	(1.331)	M_{2N}	Nm	5.5	7.3	7.5	12.4	12.6	15	14.8	22	23	29.5	30.5	36.5	44	40	–	■■■ + ■■■ + . . .
2.27	6.96		$M_{2,0}$	Nm	6.8	9	11.3	15.8	18	15	20	27	33.5	35.5	44	40	44	40	–	
			M_{2max}	Nm	20.5	27.5	34.5	40	29	24	61	70	70	70	70	64	70	64	–	
2.96	9.08	1.631	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1F.2204-6AF..-2..0-Z**
...	...	(1.711)	M_{2N}	Nm	8.7	11.8	14.8	19.7	18	15	24.5	34.5	43.5	44	44	40	44	40	–	■■■ + ■■■ + . . .
3.03	9.33		$M_{2,0}$	Nm	9	12.1	15.1	21	18	15	27	36	44	44	44	40	44	40	–	
			M_{2max}	Nm	27.5	37	46.5	40	29	24	70	70	70	70	70	64	70	64	–	
2.73	10.3	3.42	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	**1FT2205-2AC..-0..0-Z**
...	...	(4.32)	M_{2N}	Nm	7.4	10.1	12.6	17.6	18	15	22.5	28.5	36	38	44	40	44	40	–	■■■ + ■■■ + . . .
2.84	10.6		$M_{2,0}$	Nm	8.5	11.3	14.2	19.8	18	15	25	33	41.5	44	44	40	44	40	–	
			M_{2max}	Nm	31.5	42	52	40	29	24	70	70	70	70	70	64	70	64	–	
2.79	10.3	3.42	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1F.2205-2AF..-0..0-Z**
...	...	(4.32)	M_{2N}	Nm	7.7	10.3	12.9	17.6	18	15	21.5	30	37.5	39.5	44	40	44	40	–	■■■ + ■■■ + . . .
2.9	10.6		$M_{2,0}$	Nm	8.7	11.6	14.5	20	18	15	25.5	34	42.5	44	44	40	44	40	–	
			M_{2max}	Nm	31.5	42	52	40	29	24	70	70	70	70	70	64	70	64	–	
2.77	10.3	3.42	n_{2N}	r/min	600	500	375	300	250	250	200	150	125	125	100	100	75	60	–	**1FT2205-2AH..-0..0-Z**
...	...	(4.32)	M_{2N}	Nm	6.5	8	10.9	13.6	16.6	14.6	20	27	33	32.5	41	36	44	40	–	■■■ + ■■■ + . . .
2.88	10.6		$M_{2,0}$	Nm	8.6	11.5	14.4	20	18	15	25	33.5	42.5	44	44	40	44	40	–	
			M_{2max}	Nm	31.5	42	52	40	29	24	70	70	70	70	70	64	70	64	–	
4.85	17.4	5.37	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1F.2205-4AF..-0..0-Z**
...	...	(6.27)	M_{2N}	Nm	11.2	15.1	19	23.5	18	15	28	43.5	44	44	44	40	44	40	–	■■■ + ■■■ + . . .
4.95	17.7		$M_{2,0}$	Nm	14.8	19.8	24.5	25	18	15	43.5	44	44	44	44	40	44	40	–	
			M_{2max}	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	–	

Planetary gearbox data																
Gearbox type:			**NRB060, 1-stage**						**NRB060, 2-stage**							
1. Order code			**A21**						**A22**							
i			**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$		Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18
$M_{2max,G}$		Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29
$M_{2Em.Off}$		Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80
$J_{1,G}$		kg cm²	0.128	0.092	0.08	0.069	0.067	0.065	0.121	0.118	0.076	0.085	0.075	0.075	0.066	0.066	0.066
$\varphi_{2,G}$		'	10						12								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)										
Nm	Nm	kg cm²										
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 3-s-stagetage												
0.106 ... 0.122	0.506 ... 0.517	0.0245 (0.0285)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	**1F.2102-0AG..-0.A0-Z**
			M_{2N}	Nm	5.1	6.8	8.6	10.7	13.9	17.8	22	27.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.1	9.5	11.9	14.3	19.1	23.5	30.5	38	
			M_{2max}	Nm	30.5	40.5	50	61	70	64	70	64	
0.258 ... 0.271	1.03 ... 1.06	0.036 (0.04)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	**1F.2102-1AG..-0.A0-Z**
			M_{2N}	Nm	13	17.3	21.5	26	34.5	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.1	21	26.5	32	42.5	40	44	40	
			M_{2max}	Nm	62	70	70	70	70	64	70	64	
0.525 ... 0.554	1.83 ... 1.88	0.093 (0.112)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	**1F.2103-2AG..-2.A0-Z**
			M_{2N}	Nm	24.5	32.5	40.5	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
0.51 ... 0.539	1.83 ... 1.88	0.093 (0.112)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	10	**1F.2103-2AH..-2..0-Z**
			M_{2N}	Nm	23	30.5	40.5	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.09 ... 1.16	3.84 ... 3.95	0.139 (0.158)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	**1F.2103-4AG..-2.A0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
0.972 ... 1.03	3.84 ... 3.95	0.139 (0.158)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	–	**1F.2103-4AH..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
1.17 ... 1.2	3.56 ... 3.66	0.371 (0.451)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	–	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
1.16 ... 1.19	3.65 ... 3.75	0.371 (0.451)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	**1F.2104-4AK..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
2.25 ... 2.3	7.16 ... 7.36	0.581 (0.671)	n_{2N}	r/min	25	20	15	12.5	–	–	–	–	**1F.2104-5AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.23 ... 2.28	7.25 ... 7.46	0.581 (0.671)	n_{2N}	r/min	50	37.5	30	25	–	–	–	–	**1F.2104-5AK..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	

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Planetary gearbox data									
Gearbox type:			**NRB060, 3-stage**						
1. Order code			**A23**						
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$		Nm	44	44	44	44	44	40	44	40
$M_{2max,G}$		Nm	70	70	70	70	70	64	70	64
$M_{2Em.Off}$		Nm	88	88	88	88	88	80	88	80
$J_{1,G}$		kg cm²	0.076	0.075	0.074	0.066	0.066	0.066	0.066	0.066
$\varphi_{2,G}$		'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 3-stage (continued)													
2.98 ... 3.05	9.56 ... 9.83	0.781 (0.861)	n_{2N}	r/min	25	20	–	–	–	–	–	–	1F.2104-6AF..-2..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	44	–	–	–	–	–	–	
			$M_{2,0}$	Nm	44	44	–	–	–	–	–	–	
			M_{2max}	Nm	70	70	–	–	–	–	–	–	
4.59 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	25	–	–	–	–	–	–	–	1F.2105-4AF..-0..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	–	–	–	–	–	–	–	
			$M_{2,0}$	Nm	44	–	–	–	–	–	–	–	
			M_{2max}	Nm	70	–	–	–	–	–	–	–	
4.57 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	50	–	–	–	–	–	–	–	1FT2105-4AH..-0..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	–	–	–	–	–	–	–	
			$M_{2,0}$	Nm	44	–	–	–	–	–	–	–	
			M_{2max}	Nm	70	–	–	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 3-stage													
0.561 ... 0.573	1.74 ... 1.79	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1F.2203-2AG..-2.A0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	25	33	41.5	44	44	40	44	40	
			$M_{2,0}$	Nm	33.5	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
0.527 ... 0.538	1.74 ... 1.79	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1F.2203-2AK..-2..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	19.4	25.5	32	39.5	44	40	44	40	
			$M_{2,0}$	Nm	31.5	42	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.17 ... 1.19	3.56 ... 3.66	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	1F.2203-4AG..-2.A0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	44	44	44	44	40	44	–	
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
1.11 ... 1.15	3.56 ... 3.66	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	1F.2203-4AK..-2..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	42.5	44	44	44	44	40	44	–	
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
2.21 ... 2.26	6.78 ... 6.96	1.251 (1.331)	n_{2N}	r/min	25	20	15	12.5	–	–	–	–	1F.2204-5AF..-2..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	44	44	44	–	–	–	–	
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.22 ... 2.27	6.78 ... 6.96	1.251 (1.331)	n_{2N}	r/min	50	37.5	30	25	–	–	–	–	1F.2204-5AK..-2..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	44	44	44	–	–	–	–	
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.96 ... 3.03	9.08 ... 9.33	1.631 (1.711)	n_{2N}	r/min	25	20	–	–	–	–	–	–	1F.2204-6AF..-2..0-Z ■■■ + ■■■ + . . .
			M_{2N}	Nm	44	44	–	–	–	–	–	–	
			$M_{2,0}$	Nm	44	44	–	–	–	–	–	–	
			M_{2max}	Nm	70	70	–	–	–	–	–	–	

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Planetary gearbox data									
Gearbox type:			NRB060, 3-stage						
1. Order code			A23						
	i		60	80	100	120	160	200	256	320
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23
	$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
	$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
	$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
	$J_{1,G}$	kg cm²	0.076	0.075	0.074	0.066	0.066	0.066	0.066	0.066
	$\varphi_{2,G}$	'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
$M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²										
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 3-stage (continued)												
2.73 ... 2.84	10.3 ... 10.6	3.42 (4.32)	n_{2N} r/min	20	12.5	–	–	–	–	–	–	**1FT2205-2AC..-0..0-Z**
			M_{2N} Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	–	–	–	–	–	–	
			M_{2max} Nm	70	70	–	–	–	–	–	–	
2.79 ... 2.9	10.3 ... 10.6	3.42 (4.32)	n_{2N} r/min	25	20	–	–	–	–	–	–	**1F.2205-2AF..-0..0-Z**
			M_{2N} Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	–	–	–	–	–	–	
			M_{2max} Nm	70	70	–	–	–	–	–	–	
2.77 ... 2.88	10.3 ... 10.6	3.42 (4.32)	n_{2N} r/min	50	37.5	–	–	–	–	–	–	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	43	43.5	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	43.5	–	–	–	–	–	–	
			M_{2max} Nm	70	70	–	–	–	–	–	–	

Planetary gearbox data									
Gearbox type:			**NRB060, 3-stage**						
1. Order code			**A23**						
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$		Nm	44	44	44	44	44	40	44	40
$M_{2max,G}$		Nm	70	70	70	70	70	64	70	64
$M_{2Em.Off}$		Nm	88	88	88	88	88	80	88	80
$J_{1,G}$		kg cm²	0.076	0.075	0.074	0.066	0.066	0.066	0.066	0.066
$\varphi_{2,G}$		'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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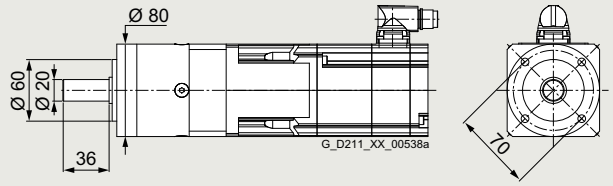
Gearbox type NRB080

Selection and ordering data

NRB080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	750 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	650 N
Average axial force for 30000 h	$F_{A,eq}$	900 N
Maximum radial force	$F_{R,max}$	1250 N
Maximum axial force	$F_{A,max}$	1600 N

3 4

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 1 and 2-stage																			
0.517	1.8	0.093	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2103-2AG..-0.A0-Z**
...	...	(0.112)	M_{2N}	Nm	0.85	1.25	1.73	2.4	3.1	3.95	2.8	4.2	5.3	5.4	7.5	9.2	12.3	15.9	24.5	■■■ + ■■■ + . . .
0.544	1.85		M_{2_0}	Nm	1.55	2.1	2.65	3.75	4.3	5.4	4.8	6.4	8.1	8.6	10.8	13.5	17.3	21.5	34.5	
			M_{2max}	Nm	5.4	7.3	9.1	12.9	14.7	18.4	16.4	21.5	27	29	36.5	45.5	58	73	80	
0.49	1.8	0.093	n_{2N}	r/min	750	750	500	375	375	250	300	250	200	200	125	100	100	75	50	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	1.04	1.19	1.86	2.7	2.95	4.1	3.15	4	5.1	5.2	7.8	9.8	11.7	15.2	23.5	■■■ + ■■■ + . . .
0.516	1.85		M_{2_0}	Nm	1.46	1.99	2.5	3.55	4.05	5.1	4.55	6.1	7.6	8.2	10.2	12.8	16.4	20.5	33	
			M_{2max}	Nm	5.4	7.3	9.1	12.9	14.7	18.4	16.4	21.5	27	29	36.5	45.5	58	73	80	
1.13	3.81	0.139	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	**1F.2103-4AG..-0.A0-Z**
...	...	(0.158)	M_{2N}	Nm	2.6	3.45	4.45	6.5	6.8	8.7	7.9	9.8	12.4	12.1	17.3	21	27.5	35.5	50	■■■ + ■■■ + . . .
1.15	3.91		M_{2_0}	Nm	3.35	4.5	5.6	8	9.1	11.4	10.2	13.6	17.1	18.2	22.5	28.5	36.5	45.5	50	
			M_{2max}	Nm	11.7	15.6	19.5	27	31	39	34.5	46.5	58	61	77	96	123	154	80	
0.994	3.81	0.139	n_{2N}	r/min	750	600	500	375	375	250	300	250	200	200	125	100	100	75	50	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.3	3.1	3.95	5.6	6.1	8.3	6.7	8.6	10.8	11.1	15.9	20	23.5	30.5	47.5	■■■ + ■■■ + . . .
1.06	3.91		M_{2_0}	Nm	3.05	4.15	5.2	7.3	8.4	10.5	9.2	12.3	15.3	16.4	20.5	25.5	32.5	41	50	
			M_{2max}	Nm	11.7	15.6	19.5	27	31	39	34.5	46.5	58	61	77	96	123	154	80	
1.14	3.52	0.35	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	3.25	4.4	5.6	7.8	9.1	11.4	9.7	13.3	16.7	17.6	22	28	35.5	45	50	■■■ + ■■■ + . . .
1.16	3.62		M_{2_0}	Nm	3.4	4.55	5.7	8.1	9.2	11.6	10.3	13.8	17.3	18.4	23	28.5	36.5	46	50	
			M_{2max}	Nm	10.8	14.4	18	25	28.5	36	32	42.5	53	57	71	89	114	142	80	
1.13	3.62	0.35	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.65	3.9	5.1	7	8.6	10.8	8.6	12.1	15.2	15.8	20.5	25.5	33	42.5	50	■■■ + ■■■ + . . .
1.16	3.72		M_{2_0}	Nm	3.4	4.55	5.7	8	9.2	11.5	10.3	13.7	17.2	18.3	22.5	28.5	36.5	45.5	50	
			M_{2max}	Nm	11.1	14.8	18.5	25.5	29.5	37	33	44	55	58	73	91	117	146	80	
2.21	7.1	0.56	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	6.6	8.8	11.1	15.5	17.8	22	19.1	26	32.5	34.5	43.5	54	69	88	50	■■■ + ■■■ + . . .
2.26	7.31		M_{2_0}	Nm	6.7	9	11.2	15.8	18	22.5	20	26.5	33.5	35.5	44.5	55	71	89	50	
			M_{2max}	Nm	21.5	29	36.5	51	58	61	65	86	108	115	144	176	192	176	80	

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Planetary gearbox data																
Gearbox type:			NRB080, 1-stage						NRB080, 2-stage							
1. Order code			A31						A32							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB080

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 1 and 2-stage (continued)																				
2.19 ... 2.25	7.19 ... 7.41	0.56 (0.65)	n_{2N}	r/min	750	600	600	375	375	300	300	250	200	150	150	125	100	75	50	1F.2104-5AK..-2..0-Z
			M_{2N}	Nm	5.8	7.6	8	13.8	14.3	18.3	16.8	20	25	32.5	35	41.5	55	73	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.9	11.1	15.7	17.9	22	20	26.5	33	35.5	44	55	71	88	50	
			M_{2max}	Nm	22	29.5	37	51	59	61	66	87	109	117	146	176	192	176	80	
2.93 ... 3.01	9.49 ... 9.78	0.76 (0.84)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2104-6AF..-2..0-Z
			M_{2N}	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26	35	44	46.5	58	73	94	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	12	15	21	24	30	26.5	35.5	44.5	47.5	59	74	95	110	50	
			M_{2max}	Nm	29	39	48.5	68	78	61	87	116	144	154	192	176	192	176	80	
4.62 ... 4.74	14.3 ... 14.7	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	12.8	17.2	21.5	29.5	34	38	36	50	63	66	83	104	120	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	18.9	23.5	33	37.5	38	42	56	70	74	93	110	120	110	50	
			M_{2max}	Nm	44	58	73	102	80	61	131	174	176	192	192	176	192	176	80	
4.65 ... 4.77	14.3 ... 14.7	1.71 (2.55)	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	100	100	75	75	50	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	15	14.9	26	27	33	31	38	51	50	73	75	106	92	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19	23.5	33	38	38	42.5	56	70	75	94	110	120	110	50	
			M_{2max}	Nm	44	58	73	102	80	61	131	174	176	192	192	176	192	176	80	
7.15 ... 7.5	22.9 ... 23.6	2.65 (3.5)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	19.2	25.5	32	42.5	50	38	51	74	93	96	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	29.5	37	52	50	38	66	88	110	117	120	110	120	110	–	
			M_{2max}	Nm	70	94	117	104	80	61	208	192	176	192	192	176	192	176	–	
7.25 ... 7.57	24.8 ... 25.5	5.476 (7.176)	n_{2N}	r/min	500	375	300	250	200	150	150	125	100	100	75	60	50	37.5	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	17.2	23	29	35.5	45	38	56	68	84	83	111	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	37.5	52	50	38	66	89	110	119	120	110	120	110	–	
			M_{2max}	Nm	76	101	127	104	80	61	208	192	176	192	192	175	192	176	–	
9.39 ... 9.81	31.5 ... 32.4	6.876 (8.476)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	20.5	27	34.5	52	50	38	66	78	96	93	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29	39	49	65	50	38	86	115	110	120	120	110	120	110	–	
			M_{2max}	Nm	97	129	161	104	80	61	208	192	176	192	192	176	192	176	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 1 and 2-stage																				
0.511 ... 0.537	1.71 ... 1.75	0.2 (0.22)	n_{2N}	r/min	750	600	600	500	375	300	300	250	200	200	150	125	100	75	50	1F.2203-2AG..-0.A0-Z
			M_{2N}	Nm	1.16	1.57	1.75	2.3	3.2	4.1	3.45	4.25	5.4	5.4	7.7	9.3	12.5	16.4	25	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.53	2.05	2.6	3.7	4.25	5.3	4.75	6.3	8	8.5	10.6	13.3	17.1	21	34	
			M_{2max}	Nm	5.1	6.9	8.6	12.2	13.9	17.4	15.5	20.5	26	27.5	34.5	43	55	69	80	
0.476 ... 0.503	1.71 ... 1.75	0.2 (0.22)	n_{2N}	r/min	750	600	500	375	375	300	300	200	150	150	150	100	100	75	50	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	0.93	1.26	1.66	2.45	2.5	3.25	2.7	4.15	5.5	5.6	5.9	9	9.5	13	19.4	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.42	1.93	2.45	3.45	3.95	5	4.45	5.9	7.4	7.9	10	12.5	16	20	32	
			M_{2max}	Nm	5.1	6.9	8.6	12.2	13.9	17.4	15.5	20.5	26	27.5	34.5	43	55	69	80	
1.13 ... 1.16	3.52 ... 3.62	0.35 (0.37)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	1F.2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.35	3.5	4.75	6.3	8	10.2	7.7	11.2	14.1	14.5	19.3	23.5	30.5	39.5	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.4	4.55	5.7	8	9.2	11.5	10.3	13.7	17.2	18.3	22.5	28.5	36.5	45.5	50	
			M_{2max}	Nm	10.8	14.4	18	25	28.5	36	32	42.5	53	57	71	89	114	142	80	

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Planetary gearbox data																
Gearbox type:			NRB080, 1-stage						NRB080, 2-stage							
1. Order code			A31						A32							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 1 and 2-stage (continued)																			
1.09 ... 1.12	3.52 ... 3.62	0.35 (0.37)	n_{2N} r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	1F.2203-4AK..-0..0-Z
			M_{2N} Nm	2.5	3.25	4.15	5.9	6.1	7.8	6.9	8.4	10.6	10.5	14.6	17.7	22.5	30	46	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	3.25	4.4	5.5	7.7	8.9	11.1	9.9	13.2	16.6	17.7	22	27.5	35.5	44	50	
			M_{2max} Nm	10.8	14.4	18	25	28.5	36	32	42.5	53	57	71	89	114	142	80	
2.17 ... 2.22	6.72 ... 6.91	1.23 (1.31)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2204-5AF..-2..0-Z
			M_{2N} Nm	6.3	8.4	10.7	14.7	17.1	21.5	18.1	25	31	33	41.5	52	66	84	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6.6	8.8	11	15.5	17.7	22	19.8	26	33	35	43.5	54	70	87	50	
			M_{2max} Nm	20.5	27.5	34.5	48	55	61	61	82	102	109	136	170	192	176	80	
2.18 ... 2.23	6.72 ... 6.91	1.23 (1.31)	n_{2N} r/min	750	600	500	375	375	300	300	200	200	150	150	100	100	75	50	1F.2204-5AK..-2..0-Z
			M_{2N} Nm	5.6	7.3	9.3	13.2	13.2	16.9	15.9	23	23	30.5	32.5	47.5	50	68	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6.6	8.8	11.1	15.6	17.8	22	19.9	26.5	33	35	44	55	70	88	50	
			M_{2max} Nm	20.5	27.5	34.5	48	55	61	61	82	102	109	136	170	192	176	80	
2.92 ... 3	9.01 ... 9.28	1.61 (1.69)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2204-6AF..-2..0-Z
			M_{2N} Nm	8.7	11.7	14.7	20.5	23.5	29.5	25.5	35	43.5	46.5	58	73	93	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.9	11.9	14.9	20.5	23.5	29.5	26.5	35.5	44.5	47	59	74	94	110	50	
			M_{2max} Nm	27.5	37	46	64	74	61	82	110	137	146	183	176	192	176	80	
2.83 ... 2.98	10.3 ... 10.6	3.15 (4.05)	n_{2N} r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	1FT2205-2AC..-0..0-Z
			M_{2N} Nm	7.8	10.6	13.3	18.7	21.5	26.5	23.5	30	38.5	40.5	52	61	81	104	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.8	11.8	14.8	20.5	23.5	29.5	26	34.5	43.5	46.5	58	72	92	110	50	
			M_{2max} Nm	31.5	42	52	73	80	61	94	125	156	166	192	176	192	176	80	
2.87 ... 3.02	10.3 ... 10.6	3.15 (4.05)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2205-2AF..-0..0-Z
			M_{2N} Nm	8	10.7	13.5	18.6	21.5	27	23	31.5	39.5	41.5	52	66	84	106	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	9	12	15	21	24	30	26.5	35	44	47	59	73	94	110	50	
			M_{2max} Nm	31.5	42	52	73	80	61	94	125	156	166	192	176	192	176	80	
2.85 ... 2.99	10.3 ... 10.6	3.15 (4.05)	n_{2N} r/min	750	500	500	375	300	250	250	200	150	150	125	100	75	60	50	1FT2205-2AH..-0..0-Z
			M_{2N} Nm	6.2	9.6	9.9	14	18.2	22	20.5	26.5	34	35	43.5	54	72	90	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.9	11.9	14.8	20.5	23.5	29.5	26	35	43.5	46.5	58	72	93	110	50	
			M_{2max} Nm	31.5	42	52	73	80	61	94	125	156	166	192	176	192	176	80	
4.89 ... 5.12	17.2 ... 17.7	5.1 (6)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	1F.2205-4AF..-0..0-Z
			M_{2N} Nm	13.1	17.6	22	29.5	35	38	37	51	64	67	85	107	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	15.3	20	25.5	35.5	40.5	38	45	60	75	80	100	110	120	110	–	
			M_{2max} Nm	53	70	88	104	80	61	157	192	176	192	192	176	192	176	–	
5.11 ... 5.35	17.1 ... 17.6	8.676 (10.276)	n_{2N} r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	1FT2206-2AC..-0..0-Z
			M_{2N} Nm	13	18.4	23	32	37	38	41	50	65	66	90	98	120	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	16	21	26.5	37	42.5	38	47	62	78	83	104	110	120	110	50	
			M_{2max} Nm	52	70	87	104	80	61	156	192	176	192	192	176	192	176	80	
5.04 ... 5.26	17.1 ... 17.6	8.676 (10.276)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	1F.2206-2AF..-0..0-Z
			M_{2N} Nm	12.9	17.3	21.5	27.5	34	38	33.5	51	63	66	84	106	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	15.7	21	26	36.5	42	38	46.5	61	77	82	103	110	120	110	–	
			M_{2max} Nm	52	70	87	104	80	61	156	192	176	192	192	176	192	176	–	

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Planetary gearbox data																
Gearbox type:			NRB080, 1-stage						NRB080, 2-stage							
1. Order code			A31						A32							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 1 and 2-stage (continued)																				
4.9	17.1	8.676	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	50	–	**1FT2206-2AH..-0..0-Z**
...	...	(10.276)	M_{2N}	Nm	10.9	14.8	18.8	28.5	29	38	37.5	46.5	58	57	77	96	117	100	–	■■■ + ■■■ + . . .
5.11	17.6		$M_{2,0}$	Nm	15.3	20	25.5	35.5	40.5	38	45	60	75	80	100	110	120	110	–	
			M_{2max}	Nm	52	70	87	104	80	61	156	192	176	192	192	176	192	176	–	
7.3	25.7	12.38	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	**1FT2206-3AB..-0..0-Z**
...	...	(13.976)	M_{2N}	Nm	20.5	27	34.5	48.5	50	38	55	73	101	106	120	110	120	110	–	■■■ + ■■■ + . . .
7.64	26.5		$M_{2,0}$	Nm	22.5	30.5	38	53	50	38	67	89	110	119	120	110	120	110	–	
			M_{2max}	Nm	79	105	132	104	80	61	208	192	176	192	192	176	192	176	–	
7.17	25.7	12.38	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	75	75	60	50	37.5	–	**1FT2206-3AF..-0..0-Z**
...	...	(13.976)	M_{2N}	Nm	14.2	19.1	24	37	37	38	49.5	58	72	95	95	110	120	110	–	■■■ + ■■■ + . . .
7.5	26.5		$M_{2,0}$	Nm	22	29.5	37	52	50	38	66	88	110	117	120	110	120	110	–	
			M_{2max}	Nm	79	105	132	104	80	61	208	192	176	192	192	176	192	176	–	
9.95	36.3	15.98	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	60	50	50	37.5	25	–	**1FT2206-4AC..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	22	27	33.5	45.5	50	38	69	90	91	113	120	110	120	110	–	■■■ + ■■■ + . . .
10.4	37.4		$M_{2,0}$	Nm	31	41.5	52	65	50	38	91	120	110	120	120	110	120	110	–	
			M_{2max}	Nm	112	149	176	104	80	61	208	192	176	192	192	176	192	176	–	
9.84	34.4	15.976	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	–	**1F.2206-4AF..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	21	28	35.5	53	50	38	67	79	98	95	120	110	120	110	–	■■■ + ■■■ + . . .
10.3	35.4		$M_{2,0}$	Nm	30.5	41	51	65	50	38	90	120	110	120	120	110	120	110	–	
			M_{2max}	Nm	106	141	176	104	79	61	208	192	176	192	191	176	192	176	–	
9.45	34.4	15.976	n_{2N}	r/min	375	300	250	200	200	150	150	100	75	75	75	60	50	50	–	**1FT2206-4AH..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	21.5	27	33	41.5	39	38	54	81	106	106	102	110	120	102	–	■■■ + ■■■ + . . .
9.85	35.4		$M_{2,0}$	Nm	29.5	39	49	65	50	38	86	115	110	120	120	110	120	110	–	
			M_{2max}	Nm	106	141	176	104	79	61	208	192	176	192	191	176	192	176	–	

Planetary gearbox data																
Gearbox type:			**NRB080, 1-stage**						**NRB080, 2-stage**							
1. Order code			**A31**						**A32**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 3-stage													
0.517 ... 0.544	1.8 ... 1.85	0.093 (0.112)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	**1F.2103-2AG..-0.A0-Z**
			M_{2N}	Nm	21	29.5	37	42.5	60	77	96	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42	52	63	84	105	120	110	50	
			M_{2max}	Nm	108	144	180	176	192	176	192	176	80	
0.49 ... 0.516	1.8 ... 1.85	0.093 (0.112)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	10	5	**1F.2103-2AH..-0..0-Z**
			M_{2N}	Nm	20	28	38	40.5	56	78	100	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	51	61	81	102	120	110	49.5	
			M_{2max}	Nm	108	144	180	176	192	176	192	176	80	
1.13 ... 1.15	3.81 ... 3.91	0.139 (0.158)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	**1F.2103-4AG..-0.A0-Z**
			M_{2N}	Nm	49	66	83	98	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	67	90	112	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
0.994 ... 1.06	3.81 ... 3.91	0.139 (0.158)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	10	–	**1F.2103-4AH..-0..0-Z**
			M_{2N}	Nm	42	57	77	85	114	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	79	99	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
1.14 ... 1.16	3.52 ... 3.62	0.35 (0.43)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	65	86	109	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	68	91	114	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
1.13 ... 1.16	3.62 ... 3.72	0.35 (0.43)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	**1F.2104-4AK..-2..0-Z**
			M_{2N}	Nm	59	81	101	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	68	90	113	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.21 ... 2.26	7.1 ... 7.31	0.56 (0.65)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	**1F.2104-5AF..-2..0-Z**
			M_{2N}	Nm	110	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.19 ... 2.25	7.19 ... 7.41	0.56 (0.65)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	**1F.2104-5AK..-2..0-Z**
			M_{2N}	Nm	99	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.93 ... 3.01	9.49 ... 9.78	0.76 (0.84)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	–	–	**1F.2104-6AF..-2..0-Z**
			M_{2N}	Nm	110	120	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	–	–	
4.62 ... 4.74	14.3 ... 14.7	1.71 (2.55)	n_{2N}	r/min	25	20	15	12.5	10	–	–	–	–	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	

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Planetary gearbox data										
Gearbox type:			**NRB080, 3-stage**							
1. Order code			**A33**							
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$	Nm		110	120	120	110	120	110	120	110	50
$M_{2max,G}$	Nm		176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$	Nm		220	240	240	220	240	220	240	220	190
$J_{1,G}$	kg cm²		0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
$\varphi_{2,G}$	'		11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 3-stage (continued)														
4.65 ... 4.77	14.3 ... 14.7	1.71 (2.55)	n_{2N}	r/min	50	37.5	25	25	20	–	–	–	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
7.15 ... 7.5	22.9 ... 23.6	2.65 (3.5)	n_{2N}	r/min	25	20	15	–	–	–	–	–	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	
7.25 ... 7.57	24.8 ... 25.5	5.476 (7.176)	n_{2N}	r/min	25	20	15	–	–	–	–	–	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	
9.39 ... 9.81	31.5 ... 32.4	6.876 (8.476)	n_{2N}	r/min	25	–	–	–	–	–	–	–	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 3-stage														
0.511 ... 0.537	1.71 ... 1.75	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	1F.2203-2AG..-0.A0-Z
			M_{2N}	Nm	21.5	30	38	43.5	60	79	97	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	63	85	106	120	110	50	
			M_{2max}	Nm	102	137	171	176	192	176	192	176	80	
0.476 ... 0.503	1.71 ... 1.75	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	20	20	15	12.5	10	6	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	16.4	23	29	41.5	46	62	73	92	49.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	59	79	99	120	110	50	
			M_{2max}	Nm	102	137	171	176	192	176	192	176	80	
1.13 ... 1.16	3.52 ... 3.62	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	1F.2203-4AG..-0.A0-Z
			M_{2N}	Nm	55	75	93	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	68	91	113	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
1.09 ... 1.12	3.52 ... 3.62	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	41	56	70	82	109	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	65	87	109	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.17 ... 2.22	6.72 ... 6.91	1.23 (1.31)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	1F.2204-5AF..-2..0-Z
			M_{2N}	Nm	110	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.18 ... 2.23	6.72 ... 6.91	1.23 (1.31)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	1F.2204-5AK..-2..0-Z
			M_{2N}	Nm	93	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	

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Planetary gearbox data										
Gearbox type:			NRB080, 3-stage								
1. Order code			A33								
	i		60	80	100	120	160	200	256	320	512
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23	R51
	$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
	$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
	$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

3 4

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Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 3-stage (continued)													
2.92	9.01	1.61	n_{2N} r/min	25	20	15	12.5	10	7.5	6	–	–	**1F.2204-6AF..-2..0-Z**
...	...	(1.69)	M_{2N} Nm	110	120	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
3	9.28		$M_{2,0}$ Nm	110	120	120	110	120	110	120	–	–	
			M_{2max} Nm	176	192	192	176	192	176	192	–	–	
2.83	10.3	3.15	n_{2N} r/min	20	12.5	10	10	7.5	5	–	–	–	**1FT2205-2AC..-0..0-Z**
...	...	(4.05)	M_{2N} Nm	110	120	120	110	120	110	–	–	–	■■■ + ■■■ + . . .
2.98	10.6		$M_{2,0}$ Nm	110	120	120	110	120	109	–	–	–	
			M_{2max} Nm	176	192	192	176	192	176	–	–	–	
2.87	10.3	3.15	n_{2N} r/min	25	20	15	12.5	10	7.5	–	–	–	**1F.2205-2AF..-0..0-Z**
...	...	(4.05)	M_{2N} Nm	110	120	120	110	120	110	–	–	–	■■■ + ■■■ + . . .
3.02	10.6		$M_{2,0}$ Nm	110	120	120	110	120	110	–	–	–	
			M_{2max} Nm	176	192	192	176	192	176	–	–	–	
2.85	10.3	3.15	n_{2N} r/min	50	37.5	25	25	20	12.5	–	–	–	**1FT2205-2AH..-0..0-Z**
...	...	(4.05)	M_{2N} Nm	83	116	120	109	120	110	–	–	–	■■■ + ■■■ + . . .
2.99	10.6		$M_{2,0}$ Nm	110	120	120	110	120	109	–	–	–	
			M_{2max} Nm	176	192	192	176	192	176	–	–	–	
4.89	17.2	5.1	n_{2N} r/min	25	20	15	12.5	–	–	–	–	–	**1F.2205-4AF..-0..0-Z**
...	...	(6)	M_{2N} Nm	110	120	120	110	–	–	–	–	–	■■■ + ■■■ + . . .
5.12	17.7		$M_{2,0}$ Nm	110	120	120	110	–	–	–	–	–	
			M_{2max} Nm	176	192	192	176	–	–	–	–	–	
5.11	17.1	8.676	n_{2N} r/min	20	12.5	10	10	7.5	–	–	–	–	**1FT2206-2AC..-0..0-Z**
...	...	(10.276)	M_{2N} Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
5.35	17.6		$M_{2,0}$ Nm	110	120	120	110	120	–	–	–	–	
			M_{2max} Nm	176	192	192	176	192	–	–	–	–	
5.04	17.1	8.676	n_{2N} r/min	25	20	15	12.5	–	–	–	–	–	**1F.2206-2AF..-0..0-Z**
...	...	(10.276)	M_{2N} Nm	110	120	120	110	–	–	–	–	–	■■■ + ■■■ + . . .
5.26	17.6		$M_{2,0}$ Nm	110	120	120	110	–	–	–	–	–	
			M_{2max} Nm	176	192	192	176	–	–	–	–	–	
4.9	17.1	8.676	n_{2N} r/min	37.5	25	20	20	–	–	–	–	–	**1FT2206-2AH..-0..0-Z**
...	...	(10.276)	M_{2N} Nm	95	119	120	109	–	–	–	–	–	■■■ + ■■■ + . . .
5.11	17.6		$M_{2,0}$ Nm	110	119	119	109	–	–	–	–	–	
			M_{2max} Nm	176	192	192	176	–	–	–	–	–	
7.3	25.7	12.38	n_{2N} r/min	12.5	10	7.5	–	–	–	–	–	–	**1FT2206-3AB..-0..0-Z**
...	...	(13.976)	M_{2N} Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.64	26.5		$M_{2,0}$ Nm	110	120	120	–	–	–	–	–	–	
			M_{2max} Nm	176	192	192	–	–	–	–	–	–	
7.17	25.7	12.38	n_{2N} r/min	25	20	15	–	–	–	–	–	–	**1FT2206-3AF..-0..0-Z**
...	...	(13.976)	M_{2N} Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.5	26.5		$M_{2,0}$ Nm	110	120	120	–	–	–	–	–	–	
			M_{2max} Nm	176	192	192	–	–	–	–	–	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			**NRB080, 3-stage**							
1. Order code			**A33**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
	$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
	$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 3-stage (continued)													
9.95 ... 10.4	36.3 ... 37.4	15.98 (17.676)	n_{2N}	r/min	20	–	–	–	–	–	–	–	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	
9.84 ... 10.3	34.4 ... 35.4	15.976 (17.676)	n_{2N}	r/min	25	–	–	–	–	–	–	–	–	**1F.2206-4AF..-0..0-Z**
			M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	
9.45 ... 9.85	34.4 ... 35.4	15.976 (17.676)	n_{2N}	r/min	30	–	–	–	–	–	–	–	–	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	

Planetary gearbox data										
Gearbox type:			**NRB080, 3-stage**								
1. Order code			**A33**								
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
	$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
	$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

3
4

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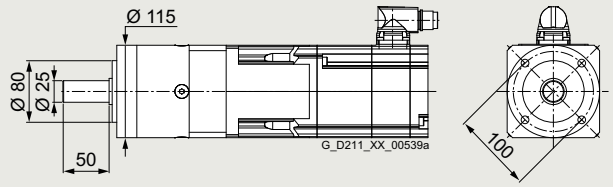
Gearbox type NRB120

Selection and ordering data

NRB120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1750 N
Average axial force for 20000 h	$F_{A,eq}$	2500 N
Average radial force for 30000 h	$F_{R,eq}$	1500 N
Average axial force for 30000 h	$F_{A,eq}$	2100 N
Maximum radial force	$F_{R,max}$	2000 N
Maximum axial force	$F_{A,max}$	3800 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 1 and 2-stage																				
0.408 ... 0.478	1.72 ... 1.77	0.093 (0.112)	n_{2N}	r/min	500	500	375	375	300	300	200	150	150	150	125	100	100	75	50	**1F.2103-2AG..-0.A0-Z**
			M_{2N}	Nm	0.81	0.96	1.59	2	2.6	2.85	2.9	4	4.15	4.4	6.1	7.9	9.3	12.6	19.3	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.22	1.71	2.2	3.15	3.65	4.6	4.1	5.5	7	7.4	9.4	11.8	15.1	19	30.5	
			M_{2max}	Nm	5.1	6.9	8.7	12.3	14.1	17.6	15.7	21	26	28	35	43.5	56	70	112	
0.379 ... 0.45	1.72 ... 1.77	0.093 (0.112)	n_{2N}	r/min	500	500	500	375	300	250	250	150	150	150	125	100	100	75	50	**1F.2103-2AH..-0..0-Z**
			M_{2N}	Nm	0.81	0.98	1.19	2.05	2.6	3.35	2.3	3.95	4.2	4.4	6.1	7.8	9.4	12.7	19.4	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.13	1.59	2.05	2.95	3.4	4.35	3.85	5.2	6.5	7	8.8	11.1	14.2	17.9	28.5	
			M_{2max}	Nm	5.1	6.9	8.7	12.3	14.1	17.6	15.7	21	26	28	35	43.5	56	70	112	
1.02 ... 1.07	3.74 ... 3.83	0.139 (0.158)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	37.5	**1F.2103-4AG..-0.A0-Z**
			M_{2N}	Nm	2.35	3.15	4.75	6.8	7.2	9.1	7.3	9.1	13	13.3	17.8	22.5	32	32.5	64	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3	4.1	5.2	7.4	8.5	10.7	9.5	12.7	15.9	17	21	26.5	34	42.5	68	
			M_{2max}	Nm	11.3	15.2	19	26.5	30.5	38	34	45.5	56	60	75	94	121	151	192	
1 ... 1.06	3.74 ... 3.83	0.139 (0.158)	n_{2N}	r/min	600	500	375	375	300	250	250	200	150	150	125	100	100	75	50	**1F.2103-4AH..-0..0-Z**
			M_{2N}	Nm	2.05	2.75	4	4.85	6.3	8	6.4	8	11	11.6	15.1	19.1	21	29.5	43.5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3	4.05	5.1	7.3	8.4	10.5	9.3	12.5	15.7	16.8	21	26	33.5	42	67	
			M_{2max}	Nm	11.3	15.2	19	26.5	30.5	38	34	45.5	56	60	75	94	121	151	192	
1.03 ... 1.09	3.45 ... 3.54	0.35 (0.43)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2104-4AF..-0..0-Z**
			M_{2N}	Nm	2.75	3.8	4.9	7	8.2	10.3	8.6	11.8	14.8	15.9	20	25.5	33	41.5	66	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3.05	4.15	5.3	7.5	8.6	10.8	9.6	12.9	16.2	17.2	21.5	27	34.5	43	69	
			M_{2max}	Nm	10.4	14	17.5	24.5	28	35	31.5	42	52	56	70	87	112	140	192	
1.02 ... 1.08	3.55 ... 3.64	0.35 (0.43)	n_{2N}	r/min	750	600	500	375	375	300	300	200	150	150	150	125	100	75	50	**1F.2104-4AK..-0..0-Z**
			M_{2N}	Nm	2.35	3.45	4.7	6.8	7.8	9.9	7.5	11.2	14.2	15.2	18.9	22.5	31.5	40	63	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3.05	4.15	5.2	7.4	8.5	10.7	9.5	12.8	16	17.1	21.5	26.5	34.5	43	69	
			M_{2max}	Nm	10.7	14.4	18	25	29	36	32	43	54	57	72	90	115	144	192	
2.13 ... 2.18	7.03 ... 7.23	0.56 (0.65)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2104-5AF..-0..0-Z**
			M_{2N}	Nm	6	8.2	10.4	14.7	16.9	21	18.4	24.5	31	33	41.5	52	67	84	120	■■■ + ■■■ + . . .
			M_{2_0}	Nm	6.4	8.6	10.8	15.2	17.4	21.5	19.4	25.5	32.5	34.5	43	54	69	86	120	
			M_{2max}	Nm	21.5	28.5	36	50	57	72	64	85	107	114	142	178	225	285	192	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage									
1. Order code			A41						A42									
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414	
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 1 and 2-stage (continued)																				
2.12 ... 2.17	7.12 ... 7.33	0.56 (0.65)	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	75	75	50	**1F.2104-5AK..-0..0-Z**
			M_{2N}	Nm	5.8	7.6	8	12.4	16.1	20	16.8	20.5	28.5	29	38	48	66	68	100	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.5	10.7	15.1	17.3	21.5	19.3	25.5	32	34	43	53	68	86	120	
			M_{2max}	Nm	21.5	29	36.5	51	58	73	65	87	108	115	144	180	230	285	192	
2.87 ... 2.93	9.42 ... 9.69	0.76 (0.84)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2104-6AF..-0..0-Z**
			M_{2N}	Nm	8.3	11.2	14.1	19.9	22.5	28.5	25	33.5	42	45	56	70	91	114	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.5	20	23	29	26	34.5	43.5	46.5	58	72	93	116	120	
			M_{2max}	Nm	28.5	38.5	48	67	77	96	86	115	143	153	191	235	305	368	192	
4.55 ... 4.66	14.2 ... 14.6	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	13	17.7	22	30.5	36	45.5	37.5	52	66	69	89	111	141	179	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.8	18.5	23	32.5	37	46.5	41.5	55	69	73	92	115	147	184	120	
			M_{2max}	Nm	43.5	58	72	102	116	146	130	173	215	230	285	360	416	368	192	
4.58 ... 4.69	14.2 ... 14.6	1.71 (2.55)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	50	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	10.7	13.3	19.7	26.5	32	40.5	35.5	47.5	58	60	78	99	108	134	105	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.9	18.6	23	32.5	37	46.5	41.5	55	69	74	92	116	148	185	120	
			M_{2max}	Nm	43.5	58	72	102	116	146	130	173	215	230	285	360	416	368	192	
7.42 ... 7.62	22.8 ... 23.5	2.65 (3.5)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	18.8	25.5	33	43.5	53	68	51	78	98	101	131	164	205	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	38	53	60	76	68	90	113	120	150	188	240	230	120	
			M_{2max}	Nm	70	93	117	164	187	152	205	275	345	370	416	368	416	368	192	
7.8 ... 8.1	24.7 ... 25.5	4.6 (6.3)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	19.4	26.5	34	45	54	69	52	79	99	103	133	166	210	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	24	32	40	56	64	81	71	95	119	127	159	198	255	230	120	
			M_{2max}	Nm	76	101	127	177	192	152	225	300	368	400	416	368	416	368	192	
10.1 ... 10.5	31.5 ... 32.4	6 (7.6)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	23.5	32.5	41.5	53	66	85	60	97	121	123	163	200	255	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42	52	73	84	95	93	124	155	165	205	230	260	230	120	
			M_{2max}	Nm	97	129	161	216	192	152	285	380	368	416	416	368	416	368	192	
14.3 ... 14.9	43.4 ... 44.7	8.7 (10.4)	n_{2N}	r/min	500	375	300	250	200	150	150	125	100	100	75	60	50	37.5	–	**1F.2106-6AF..-0..0-Z**
			M_{2N}	Nm	31	42	54	69	85	95	101	122	151	152	200	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44.5	59	74	104	119	95	131	175	215	230	260	230	260	230	–	
			M_{2max}	Nm	134	178	220	216	192	152	336	416	368	416	416	365	416	368	–	
21.1 ... 21.5	84.1 ... 85.6	20.6 (24.7)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	**1FT2108-4AC..-0..0-Z**
			M_{2N}	Nm	40	60	76	104	120	95	143	145	193	190	260	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	64	85	107	135	120	95	190	250	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
25.9 ... 26.4	101 ... 103	24.0 (27.0)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	**1FT2108-5AB..-0..0-Z**
			M_{2N}	Nm	64	83	107	135	120	95	170	220	230	260	260	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	79	105	131	135	120	95	210	260	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
25.6 ... 26.2	102 ... 103	24.0 (28.0)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	60	50	50	37.5	25	–	**1FT2108-5AC..-0.B0-Z**
			M_{2N}	Nm	44.5	66	84	114	120	95	157	155	205	255	260	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	78	104	130	135	120	95	210	260	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	

Planetary gearbox data

Gearbox type:		NRB120, 1-stage						NRB120, 2-stage								
1. Order code		A41						A42								
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage																			
0.401 ... 0.471	1.62 ... 1.67	0.2 (0.22)	n_{2N}	r/min	600	500	375	375	300	250	250	150	150	150	125	100	75	75	50	1F.2203-2AG..-0.A0-Z
			M_{2N}	Nm	0.75	1.09	1.73	2.15	2.85	3.7	2.5	4.2	4.6	4.75	6.7	8.5	12.8	13.2	19.6	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.2	1.68	2.15	3.1	3.6	4.55	4.05	5.4	6.9	7.3	9.2	11.6	14.9	18.7	30	
			M_{2max}	Nm	4.85	6.5	8.2	11.6	13.3	16.7	14.8	19.8	24.5	26.5	33	41.5	53	66	106	
0.366 ... 0.437	1.62 ... 1.67	0.2 (0.22)	n_{2N}	r/min	500	375	375	300	250	250	200	150	125	125	100	100	75	60	37.5	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	0.79	1.19	1.5	2.25	2.85	3	2.75	3.85	4.75	4.95	7	6.9	10.9	13.8	22	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.09	1.54	1.99	2.85	3.3	4.2	3.7	5	6.3	6.8	8.5	10.7	13.8	17.3	27.5	
			M_{2max}	Nm	4.85	6.5	8.2	11.6	13.3	16.7	14.8	19.8	24.5	26.5	33	41.5	53	66	106	
1.02 ... 1.08	3.45 ... 3.54	0.35 (0.37)	n_{2N}	r/min	600	600	500	375	375	300	250	200	150	150	150	125	100	75	50	1F.2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.65	3.1	4.6	6.8	7.1	9.6	8.4	11.2	14.2	15.2	17.8	20.5	29.5	39	60	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.05	4.15	5.2	7.4	8.5	10.7	9.5	12.8	16.1	17.2	21.5	26.5	34.5	43	69	
			M_{2max}	Nm	10.4	14	17.5	24.5	28	35	31.5	42	52	56	70	87	112	140	192	
0.985 ... 1.04	3.45 ... 3.54	0.35 (0.37)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	37.5	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	2.4	3.15	4.55	6.5	7	8.8	7.1	8.8	12.3	12.8	16.5	20.5	29	30.5	58	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.95	4	5	7.2	8.2	10.3	9.2	12.3	15.5	16.5	20.5	25.5	33	41.5	66	
			M_{2max}	Nm	10.4	14	17.5	24.5	28	35	31.5	42	52	56	70	87	112	140	192	
2.09 ... 2.14	6.64 ... 6.83	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2204-5AF..-0..0-Z
			M_{2N}	Nm	5.9	8	10.1	14.3	16.5	20.5	17.9	24	30	32	40.5	51	66	82	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.2	8.4	10.6	14.9	17	21	19	25	31.5	34	42.5	53	68	85	120	
			M_{2max}	Nm	20	27	34	47.5	54	68	60	81	101	108	135	168	215	265	192	
2.11 ... 2.16	6.64 ... 6.83	1.23 (1.31)	n_{2N}	r/min	600	500	375	375	300	250	250	200	150	150	125	100	75	60	37.5	1F.2204-5AK..-0..0-Z
			M_{2N}	Nm	5.7	7.4	10.1	11.7	15.6	19.4	16.3	20	28	28	36.5	46	65	82	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.4	10.6	15	17.2	21.5	19.2	25.5	32	34	42.5	53	68	85	120	
			M_{2max}	Nm	20	27	34	47.5	54	68	60	81	101	108	135	168	215	265	192	
2.85 ... 2.92	8.94 ... 9.19	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2204-6AF..-0..0-Z
			M_{2N}	Nm	8.2	11.1	14	19.7	22.5	28.5	24.5	33	41.5	44.5	56	70	90	113	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.5	14.4	20	23	29	26	34.5	43	46	57	72	92	115	120	
			M_{2max}	Nm	27.5	36.5	45.5	64	73	91	82	109	136	145	181	225	290	360	192	
3.08 ... 3.2	10.2 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	8	11.1	14	19.8	22.5	28.5	25	32	41	42.5	56	65	87	113	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9.4	12.6	15.8	22	25.5	31.5	28	37.5	47	50	62	78	100	125	120	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	330	368	192	
3.11 ... 3.23	10.2 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	7.9	10.8	13.8	19.2	22	28.5	23	32.5	40.5	43	55	69	88	112	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9.5	12.7	16	22.5	25.5	32	28.5	38	47.5	50	63	79	101	127	120	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	330	368	192	
3.05 ... 3.16	10.2 ... 10.5	3.15 (4.05)	n_{2N}	r/min	600	500	375	300	250	250	200	150	150	125	100	100	75	60	37.5	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	6.6	8.4	12.4	17	20	20.5	22	29.5	30.5	38.5	49	49	73	92	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9.3	12.5	15.6	22	25	31.5	27.5	37	46.5	49.5	62	77	99	124	120	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	330	368	192	

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Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage							
1. Order code			A41						A42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage (continued)																			
5.25 ... 5.46	17.1 ... 17.6	5.1 (6)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	12.6	17.5	22.5	30	36.5	46.5	35.5	54	67	70	91	113	144	183	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.2	21.5	27	38	43.5	54	48	64	80	85	107	134	171	210	120	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
5.31 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	**1FT2206-2AC..-0..0-Z**
			M_{2N}	Nm	14.1	20	25	35.5	41	51	45.5	55	72	73	100	109	148	200	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.2	21.5	27	38	43.5	54	48.5	64	80	86	107	134	172	215	120	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
5.41 ... 5.62	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	13.6	18.4	23	31.5	37.5	47.5	39	55	68	72	92	115	147	186	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.7	22	27.5	39	44.5	56	49.5	66	82	88	110	138	176	220	119	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
5.25 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	100	100	75	60	50	37.5	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	12.4	17.3	22	29	29	37.5	34.5	46	55	70	72	97	127	152	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.2	21.5	27	38	43.5	54	48	64	80	85	107	133	171	210	120	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
7.94 ... 8.26	25.7 ... 26.4	11.5 (13.1)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	12.5	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	22	29.5	37.5	53	59	75	59	79	110	116	147	184	230	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	24.5	32.5	41	57	66	82	73	97	121	129	162	200	255	230	120	
			M_{2max}	Nm	79	105	132	184	192	152	235	310	368	416	416	368	416	368	192	
7.81 ... 8.12	25.7 ... 26.4	11.5 (13.1)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	16.4	22.5	29.5	38	47.5	63	43.5	71	89	90	121	151	189	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	24	32	40.5	56	64	81	71	95	119	127	159	199	255	230	120	
			M_{2max}	Nm	79	105	132	184	192	152	235	310	368	416	416	368	416	368	192	
10.8 ... 11.1	36.2 ... 37.3	15.1 (16.8)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	20	30.5	39	53	63	80	77	82	109	109	160	165	225	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	33	44	55	77	88	95	99	131	164	175	215	230	260	230	120	
			M_{2max}	Nm	111	149	186	216	192	152	330	416	368	416	416	368	416	368	192	
10.6 ... 11	34.3 ... 35.3	15.1 (16.8)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1F.2206-4AF..-0..0-Z**
			M_{2N}	Nm	24	33	42.5	54	67	89	62	99	123	125	167	205	255	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	32.5	43.5	54	76	87	95	97	129	162	172	215	230	260	230	120	
			M_{2max}	Nm	106	141	176	216	192	152	310	416	368	416	416	368	416	368	192	
10.1 ... 10.5	34.3 ... 35.3	15.1 (16.8)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	50	37.5	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	18.5	25.5	33.5	51	53	71	66	80	100	99	136	169	205	190	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	73	83	95	93	123	154	165	205	230	260	230	120	
			M_{2max}	Nm	106	141	176	216	192	152	310	416	368	416	416	368	416	368	192	
10.3 ... 10.6	36.2 ... 37.3	24.86 (28.16)	n_{2N}	r/min	375	300	250	200	150	125	150	100	100	75	60	50	50	37.5	25	**1FT2208-2AF..-0..0-Z**
			M_{2N}	Nm	25.5	32.5	40.5	52	68	84	67	99	96	132	167	200	199	225	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	74	85	95	94	125	157	167	205	230	260	225	120	
			M_{2max}	Nm	111	148	185	216	192	152	330	416	368	416	416	368	416	368	192	

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Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage							
1. Order code			A41						A42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

3 4

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Gearbox type NRB120

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage (continued)																			
16.2	48.6	31.96	n_{2N} r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	**1FT2208-3AB..-0..0-Z**
...	...	(34.96)	M_{2N} Nm	38.5	49.5	64	94	101	95	106	140	194	200	255	230	260	230	–	■■■ + ■■■ + . . .
16.6	50.1		$M_{2,0}$ Nm	49.5	66	82	116	120	95	148	197	230	260	260	230	260	230	–	
			M_{2max} Nm	150	200	245	216	192	152	336	416	368	416	416	368	416	368	–	
15.2	48.6	31.96	n_{2N} r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	**1F.2208-3AC..-0..0-Z**
...	...	(35.36)	M_{2N} Nm	34.5	50	63	87	103	95	119	130	170	172	245	230	260	230	–	■■■ + ■■■ + . . .
15.8	50.1		$M_{2,0}$ Nm	47	63	79	110	120	95	140	186	230	245	260	230	260	230	–	
			M_{2max} Nm	150	200	245	216	192	152	336	416	368	416	416	368	416	368	–	
15.1	48.6	31.96	n_{2N} r/min	375	300	250	200	150	150	125	100	75	75	60	50	50	37.5	–	**1FT2208-3AF..-0..0-Z**
...	...	(35.36)	M_{2N} Nm	32	41	50	64	86	84	98	123	162	162	205	230	225	230	–	■■■ + ■■■ + . . .
15.7	50.1		$M_{2,0}$ Nm	47	62	78	109	120	95	139	185	230	245	260	230	260	230	–	
			M_{2max} Nm	150	200	245	216	192	152	336	416	368	416	416	368	416	368	–	
19.7	63.1	41.16	n_{2N} r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	**1FT2208-4AB..-0..0-Z**
...	...	(46.76)	M_{2N} Nm	38	48.5	64	96	99	95	100	133	196	197	255	230	260	230	–	■■■ + ■■■ + . . .
20.2	64.9		$M_{2,0}$ Nm	60	80	100	135	120	95	179	235	230	260	260	230	260	230	–	
			M_{2max} Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
18.9	63.1	41.16	n_{2N} r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	**1F.2208-4AC..-0..0-Z**
...	...	(46.76)	M_{2N} Nm	39.5	58	73	101	118	95	138	142	190	189	260	230	260	230	–	■■■ + ■■■ + . . .
19.7	64.9		$M_{2,0}$ Nm	58	78	98	135	120	95	174	230	230	260	260	230	260	230	–	
			M_{2max} Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
18.2	63.1	41.16	n_{2N} r/min	375	300	250	150	150	150	125	100	75	75	60	60	50	37.5	–	**1FT2208-4AF..-0..0-Z**
...	...	(46.76)	M_{2N} Nm	39.5	49.5	60	101	103	94	117	143	190	189	235	210	245	230	–	■■■ + ■■■ + . . .
18.8	64.9		$M_{2,0}$ Nm	56	75	93	131	120	95	166	220	230	260	260	230	260	230	–	
			M_{2max} Nm	184	248	312	216	192	152	336	416	368	416	415	368	416	368	–	
22.9	76.6	50.46	n_{2N} r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	**1FT2208-5AB..-0..0-Z**
...	...	(55.96)	M_{2N} Nm	58	74	96	135	120	95	153	200	230	260	260	230	260	230	–	■■■ + ■■■ + . . .
23.7	78.7		$M_{2,0}$ Nm	71	94	118	135	120	95	210	260	230	260	260	230	260	230	–	
			M_{2max} Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
22.7	76.6	50.46	n_{2N} r/min	375	250	200	150	125	100	100	75	75	60	50	50	37.5	25	–	**1F.2208-5AC..-0..0-Z**
...	...	(55.96)	M_{2N} Nm	42.5	64	81	110	120	95	152	200	200	250	260	230	260	230	–	■■■ + ■■■ + . . .
23.5	78.7		$M_{2,0}$ Nm	70	94	117	135	120	95	205	260	230	260	260	230	260	230	–	
			M_{2max} Nm	184	248	312	216	192	152	336	416	368	415	416	368	416	368	–	

Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage							
1. Order code			A41						A42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 3-stage													
0.408	1.72	0.093 (0.112)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2103-2AG..-0.A0-Z**
...	...		M_{2N}	Nm	17.8	26.5	32	34	48	64	77	97	120	■■■ + ■■■ + . . .
0.478	1.77		$M_{2,0}$	Nm	28	37.5	47	56	75	94	121	151	120	
			M_{2max}	Nm	104	139	174	205	275	345	416	368	192	
0.379	1.72	0.093 (0.112)	n_{2N}	r/min	37.5	37.5	25	20	20	12.5	10	10	5	**1F.2103-2AH..-0..0-Z**
...	...		M_{2N}	Nm	17.6	21	32	33.5	48	71	91	97	119	■■■ + ■■■ + . . .
0.45	1.77		$M_{2,0}$	Nm	26.5	35.5	44.5	53	71	89	114	142	119	
			M_{2max}	Nm	104	139	174	205	275	345	416	368	191	
1.02	3.74	0.139 (0.158)	n_{2N}	r/min	37.5	30	25	20	20	15	10	10	6	**1F.2103-4AG..-0.A0-Z**
...	...		M_{2N}	Nm	54	75	92	105	126	172	245	230	120	■■■ + ■■■ + . . .
1.07	3.83		$M_{2,0}$	Nm	63	85	106	127	170	210	260	230	120	
			M_{2max}	Nm	225	300	375	368	416	368	416	368	192	
1	3.74	0.139 (0.158)	n_{2N}	r/min	37.5	37.5	25	20	20	12.5	10	10	5	**1F.2103-4AH..-0..0-Z**
...	...		M_{2N}	Nm	44.5	52	76	86	113	160	200	225	120	■■■ + ■■■ + . . .
1.06	3.83		$M_{2,0}$	Nm	62	83	104	125	167	205	260	230	119	
			M_{2max}	Nm	225	300	375	368	416	368	416	368	192	
1.03	3.45	0.35 (0.43)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	3	**1F.2104-4AF..-0..0-Z**
...	...		M_{2N}	Nm	59	80	101	119	164	205	260	230	119	■■■ + ■■■ + . . .
1.09	3.54		$M_{2,0}$	Nm	64	86	107	129	172	215	260	230	119	
			M_{2max}	Nm	205	275	345	368	416	368	416	368	192	
1.02	3.55	0.35 (0.43)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	**1F.2104-4AK..-0..0-Z**
...	...		M_{2N}	Nm	47.5	76	95	98	157	198	250	230	120	■■■ + ■■■ + . . .
1.08	3.64		$M_{2,0}$	Nm	64	85	107	128	171	210	260	230	119	
			M_{2max}	Nm	210	285	355	368	416	368	416	368	192	
2.13	7.03	0.56 (0.65)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	3	**1F.2104-5AF..-0..0-Z**
...	...		M_{2N}	Nm	123	166	205	230	260	230	260	230	120	■■■ + ■■■ + . . .
2.18	7.23		$M_{2,0}$	Nm	129	171	210	230	260	230	260	230	120	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	192	
2.12	7.12	0.56 (0.65)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2104-5AK..-0..0-Z**
...	...		M_{2N}	Nm	118	161	194	220	245	230	260	230	120	■■■ + ■■■ + . . .
2.17	7.33		$M_{2,0}$	Nm	128	170	210	230	260	230	260	230	120	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	192	
2.87	9.42	0.76 (0.84)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	**1F.2104-6AF..-0..0-Z**
...	...		M_{2N}	Nm	167	220	260	230	260	230	260	230	–	■■■ + ■■■ + . . .
2.93	9.69		$M_{2,0}$	Nm	172	230	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
4.55	14.2	1.71 (2.55)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	**1F.2105-4AF..-0..0-Z**
...	...		M_{2N}	Nm	255	260	260	230	260	230	260	230	–	■■■ + ■■■ + . . .
4.66	14.6		$M_{2,0}$	Nm	260	260	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	415	368	416	368	416	368	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$		Nm	260	260	260	230	260	230	260	230	120
$M_{2max,G}$		Nm	416	416	416	368	416	368	416	368	192
$M_{2Em.Off}$		Nm	520	520	520	500	520	500	520	500	380
$J_{1,G}$		kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
$\varphi_{2,G}$		'	11							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 3-stage (continued)													
4.58 ... 4.69	14.2 ... 14.6	1.71 (2.55)	n_{2N}	r/min	30	30	25	20	20	12.5	10	10	–	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	230	240	260	230	255	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
7.42 ... 7.62	22.8 ... 23.5	2.65 (3.5)	n_{2N}	r/min	25	20	15	12.5	10	7.5	–	–	–	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	230	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	–	–	–	
7.8 ... 8.1	24.7 ... 25.5	4.6 (6.3)	n_{2N}	r/min	25	20	15	12.5	10	–	–	–	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	–	
			M_{2max}	Nm	410	415	416	368	416	–	–	–	–	
10.1 ... 10.5	31.5 ... 32.4	6 (7.6)	n_{2N}	r/min	25	20	15	12.5	–	–	–	–	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	–	–	–	–	–	
			M_{2max}	Nm	416	416	416	368	–	–	–	–	–	
14.3 ... 14.9	43.4 ... 44.7	8.7 (10.4)	n_{2N}	r/min	25	20	15	–	–	–	–	–	–	**1F.2106-6AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	416	–	–	–	–	–	–	
20.8 ... 20.8	83.2 ... 83.2	21.0 (25.0)	n_{2N}	r/min	20	–	–	–	–	–	–	–	–	**1FT2108-4AC..-0..0-Z**
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
25.5 ... 25.5	101 ... 101	24.0 (28.0)	n_{2N}	r/min	12.5	–	–	–	–	–	–	–	–	**1FT2108-5AB..-0..0-Z**
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
25.3 ... 25.3	101 ... 101	24.0 (28.0)	n_{2N}	r/min	20	–	–	–	–	–	–	–	–	**1FT2108-5AC..-0.B0-Z**
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage													
0.401 ... 0.471	1.62 ... 1.67	0.2 (0.22)	n_{2N}	r/min	37.5	30	25	20	20	15	10	10	6	**1F.2203-2AG..-0.A0-Z**
			M_{2N}	Nm	19.7	29	35	37	49.5	67	100	99	119	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	27.5	37	46.5	56	74	93	119	149	120	
			M_{2max}	Nm	98	131	164	197	260	325	416	368	192	
0.366 ... 0.437	1.62 ... 1.67	0.2 (0.22)	n_{2N}	r/min	30	30	20	15	15	12.5	10	7.5	6	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	20	24	36	41	55	66	83	111	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	25.5	34.5	43	52	69	86	111	138	120	
			M_{2max}	Nm	98	131	164	197	260	325	416	368	192	

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Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	M_{maxM} Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage (continued)													
1.02 ... 1.08	3.45 ... 3.54	0.35 (0.37)	n_{2N} r/min	50	37.5	30	20	20	15	12.5	10	6	**1F.2203-4AG..-0.A0-Z**
			M_{2N} Nm	42.5	71	89	113	148	192	235	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	64	85	107	128	171	210	260	230	120	
			M_{2max} Nm	205	275	345	368	416	368	416	368	192	
0.985 ... 1.04	3.45 ... 3.54	0.35 (0.37)	n_{2N} r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2203-4AK..-0..0-Z**
			M_{2N} Nm	49	67	82	94	114	152	183	225	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	62	82	103	124	165	205	260	230	120	
			M_{2max} Nm	205	275	345	368	416	368	416	368	192	
2.09 ... 2.14	6.64 ... 6.83	1.23 (1.31)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	3	**1F.2204-5AF..-0..0-Z**
			M_{2N} Nm	120	162	200	230	260	230	260	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	126	168	210	230	260	230	260	230	120	
			M_{2max} Nm	400	416	416	368	416	368	416	368	192	
2.11 ... 2.16	6.64 ... 6.83	1.23 (1.31)	n_{2N} r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2204-5AK..-0..0-Z**
			M_{2N} Nm	116	157	188	215	225	230	260	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	127	169	210	230	260	230	260	230	120	
			M_{2max} Nm	400	416	416	368	416	368	416	368	192	
2.85 ... 2.92	8.94 ... 9.19	1.61 (1.69)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	–	**1F.2204-6AF..-0..0-Z**
			M_{2N} Nm	165	220	260	230	260	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	172	225	260	230	260	230	260	230	–	
			M_{2max} Nm	416	416	416	368	416	368	416	368	–	
3.08 ... 3.2	10.2 ... 10.5	3.15 (4.05)	n_{2N} r/min	20	12.5	10	10	7.5	5	5	3.75	–	**1FT2205-2AC..-0..0-Z**
			M_{2N} Nm	157	215	260	230	255	230	260	225	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	185	245	260	230	260	230	260	230	–	
			M_{2max} Nm	416	416	416	368	416	368	416	368	–	
3.11 ... 3.23	10.2 ... 10.5	3.15 (4.05)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	–	**1F.2205-2AF..-0..0-Z**
			M_{2N} Nm	160	210	260	230	260	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	187	245	260	230	260	230	260	225	–	
			M_{2max} Nm	416	416	416	368	416	368	416	368	–	
3.05 ... 3.16	10.2 ... 10.5	3.15 (4.05)	n_{2N} r/min	37.5	30	25	20	15	12.5	10	10	–	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	128	172	200	225	260	230	260	225	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	183	240	260	225	260	230	255	225	–	
			M_{2max} Nm	416	416	416	368	416	368	416	368	–	
5.25 ... 5.46	17.1 ... 17.6	5.1 (6)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	–	–	**1F.2205-4AF..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	230	260	–	–	
			M_{2max} Nm	416	416	416	368	416	368	416	–	–	
5.31 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N} r/min	20	12.5	10	10	7.5	5	5	–	–	**1FT2206-2AC..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	230	260	–	–	
			M_{2max} Nm	416	416	416	368	416	368	416	–	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage (continued)													
5.41 ... 5.62	17.1 ... 17.6	7.8 (9.4)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	–	–	**1F.2206-2AF..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	255	225	255	–	–	
			M_{2max} Nm	416	416	416	368	416	368	416	–	–	
5.25 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N} r/min	30	25	25	20	15	12.5	10	–	–	**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	230	255	230	225	255	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	225	255	225	255	–	–	
			M_{2max} Nm	416	416	416	368	416	368	416	–	–	
7.94 ... 8.26	25.7 ... 26.4	11.5 (13.1)	n_{2N} r/min	12.5	10	7.5	7.5	5	–	–	–	–	**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	–	–	–	–	
			M_{2max} Nm	416	416	416	368	416	–	–	–	–	
7.81 ... 8.12	25.7 ... 26.4	11.5 (13.1)	n_{2N} r/min	25	20	15	12.5	10	–	–	–	–	**1FT2206-3AF..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	–	–	–	–	
			M_{2max} Nm	416	416	416	368	416	–	–	–	–	
10.8 ... 11.1	36.2 ... 37.3	15.1 (16.8)	n_{2N} r/min	20	12.5	10	10	–	–	–	–	–	**1FT2206-4AC..-0..0-Z**
			M_{2N} Nm	260	260	260	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
10.6 ... 11	34.3 ... 35.3	15.1 (16.8)	n_{2N} r/min	25	20	15	12.5	–	–	–	–	–	**1F.2206-4AF..-0..0-Z**
			M_{2N} Nm	260	260	260	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
10.1 ... 10.5	34.3 ... 35.3	15.1 (16.8)	n_{2N} r/min	30	25	25	20	–	–	–	–	–	**1FT2206-4AH..-0..0-Z**
			M_{2N} Nm	260	260	210	225	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
10.3 ... 10.6	36.2 ... 37.3	24.86 (28.16)	n_{2N} r/min	25	20	15	12.5	–	–	–	–	–	**1FT2208-2AF..-0..0-Z**
			M_{2N} Nm	255	260	255	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	255	260	255	225	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
16.2 ... 16.6	48.6 ... 50.1	31.96 (34.96)	n_{2N} r/min	12.5	10	7.5	–	–	–	–	–	–	**1FT2208-3AB..-0..0-Z**
			M_{2N} Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	–	–	–	–	–	–	
			M_{2max} Nm	416	416	416	–	–	–	–	–	–	
15.2 ... 15.8	48.6 ... 50.1	31.96 (35.36)	n_{2N} r/min	20	12.5	10	–	–	–	–	–	–	**1F.2208-3AC..-0..0-Z**
			M_{2N} Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	–	–	–	–	–	–	
			M_{2max} Nm	416	416	416	–	–	–	–	–	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage (continued)													
15.1 ... 15.7	48.6 ... 50.1	31.96 (35.36)	n_{2N}	r/min	25	20	15	–	–	–	–	–	–	**1FT2208-3AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	416	–	–	–	–	–	–	
19.7 ... 20.2	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	12.5	10	–	–	–	–	–	–	–	**1FT2208-4AB..-0..0-Z**
			M_{2N}	Nm	260	260	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	–	–	–	–	–	–	–	
18.9 ... 19.7	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	20	12.5	–	–	–	–	–	–	–	**1F.2208-4AC..-0..0-Z**
			M_{2N}	Nm	260	260	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	–	–	–	–	–	–	–	
18.2 ... 18.8	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	25	20	–	–	–	–	–	–	–	**1FT2208-4AF..-0..0-Z**
			M_{2N}	Nm	260	260	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	255	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	–	–	–	–	–	–	–	
22.9 ... 23.7	76.6 ... 78.7	50.46 (55.96)	n_{2N}	r/min	12.5	–	–	–	–	–	–	–	–	**1FT2208-5AB..-0..0-Z**
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
22.7 ... 23.5	76.6 ... 78.7	50.46 (55.96)	n_{2N}	r/min	20	–	–	–	–	–	–	–	–	**1F.2208-5AC..-0..0-Z**
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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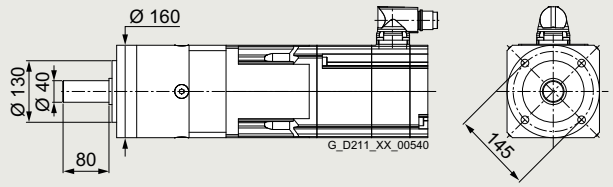
Gearbox type NRB160

Selection and ordering data

NRB160



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5000 N
Average axial force for 20000 h	$F_{A,eq}$	7000 N
Average radial force for 30000 h	$F_{R,eq}$	4200 N
Average axial force for 30000 h	$F_{A,eq}$	6000 N
Maximum radial force	$F_{R,max}$	5000 N
Maximum axial force	$F_{A,max}$	11000 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB160 1 and 2-stage																	
4.16 ... 4.28	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	50	37.5	20	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	11.2	14.8	19.5	31	44	57	60	76	95	96	136	245	■■■ + ■■■ + . . .
			M_{2_0}	Nm	12.4	16.8	21	34	51	63	68	85	106	136	170	270	
			M_{2max}	Nm	42	56	70	113	169	210	225	280	350	450	560	720	
4.19 ... 4.31	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10.6	13.8	18.8	28.5	41	55	56	73	90	120	122	235	■■■ + ■■■ + . . .
			M_{2_0}	Nm	12.5	16.9	21	34	51	64	68	85	107	137	172	275	
			M_{2max}	Nm	42	56	70	113	169	210	225	280	350	450	560	720	
7.13 ... 7.24	22.8 ... 23.1	2.65 (3.5)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	16.5	21	29	43	60	83	82	110	132	187	230	350	■■■ + ■■■ + . . .
			M_{2_0}	Nm	21	28.5	36	57	86	107	114	143	179	230	285	450	
			M_{2max}	Nm	69	92	115	184	270	340	365	455	570	720	910	720	
7.5 ... 7.65	24.7 ... 25	4.6 (6.3)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	17.5	22.5	30.5	45.5	63	88	86	115	139	195	240	365	■■■ + ■■■ + . . .
			M_{2_0}	Nm	22.5	30	38	61	90	112	120	150	187	240	300	450	
			M_{2max}	Nm	75	100	125	200	295	370	395	495	610	790	980	720	
9.84 ... 10	31.5 ... 31.9	6 (7.6)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	22.5	28.5	39	56	76	108	104	140	167	235	295	435	■■■ + ■■■ + . . .
			M_{2_0}	Nm	29.5	39.5	50	80	118	147	157	196	245	310	390	450	
			M_{2max}	Nm	95	127	159	255	375	470	500	630	780	1000	1120	720	
14.1 ... 14.4	43.6 ... 44.3	8.7 (10.4)	n_{2N}	r/min	300	200	200	125	75	60	60	50	37.5	37.5	25	20	1F.2106-6AF..-0..0-Z
			M_{2N}	Nm	30	47	51	88	137	172	173	215	285	290	440	450	■■■ + ■■■ + . . .
			M_{2_0}	Nm	42.5	57	71	114	168	210	225	280	350	450	560	450	
			M_{2max}	Nm	132	176	220	350	520	650	690	870	1090	1280	1120	720	
20.6 ... 21.1	83.8 ... 85.2	18.2 (22.3)	n_{2N}	r/min	250	200	150	100	75	60	50	37.5	37.5	30	20	20	1FT2108-4AC..-0..0-Z
			M_{2N}	Nm	43	55	77	123	155	196	235	315	315	405	600	445	■■■ + ■■■ + . . .
			M_{2_0}	Nm	63	84	105	168	245	310	330	410	510	660	700	450	
			M_{2max}	Nm	255	340	425	680	1010	1120	1280	1280	1120	1280	1120	720	

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Planetary gearbox data													
Gearbox type:		NRB160, 1-stage				NRB160, 2-stage							
1. Order code		A51				A52							
i		3	4	5	8	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R08	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$	Nm	400	450	450	450	800	700	800	800	700	800	700	450
$M_{2max,G}$	Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
$M_{2Em.Off}$	Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
$J_{1.G}$	kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
$\varphi_{2,G}$	'	6				9							

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB160

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB160 1 and 2-stage (continued)																	
25.4 ... 26	101 ... 103	21.6 (25.6)	n_{2N}	r/min	250	200	150	100	75	50	50	37.5	30	25	20	12.5	1FT2108-5AB..-0..0-Z
			M_{2N}	Nm	53	69	94	150	186	275	275	370	465	570	700	450	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	77	103	129	205	305	380	405	500	630	800	700	450	
			M_{2max}	Nm	305	410	510	720	1220	1120	1280	1280	1120	1280	1120	720	
25.1 ... 25.7	101 ... 103	21.6 (25.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	48.5	62	87	138	215	260	255	350	435	530	660	450	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	77	102	128	205	300	375	400	500	620	800	700	450	
			M_{2max}	Nm	305	410	510	720	1220	1120	1280	1280	1120	1280	1120	720	
32.1 ... 32.8	135 ... 138	28.2 (32.2)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	12.5	1FT2108-7AB..-0..0-Z
			M_{2N}	Nm	62	80	110	175	260	315	315	425	520	650	700	450	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	98	131	164	260	385	480	510	640	700	800	700	450	
			M_{2max}	Nm	410	540	680	720	1280	1120	1280	1280	1120	1280	1120	720	
31.5 ... 32.3	135 ... 138	28.2 (32.2)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	25	20	1FT2108-7AC..-0.B0-Z
			M_{2N}	Nm	60	77	107	170	255	310	305	415	510	630	600	450	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	96	128	161	255	375	470	500	630	700	800	700	450	
			M_{2max}	Nm	410	540	680	720	1280	1120	1280	1280	1120	1280	1120	720	
31.3 ... 32	135 ... 138	28.2 (32.2)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	1FT2108-7AE..-0.B0-Z
			M_{2N}	Nm	55	71	100	158	240	290	285	390	490	590	690	445	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	95	127	160	255	375	470	500	620	700	800	700	450	
			M_{2max}	Nm	410	540	680	720	1280	1120	1280	1280	1120	1280	1120	720	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB160 1 and 2-stage																	
2.65 ... 2.78	9.99 ... 10.1	3.15 (4.05)	n_{2N}	r/min	300	250	200	125	100	75	75	50	50	37.5	25	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.5	7.1	10.3	17.6	22.5	30.5	31	43.5	49.5	68	90	127	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	7.9	10.8	13.6	22	32.5	40.5	43.5	54	68	87	110	176	
			M_{2max}	Nm	29.5	40	50	80	120	150	160	200	250	320	400	630	
2.68 ... 2.81	9.99 ... 10.1	3.15 (4.05)	n_{2N}	r/min	300	250	250	150	100	75	75	75	60	50	37.5	25	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	5.9	8.1	8.9	17.6	25	32	33.5	36.5	47	61	85	127	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8	10.9	13.8	22	33	41	44	55	69	88	111	178	
			M_{2max}	Nm	29.5	40	50	80	120	150	160	200	250	320	400	630	
2.62 ... 2.74	9.99 ... 10.1	3.15 (4.05)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.8	7.7	10.5	16.9	24	31	32.5	42.5	53	70	77	139	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	7.8	10.6	13.4	21.5	32	40.5	43	54	67	87	108	174	
			M_{2max}	Nm	29.5	40	50	80	120	150	160	200	250	320	400	630	
4.91 ... 5.02	17 ... 17.2	5.1 (6)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	10.4	13.4	18.8	28	40	56	55	74	89	127	160	240	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	14.7	19.8	24.5	40	59	74	78	98	123	158	197	315	
			M_{2max}	Nm	51	68	85	137	200	255	270	335	420	540	670	720	
4.94 ... 5.06	17 ... 17.2	7.8 (9.4)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	37.5	25	15	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	12.2	16.4	17.5	32	52	65	67	85	110	116	176	280	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	14.8	19.9	25	40	60	75	80	100	126	161	200	320	
			M_{2max}	Nm	51	68	85	137	200	255	270	335	420	540	670	720	

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Planetary gearbox data														
Gearbox type:			NRB160, 1-stage				NRB160, 2-stage							
1. Order code			A51				A52							
	i		3	4	5	8	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R08	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	400	450	450	450	800	700	800	800	700	800	700	450
	$M_{2max,G}$	Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
	$M_{2Em.Off}$	Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
	$J_{1,G}$	kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
	$\varphi_{2,G}$	'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB160

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB160 1 and 2-stage (continued)																	
5.07 ... 5.18	17 ... 17.2	7.8 (9.4)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	12.1	16.1	21	33	47.5	61	64	82	102	134	143	260	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	41	61	76	81	102	127	163	200	325	
			M_{2max}	Nm	51	68	85	137	200	255	270	335	420	540	670	720	
4.9 ... 5.02	17 ... 17.2	7.8 (9.4)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	10.8	13.8	19.4	28	40.5	57	56	76	91	129	161	240	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.7	19.7	24.5	40	59	74	79	98	123	158	197	315	
			M_{2max}	Nm	51	68	85	137	200	255	270	335	420	540	670	720	
7.64 ... 7.79	25.7 ... 26	11.5 (13.1)	n_{2N}	r/min	250	200	150	100	75	50	50	37.5	30	25	20	12.5	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	18.8	25	33	53	70	99	104	133	167	210	265	425	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	30.5	38.5	62	91	114	122	152	191	240	305	450	
			M_{2max}	Nm	77	103	130	205	305	385	410	510	640	820	1020	720	
7.51 ... 7.66	25.7 ... 26	11.5 (13.1)	n_{2N}	r/min	250	200	200	125	75	75	60	50	37.5	37.5	30	20	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	18.2	24	26	47	74	76	96	121	157	170	210	315	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	38	61	90	112	120	150	187	240	300	450	
			M_{2max}	Nm	77	103	130	205	305	385	410	510	640	820	1020	720	
10.6 ... 10.7	36.3 ... 36.9	15.1 (16.8)	n_{2N}	r/min	250	200	150	100	75	60	50	37.5	37.5	30	25	15	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	19.8	26	37	59	80	101	122	164	168	215	255	430	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	85	127	159	169	210	265	340	420	450	
			M_{2max}	Nm	110	147	184	290	435	540	580	720	910	1160	1120	720	
10.3 ... 10.5	34.4 ... 34.9	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	75	75	60	60	50	37.5	30	20	**1F.2206-4AF..-0..0-Z**
			M_{2N}	Nm	23	29	39.5	57	106	110	137	143	170	240	300	445	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	84	123	154	164	205	255	325	410	450	
			M_{2max}	Nm	104	139	174	275	410	510	550	680	860	1100	1120	720	
9.83 ... 10	34.4 ... 34.9	15.1 (16.8)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	30	25	20	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	22.5	29.5	31.5	56	91	115	115	143	191	245	295	350	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	80	117	147	157	196	245	310	390	450	
			M_{2max}	Nm	104	139	174	275	410	510	550	680	860	1100	1120	720	
10.1 ... 10.3	36.3 ... 36.9	22.5 (25.8)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	30	25	20	**1FT2208-2AF..-0..0-Z**
			M_{2N}	Nm	25	33.5	35	62	98	123	126	158	205	260	320	370	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	51	82	121	151	161	200	250	320	400	450	
			M_{2max}	Nm	110	147	184	290	435	540	580	720	910	1160	1120	720	
16.1 ... 16.3	48.9 ... 49.7	29.6 (32.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	12.5	**1FT2208-3AB..-0..0-Z**
			M_{2N}	Nm	29.5	38.5	55	87	143	174	173	235	295	360	455	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	48.5	64	81	130	193	240	255	320	400	510	640	450	
			M_{2max}	Nm	149	198	245	395	580	730	780	980	1120	1280	1120	720	
15 ... 15.3	48.9 ... 49.7	29.6 (33)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	30	25	20	**1F.2208-3AC..-0..0-Z**
			M_{2N}	Nm	35	46	48.5	85	134	169	167	205	275	355	425	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45.5	61	76	122	180	225	240	300	375	480	590	450	
			M_{2max}	Nm	149	198	245	395	580	730	780	980	1120	1280	1120	720	

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Planetary gearbox data													
Gearbox type:			**NRB160, 1-stage**				**NRB160, 2-stage**						
1. Order code			**A51**				**A52**						
i			**3**	**4**	**5**	**8**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R08**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	400	450	450	450	800	700	800	800	700	800	700	450
	$M_{2max,G}$	Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
	$M_{2Em.Off}$	Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
	$J_{1,G}$	kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
	$\varphi_{2,G}$	'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB160 1 and 2-stage (continued)																	
14.9 ... 15.2	48.9 ... 49.7	29.6 (33)	n_{2N}	r/min	250	200	150	125	75	60	60	50	37.5	30	25	20	**1FT2208-3AF..-0..0-Z**
			M_{2N}	Nm	34	44.5	61	80	129	163	161	198	265	340	410	440	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45	60	76	121	179	220	235	295	370	475	590	450	
			M_{2max}	Nm	149	198	245	395	580	730	780	980	1120	1280	1120	720	
19.4 ... 19.8	63.5 ... 64.5	38.8 (44.4)	n_{2N}	r/min	200	150	125	75	60	50	37.5	37.5	30	25	20	12.5	**1FT2208-4AB..-0..0-Z**
			M_{2N}	Nm	37.5	51	64	111	143	171	225	230	290	350	440	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	79	99	158	230	290	310	385	480	620	700	450	
			M_{2max}	Nm	193	255	320	510	760	950	1010	1270	1120	1280	1120	720	
18.7 ... 19.1	63.5 ... 64.5	38.8 (44.4)	n_{2N}	r/min	250	200	150	125	75	60	50	50	37.5	30	25	20	**1F.2208-4AC..-0..0-Z**
			M_{2N}	Nm	42	54	75	97	154	194	230	230	315	400	480	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	57	76	95	153	220	280	295	370	465	590	700	450	
			M_{2max}	Nm	193	255	320	510	760	950	1010	1270	1120	1280	1120	720	
18 ... 18.3	63.5 ... 64.5	38.8 (44.4)	n_{2N}	r/min	250	200	150	125	75	60	50	50	37.5	30	25	20	**1FT2208-4AF..-0..0-Z**
			M_{2N}	Nm	42.5	55	74	97	155	195	230	230	315	405	480	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	54	73	91	146	215	270	285	355	445	570	700	450	
			M_{2max}	Nm	193	255	320	510	760	950	1010	1270	1120	1280	1120	720	
22.7 ... 23.3	77 ... 78.3	48.1 (53.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	12.5	**1FT2208-5AB..-0..0-Z**
			M_{2N}	Nm	47	61	84	134	205	250	250	340	425	520	650	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	69	92	116	186	270	340	360	455	560	720	700	450	
			M_{2max}	Nm	230	310	390	620	920	1120	1230	1280	1120	1280	1120	720	
22.4 ... 23	77 ... 78.3	48.1 (53.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	**1F.2208-5AC..-0..0-Z**
			M_{2N}	Nm	47.5	61	85	135	210	255	250	340	425	520	650	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	68	91	114	183	270	335	355	445	560	710	700	450	
			M_{2max}	Nm	230	310	390	620	920	1120	1230	1280	1120	1280	1120	720	

Planetary gearbox data													
Gearbox type:			**NRB160, 1-stage**				**NRB160, 2-stage**						
1. Order code			**A51**				**A52**						
i			**3**	**4**	**5**	**8**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R08**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$		Nm	400	450	450	450	800	700	800	800	700	800	700	450
$M_{2max,G}$		Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
$M_{2Em.Off}$		Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
$J_{1,G}$		kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
$\varphi_{2,G}$		'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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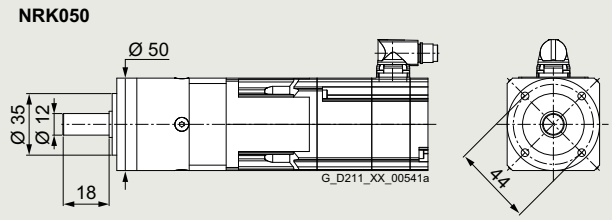
Gearbox type NRK050

Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	800 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	700 N
Average axial force for 30000 h	$F_{A,eq}$	800 N
Maximum radial force	$F_{R,max}$	1300 N
Maximum axial force	$F_{A,max}$	1000 N

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK050 1 and 2-stage																					
0.12 ... 0.131	0.525 ... 0.533	0.0245 (0.0285)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	30	1F.2102-0AG..-0.A0-Z
			M_{2N}	Nm	0.235	0.355	0.47	0.66	0.81	1.04	0.84	1.21	1.53	1.62	2.1	2.6	3.35	4.3	6.8	5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	0.355	0.49	0.62	0.89	1.02	1.29	1.14	1.54	1.93	2.05	2.55	3.25	4.15	5.2	7.5	5	
			M_{2max}	Nm	1.57	2.1	2.6	3.7	4.25	5.3	4.7	6.3	7.9	8.4	10.5	13.2	16.9	21	12	8	
0.27 ... 0.28	1.06 ... 1.07	0.036 (0.04)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	30	1F.2102-1AG..-0.A0-Z
			M_{2N}	Nm	0.63	0.88	1.13	1.56	1.87	2.35	1.98	2.75	3.45	3.65	4.65	5.8	7.4	9.5	7.5	5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	0.81	1.09	1.37	1.94	2.2	2.75	2.45	3.3	4.15	4.4	5.5	6.9	8.8	11.1	7.5	5	
			M_{2max}	Nm	3.2	4.25	5.3	7.5	8.5	8	9.5	12.7	15.9	17	21	21	24	21	12	8	
0.515 ... 0.524	1.86 ... 1.89	0.1396 (0.1586)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	–	1F.2103-2AG..-2.A0-Z
			M_{2N}	Nm	1.05	1.46	1.87	2.45	3.05	3.85	3.15	4.55	5.7	5.9	7.7	9.4	12	13	7.5	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.54	2.05	2.55	3.65	4.15	5	4.65	6.2	7.7	8.2	10.3	12.9	15	13	7.5	–	
			M_{2max}	Nm	5.6	7.5	9.4	13.1	9.5	8	16.8	22	21	24	24	21	24	21	12	–	
0.5 ... 0.509	1.86 ... 1.89	0.1396 (0.1586)	n_{2N}	r/min	750	600	500	375	375	250	300	250	200	200	125	100	100	75	50	–	1F.2103-2AH..-2..0-Z
			M_{2N}	Nm	1.11	1.47	1.85	2.55	2.65	3.9	3.3	4.15	5.2	5.2	7.7	9.7	10.9	13	7.5	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.5	2	2.5	3.5	4.05	5	4.5	6	7.5	8	10	12.5	15	13	7.5	–	
			M_{2max}	Nm	5.6	7.5	9.4	13.1	9.5	8	16.8	22	21	24	24	21	24	21	12	–	
1.08 ... 1.1	3.9 ... 3.96	0.1856 (0.2046)	n_{2N}	r/min	750	600	600	375	375	300	–	250	200	200	150	125	100	75	–	–	1F.2103-4AG..-2.A0-Z
			M_{2N}	Nm	2.2	2.9	3	5	5	5	–	7.6	9.6	9.5	13	13	15	13	–	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3.25	4.35	5.4	7.6	6	5	–	12.9	13	15	15	13	15	13	–	–	
			M_{2max}	Nm	11.8	15.8	19.7	13.5	9.5	8	–	24	21	24	24	21	24	21	–	–	
0.964 ... 0.978	3.9 ... 3.96	0.1856 (0.2046)	n_{2N}	r/min	750	600	500	375	375	250	300	250	200	200	125	100	100	75	–	–	1F.2103-4AH..-2..0-Z
			M_{2N}	Nm	1.99	2.6	3.25	4.5	4.55	5	5.7	6.9	8.8	8.7	13.7	13	15	13	–	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	2.9	3.85	4.85	6.8	6	5	8.6	11.5	13	15	15	13	15	13	–	–	
			M_{2max}	Nm	11.8	15.8	19.7	13.5	9.5	8	19	24	21	24	24	21	24	21	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK050 1 and 2-stage																					
0.566 ... 0.574	1.76 ... 1.79	0.2466 (0.2666)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	–	1F.2203-2AG..-2.A0-Z
			M_{2N}	Nm	1.02	1.43	1.84	2.25	3.05	3.85	3	4.5	5.6	5.7	7.6	9.3	11.7	13	7.5	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.69	2.25	2.85	4	4.55	5	5.1	6.8	8.5	9	11.3	13	15	13	7.5	–	
			M_{2max}	Nm	5.3	7.1	8.9	12.4	9.5	8	15.9	21	21	24	24	21	24	21	12	–	

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Planetary gearbox data																	
Gearbox type:		NRK050, 1-stage						NRK050, 2-stage									
1. Order code		B11						B12									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	11	15	13	8.5	6	5	12	15	13	15	15	13	15	13	7.5	5
	$M_{2max,G}$ Nm	17.5	24	21	13.5	9.5	8	19	24	21	24	24	21	24	21	12	8
	$M_{2Em.Off}$ Nm	22.5	30	36	26	27	27	33	40	36	40	40	36	40	36	27	27
	$J_{1,G}$ kg cm²	0.03	0.022	0.02	0.016	0.015	0.015	0.026	0.026	0.025	0.02	0.018	0.018	0.015	0.015	0.015	0.014
	$\varphi_{2,G}$ '	15						19									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK050 1 and 2-stage (continued)																					
0.531	1.76	0.2466	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	150	150	100	75	75	50	–	**1F.2203-2AK..-2..0-Z**
...	...	(0.2666)	M_{2N}	Nm	1	1.32	1.63	2.25	2.2	2.85	2.75	3.3	4.15	5.5	5.6	8.5	11.2	11.5	7.5	–	■■■ + ■■■ + . . .
0.539	1.79		$M_{2,0}$	Nm	1.59	2.1	2.65	3.75	4.3	5	4.8	6.4	8	8.5	10.6	13	15	13	7.5	–	
			M_{2max}	Nm	5.3	7.1	8.9	12.4	9.5	8	15.9	21	21	24	24	21	24	21	12	–	
1.18	3.61	0.3966	n_{2N}	r/min	1000	750	600	375	375	300	–	250	200	200	150	125	100	75	–	–	**1F.2203-4AG..-2.A0-Z**
...	...	(0.4166)	M_{2N}	Nm	2.2	3.1	4.05	6.5	6	5	–	9.9	12.5	12.4	15	13	15	13	–	–	■■■ + ■■■ + . . .
1.2	3.66		$M_{2,0}$	Nm	3.55	4.75	5.9	8.3	6	5	–	14.2	13	15	15	13	15	13	–	–	
			M_{2max}	Nm	10.9	14.6	18.2	13.5	9.5	8	–	24	21	24	24	21	24	21	–	–	
1.1	3.61	0.3966	n_{2N}	r/min	750	500	500	300	300	300	250	200	150	150	125	125	100	75	–	–	**1F.2203-4AK..-2..0-Z**
...	...	(0.4166)	M_{2N}	Nm	1.96	3	3.05	5.3	5.3	4.7	6.6	8.3	11.1	11.1	13.4	11.4	14.2	13	–	–	■■■ + ■■■ + . . .
1.12	3.66		$M_{2,0}$	Nm	3.3	4.4	5.5	7.7	6	5	9.9	13.2	13	15	15	13	15	13	–	–	
			M_{2max}	Nm	10.9	14.6	18.2	13.5	9.5	8	19	24	21	24	24	21	24	21	–	–	

Planetary gearbox data																		
Gearbox type:			**NRK050, 1-stage**						**NRK050, 2-stage**									
1. Order code			**B11**						**B12**									
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	11	15	13	8.5	6	5	12	15	13	15	15	13	15	13	7.5	5
	$M_{2max,G}$	Nm	17.5	24	21	13.5	9.5	8	19	24	21	24	24	21	24	21	12	8
	$M_{2Em.Off}$	Nm	22.5	30	36	26	27	27	33	40	36	40	40	36	40	36	27	27
	$J_{1,G}$	kg cm²	0.03	0.022	0.02	0.016	0.015	0.015	0.026	0.026	0.025	0.02	0.018	0.018	0.015	0.015	0.015	0.014
	$\varphi_{2,G}$	'	15						19									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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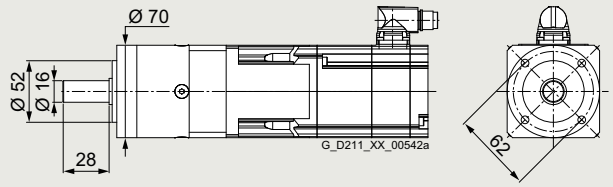
Gearbox type NRK070

Selection and ordering data

NRK070



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1050 N
Average axial force for 20000 h	$F_{A,eq}$	1350 N
Average radial force for 30000 h	$F_{R,eq}$	900 N
Average axial force for 30000 h	$F_{A,eq}$	1000 N
Maximum radial force	$F_{R,max}$	1650 N
Maximum axial force	$F_{A,max}$	2100 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK070 1 and 2-stage																				
0.068 ... 0.121	0.468 ... 0.512	0.0245 (0.0285)	n_{2N}	r/min	375	375	375	375	375	300	300	250	200	200	150	125	100	75	50	30	**1F.2102-0AG..-0.A0-Z**
			M_{2N}	Nm	0.107	0.199	0.28	0.415	0.47	0.68	0.53	0.75	1.14	1.14	1.62	2.05	2.75	3.6	5.7	9.4	■■■ + ■■■ + ...
			M_{2_0}	Nm	0.2	0.325	0.45	0.7	0.82	1.07	0.94	1.31	1.68	1.8	2.25	2.9	3.75	4.7	7.6	12	
			M_{2max}	Nm	1.4	1.92	2.4	3.45	4	5	4.45	6	7.5	8	10.1	12.7	16.3	20	29	24	
0.221 ... 0.27	1.01 ... 1.05	0.036 (0.04)	n_{2N}	r/min	750	600	600	500	375	300	375	250	200	200	150	125	100	75	50	30	**1F.2102-1AG..-0.A0-Z**
			M_{2N}	Nm	0.415	0.67	0.84	1.25	1.61	2.1	1.62	2.4	3.25	3.35	4.45	5.5	7.2	9.3	14.7	15	■■■ + ■■■ + ...
			M_{2_0}	Nm	0.66	0.93	1.21	1.76	2	2.55	2.25	3.1	3.9	4.2	5.2	6.6	8.5	10.7	17.2	15	
			M_{2max}	Nm	3	4.05	5.1	7.2	8.3	10.4	9.3	12.4	15.6	16.6	20.5	26	33	41.5	29	24	
0.515 ... 0.558	1.84 ... 1.87	0.093 (0.112)	n_{2N}	r/min	750	750	600	500	375	300	375	250	200	200	150	125	100	75	50	30	**1F.2103-2AG..-2.A0-Z**
			M_{2N}	Nm	1	1.28	1.77	2.45	3.15	4.1	3.2	4.75	6.2	6.4	8.5	10.5	13.6	17.4	18	15	■■■ + ■■■ + ...
			M_{2_0}	Nm	1.54	2.1	2.65	3.8	4.35	5.5	4.9	6.5	8.2	8.8	11	13.8	17.7	22	18	15	
			M_{2max}	Nm	5.5	7.4	9.2	13	14.9	18.7	16.6	22	27.5	29.5	37	46	53	48	29	24	
0.5 ... 0.543	1.84 ... 1.87	0.093 (0.112)	n_{2N}	r/min	600	600	500	375	375	250	300	250	200	200	125	100	100	75	50	25	**1F.2103-2AH..-2..0-Z**
			M_{2N}	Nm	1.09	1.36	1.84	2.75	2.95	4.2	3.45	4.55	5.9	6.1	8.5	10.8	12.9	16.6	18	15	■■■ + ■■■ + ...
			M_{2_0}	Nm	1.5	2.05	2.6	3.7	4.25	5.3	4.75	6.4	8	8.5	10.7	13.5	17.3	21.5	18	15	
			M_{2max}	Nm	5.5	7.4	9.2	13	14.9	18.7	16.6	22	27.5	29.5	37	46	53	48	29	24	
1.14 ... 1.17	3.89 ... 3.94	0.139 (0.158)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	–	**1F.2103-4AG..-2.A0-Z**
			M_{2N}	Nm	1.91	2.8	3.7	5.4	5.7	7.5	7	8.8	11.8	11.8	16	19.6	25	30	18	–	■■■ + ■■■ + ...
			M_{2_0}	Nm	3.4	4.55	5.7	8.1	9.3	11.7	10.4	13.9	17.4	18.6	23	29	33	30	18	–	
			M_{2max}	Nm	11.7	15.6	19.6	27.5	29	24	35	46.5	53	53	53	48	53	48	29	–	
0.997 ... 1.03	3.89 ... 3.94	0.139 (0.158)	n_{2N}	r/min	600	600	500	375	375	250	300	250	200	200	125	100	100	75	50	–	**1F.2103-4AH..-2..0-Z**
			M_{2N}	Nm	2.1	2.5	3.3	4.95	5.2	7.7	6.4	8.1	10.8	10.8	16.4	20.5	23	30	18	–	■■■ + ■■■ + ...
			M_{2_0}	Nm	2.95	4	5	7.1	8.2	10.3	9.1	12.2	15.3	16.4	20.5	25.5	32.5	30	18	–	
			M_{2max}	Nm	11.7	15.6	19.6	27.5	29	24	35	46.5	53	53	53	48	53	48	29	–	
1.15 ... 1.19	3.6 ... 3.64	0.371 (0.451)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	3.1	4.3	5.5	7.7	9	11.4	9.8	13.5	17	18	22.5	28.5	33	30	18	–	■■■ + ■■■ + ...
			M_{2_0}	Nm	3.45	4.65	5.8	8.2	9.4	11.8	10.5	14.1	17.7	18.9	23.5	29.5	33	30	18	–	
			M_{2max}	Nm	10.8	14.5	18.1	25	29	24	32	43	53	53	53	48	53	48	29	–	

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Planetary gearbox data																	
Gearbox type:			NRK070, 1-stage						NRK070, 2-stage								
1. Order code			B21						B22								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	28	33	30	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
	$J_{1.G}$	kg cm²	0.174	0.117	0.095	0.078	0.074	0.069	0.126	0.121	0.078	0.087	0.076	0.075	0.067	0.066	0.066	0.064
	$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK070 1 and 2-stage (continued)																				
1.15 ... 1.18	3.7 ... 3.74	0.371 (0.451)	n_{2N}	r/min	750	600	600	500	375	300	375	250	200	200	150	125	100	75	50	–	1F.2104-4AK..-2..0-Z
			M_{2N}	Nm	2.85	4.1	4.6	6.1	8.3	10.8	8.1	12.5	16	16.7	21.5	26.5	33	30	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.4	4.6	5.8	8.2	9.4	11.8	10.5	14	17.6	18.7	23.5	29	33	30	18	–	
			M_{2max}	Nm	11.1	14.9	18.6	26	29	24	33	44	53	53	53	48	53	48	29	–	
2.26 ... 2.29	7.24 ... 7.33	0.581 (0.671)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2104-5AF..-2..0-Z
			M_{2N}	Nm	5.9	8.3	10.7	14.6	17.3	15	18.6	26	32.5	33	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.7	9	11.3	15.9	18	15	20	27	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	21.5	29	36.5	40	29	24	53	53	53	53	53	48	53	48	–	–	
2.24 ... 2.27	7.34 ... 7.43	0.581 (0.671)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	–	–	1F.2104-5AK..-2..0-Z
			M_{2N}	Nm	4.45	6.3	8.1	11.6	12	15	14.4	17.7	23	23	31	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.7	9	11.3	15.8	18	15	20	27	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	22	29.5	37	40	29	24	53	53	53	53	53	48	53	48	–	–	
3.01 ... 3.04	9.66 ... 9.79	0.781 (0.861)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	–	–	60	50	37.5	–	–	1F.2104-6AF..-2..0-Z
			M_{2N}	Nm	7.2	10.1	12.9	17.6	18	15	22	31.5	33	–	–	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9	12	15.1	21	18	15	27	33	33	–	–	30	33	30	–	–	
			M_{2max}	Nm	29	39	48	40	29	24	53	53	53	–	–	48	53	48	–	–	
4.68 ... 4.73	14.5 ... 14.7	1.98 (2.82)	n_{2N}	r/min	500	375	300	250	200	150	–	–	100	100	75	60	50	37.5	–	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	10.8	15.1	19.3	24.5	18	15	–	–	33	33	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	18.8	23.5	25	18	15	–	–	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	44	53	48	40	29	24	–	–	53	53	53	48	53	48	–	–	
4.71 ... 4.77	14.5 ... 14.7	1.98 (2.82)	n_{2N}	r/min	500	375	300	250	250	250	200	150	150	150	125	100	75	75	–	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	13.5	17.4	21.5	18	15	26	33	32	30	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19	23.5	25	18	15	33	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	44	53	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
7.21 ... 7.3	23.2 ... 23.6	2.92 (3.77)	n_{2N}	r/min	500	375	–	250	200	150	200	125	100	100	75	60	–	–	–	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	14	19.5	–	25	18	15	33	33	33	33	33	30	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	–	25	18	15	33	33	33	33	33	30	–	–	–	–	
			M_{2max}	Nm	45	53	–	40	29	24	53	53	53	53	53	48	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK070 1 and 2-stage																				
0.524 ... 0.567	1.74 ... 1.77	0.2 (0.22)	n_{2N}	r/min	750	600	600	500	375	300	375	250	200	200	150	125	100	75	50	30	1F.2203-2AG..-2.A0-Z
			M_{2N}	Nm	1.04	1.55	1.75	2.35	3.2	4.2	3.1	4.85	6.4	6.5	8.7	10.7	13.8	18	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.57	2.1	2.7	3.85	4.45	5.6	4.95	6.7	8.4	8.9	11.2	14.1	18	22.5	18	15	
			M_{2max}	Nm	5.2	7	8.8	12.3	14.1	17.7	15.8	21	26	28	35	44	53	48	29	24	
0.489 ... 0.533	1.74 ... 1.77	0.2 (0.22)	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	1.01	1.21	1.62	2.4	2.5	3.3	3	3.8	5.1	5	6.9	8.5	10.8	14.5	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.46	2	2.55	3.6	4.15	5.2	4.65	6.2	7.8	8.4	10.5	13.2	16.9	21	18	15	
			M_{2max}	Nm	5.2	7	8.8	12.3	14.1	17.7	15.8	21	26	28	35	44	53	48	29	24	
1.15 ... 1.18	3.6 ... 3.64	0.35 (0.37)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	–	1F.2203-4AG..-2.A0-Z
			M_{2N}	Nm	2.55	3.75	4.9	7.1	7.6	9.9	9	11.5	14.9	15.3	20	24.5	31.5	30	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.4	4.6	5.8	8.2	9.4	11.8	10.5	14	17.6	18.8	23.5	29	33	30	18	–	
			M_{2max}	Nm	10.8	14.5	18.1	25	29	24	32	43	53	53	53	48	53	48	29	–	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NRK070, 1-stage						NRK070, 2-stage									
1. Order code		B21						B22									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	33	30	25	18	15	33	33	33	33	33	30	33	30	18	15
$M_{2max,G}$	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	48	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.174	0.117	0.095	0.078	0.074	0.069	0.126	0.121	0.078	0.087	0.076	0.075	0.067	0.066	0.066	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRK070

Servomotor data

$M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²
1.11 ... 1.14	3.6 ... 3.64	0.35 (0.37)
2.22 ... 2.25	6.85 ... 6.94	1.251 (1.331)
2.23 ... 2.26	6.85 ... 6.94	1.251 (1.331)
2.99 ... 3.02	9.18 ... 9.3	1.631 (1.711)
2.84 ... 2.87	10.4 ... 10.5	3.42 (4.32)
2.89 ... 2.93	10.4 ... 10.5	3.42 (4.32)
2.87 ... 2.9	10.4 ... 10.5	3.42 (4.32)
4.93 ... 4.99	17.4 ... 17.7	5.37 (6.27)

Selection data servomotors with planetary gearbox

SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK070 1 and 2-stage (continued)

																				Servomotors with planetary gearbox
n_{2N}	r/min	600	500	375	375	300	250	250	200	200	150	150	100	100	75	50	–	**1F.2203-4AK..-2..0-Z**
M_{2N}	Nm	2.25	3.1	4.35	4.85	6.3	7.9	7.6	9.9	10.3	13.8	14.2	21.5	21.5	29.5	18	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	3.3	4.45	5.6	7.9	9.1	11.4	10.1	13.6	17	18.1	22.5	28	33	30	18	–	
M_{2max}	Nm	10.8	14.5	18.1	25	29	24	32	43	53	53	53	48	53	48	29	–	
n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2204-5AF..-2..0-Z**
M_{2N}	Nm	5.7	8	10.2	13.8	16.5	15	17.7	24.5	31	32.5	33	30	33	30	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	6.6	8.9	11.1	15.6	17.9	15	20	26.5	33	33	33	30	33	30	–	–	
M_{2max}	Nm	20.5	27.5	34.5	40	29	24	53	53	53	53	53	48	53	48	–	–	
n_{2N}	r/min	600	600	500	375	300	300	300	200	200	150	150	125	100	75	–	–	**1F.2204-5AK..-2..0-Z**
M_{2N}	Nm	5.2	5.8	7.5	10.7	13.6	13.8	13.2	20	21	27.5	28	30	33	30	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	6.6	8.9	11.2	15.7	18	15	20	26.5	33	33	33	30	33	30	–	–	
M_{2max}	Nm	20.5	27.5	34.5	40	29	24	53	53	53	53	53	48	53	48	–	–	
n_{2N}	r/min	500	375	300	250	200	150	200	125	100	–	75	60	50	37.5	–	–	**1F.2204-6AF..-2..0-Z**
M_{2N}	Nm	7.6	10.6	13.6	18.4	18	15	23	33	33	–	33	30	33	30	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	8.9	12	15	21	18	15	26.5	33	33	–	33	30	33	30	–	–	
M_{2max}	Nm	27.5	37	46	40	29	24	53	53	53	–	53	48	53	48	–	–	
n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	–	**1FT2205-2AC..-0..0-Z**
M_{2N}	Nm	7	10	12.5	17.6	18	15	22.5	29	33	33	33	30	33	30	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	8.5	11.4	14.2	20	18	15	25.5	33	33	33	33	30	33	30	–	–	
M_{2max}	Nm	31.5	42	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2205-2AF..-0..0-Z**
M_{2N}	Nm	7	9.9	12.6	16.6	18	15	20.5	30	33	33	33	30	33	30	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	8.6	11.6	14.5	20	18	15	26	33	33	33	33	30	33	30	–	–	
M_{2max}	Nm	31.5	42	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	100	75	60	–	–	**1FT2205-2AH..-0..0-Z**
M_{2N}	Nm	6.1	8.7	9	14.4	14.4	15	18.2	24.5	30	29.5	33	30	33	30	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	8.6	11.5	14.4	20	18	15	25.5	33	33	33	33	30	33	30	–	–	
M_{2max}	Nm	31.5	42	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	–	–	–	**1F.2205-4AF..-0..0-Z**
M_{2N}	Nm	9.3	13.1	16.9	21	18	15	25.5	33	33	33	33	30	33	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	14.9	19.9	24.5	25	18	15	33	33	33	33	33	30	33	–	–	–	
M_{2max}	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	–	–	–	

Planetary gearbox data

Gearbox type:		NRK070, 1-stage						NRK070, 2-stage									
1. Order code		B21						B22									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	33	30	25	18	15	33	33	33	33	33	30	33	30	18	15
$M_{2max,G}$	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	48	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.174	0.117	0.095	0.078	0.074	0.069	0.126	0.121	0.078	0.087	0.076	0.075	0.067	0.066	0.066	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

3 4

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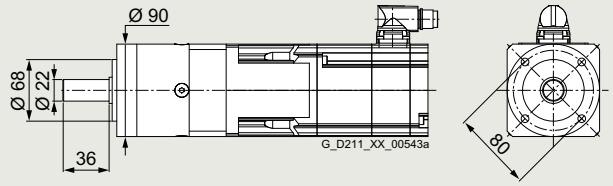
Selection and ordering data

NRK090



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1900 N
Average axial force for 20000 h	$F_{A,eq}$	2000 N
Average radial force for 30000 h	$F_{R,eq}$	1700 N
Average axial force for 30000 h	$F_{A,eq}$	1500 N
Maximum radial force	$F_{R,max}$	3100 N
Maximum axial force	$F_{A,max}$	3800 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK090 1 and 2-stage																					
0.473	1.78	0.093	n_{2N}	r/min	600	600	600	500	375	300	375	250	200	200	150	125	100	75	50	30	1F.2103-2AG..-0.A0-Z
...	...	(0.112)	M_{2N}	Nm	0.88	1.13	1.33	1.94	2.7	3.6	2.45	3.95	5.1	5.4	7.4	9.2	12.2	15.9	25	38	■■■ + ■■■ + . . .
0.543	1.83		$M_{2,0}$	Nm	1.42	1.97	2.5	3.6	4.15	5.2	4.7	6.3	7.9	8.5	10.7	13.4	17.2	21.5	34.5	38	
			M_{2max}	Nm	5.3	7.2	9	12.7	14.6	18.3	16.3	21.5	27	29	36	45.5	58	73	80	61	
0.445	1.78	0.093	n_{2N}	r/min	600	500	500	375	375	250	300	250	200	200	125	100	100	75	50	25	1F.2103-2AH..-0..0-Z
...	...	(0.112)	M_{2N}	Nm	0.86	1.28	1.54	2.4	2.6	3.85	2.95	3.85	4.95	5.2	7.8	9.9	11.8	15.3	24	38	■■■ + ■■■ + . . .
0.515	1.83		$M_{2,0}$	Nm	1.33	1.86	2.35	3.4	3.95	5	4.45	6	7.5	8	10.1	12.7	16.3	20.5	32.5	38	
			M_{2max}	Nm	5.3	7.2	9	12.7	14.6	18.3	16.3	21.5	27	29	36	45.5	58	73	80	61	
1.08	3.86	0.139	n_{2N}	r/min	600	500	500	375	300	300	300	200	200	150	150	125	100	75	50	30	1F.2103-4AG..-0.A0-Z
...	...	(0.158)	M_{2N}	Nm	2.2	3.1	3.45	5.4	6.9	7.4	6.8	10.7	10.8	14.9	16	19.5	25.5	34.5	50	38	■■■ + ■■■ + . . .
1.14	3.9		$M_{2,0}$	Nm	3.2	4.4	5.5	7.8	9	11.3	10.1	13.5	16.9	18.1	22.5	28	36	45.5	50	38	
			M_{2max}	Nm	11.5	15.4	19.3	27	31	38.5	34.5	46	57	61	77	96	123	131	80	61	
0.998	3.86	0.139	n_{2N}	r/min	600	500	500	375	300	250	300	200	200	200	125	100	100	75	50	25	1F.2103-4AH..-0..0-Z
...	...	(0.158)	M_{2N}	Nm	1.96	2.75	3.05	4.85	6.2	7.9	6.1	9.4	9.8	10	16.1	20	23.5	31	48.5	38	■■■ + ■■■ + . . .
1.05	3.9		$M_{2,0}$	Nm	2.95	4.05	5.1	7.2	8.3	10.5	9.3	12.4	15.6	16.6	20.5	26	33.5	41.5	50	38	
			M_{2max}	Nm	11.5	15.4	19.3	27	31	38.5	34.5	46	57	61	77	96	123	131	80	61	
1.1	3.56	0.35	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2104-4AF..-2..0-Z
...	...	(0.43)	M_{2N}	Nm	2.95	4.15	5.3	7.5	8.8	11.2	9.5	13.3	16.7	17.7	22	28	36	45	50	38	■■■ + ■■■ + . . .
1.15	3.6		$M_{2,0}$	Nm	3.25	4.45	5.6	7.9	9.1	11.4	10.2	13.7	17.1	18.3	22.5	28.5	36.5	46	50	38	
			M_{2max}	Nm	10.6	14.3	17.9	25	28.5	36	32	42.5	53	57	71	89	114	131	80	61	
1.09	3.66	0.35	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	1F.2104-4AK..-2..0-Z
...	...	(0.43)	M_{2N}	Nm	3.05	3.7	5	7.4	8.1	10.4	9.2	11.9	15.1	15.8	20.5	25.5	33	42.5	50	38	■■■ + ■■■ + . . .
1.15	3.7		$M_{2,0}$	Nm	3.25	4.4	5.6	7.9	9.1	11.4	10.1	13.6	17	18.2	22.5	28.5	36.5	45.5	50	38	
			M_{2max}	Nm	10.9	14.6	18.4	25.5	29.5	37	33	44	55	58	73	91	117	131	80	61	
2.2	7.19	0.56	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2104-5AF..-2..0-Z
...	...	(0.65)	M_{2N}	Nm	6.1	8.5	10.9	15.2	17.7	22	19.1	26	32.5	35	44	55	70	82	50	38	■■■ + ■■■ + . . .
2.25	7.29		$M_{2,0}$	Nm	6.6	8.8	11.1	15.6	17.9	22	20	26.5	33	35.5	44.5	55	71	82	50	38	
			M_{2max}	Nm	21.5	29	36	50	58	61	65	86	108	115	144	131	144	131	80	61	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NRK090, 1-stage						NRK090, 2-stage								
1. Order code			B31						B32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$	Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK090

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK090 1 and 2-stage (continued)																				
2.19 ... 2.23	7.29 ... 7.39	0.56 (0.65)	n_{2N}	r/min	600	500	500	375	300	300	300	200	150	150	150	125	100	75	50	30	1F.2104-5AK..-2..0-Z
			M_{2N}	Nm	5.3	7.2	7.8	11.8	15	15.8	14.4	22	29.5	30.5	32	38.5	50	68	50	38	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	6.5	8.8	11	15.5	17.8	22	19.9	26.5	33	35	44	55	71	82	50	38	
			M_{2max}	Nm	22	29	36.5	51	59	61	65	87	109	117	144	131	144	131	80	61	
2.95 ... 3	9.62 ... 9.75	0.76 (0.84)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1F.2104-6AF..-2..0-Z
			M_{2N}	Nm	7.5	10.7	13.8	18.9	22.5	29	24	34.5	43.5	45.5	58	73	90	82	50	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26.5	35.5	44.5	47.5	59	74	90	82	50	–	
			M_{2max}	Nm	29	38.5	48.5	68	77	61	86	115	131	144	144	131	144	131	80	–	
4.67 ... 4.72	14.5 ... 14.7	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	12.3	16.8	21	29	34	38	36	50	63	66	84	82	90	82	50	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	14	18.7	23.5	33	37.5	38	42	56	70	74	90	82	90	82	50	–	
			M_{2max}	Nm	44	58	73	102	80	61	130	144	131	144	144	131	144	131	80	–	
4.7 ... 4.76	14.5 ... 14.7	1.71 (2.55)	n_{2N}	r/min	500	500	375	300	250	200	200	150	125	125	100	100	75	75	50	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	11.4	11.9	17.5	23	28.5	36.5	34	45.5	55	56	71	68	90	79	50	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	14.1	18.9	23.5	33	38	38	42	56	70	75	90	82	90	82	50	–	
			M_{2max}	Nm	44	58	73	102	80	61	130	144	131	144	144	131	144	131	80	–	
7.4 ... 7.52	23.2 ... 23.6	2.65 (3.5)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	16.5	23	29.5	38.5	47.5	38	46	71	82	89	90	82	90	82	–	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	22	29.5	37.5	52	50	38	66	89	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	70	94	117	104	80	61	155	144	131	144	144	131	144	131	–	–	
7.47 ... 7.58	25.1 ... 25.5	5.476 (7.176)	n_{2N}	r/min	375	375	300	200	200	150	150	125	100	100	75	60	50	37.5	–	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	18.6	19.9	25.5	40	40.5	38	51	62	78	77	90	82	90	82	–	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	22.5	30	37.5	53	50	38	67	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	76	101	127	104	80	61	155	144	131	144	143	131	144	131	–	–	
9.67 ... 9.82	31.8 ... 32.4	6.876 (8.476)	n_{2N}	r/min	375	300	250	200	200	150	–	125	100	100	75	60	50	37.5	–	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	23	30	36.5	48	47	38	–	71	82	86	90	82	90	82	–	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	29	39	49	65	50	38	–	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	97	129	131	104	80	61	–	144	131	144	144	131	144	131	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK090 1 and 2-stage																				
0.467 ... 0.537	1.68 ... 1.74	0.2 (0.22)	n_{2N}	r/min	600	500	500	375	375	300	300	250	200	200	150	125	100	75	50	30	1F.2203-2AG..-0.A0-Z
			M_{2N}	Nm	0.96	1.42	1.65	2.6	2.7	3.65	3.15	3.95	5.1	5.3	7.6	9.3	12.4	16.5	25.5	38	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	1.4	1.94	2.45	3.55	4.1	5.2	4.6	6.2	7.8	8.4	10.5	13.2	17	21	34	38	
			M_{2max}	Nm	5	6.8	8.5	12	13.8	17.3	15.4	20.5	25.5	27.5	34.5	43	55	69	80	61	
0.432 ... 0.502	1.68 ... 1.74	0.2 (0.22)	n_{2N}	r/min	500	500	375	375	300	250	250	200	150	150	150	100	100	75	50	30	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	0.92	1.14	1.73	2	2.7	3.45	3	3.95	5.4	5.6	6	9.1	9.6	13.2	19.8	34	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	1.29	1.8	2.3	3.3	3.85	4.85	4.3	5.8	7.3	7.8	9.8	12.4	15.9	19.9	32	38	
			M_{2max}	Nm	5	6.8	8.5	12	13.8	17.3	15.4	20.5	25.5	27.5	34.5	43	55	69	80	61	
1.09 ... 1.15	3.56 ... 3.6	0.35 (0.37)	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	1F.2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.9	3.35	4.65	6.9	7.3	9.7	8.6	10.9	14	14.4	19.4	23.5	31	40	50	38	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	3.25	4.4	5.6	7.9	9.1	11.4	10.1	13.6	17.1	18.2	22.5	28.5	36.5	45.5	50	38	
			M_{2max}	Nm	10.6	14.3	17.9	25	28.5	36	32	42.5	53	57	71	89	114	131	80	61	

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Planetary gearbox data																	
Gearbox type:		NRK090, 1-stage						NRK090, 2-stage									
1. Order code		B31						B32									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
$M_{2max,G}$	Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK090

SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK090 1 and 2-stage (continued)

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
1.05 ... 1.11	3.56 ... 3.6	0.35 (0.37)	n_{2N}	r/min	500	500	375	300	300	250	250	200	150	150	150	125	100	75	50	30	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	2.55	3	4.4	6.2	6.6	8.4	7.6	10	13.1	13.6	14.5	17.3	23	31	47	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.15	4.25	5.4	7.6	8.7	11	9.8	13.1	16.5	17.6	22	27.5	35	44	50	38	
			M_{2max}	Nm	10.6	14.3	17.9	25	28.5	36	32	42.5	53	57	71	89	114	131	80	61	
2.16 ... 2.21	6.8 ... 6.9	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2204-5AF..-2..0-Z
			M_{2N}	Nm	5.9	8.1	10.4	14.4	16.8	21.5	18.1	25	31.5	33	42	52	67	82	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.4	8.7	10.9	15.4	17.6	22	19.6	26	32.5	35	43.5	54	70	82	50	38	
			M_{2max}	Nm	20.5	27.5	34	48	55	61	61	82	102	109	136	131	144	131	80	61	
2.17 ... 2.22	6.8 ... 6.9	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	50	30	1F.2204-5AK..-2..0-Z
			M_{2N}	Nm	5.2	7	9.9	13.7	14.4	18	16.8	21.5	28.5	29.5	36.5	46	62	62	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.5	8.7	10.9	15.4	17.7	22	19.7	26	33	35	44	55	70	82	50	38	
			M_{2max}	Nm	20.5	27.5	34	48	55	61	61	82	102	109	136	131	144	131	80	61	
2.94 ... 2.98	9.13 ... 9.26	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1F.2204-6AF..-2..0-Z
			M_{2N}	Nm	8	11.4	14.5	20	23	29	25	34.5	43.5	46.5	58	72	90	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26.5	35	44	47	59	73	90	82	50	–	
			M_{2max}	Nm	27.5	36.5	46	64	74	61	82	110	131	144	144	131	144	131	80	–	
2.94 ... 2.98	10.4 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	7.5	10.4	13.1	18.5	21	26.5	23.5	30.5	38.5	41	52	62	82	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26	35	44	47	58	73	90	82	49.5	–	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	131	144	144	131	144	131	80	–	
2.98 ... 3.02	10.4 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	7.6	10.4	13.2	18.3	21	27	22.5	31.5	39.5	42	53	66	84	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	11.9	15	21	24	30	26.5	35.5	44.5	47.5	59	74	90	82	50	–	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	131	144	144	131	144	131	80	–	
2.94 ... 2.99	10.4 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	500	375	300	250	200	250	200	150	125	100	100	75	60	50	–	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	7.2	7.7	11.4	15.4	18.9	24	18.4	22.5	31.5	38	48	48.5	68	82	49	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26.5	35	44	47	59	73	90	82	50	–	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	131	144	144	131	144	131	80	–	
5.06 ... 5.13	17.4 ... 17.6	5.1 (6)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	11.1	15.7	20	26.5	32.5	38	33	50	63	65	84	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	35.5	41	38	45.5	60	76	81	90	82	90	82	–	–	
			M_{2max}	Nm	52	70	88	104	80	61	155	144	131	144	144	131	144	131	–	–	
5.27 ... 5.3	17.3 ... 17.6	8.676 (10.276)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	–	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	10.8	16.7	21	29.5	35	38	41.5	46	62	62	89	82	90	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.8	21	26	37	42	38	47.5	63	79	84	90	82	90	82	50	–	
			M_{2max}	Nm	52	70	87	104	80	61	155	144	131	144	144	131	144	131	80	–	
5.19 ... 5.27	17.3 ... 17.6	8.676 (10.276)	n_{2N}	r/min	500	375	300	200	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2206-2AF..-0..0-Z
			M_{2N}	Nm	10.6	15.3	20	30.5	31.5	38	29	49.5	62	62	84	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.6	20.5	26	36.5	42	38	46.5	62	78	83	90	82	90	82	–	–	
			M_{2max}	Nm	52	70	87	104	80	61	155	144	131	144	144	131	144	131	–	–	

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Planetary gearbox data																	
Gearbox type:		NRK090, 1-stage						NRK090, 2-stage									
1. Order code		B31						B32									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$ Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$ Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$ kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
	$\varphi_{2,G}$ '	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK090

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK090 1 and 2-stage (continued)																					
5.05 ... 5.12	17.3 ... 17.6	8.676 (10.276)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	60	50	–	–	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	12	15.8	19.7	25.5	25	35	34.5	41.5	52	51	71	82	77	81	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25	35.5	40.5	38	45.5	60	75	80	90	82	90	82	–	–	
			M_{2max}	Nm	52	70	87	104	80	61	155	144	131	144	144	131	144	131	–	–	
7.54 ... 7.66	26 ... 26.5	12.38 (13.976)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	20	27	34	48.5	50	38	55	74	82	90	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	50	38	68	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	79	105	131	104	80	61	155	144	131	144	144	131	144	131	–	–	
7.41 ... 7.52	26 ... 26.5	12.38 (13.976)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	75	60	50	37.5	–	–	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	15.9	20.5	25.5	33	44	38	44	65	64	87	86	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	30	37.5	52	50	38	66	89	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	79	105	131	104	80	61	155	144	131	144	144	131	144	131	–	–	
10.3 ... 10.5	36.7 ... 37.3	15.98 (17.676)	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	75	50	50	37.5	25	–	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	18.9	23	29.5	40	49	38	61	81	79	76	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	65	50	38	94	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	111	144	131	104	80	61	155	144	131	144	144	131	144	131	–	–	
10.1 ... 10.3	34.7 ... 35.3	15.976 (17.676)	n_{2N}	r/min	375	300	250	200	200	150	–	125	100	100	75	60	50	37.5	–	–	**1F.2206-4AF..-0..0-Z**
			M_{2N}	Nm	23.5	30.5	37.5	49	48.5	38	–	73	82	88	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	41	51	65	50	38	–	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	106	141	131	104	79	61	–	144	131	144	144	131	144	131	–	–	
9.7 ... 9.86	34.7 ... 35.3	15.976 (17.676)	n_{2N}	r/min	375	300	250	150	150	150	125	100	100	75	75	60	60	50	–	–	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	18.3	23.5	28.5	49	49.5	38	59	73	68	90	90	82	77	80	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39	49	65	50	38	87	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	106	141	131	104	79	61	155	144	131	144	144	131	144	131	–	–	

Planetary gearbox data																	
Gearbox type:			NRK090, 1-stage						NRK090, 2-stage								
1. Order code			B31						B32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$	Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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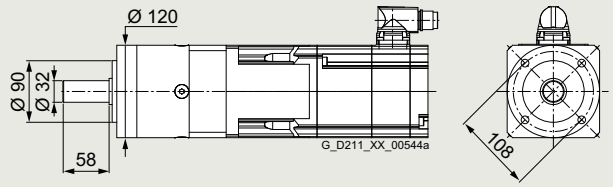
Selection and ordering data

NRK120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	2500 N
Average axial force for 20000 h	$F_{A,eq}$	4000 N
Average radial force for 30000 h	$F_{R,eq}$	2150 N
Average axial force for 30000 h	$F_{A,eq}$	3000 N
Maximum radial force	$F_{R,max}$	4000 N
Maximum axial force	$F_{A,max}$	5900 N

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK120 1 and 2-stage																					
0.346	1.66	0.093	n_{2N}	r/min	300	300	300	300	250	250	200	150	125	125	125	100	75	75	50	30	1F.2103-2AG..-0.A0-Z
...	...	(0.112)	M_{2N}	Nm	0.7	0.99	1.3	1.71	2.25	2.5	2.35	3.45	4.4	4.6	5.2	6.8	10.2	10.5	16	28.5	■■■ + ■■■ + . . .
0.477	1.76		$M_{2.0}$	Nm	1.03	1.52	2	2.95	3.45	4.45	3.9	5.3	6.8	7.3	9.2	11.6	15	18.8	30	47.5	
			M_{2max}	Nm	4.95	6.7	8.5	12.1	13.9	17.5	15.5	20.5	26	27.5	34.5	43.5	56	70	112	152	
0.318	1.66	0.093	n_{2N}	r/min	375	300	300	300	250	250	200	150	125	125	125	100	75	75	37.5	25	1F.2103-2AH..-0..0-Z
...	...	(0.112)	M_{2N}	Nm	0.55	0.98	1.29	1.73	2.2	2.45	2.35	3.4	4.35	4.55	5.3	6.8	10.1	10.6	21	33	■■■ + ■■■ + . . .
0.449	1.76		$M_{2.0}$	Nm	0.95	1.41	1.87	2.75	3.25	4.15	3.65	5	6.4	6.8	8.6	10.9	14.1	17.7	28.5	44.5	
			M_{2max}	Nm	4.95	6.7	8.5	12.1	13.9	17.5	15.5	20.5	26	27.5	34.5	43.5	56	70	112	152	
0.955	3.73	0.139	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	100	75	60	37.5	25	1F.2103-4AG..-0.A0-Z
...	...	(0.158)	M_{2N}	Nm	2.45	2.95	4.3	6.1	6.4	8.7	7.7	10.8	13.5	13.8	18.7	18.5	27.5	35	57	87	■■■ + ■■■ + . . .
1.07	3.82		$M_{2.0}$	Nm	2.85	3.95	5	7.2	8.3	10.5	9.3	12.5	15.8	16.8	21	26.5	34	42.5	68	95	
			M_{2max}	Nm	11.1	15	18.8	26.5	30	38	33.5	45	56	60	75	94	121	151	192	152	
0.941	3.73	0.139	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	125	100	75	60	37.5	25	1F.2103-4AH..-0..0-Z
...	...	(0.158)	M_{2N}	Nm	2	2.55	3.7	5.3	5.7	7.7	6.5	8.9	11.2	11.8	12.7	16.5	24	30	49	76	■■■ + ■■■ + . . .
1.06	3.82		$M_{2.0}$	Nm	2.8	3.9	4.95	7.1	8.2	10.3	9.2	12.4	15.5	16.6	20.5	26	33.5	42	67	95	
			M_{2max}	Nm	11.1	15	18.8	26.5	30	38	33.5	45	56	60	75	94	121	151	192	152	
0.969	3.43	0.35	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2104-4AF..-0..0-Z
...	...	(0.43)	M_{2N}	Nm	2.25	3.45	4.65	6.7	7.9	10.1	8.2	11.7	14.8	15.8	20	25	32.5	41	66	95	■■■ + ■■■ + . . .
1.09	3.52		$M_{2.0}$	Nm	2.9	4	5.1	7.3	8.4	10.6	9.4	12.7	16	17.1	21	26.5	34.5	43	69	95	
			M_{2max}	Nm	10.2	13.8	17.4	24.5	28	35	31	41.5	52	55	69	87	112	139	192	152	
0.963	3.53	0.35	n_{2N}	r/min	500	500	375	300	300	250	250	200	150	150	125	100	100	75	50	30	1F.2104-4AK..-0..0-Z
...	...	(0.43)	M_{2N}	Nm	2.45	2.65	4.55	6.7	7.4	9.7	8.1	10.5	14.2	15	19.4	24.5	25	37	53	95	■■■ + ■■■ + . . .
1.08	3.62		$M_{2.0}$	Nm	2.85	3.95	5	7.2	8.3	10.6	9.4	12.6	15.9	17	21	26.5	34	43	69	95	
			M_{2max}	Nm	10.5	14.2	17.8	25	28.5	36	32	43	53	57	71	89	115	143	192	152	
2.07	7.13	0.56	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2104-5AF..-0..0-Z
...	...	(0.65)	M_{2N}	Nm	4.9	7.6	10.1	14.4	16.7	21	18.1	24.5	31	33	41.5	52	67	84	120	95	■■■ + ■■■ + . . .
2.17	7.21		$M_{2.0}$	Nm	6.2	8.4	10.6	15	17.2	21.5	19.2	25.5	32	34.5	43	54	69	86	120	95	
			M_{2max}	Nm	21	28.5	35.5	50	57	72	64	85	107	114	142	178	225	275	192	152	

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Planetary gearbox data																
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage							
1. Order code			B41						B42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																				
2.06 ... 2.15	7.23 ... 7.31	0.56 (0.65)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	100	75	60	37.5	30	1F.2104-5AK..-0..0-Z
			M_{2N}	Nm	4.8	7.5	8.3	12	15.1	19.8	17.7	24	30	30.5	40.5	40.5	59	74	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.1	8.3	10.5	14.9	17.1	21	19.1	25.5	32	34	42.5	53	68	85	120	95	
			M_{2max}	Nm	21.5	29	36	51	58	73	65	86	108	115	144	180	230	275	192	152	
2.82 ... 2.92	9.55 ... 9.67	0.76 (0.84)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2104-6AF..-0..0-Z
			M_{2N}	Nm	6.2	9.5	12.9	17.7	21.5	28.5	22	33.5	42	44.5	56	70	91	113	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.4	11.4	14.3	20	23	29	25.5	34.5	43	46	57	72	92	116	120	95	
			M_{2max}	Nm	28.5	38	48	67	77	96	86	114	143	153	191	235	305	275	192	152	
4.56 ... 4.64	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	10.5	15.8	20.5	28	33.5	43.5	34.5	50	63	66	85	106	135	171	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.6	18.3	23	32	37	46	41	55	69	73	92	115	147	172	120	95	
			M_{2max}	Nm	43.5	58	72	102	116	145	130	173	215	230	285	275	312	275	192	152	
4.59 ... 4.67	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	37.5	25	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.3	14.4	19.6	25.5	32	34	31	42.5	51	63	67	91	119	143	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.7	18.4	23	32.5	37	46.5	41.5	55	69	74	92	115	148	172	120	95	
			M_{2max}	Nm	43.5	58	72	102	116	145	130	173	215	230	285	275	312	275	192	152	
7.52 ... 7.6	23.1 ... 23.4	2.65 (3.5)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	18.8	21	28	36.5	46.5	62	43	71	89	90	121	152	190	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	37.5	53	60	76	67	90	112	120	150	172	195	172	120	–	
			M_{2max}	Nm	70	93	117	163	187	152	205	275	275	312	312	275	312	275	192	–	
7.76 ... 7.88	25 ... 25.4	4.6 (6.3)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	14.8	22	29.5	38	48.5	65	45	73	93	94	126	157	194	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39	55	62	78	70	93	116	124	155	172	195	172	120	–	
			M_{2max}	Nm	76	101	126	177	192	152	225	300	275	312	312	275	312	270	192	–	
10.1 ... 10.2	31.8 ... 32.3	6 (7.6)	n_{2N}	r/min	375	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	24.5	26	35.5	56	58	79	71	87	109	109	148	172	195	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	50	71	81	95	90	121	151	161	195	172	195	172	120	–	
			M_{2max}	Nm	96	129	161	216	192	152	251	312	275	312	312	275	312	275	192	–	
14.3 ... 14.5	43.9 ... 44.7	8.7 (10.4)	n_{2N}	r/min	375	300	300	200	200	150	150	125	100	100	75	60	50	37.5	–	–	1F.2106-6AF..-0..0-Z
			M_{2N}	Nm	32	43	45	72	73	95	89	106	134	132	181	172	195	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	43	57	72	101	116	95	128	171	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	133	178	220	216	192	152	251	312	275	312	312	275	312	275	–	–	
20.7 ... 21	84.1 ... 85.6	20.6 (24.7)	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	75	50	50	37.5	25	–	–	1FT2108-4AC..-0..0-Z
			M_{2N}	Nm	41.5	51	66	92	110	95	129	171	168	165	195	172	195	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	83	104	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	–	–	
25.4 ... 25.8	101.6 ... 103.3	24.0 (28.0)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	–	–	–	1FT2108-5AB..-0..0-Z
			M_{2N}	Nm	58	76	99	135	120	95	154	195	172	195	195	172	195	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	77	103	129	135	120	95	157	195	172	195	195	172	195	–	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	–	–	–	

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Planetary gearbox data																	
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage								
1. Order code			B41						B42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																				
25.2 ... 25.6	101.6 ... 103.3	24.0 (28.0)	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	75	50	50	37.5	–	–	–	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	46.5	57	73	101	120	95	141	187	172	175	195	172	195	–	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	76	102	127	135	120	95	157	195	172	195	195	172	195	–	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage																				
0.34 ... 0.471	1.56 ... 1.66	0.2 (0.22)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	100	75	60	37.5	25	1F.2203-2AG..-0.A0-Z
			M_{2N}	Nm	0.69	0.92	1.51	2.3	2.45	3.4	2.7	3.9	4.95	5.1	7.2	7.2	11.1	14.1	23	35.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.01	1.5	1.98	2.9	3.4	4.35	3.85	5.3	6.7	7.2	9.1	11.4	14.8	18.5	29.5	47	
			M_{2max}	Nm	4.65	6.3	8	11.4	13.1	16.5	14.6	19.7	24.5	26	33	41	53	66	106	152	
0.304 ... 0.436	1.56 ... 1.66	0.2 (0.22)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	100	75	75	50	37.5	25	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	0.54	0.98	1.22	1.89	2.5	2.8	2.9	3.85	5	5.2	5.9	8.1	8.9	13.7	18.8	29	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.91	1.36	1.8	2.7	3.1	4	3.55	4.85	6.2	6.6	8.4	10.6	13.6	17.2	27.5	43.5	
			M_{2max}	Nm	4.65	6.3	8	11.4	13.1	16.5	14.6	19.7	24.5	26	33	41	53	66	106	152	
0.963 ... 1.08	3.43 ... 3.52	0.35 (0.37)	n_{2N}	r/min	500	375	375	300	300	250	250	200	150	150	125	100	75	75	37.5	30	1F.2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.45	3.55	4.5	6.6	6.7	8.9	7.5	9.5	13.7	14.2	18.4	23	31.5	33.5	64	90	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.85	3.95	5	7.2	8.4	10.6	9.4	12.6	15.9	17	21	26.5	34	43	69	95	
			M_{2max}	Nm	10.2	13.8	17.4	24.5	28	35	31	41.5	52	55	69	87	112	139	192	152	
0.924 ... 1.04	3.43 ... 3.52	0.35 (0.37)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	100	75	60	37.5	25	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	2.35	3	4.2	6	6.4	8.5	7.3	10	12.5	13.1	17.2	17.3	26	33	53	82	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.75	3.8	4.85	7	8	10.2	9	12.2	15.3	16.3	20.5	25.5	33	41.5	66	95	
			M_{2max}	Nm	10.2	13.8	17.4	24.5	28	35	31	41.5	52	55	69	87	112	139	192	152	
2.03 ... 2.13	6.74 ... 6.82	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2204-5AF..-0..0-Z
			M_{2N}	Nm	4.65	7.3	9.9	13.7	16.3	20.5	17.1	24	30	32	40.5	51	65	82	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6	8.2	10.4	14.7	16.9	21	18.9	25	31.5	33.5	42	53	67	84	120	95	
			M_{2max}	Nm	20	27	33.5	47.5	54	68	60	81	101	107	134	168	215	265	192	152	
2.05 ... 2.14	6.74 ... 6.82	1.23 (1.31)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	100	75	60	37.5	30	1F.2204-5AK..-0..0-Z
			M_{2N}	Nm	4.8	7.5	8.1	14	14.8	19.4	17.6	24	29.5	30	40	38	57	71	116	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.1	8.3	10.4	14.8	17	21	19	25	31.5	34	42.5	53	68	85	120	95	
			M_{2max}	Nm	20	27	33.5	47.5	54	68	60	81	101	107	134	168	215	265	192	152	
2.81 ... 2.9	9.06 ... 9.18	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2204-6AF..-0..0-Z
			M_{2N}	Nm	6.5	10.1	13.7	18.8	22	28	23	33	41.5	44.5	56	70	90	112	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.4	11.3	14.3	20	23	29	25.5	34.5	43	46	57	72	92	115	120	95	
			M_{2max}	Nm	27	36.5	45.5	64	73	91	81	109	136	145	181	225	290	275	192	152	
2.98 ... 3.07	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	7.1	10.2	13	18.6	21.5	27	24	30.5	39	41	53	62	83	108	120	94	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.9	12	15.1	21	24.5	30.5	27	36	45.5	48.5	60	76	97	121	120	95	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	312	275	192	152	
3.02 ... 3.11	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	6.5	9.8	12.6	17.7	20.5	26.5	22	31	39	41	52	66	84	107	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	9	12.1	15.3	21.5	24.5	31	27.5	36.5	46	49	61	76	98	123	120	95	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	312	275	192	152	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NRK120, 1-stage						NRK120, 2-stage									
1. Order code		B41						B42									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																					
2.96 ... 3.05	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	125	100	75	60	50	37.5	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.6	8.9	12.2	16.4	16.5	22	20	28	34	34	45.5	60	77	95	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.9	15	21	24	30.5	27	36	45	48	60	75	96	120	120	95	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	312	275	192	152	
5.21 ... 5.29	17.3 ... 17.5	5.1 (6)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	12.5	14	19.1	25	31.5	43	30	49.5	62	64	86	108	135	172	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.6	20.5	26	36.5	42	52	46.5	62	78	83	104	130	167	172	120	95	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
5.34 ... 5.42	17.3 ... 17.5	7.8 (9.4)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	11.6	18.1	23.5	33	39	49	43.5	52	70	70	96	105	143	172	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16	21	26.5	37.5	43	54	48	64	80	86	107	134	172	172	120	95	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
5.38 ... 5.46	17.3 ... 17.5	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2206-2AF..-0..0-Z
			M_{2N}	Nm	11.2	16.8	22	29.5	35.5	45.5	35.5	53	66	69	89	111	141	172	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.1	21.5	27	38	43.5	54	48.5	64	80	86	107	134	172	172	120	95	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
5.22 ... 5.3	17.3 ... 17.5	7.8 (9.4)	n_{2N}	r/min	375	300	300	200	200	150	150	125	100	100	75	60	50	50	37.5	25	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	12.7	17.3	18.7	30	31	42.5	39	49.5	62	63	86	107	134	130	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.6	20.5	26	36.5	42	53	47	62	78	83	104	130	167	172	120	94	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
7.89 ... 8.01	26 ... 26.4	11.5 (13.1)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	12.5	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	21	28	36	51	57	72	57	77	107	112	142	172	195	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23.5	31.5	39.5	55	64	80	71	94	118	126	157	172	195	172	120	–	
			M_{2max}	Nm	79	105	131	184	192	152	235	312	275	312	312	275	312	275	192	–	
7.76 ... 7.88	26 ... 26.4	11.5 (13.1)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	17	23	29	39.5	40	55	51	63	79	79	109	136	169	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39	55	62	78	69	93	116	124	155	172	195	172	120	–	
			M_{2max}	Nm	79	105	131	184	192	152	235	312	275	312	312	275	312	275	192	–	
11 ... 11.1	36.6 ... 37.2	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	–	1FT2206-4AC..-0..0-Z
			M_{2N}	Nm	20.5	26	34	47.5	57	73	70	72	98	97	146	146	195	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	33	44	55	77	88	95	98	131	164	175	195	172	195	172	120	–	
			M_{2max}	Nm	111	148	186	216	192	152	251	312	275	312	312	275	312	275	192	–	
10.5 ... 10.7	34.7 ... 35.3	15.1 (16.8)	n_{2N}	r/min	375	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1F.2206-4AF..-0..0-Z
			M_{2N}	Nm	25	27	36	57	59	80	73	88	111	111	151	172	195	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	74	85	95	95	126	158	168	195	172	195	172	120	–	
			M_{2max}	Nm	105	141	176	216	192	152	251	312	275	312	312	275	310	275	192	–	
10.1 ... 10.2	34.7 ... 35.3	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	75	60	50	50	37.5	–	1FT2206-4AH..-0..0-Z
			M_{2N}	Nm	20	26.5	33.5	44.5	59	62	58	87	87	117	120	150	183	152	117	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40.5	50	71	81	95	90	121	151	161	195	172	195	172	120	–	
			M_{2max}	Nm	105	141	176	216	192	152	251	312	275	312	312	275	310	275	192	–	

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Planetary gearbox data																	
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage								
1. Order code			B41						B42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																				
10.3	36.6	24.86	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	50	37.5	25	–	1FT2208-2AF..-0..0-Z
...	...	(28.16)	M_{2N}	Nm	25.5	33	42.5	59	61	75	71	89	119	120	152	172	164	172	119	–	■■■ + ■■■ + ...
10.4	37.2		$M_{2,0}$	Nm	31	41.5	51	72	83	95	92	123	154	164	195	171	195	172	120	–	
			M_{2max}	Nm	111	148	185	216	192	152	251	312	275	312	312	275	312	275	192	–	
16.3	49.2	31.96	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	1FT2208-3AB..-0..0-Z
...	...	(34.96)	M_{2N}	Nm	34	44.5	59	87	93	95	95	127	172	184	195	172	195	172	–	–	■■■ + ■■■ + ...
16.6	50		$M_{2,0}$	Nm	49.5	66	82	115	120	95	146	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	150	199	245	216	192	152	251	312	275	312	312	275	312	275	–	–	
15.1	49.2	31.96	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	–	1F.2208-3AC..-0..0-Z
...	...	(35.36)	M_{2N}	Nm	28	44	57	79	94	95	110	115	154	153	195	172	195	172	–	–	■■■ + ■■■ + ...
15.4	50		$M_{2,0}$	Nm	45.5	61	76	107	120	95	136	181	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	150	199	245	216	192	152	251	312	275	312	312	275	312	275	–	–	
15.1	49.2	31.96	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	60	50	37.5	–	–	1FT2208-3AF..-0..0-Z
...	...	(35.36)	M_{2N}	Nm	33	42	54	75	76	92	87	108	146	144	183	159	185	172	–	–	■■■ + ■■■ + ...
15.3	50		$M_{2,0}$	Nm	45.5	61	76	107	120	95	136	181	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	150	199	245	216	192	152	251	312	275	312	312	275	312	275	–	–	
19.3	63.8	41.16	n_{2N}	r/min	250	200	150	100	100	75	75	60	50	50	37.5	30	25	20	–	–	1FT2208-4AB..-0..0-Z
...	...	(46.76)	M_{2N}	Nm	32.5	41.5	57	87	89	95	117	148	172	177	195	172	195	172	–	–	■■■ + ■■■ + ...
19.7	64.9		$M_{2,0}$	Nm	59	78	98	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	–	–	
18.8	63.8	41.16	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	75	50	50	37.5	25	–	–	1F.2208-4AC..-0..0-Z
...	...	(46.76)	M_{2N}	Nm	40.5	51	65	90	108	95	126	167	168	165	195	172	195	172	–	–	■■■ + ■■■ + ...
19.1	64.9		$M_{2,0}$	Nm	57	76	95	134	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	270	310	312	275	312	275	–	–	
18.1	63.8	41.16	n_{2N}	r/min	300	250	200	150	125	125	125	75	75	75	60	60	50	37.5	–	–	1FT2208-4AF..-0..0-Z
...	...	(46.76)	M_{2N}	Nm	41	51	65	90	108	95	102	169	168	166	195	168	192	172	–	–	■■■ + ■■■ + ...
18.4	64.9		$M_{2,0}$	Nm	55	73	92	128	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	270	312	312	275	312	275	–	–	
22.8	77.3	50.46	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	1FT2208-5AB..-0..0-Z
...	...	(55.96)	M_{2N}	Nm	52	67	89	131	120	95	139	183	172	195	195	172	195	172	–	–	■■■ + ■■■ + ...
23.2	78.7		$M_{2,0}$	Nm	69	92	115	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	–	–	
22.5	77.3	50.46	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	75	50	50	37.5	25	–	–	1F.2208-5AC..-0..0-Z
...	...	(55.96)	M_{2N}	Nm	45	55	71	98	118	95	138	183	170	170	195	172	195	172	–	–	■■■ + ■■■ + ...
22.9	78.7		$M_{2,0}$	Nm	68	91	114	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	310	275	312	312	275	312	275	–	–	

Planetary gearbox data																	
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage								
1. Order code			B41						B42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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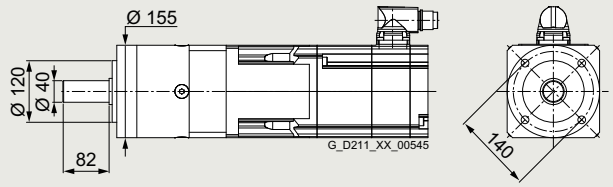
Gearbox type NRK155

Selection and ordering data

NRK155



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5200 N
Average axial force for 20000 h	$F_{A,eq}$	7000 N
Average radial force for 30000 h	$F_{R,eq}$	4600 N
Average axial force for 30000 h	$F_{A,eq}$	6000 N
Maximum radial force	$F_{R,max}$	8400 N
Maximum axial force	$F_{A,max}$	11000 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK155 1 and 2-stage													
4.5 ... 4.58	14.3 ... 14.5	1.71 (2.55)	n_{2N}	r/min	375	300	150	100	75	60	37.5	30	15	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	15.1	20.5	44	65	84	106	174	215	210	■■■ + ■■■ + . . .
			M_{2_0}	Nm	18	22.5	45.5	72	91	113	182	225	210	
			M_{2max}	Nm	57	72	145	225	285	355	570	712	336	
4.53 ... 4.62	14.3 ... 14.5	1.71 (2.55)	n_{2N}	r/min	375	300	200	100	100	75	50	37.5	25	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	13.6	19.6	35	61	63	90	150	195	210	■■■ + ■■■ + . . .
			M_{2_0}	Nm	18.1	22.5	46	73	91	114	183	225	210	
			M_{2max}	Nm	57	72	145	225	285	355	570	712	336	
7.47 ... 7.54	23 ... 23.4	2.65 (3.5)	n_{2N}	r/min	300	300	150	100	75	60	37.5	30	15	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	25.5	28.5	66	87	124	156	260	325	210	■■■ + ■■■ + . . .
			M_{2_0}	Nm	29.5	37	75	119	149	187	295	370	210	
			M_{2max}	Nm	93	116	230	365	460	570	736	712	336	
7.89 ... 8.04	25 ... 25.3	4.6 (6.3)	n_{2N}	r/min	375	300	150	100	75	60	37.5	30	15	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	21	29.5	67	91	128	161	260	325	210	■■■ + ■■■ + . . .
			M_{2_0}	Nm	31.5	39.5	80	126	158	197	315	395	210	
			M_{2max}	Nm	101	126	250	400	500	620	736	712	336	
10.3 ... 10.5	31.7 ... 32.2	6 (7.6)	n_{2N}	r/min	300	300	150	100	75	60	37.5	30	15	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	33	36	82	106	153	192	320	400	210	■■■ + ■■■ + . . .
			M_{2_0}	Nm	41.5	52	104	164	205	255	410	445	210	
			M_{2max}	Nm	128	161	320	500	630	712	736	712	336	
14.5 ... 14.8	43.9 ... 44.5	8.7 (10.4)	n_{2N}	r/min	300	250	150	75	75	60	37.5	30	–	**1F.2106-6AF..-0..0-Z**
			M_{2N}	Nm	43.5	56	107	179	189	235	400	445	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	59	73	148	230	290	360	460	445	–	
			M_{2max}	Nm	178	220	336	700	736	712	736	712	–	
21.2 ... 21.6	84.1 ... 85.4	18.2 (22.3)	n_{2N}	r/min	250	200	100	60	50	50	25	20	–	**1FT2108-4AC..-0..0-Z**
			M_{2N}	Nm	56	74	157	235	290	285	460	445	–	■■■ + ■■■ + . . .
			M_{2_0}	Nm	86	107	210	335	420	445	460	445	–	
			M_{2max}	Nm	340	425	336	736	736	712	736	712	–	

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Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage				
1. Order code			B51			B52				
i			4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
$M_{2N,G}$	Nm		460	445	210	460	460	445	460	445	210
$M_{2max,G}$	Nm		736	712	336	736	736	712	736	712	336
$M_{2Em.Off}$	Nm		920	890	420	920	920	890	920	890	420
$J_{1,G}$	kg cm²		7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
$\varphi_{2,G}$	'		6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK155 1 and 2-stage (continued)														
26 ... 26.5	102 ... 103	21.6 (25.6)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	1FT2108-5AB..-0..0-Z
			M_{2N}	Nm	81	107	210	315	410	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	105	132	210	415	460	445	460	445	–	
			M_{2max}	Nm	410	510	336	736	736	712	736	712	–	
25.8 ... 26.3	102 ... 103	21.6 (25.6)	n_{2N}	r/min	250	200	100	60	50	37.5	25	20	–	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	63	82	175	255	315	415	460	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	104	131	210	410	460	445	460	445	–	
			M_{2max}	Nm	410	510	336	736	736	712	736	712	–	
32.8 ... 33.4	135 ... 138	28.2 (32.2)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	1FT2108-7AB..-0..0-Z
			M_{2N}	Nm	95	126	210	360	460	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	133	167	210	460	460	445	460	445	–	
			M_{2max}	Nm	550	680	336	736	736	712	736	712	–	
32.2 ... 32.8	135 ... 138	28.2 (32.2)	n_{2N}	r/min	250	200	100	60	50	50	25	20	–	1FT2108-7AC..-0.B0-Z
			M_{2N}	Nm	77	100	205	300	365	340	460	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	131	164	210	460	460	445	460	445	–	
			M_{2max}	Nm	550	680	336	736	736	712	736	712	–	
32 ... 32.6	135 ... 138	28.2 (32.2)	n_{2N}	r/min	200	200	100	60	50	37.5	30	25	–	1FT2108-7AE..-0.B0-Z
			M_{2N}	Nm	87	91	193	275	340	440	460	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	130	162	210	460	460	445	460	445	–	
			M_{2max}	Nm	550	680	336	736	736	712	736	712	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage														
3.04 ... 3.12	10.3 ... 10.4	3.15 (4.05)	n_{2N}	r/min	250	200	100	75	50	50	25	20	10	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	9.9	12.9	27	40	53	61	109	137	205	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	12.1	15.3	31	49	61	77	123	154	210	
			M_{2max}	Nm	41	51	103	164	205	255	410	510	336	
3.07 ... 3.15	10.3 ... 10.4	3.15 (4.05)	n_{2N}	r/min	375	300	150	100	75	60	37.5	30	15	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	9.2	12.3	26.5	39	51	65	107	135	210	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	12.2	15.4	31.5	49.5	62	77	124	156	210	
			M_{2max}	Nm	41	51	103	164	205	255	410	510	336	
3 ... 3.08	10.3 ... 10.4	3.15 (4.05)	n_{2N}	r/min	375	300	200	100	100	75	50	37.5	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	8.2	11.8	22.5	37.5	42	58	96	122	183	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	11.9	15.1	30.5	48.5	60	76	122	152	205	
			M_{2max}	Nm	41	51	103	164	205	255	410	510	336	
5.3 ... 5.39	17.2 ... 17.5	5.1 (6)	n_{2N}	r/min	300	300	150	100	75	60	37.5	30	15	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	17.1	19.2	45	61	87	109	179	220	210	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	21	26.5	53	84	106	132	210	265	210	
			M_{2max}	Nm	69	87	174	275	345	430	690	712	336	
5.29 ... 5.37	17.2 ... 17.5	7.8 (9.4)	n_{2N}	r/min	250	200	100	75	50	50	25	20	10	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	18.5	24	50	70	97	106	198	245	210	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	21	26.5	53	85	106	133	210	265	210	
			M_{2max}	Nm	69	87	174	275	345	430	690	712	336	

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Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage				
1. Order code			B51			B52				
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK155

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage (continued)														
5.46 ... 5.54	17.2 ... 17.5	7.8 (9.4)	n_{2N} r/min	375	300	150	100	75	60	37.5	30	15		**1F.2206-2AF..-0..0-Z**
			M_{2N} Nm	16	21.5	45.5	68	88	111	182	225	205		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	21.5	27	55	87	109	136	215	270	205		
			M_{2max} Nm	69	87	174	275	345	430	690	712	336		
5.29 ... 5.37	17.2 ... 17.5	7.8 (9.4)	n_{2N} r/min	300	300	150	100	75	60	50	37.5	25		**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	17.2	18.8	44.5	60	86	108	138	189	200		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	21	26.5	53	84	105	132	210	265	210		
			M_{2max} Nm	69	87	174	275	345	430	690	712	336		
8.04 ... 8.19	25.9 ... 26.3	11.5 (13.1)	n_{2N} r/min	200	150	75	50	37.5	30	20	15	7.5		**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	28	36.5	74	113	145	181	285	365	210		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	32	40.5	81	128	161	200	320	400	210		
			M_{2max} Nm	105	131	260	415	520	650	736	712	336		
7.91 ... 8.06	25.9 ... 26.3	11.5 (13.1)	n_{2N} r/min	300	250	150	75	75	60	37.5	30	15		**1FT2206-3AF..-0..0-Z**
			M_{2N} Nm	23	30	59	103	111	140	235	295	210		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	31.5	40	80	126	158	198	315	395	210		
			M_{2max} Nm	105	131	260	415	520	650	736	712	336		
10.9 ... 11	36.6 ... 37.1	15.1 (16.8)	n_{2N} r/min	250	200	100	60	50	50	25	20	10		**1FT2206-4AC..-0..0-Z**
			M_{2N} Nm	27.5	36.5	79	125	156	157	320	400	210		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	43.5o	54	110	174	215	270	435	445	210		
			M_{2max} Nm	148	185	336	580	730	712	736	712	336		
10.7 ... 10.9	34.6 ... 35.2	15.1 (16.8)	n_{2N} r/min	300	300	150	100	75	60	37.5	30	15		**1F.2206-4AF..-0..0-Z**
			M_{2N} Nm	34	37	84	108	155	195	325	405	210		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	43	54	109	171	210	265	425	445	210		
			M_{2max} Nm	140	175	336	550	690	712	736	712	336		
10.2 ... 10.4	34.6 ... 35.2	15.1 (16.8)	n_{2N} r/min	300	250	150	75	75	50	37.5	30	20		**1FT2206-4AH..-0..0-Z**
			M_{2N} Nm	27	35	67	119	124	188	265	330	210		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	41	51	104	164	205	255	410	445	210		
			M_{2max} Nm	140	175	336	550	690	712	736	712	336		
10.5 ... 10.7	36.6 ... 37.1	22.5 (25.8)	n_{2N} r/min	300	250	125	75	60	50	37.5	30	15		**1FT2208-2AF..-0..0-Z**
			M_{2N} Nm	29.5	38	85	129	166	200	280	350	210		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	42	53	106	167	205	260	415	445	210		
			M_{2max} Nm	148	185	336	580	730	712	736	712	336		
16.4 ... 16.6	49.2 ... 49.9	29.6 (32.6)	n_{2N} r/min	200	150	75	50	37.5	30	20	15	–		**1FT2208-3AB..-0..0-Z**
			M_{2N} Nm	48	64	134	199	260	325	460	445	–		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	66	82	165	260	325	405	460	445	–		
			M_{2max} Nm	199	245	336	736	736	712	736	712	–		
15.5 ... 15.8	49.2 ... 49.9	29.6 (33)	n_{2N} r/min	250	200	100	75	50	50	25	20	–		**1F.2208-3AC..-0..0-Z**
			M_{2N} Nm	48	63	132	169	250	260	460	445	–		■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	63	78	158	245	310	385	460	445	–		
			M_{2max} Nm	199	245	336	736	736	712	736	712	–		

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Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage				
1. Order code			B51			B52				
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage (continued)													
15.4 ... 15.7	49.2 ... 49.9	29.6 (33)	n_{2N}	r/min	250	250	125	75	60	50	30	30	–	1FT2208-3AF..-0..0-Z
			M_{2N}	Nm	45.5	48	108	160	205	245	425	410	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	78	156	245	305	385	460	445	–	
			M_{2max}	Nm	199	245	336	736	736	712	736	712	–	
19.9 ... 20.1	63.8 ... 64.7	38.8 (44.4)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	1FT2208-4AB..-0..0-Z
			M_{2N}	Nm	46.5	64	136	197	260	325	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	80	100	200	315	395	445	460	445	–	
			M_{2max}	Nm	255	320	336	736	736	712	736	712	–	
19.2 ... 19.6	63.8 ... 64.7	38.8 (44.4)	n_{2N}	r/min	250	200	100	75	50	50	25	20	–	1F.2208-4AC..-0..0-Z
			M_{2N}	Nm	56	73	154	186	285	285	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	78	98	196	305	385	445	460	445	–	
			M_{2max}	Nm	255	320	336	736	736	712	730	712	–	
18.4 ... 18.8	63.8 ... 64.7	38.8 (44.4)	n_{2N}	r/min	250	200	125	75	60	50	37.5	30	–	1FT2208-4AF..-0..0-Z
			M_{2N}	Nm	56	73	128	186	240	285	370	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	74	93	187	295	365	445	460	445	–	
			M_{2max}	Nm	255	320	336	736	736	712	730	712	–	
23.3 ... 23.8	77.3 ... 78.5	48.1 (53.6)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	1FT2208-5AB..-0..0-Z
			M_{2N}	Nm	73	96	198	285	370	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	95	118	210	370	460	445	460	445	–	
			M_{2max}	Nm	310	390	336	736	736	712	736	712	–	
23.1 ... 23.5	77.3 ... 78.5	48.1 (53.6)	n_{2N}	r/min	250	200	100	60	50	37.5	25	20	–	1F.2208-5AC..-0..0-Z
			M_{2N}	Nm	61	80	170	250	310	405	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	94	117	210	365	455	445	460	445	–	
			M_{2max}	Nm	310	390	336	736	736	712	736	712	–	
18.2 ... 18.6	57.9 ... 58.7	66.7 (72.7)	n_{2N}	r/min	250	200	100	60	50	37.5	25	20	–	1FT2210-2AC..-0..0-Z
			M_{2N}	Nm	57	75	153	235	290	370	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	74	92	185	290	365	445	460	445	–	
			M_{2max}	Nm	230	290	336	736	736	712	736	712	–	
18 ... 18.3	57.9 ... 58.7	66.7 (72.7)	n_{2N}	r/min	250	200	100	60	50	37.5	30	25	–	1FT2210-2AF..-0..0-Z
			M_{2N}	Nm	53	69	148	220	270	360	445	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	73	91	183	285	360	445	460	445	–	
			M_{2max}	Nm	230	290	336	736	736	712	736	712	–	
28.3 ... 28.7	86.9 ... 88.3	93.8 (99.8)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	1F.2210-3AB..-0..0-Z
			M_{2N}	Nm	90	119	210	340	450	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	114	143	210	450	460	445	460	445	–	
			M_{2max}	Nm	350	440	336	736	736	712	736	712	–	
28.3 ... 28.7	86.9 ... 88.3	93.8 (99.8)	n_{2N}	r/min	250	200	100	60	50	37.5	25	20	–	1F.2210-3AC..-0..0-Z
			M_{2N}	Nm	73	95	200	285	350	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	114	143	210	450	460	445	460	445	–	
			M_{2max}	Nm	350	440	336	736	736	710	736	712	–	

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Planetary gearbox data											
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage					
1. Order code			B51			B52					
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRK155

Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage (continued)													
27.8 ... 28.2	86.9 ... 88.3	93.8 (99.8)	n_{2N}	r/min	200	200	100	50	37.5	37.5	30	25	–	**1FT2210-3AF..-0..0-Z**
			M_{2N}	Nm	85	86	184	325	435	435	455	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	112	140	210	445	460	445	455	440	–	
			M_{2max}	Nm	350	440	336	736	736	712	736	712	–	
37.6 ... 38.5	116 ... 118	122 (138)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	**1F.2210-4AB..-0..0-Z**
			M_{2N}	Nm	105	140	210	385	460	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	153	192	210	460	460	445	460	445	–	
			M_{2max}	Nm	470	580	335	736	736	712	736	712	–	
37 ... 37.8	116 ... 118	122 (138)	n_{2N}	r/min	200	200	100	50	50	37.5	25	20	–	**1F.2210-4AC..-0..0-Z**
			M_{2N}	Nm	104	106	210	380	375	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	151	188	210	460	460	445	460	445	–	
			M_{2max}	Nm	470	580	335	736	736	712	736	712	–	
35.5 ... 36.2	116 ... 118	122 (138)	n_{2N}	r/min	200	150	100	50	50	37.5	30	25	–	**1FT2210-4AF..-0.B0-Z**
			M_{2N}	Nm	102	138	205	375	360	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	144	180	210	460	460	445	460	440	–	
			M_{2max}	Nm	470	580	335	736	736	712	736	712	–	
42.9 ... 43.7	145 ... 147	19.5 (21.1)	n_{2N}	r/min	200	150	75	50	37.5	30	20	15	–	**1FT2210-5AB..-0..0-Z**
			M_{2N}	Nm	125	168	210	440	460	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	174	215	210	460	460	445	460	445	–	
			M_{2max}	Nm	580	712	336	736	736	712	736	712	–	
43.9 ... 44.9	145 ... 147	150 (166)	n_{2N}	r/min	200	150	100	50	50	37.5	25	20	–	**1F.2210-5AC..-0.B0-Z**
			M_{2N}	Nm	114	154	210	410	390	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	179	220	210	460	460	445	460	445	–	
			M_{2max}	Nm	580	712	336	736	736	712	736	712	–	

Planetary gearbox data										
Gearbox type:			**NRK155, 1-stage**			**NRK155, 2-stage**				
1. Order code			**B51**			**B52**				
	i		**4**	**5**	**10**	**16**	**20**	**25**	**40**	**50**	**100**
2. Order code			**R04**	**R05**	**R10**	**R16**	**R20**	**R25**	**R40**	**R50**	**R00**
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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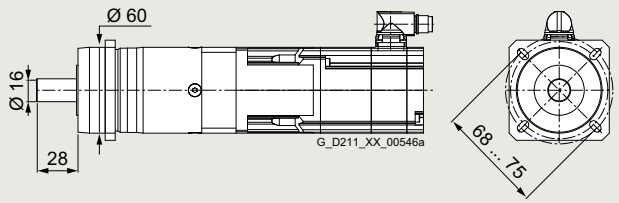
Selection and ordering data

NLC060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	3200 N
Average axial force for 20000 h	$F_{A,eq}$	4400 N
Average radial force for 30000 h	$F_{R,eq}$	3200 N
Average axial force for 30000 h	$F_{A,eq}$	3900 N
Maximum radial force	$F_{R,max}$	3200 N
Maximum axial force	$F_{A,max}$	4400 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC060 1 and 2-stage																					
0.038	0.439	0.0245	n_{2N}	r/min	–	–	–	100	150	150	125	150	150	150	150	125	100	75	50	30	**1F.2102-0AG..-0.A0-Z**
...	...	(0.0285)	M_{2N}	Nm	–	–	–	0.143	0.175	0.34	0.25	0.4	0.65	0.68	0.89	1.29	1.96	2.75	4.75	8.1	■■■ + ■■■ + . . .
0.112	0.508		$M_{2.0}$	Nm	–	–	–	0.265	0.385	0.63	0.485	0.84	1.19	1.31	1.79	2.35	3.2	4.15	6.9	11.2	
			M_{2max}	Nm	–	–	–	3.05	3.55	4.6	4.05	5.6	7.1	7.6	9.7	12.3	15.9	20	29	24	
0.128	0.918	0.036	n_{2N}	r/min	–	300	375	375	300	300	300	250	200	200	150	125	100	75	50	30	**1F.2102-1AG..-0.A0-Z**
...	...	(0.04)	M_{2N}	Nm	–	0.265	0.38	0.7	1.01	1.31	1.03	1.56	2.35	2.4	3.45	4.45	6	7.9	12.9	15	■■■ + ■■■ + . . .
0.26	1.04		$M_{2.0}$	Nm	–	0.51	0.78	1.33	1.61	2.15	1.82	2.6	3.4	3.65	4.75	6.1	7.9	10	16.4	15	
			M_{2max}	Nm	–	3.65	4.7	6.8	7.9	10	8.9	12	15.1	16.2	20	25.5	32.5	41	29	24	
0.341	1.7	0.093	n_{2N}	r/min	375	375	375	375	375	300	300	250	200	200	150	125	100	75	50	30	**1F.2103-2AG..-2.A0-Z**
...	...	(0.112)	M_{2N}	Nm	0.63	1.01	1.35	1.93	2.15	3	2.6	3.6	5	5.1	7.1	9	11.8	15.5	18	15	■■■ + ■■■ + . . .
0.515	1.85		$M_{2.0}$	Nm	1.02	1.55	2.05	3.15	3.7	4.75	4.1	5.7	7.2	7.7	9.8	12.4	16.1	20	18	15	
			M_{2max}	Nm	5	6.9	8.8	12.6	14.5	18.3	16.2	21.5	27	29	36.5	46	59	64	29	24	
0.326	1.7	0.093	n_{2N}	r/min	375	375	375	300	300	250	300	250	200	200	125	100	100	75	50	25	**1F.2103-2AH..-2..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.6	0.96	1.28	2.1	2.35	3.15	2.4	3.35	4.65	4.8	7.1	9.2	11	14.4	18	15	■■■ + ■■■ + . . .
0.5	1.85		$M_{2.0}$	Nm	0.97	1.49	2	3.05	3.55	4.6	4	5.5	7	7.5	9.5	12.1	15.6	19.6	18	15	
			M_{2max}	Nm	5	6.9	8.8	12.6	14.5	18.3	16.2	21.5	27	29	36.5	46	59	64	28.5	24	
0.922	3.77	0.139	n_{2N}	r/min	375	375	375	300	300	250	250	200	200	200	150	125	100	75	50	–	**1F.2103-4AG..-2.A0-Z**
...	...	(0.158)	M_{2N}	Nm	2.05	2.7	3.25	5.2	5.6	7.6	7	9.6	11.3	11.1	15.6	19.5	25	32.5	18	–	■■■ + ■■■ + . . .
1.07	3.9		$M_{2.0}$	Nm	2.75	3.85	4.95	7.2	8.3	10.5	9.2	12.4	15.7	16.8	21	26.5	34	40	18	–	
			M_{2max}	Nm	11.3	15.2	19.2	27	29	24	34.5	46	58	61	70	64	70	64	29	–	
0.801	3.77	0.139	n_{2N}	r/min	375	375	375	300	300	250	250	250	200	200	125	100	100	75	50	–	**1F.2103-4AH..-2..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.79	2.35	2.8	4.65	5	6.8	6.1	6.8	9.9	10.1	14.6	18.6	22	28.5	18	–	■■■ + ■■■ + . . .
0.958	3.9		$M_{2.0}$	Nm	2.4	3.35	4.35	6.3	7.3	9.3	8.1	11	13.9	14.9	18.8	23.5	30	38	18	–	
			M_{2max}	Nm	11.3	15.2	19.2	27	29	24	34.5	46	58	61	70	64	70	64	29	–	
1.01	3.48	0.371	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	**1F.2104-4AF..-2..0-Z**
...	...	(0.451)	M_{2N}	Nm	2	3.45	4.6	6.7	7.9	10.3	8.6	12.2	15.5	16.5	21	26.5	34	40	18	–	■■■ + ■■■ + . . .
1.18	3.6		$M_{2.0}$	Nm	3	4.2	5.4	7.8	9	11.4	10.1	13.7	17.3	18.4	23	29	37	40	18	–	
			M_{2max}	Nm	10.4	14	17.7	25	28.5	24	32	42.5	53	57	70	64	70	64	29	–	

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Planetary gearbox data																	
Gearbox type:		NLC060, 1-stage						NLC060, 2-stage									
1. Order code		C21						C22									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18	15
	$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29	24
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.178	0.12	0.097	0.078	0.074	0.069	0.135	0.129	0.081	0.091	0.079	0.078	0.068	0.067	0.067	0.064
	$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLC060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC060 1 and 2-stage (continued)																						
1.01 ... 1.17	3.58 ... 3.7	0.371 (0.451)	n_{2N}	r/min	500	375	375	375	300	300	300	250	200	200	150	125	100	75	50	–	1F.2104-4AK..-2..0-Z
			M_{2N}	Nm	2.15	3.75	4.75	5.8	7.8	9.1	8.2	11	14.4	15	19.7	24.5	31.5	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3	4.2	5.4	7.8	9	11.3	10.1	13.6	17.1	18.3	23	28.5	37	40	18	–	
			M_{2max}	Nm	10.7	14.4	18.2	25.5	29	24	32.5	44	55	58	70	64	70	64	29	–	
2.12 ... 2.26	7.18 ... 7.29	0.581 (0.671)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2104-5AF..-2..0-Z
			M_{2N}	Nm	5.4	6.8	9.6	13.6	16	15	17.3	24	30.5	32	41	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.6	10.9	15.5	17.8	15	19.9	26.5	33.5	35.5	44	40	44	40	–	–	
			M_{2max}	Nm	21.5	28.5	36	40	29	24	64	70	70	70	70	64	70	64	–	–	
2.1 ... 2.24	7.28 ... 7.39	0.581 (0.671)	n_{2N}	r/min	375	375	375	300	300	300	250	200	200	150	150	125	100	75	–	–	1F.2104-5AK..-2..0-Z
			M_{2N}	Nm	5.3	6.7	7.8	11.8	12.6	12.9	15.2	20.5	22.5	30	32	39.5	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.5	10.8	15.4	17.7	15	19.8	26.5	33	35.5	44	40	44	40	–	–	
			M_{2max}	Nm	21.5	29	36.5	40	29	24	65	70	70	70	70	64	70	64	–	–	
2.87 ... 3	9.65 ... 9.75	0.781 (0.861)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2104-6AF..-2..0-Z
			M_{2N}	Nm	6.7	8.4	11.8	16.8	18	15	22	33	41.5	44	44	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.7	20.5	18	15	26.5	35.5	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	28.5	38.5	48.5	40	29	24	70	70	70	70	70	64	70	64	–	–	
4.51 ... 4.63	14.5 ... 14.6	1.98 (2.82)	n_{2N}	r/min	375	300	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	10.6	15.4	17.1	22.5	18	15	28.5	44	44	44	44	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.5	18.2	22.5	25	18	15	41	44	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	43.5	58	64	40	29	24	70	70	70	70	70	64	70	64	–	–	
4.49 ... 4.61	14.5 ... 14.6	1.98 (2.82)	n_{2N}	r/min	375	300	250	200	250	200	200	150	125	125	125	100	75	75	–	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	14.3	18.7	25	17.7	15	25	36.5	44	43.5	36.5	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	18.1	22.5	25	18	15	40.5	44	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	43.5	58	64	40	29	24	70	70	70	70	70	64	70	64	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC060 1 and 2-stage																						
0.383 ... 0.563	1.6 ... 1.76	0.2 (0.22)	n_{2N}	r/min	375	375	375	375	300	300	300	250	200	200	150	125	100	75	50	30	1F.2203-2AG..-2.A0-Z
			M_{2N}	Nm	0.73	1.11	1.43	1.87	2.55	2.9	2.55	3.45	4.95	4.95	7	8.9	11.7	15.7	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.14	1.72	2.3	3.45	4	5.1	4.55	6.2	7.9	8.5	10.8	13.6	17.6	22	18	15	
			M_{2max}	Nm	4.8	6.5	8.3	11.9	13.7	17.3	15.3	20.5	25.5	27.5	34.5	43.5	55	64	29	24	
0.348 ... 0.529	1.6 ... 1.76	0.2 (0.22)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	125	100	100	75	50	30	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	0.55	0.83	1.32	1.74	2.25	2.55	2.25	3.2	4.75	4.8	6.2	8	8.3	11.7	17.9	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.04	1.58	2.1	3.2	3.75	4.8	4.25	5.8	7.4	8	10.1	12.8	16.5	20.5	18	15	
			M_{2max}	Nm	4.8	6.5	8.3	11.9	13.7	17.3	15.3	20.5	25.5	27.5	34.5	43.5	55	64	29	24	
1.01 ... 1.17	3.48 ... 3.6	0.35 (0.37)	n_{2N}	r/min	375	375	375	300	300	300	300	250	200	200	150	125	100	75	50	–	1F.2203-4AG..-2.A0-Z
			M_{2N}	Nm	2.55	3.5	4.3	6.4	7.1	7.9	7.3	9.7	13	13.3	17.8	22	28.5	37	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3	4.2	5.4	7.8	9	11.4	10.1	13.6	17.2	18.3	23	29	37	40	18	–	
			M_{2max}	Nm	10.4	14	17.7	25	28.5	24	32	42.5	53	57	70	64	70	64	29	–	
0.942 ... 1.09	3.48 ... 3.6	0.35 (0.37)	n_{2N}	r/min	375	375	300	300	250	250	250	200	200	200	150	125	100	75	50	–	1F.2203-4AK..-2..0-Z
			M_{2N}	Nm	2.05	2.6	3.8	4.85	6.1	6.9	6.3	8.5	9.2	9	12.7	15.6	20	27	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.8	3.95	5	7.3	8.4	10.7	9.4	12.7	16	17.1	21.5	27	34.5	40	18	–	
			M_{2max}	Nm	10.4	14	17.7	25	28.5	24	32	42.5	53	57	70	64	70	64	29	–	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NLC060, 1-stage						NLC060, 2-stage									
1. Order code		C21						C22									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.178	0.12	0.097	0.078	0.074	0.069	0.135	0.129	0.081	0.091	0.079	0.078	0.068	0.067	0.067	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC060 1 and 2-stage (continued)																					
2.08	6.78	1.251	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2204-5AF..-2..0-Z**
...	...	(1.331)	M_{2N}	Nm	5.2	6.5	9.1	12.9	15.2	15	16.4	23	29	30.5	39	40	44	40	–	–	■■■ + ■■■ + . . .
2.22	6.89		$M_{2,0}$	Nm	6.2	8.4	10.7	15.2	17.5	15	19.6	26	33	35	44	40	44	40	–	–	
			M_{2max}	Nm	20	27	34	40	29	24	61	70	70	70	70	64	70	64	–	–	
2.09	6.78	1.251	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	125	125	100	75	–	–	**1F.2204-5AK..-2..0-Z**
...	...	(1.331)	M_{2N}	Nm	5.3	6.6	9.4	11.4	14.5	15	14.6	19.9	27.5	28.5	35.5	36	44	40	–	–	■■■ + ■■■ + . . .
2.23	6.89		$M_{2,0}$	Nm	6.2	8.5	10.8	15.3	17.6	15	19.7	26	33	35	44	40	44	40	–	–	
			M_{2max}	Nm	20	27	34	40	29	24	61	70	70	70	70	64	70	64	–	–	
2.85	9.15	1.631	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2204-6AF..-2..0-Z**
...	...	(1.711)	M_{2N}	Nm	7.1	8.7	12.4	17.5	18	15	22.5	33	41.5	43.5	44	40	44	40	–	–	■■■ + ■■■ + . . .
2.98	9.26		$M_{2,0}$	Nm	8.5	11.5	14.6	20.5	18	15	26.5	35.5	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	27	36.5	46	40	29	24	70	70	70	70	70	64	70	64	–	–	
2.6	10.4	3.42	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	–	**1FT2205-2AC..-0..0-Z**
...	...	(4.32)	M_{2N}	Nm	5.4	8.9	11.4	16.3	18	15	21	27	34.5	36.5	44	40	44	40	–	–	■■■ + ■■■ + . . .
2.73	10.5		$M_{2,0}$	Nm	7.7	10.5	13.3	18.9	18	15	24	32	40	43	44	40	44	40	–	–	
			M_{2max}	Nm	31	41.5	52	40	29	24	70	70	70	70	70	64	70	64	–	–	
2.66	10.4	3.42	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2205-2AF..-0..0-Z**
...	...	(4.32)	M_{2N}	Nm	6.7	7.6	11.3	15.5	18	15	20.5	28.5	36	38	44	40	44	40	–	–	■■■ + ■■■ + . . .
2.79	10.5		$M_{2,0}$	Nm	7.9	10.8	13.6	19.3	18	15	24.5	33	41.5	43.5	44	40	44	40	–	–	
			M_{2max}	Nm	31	41.5	52	40	29	24	70	70	70	70	70	64	70	64	–	–	
2.65	10.4	3.42	n_{2N}	r/min	375	300	300	250	200	200	200	150	125	125	100	100	75	75	–	–	**1FT2205-2AH..-0..0-Z**
...	...	(4.32)	M_{2N}	Nm	6	9	9.9	13.4	17.9	15	18.2	26	33	32.5	42.5	37.5	44	35	–	–	■■■ + ■■■ + . . .
2.77	10.5		$M_{2,0}$	Nm	7.9	10.7	13.6	19.2	18	15	24.5	32.5	41	43.5	44	40	44	40	–	–	
			M_{2max}	Nm	31	41.5	52	40	29	24	70	70	70	70	70	64	70	64	–	–	
4.69	17.4	5.37	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	–	–	**1F.2205-4AF..-0..0-Z**
...	...	(6.27)	M_{2N}	Nm	11.9	13.9	18.4	24.5	18	15	35	43.5	44	44	44	40	44	40	–	–	■■■ + ■■■ + . . .
4.81	17.6		$M_{2,0}$	Nm	14	18.9	23.5	25	18	15	42.5	44	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	–	–	

Planetary gearbox data																	
Gearbox type:			NLC060, 1-stage						NLC060, 2-stage								
1. Order code			C21						C22								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18	15
	$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29	24
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.178	0.12	0.097	0.078	0.074	0.069	0.135	0.129	0.081	0.091	0.079	0.078	0.068	0.067	0.067	0.064
	$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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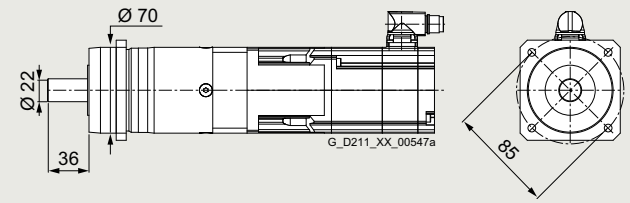
Gearbox type NLC080

Selection and ordering data

NLC080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5500 N
Average axial force for 20000 h	$F_{A,eq}$	6400 N
Average radial force for 30000 h	$F_{R,eq}$	4800 N
Average axial force for 30000 h	$F_{A,eq}$	5700 N
Maximum radial force	$F_{R,max}$	5500 N
Maximum axial force	$F_{A,max}$	6400 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC080 1 and 2-stage																				
0.243 ... 0.517	1.56 ... 1.82	0.093 (0.112)	n_{2N}	r/min	250	300	300	300	300	300	250	250	200	200	150	125	100	75	50	30	**1F.2103-2AG..-0.A0-Z**
			M_{2N}	Nm	0.375	0.66	1.02	1.65	1.91	2.3	2.25	2.65	3.8	3.85	5.9	7.6	10.6	14.1	22.5	37.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.72	1.27	1.81	2.9	3.45	4.5	3.85	5.4	7	7.5	9.6	12.2	15.9	20	32.5	38	
			M_{2max}	Nm	4.65	6.5	8.3	12.1	13.9	17.6	15.6	21	26.5	28	35.5	44.5	57	72	80	61	
0.224 ... 0.501	1.56 ... 1.82	0.093 (0.112)	n_{2N}	r/min	250	300	300	300	300	250	250	250	200	200	125	100	100	75	50	25	**1F.2103-2AH..-0..0-Z**
			M_{2N}	Nm	0.35	0.63	0.98	1.59	1.83	2.6	2.1	2.5	3.6	3.65	6.3	8.2	10	13.3	21.5	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.67	1.19	1.72	2.75	3.3	4.35	3.7	5.2	6.7	7.3	9.3	11.8	15.4	19.5	31.5	38	
			M_{2max}	Nm	4.65	6.5	8.3	12.1	13.9	17.6	15.6	21	26.5	28	35.5	44.5	57	72	80	61	
0.862 ... 1.12	3.64 ... 3.85	0.139 (0.158)	n_{2N}	r/min	375	375	300	300	250	250	250	200	200	150	150	125	100	75	50	30	**1F.2103-4AG..-0.A0-Z**
			M_{2N}	Nm	1.82	2.35	3.7	5	6.4	7.5	6.7	9.2	10	12.8	15.1	18.9	25	32.5	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.55	3.7	4.9	7.2	8.3	10.7	9.3	12.6	16	17.1	21.5	27	35	44	50	38	
			M_{2max}	Nm	10.9	14.8	18.7	26.5	30	38	34	45.5	57	61	76	95	122	153	80	61	
0.727 ... 0.984	3.64 ... 3.85	0.139 (0.158)	n_{2N}	r/min	375	375	300	300	300	250	250	200	200	200	125	100	100	75	50	25	**1F.2103-4AH..-0..0-Z**
			M_{2N}	Nm	1.5	2	3.1	4.35	4.65	6.6	5.7	7.8	8.9	8.5	14.1	18	21.5	28	44.5	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.15	3.2	4.2	6.2	7.3	9.3	8.1	11	14	15	19	23.5	30.5	38.5	50	38	
			M_{2max}	Nm	10.9	14.8	18.7	26.5	30	38	34	45.5	57	61	76	95	122	153	80	61	
0.875 ... 1.15	3.34 ... 3.56	0.35 (0.43)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.1	3	4.15	6.2	7.5	10	8.2	11.8	15.1	16	20.5	26	33.5	43	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.6	3.75	4.95	7.3	8.4	10.8	9.5	13	16.5	17.6	22	28	36	45	50	38	
			M_{2max}	Nm	10	13.6	17.2	24.5	28	35	31	42	52	56	70	88	113	142	80	61	
0.869 ... 1.14	3.44 ... 3.66	0.35 (0.43)	n_{2N}	r/min	375	375	375	300	300	300	300	250	200	200	150	125	100	75	50	30	**1F.2104-4AK..-2..0-Z**
			M_{2N}	Nm	2.35	3.3	4.25	6.5	7.3	8.2	7.6	10.1	13.4	13.9	18.9	23.5	31	40	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.6	3.75	4.9	7.2	8.4	10.7	9.5	12.9	16.4	17.5	22	27.5	35.5	45	50	38	
			M_{2max}	Nm	10.3	14	17.7	25	28.5	36	32	43	54	58	72	91	116	145	80	61	
1.98 ... 2.23	7.04 ... 7.22	0.56 (0.65)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1F.2104-5AF..-2..0-Z**
			M_{2N}	Nm	5.3	6.6	9.4	13.5	16	20.5	17.3	24	30.5	32.5	41.5	52	67	84	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	5.9	8.2	10.4	15	17.2	21.5	19.3	26	32.5	35	44	55	70	88	50	38	
			M_{2max}	Nm	21	28	35.5	50	57	61	64	86	107	114	143	176	192	176	80	61	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NLC080, 1-stage						NLC080, 2-stage								
1. Order code			C31						C32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1.G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NLC080

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC080 1 and 2-stage (continued)																				
1.96 ... 2.21	7.14 ... 7.32	0.56 (0.65)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	150	100	100	75	50	30	**1F.2104-5AK..-2..0-Z**
			M_{2N}	Nm	5.3	6.5	9.7	12	15.5	17.1	16	22	29.5	31	33	49.5	56	77	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	8.1	10.4	14.9	17.1	21.5	19.2	25.5	32.5	34.5	43.5	54	70	88	50	38	
			M_{2max}	Nm	21	28.5	36	51	58	61	65	87	109	116	145	176	192	176	80	61	
2.73 ... 2.96	9.51 ... 9.68	0.76 (0.84)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	**1F.2104-6AF..-2..0-Z**
			M_{2N}	Nm	6.8	8.3	12.2	17.8	22	28.5	24	33.5	42	44.5	56	71	91	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.1	11.2	14.2	20	23	29	26	35	43.5	46.5	58	73	94	110	50	–	
			M_{2max}	Nm	28.5	38	48	67	77	61	86	115	144	153	192	176	192	176	80	–	
4.47 ... 4.66	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	11.5	14	19.3	27	31.5	38	34	48	60	63	81	102	120	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	18.1	22.5	32	37	38	41	55	69	74	92	110	120	110	50	–	
			M_{2max}	Nm	43	57	72	101	80	61	130	173	176	192	192	176	192	176	80	–	
4.5 ... 4.69	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	375	375	300	250	250	200	200	200	150	150	125	100	75	75	50	–	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	11	12.5	18.3	25	27	35.5	32	32.5	49.5	48	61	79	107	104	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	18.2	23	32.5	37	38	41.5	55	70	74	93	110	120	110	50	–	
			M_{2max}	Nm	43	57	72	101	80	61	130	173	176	192	192	176	192	176	80	–	
7.08 ... 7.26	23.2 ... 23.4	2.65 (3.5)	n_{2N}	r/min	375	300	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	16.7	24	26.5	37	48	38	47	72	90	95	120	110	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21	28.5	35.5	50	50	38	64	85	107	114	120	110	120	110	–	–	
			M_{2max}	Nm	70	93	116	104	80	61	208	192	176	192	192	176	192	176	–	–	
7.18 ... 7.36	25 ... 25.3	5.476 (7.176)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	–	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	18.7	21	28.5	39.5	39.5	38	54	67	86	85	118	110	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	28.5	36	51	50	38	65	87	109	116	120	110	120	110	–	–	
			M_{2max}	Nm	75	101	126	104	80	61	208	192	176	192	192	175	192	176	–	–	
9.37 ... 9.55	31.8 ... 32.2	6.876 (8.476)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	–	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	23.5	31.5	34	47	45	38	64	76	98	94	120	110	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	28	37.5	47	65	50	38	84	112	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	96	128	160	104	80	61	208	192	176	192	192	176	192	176	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC080 1 and 2-stage																				
0.246 ... 0.53	1.46 ... 1.72	0.2 (0.22)	n_{2N}	r/min	250	300	300	300	250	250	250	200	150	150	150	125	100	75	50	30	**1F.2203-2AG..-0.A0-Z**
			M_{2N}	Nm	0.53	0.82	1.18	1.76	2.35	2.8	2.35	3.5	5.1	5.2	5.9	7.5	10.5	14.4	23	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.73	1.28	1.83	2.9	3.45	4.55	3.95	5.6	7.2	7.7	9.9	12.6	16.4	20.5	33.5	38	
			M_{2max}	Nm	4.35	6.1	7.9	11.4	13.1	16.6	14.8	20	25	26.5	33.5	42.5	54	68	80	61	
0.286 ... 0.496	1.54 ... 1.72	0.2 (0.22)	n_{2N}	r/min	–	250	250	250	200	200	200	150	150	125	125	100	75	75	37.5	30	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	–	0.73	1.07	1.61	2.2	2.65	2.25	3.5	3.9	4.75	5.3	7.1	10.4	10.8	22	30	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	1.14	1.65	2.65	3.15	4.2	3.65	5.1	6.7	7.2	9.2	11.7	15.3	19.3	31	38	
			M_{2max}	Nm	–	6.1	7.9	11.4	13.1	16.6	14.8	20	25	26.5	33.5	42.5	54	68	80	61	
0.87 ... 1.14	3.34 ... 3.56	0.35 (0.37)	n_{2N}	r/min	375	375	375	300	300	250	300	250	200	200	150	125	100	75	50	30	**1F.2203-4AG..-0.A0-Z**
			M_{2N}	Nm	2.2	3.1	3.9	6	6.7	8.8	6.7	8.9	12	12.3	17.1	21	28	37	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.6	3.75	4.9	7.2	8.4	10.7	9.5	12.9	16.4	17.5	22	27.5	36	45	50	38	
			M_{2max}	Nm	10	13.6	17.2	24.5	28	35	31	42	52	56	70	88	113	142	80	61	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NLC080, 1-stage						NLC080, 2-stage								
1. Order code			C31						C32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLC080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC080 1 and 2-stage (continued)																				
0.83 ... 1.1	3.34 ... 3.56	0.35 (0.37)	n_{2N}	r/min	375	375	300	300	250	250	250	200	200	150	150	125	100	75	50	30	**1F.2203-4AK..-0..0-Z**
			M_{2N}	Nm	1.74	2.3	3.45	4.7	5.8	6.7	5.9	8.1	8.4	11.4	12.3	15.1	20	27.5	42	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.45	3.6	4.7	7	8.1	10.3	9.1	12.5	15.8	16.9	21	26.5	34.5	43.5	50	38	
			M_{2max}	Nm	10	13.6	17.2	24.5	28	35	31	42	52	56	70	88	113	142	80	61	
1.94 ... 2.19	6.65 ... 6.83	1.23 (1.31)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1F.2204-5AF..-2..0-Z**
			M_{2N}	Nm	5	6.3	8.9	12.7	15.2	19.7	16.3	23	29	30.5	39.5	49.5	63	80	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	8	10.2	14.7	16.9	21	19	25.5	32	34	43	54	69	87	50	38	
			M_{2max}	Nm	19.9	26.5	33.5	47.5	54	61	60	81	101	108	135	169	192	176	80	61	
1.95 ... 2.2	6.65 ... 6.83	1.23 (1.31)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	150	125	100	75	50	30	**1F.2204-5AK..-2..0-Z**
			M_{2N}	Nm	5.2	6.4	9.2	11.6	14.8	16.2	15.4	20.5	27	28.5	30.5	37.5	52	68	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	8	10.3	14.8	17	21.5	19.1	25.5	32	34.5	43	54	70	87	50	38	
			M_{2max}	Nm	19.9	26.5	33.5	47.5	54	61	60	81	101	108	135	169	192	176	80	61	
2.72 ... 2.95	9.02 ... 9.19	1.61 (1.69)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	**1F.2204-6AF..-2..0-Z**
			M_{2N}	Nm	7.3	8.7	12.9	18.6	22	28.5	23.5	33.5	42	44.5	56	71	91	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.1	11.1	14.1	20	23	29	25.5	34.5	43.5	46.5	58	73	94	110	50	–	
			M_{2max}	Nm	27	36	45.5	64	73	61	81	109	136	145	182	176	192	176	80	–	
2.62 ... 2.82	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	–	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	6.2	9	11.7	16.9	19.7	25	22	28.5	36.5	38	49.5	59	78	101	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.5	22	28	24.5	33	41.5	44.5	56	70	90	110	50	–	
			M_{2max}	Nm	30.5	41	51	73	80	61	93	124	155	166	192	176	192	176	80	–	
2.67 ... 2.87	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	**1F.2205-2AF..-0..0-Z**
			M_{2N}	Nm	6.7	8.8	11.7	16.6	19.6	25	21	29.5	37.5	39.5	50	63	81	103	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8	10.9	13.9	19.8	22.5	28.5	25	33.5	42.5	45	57	71	91	110	50	–	
			M_{2max}	Nm	30.5	41	51	73	80	61	93	124	155	166	192	176	192	176	80	–	
2.64 ... 2.85	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	250	200	250	200	150	150	125	100	75	60	50	–	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.5	7.8	11.2	15.8	17.6	22.5	17.4	23.5	32	33.5	41.5	52	69	87	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	10.8	13.7	19.6	22.5	28	25	33.5	42	45	56	70	90	110	50	–	
			M_{2max}	Nm	30.5	41	51	73	80	61	93	124	155	166	192	176	192	176	80	–	
4.75 ... 4.94	17.4 ... 17.5	5.1 (6)	n_{2N}	r/min	375	300	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	11	16.2	18.3	25.5	32.5	38	34	49	62	65	83	104	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19.2	24	34	39	38	43.5	58	73	77	97	110	120	110	–	–	
			M_{2max}	Nm	52	69	87	104	80	61	156	192	176	192	192	176	192	176	–	–	
4.98 ... 5.17	17.3 ... 17.5	8.676 (10.276)	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	–	**1FT2206-2AC..-0..0-Z**
			M_{2N}	Nm	11.8	16.2	21	30	35	38	39.5	48.5	63	64	87	96	120	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.9	20	25	35.5	41	38	45.5	61	76	81	102	110	120	110	50	–	
			M_{2max}	Nm	52	69	87	104	80	61	155	192	176	192	192	176	192	176	80	–	
4.9 ... 5.09	17.3 ... 17.5	8.676 (10.276)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	–	–	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	10.9	16.2	20.5	29	31	38	37.5	49	62	64	83	104	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.7	19.8	25	35	40.5	38	45	60	75	80	100	110	120	110	–	–	
			M_{2max}	Nm	52	69	87	104	80	61	155	192	176	192	192	176	192	176	–	–	

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Planetary gearbox data																	
Gearbox type:			NLC080, 1-stage						NLC080, 2-stage								
1. Order code			C31						C32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC080 1 and 2-stage (continued)																					
4.76	17.3	8.676	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	60	50	–	–	**1FT2206-2AH..-0..0-Z**
...	...	(10.276)	M_{2N}	Nm	12.2	16.5	18.6	26	25	38	36	47.5	59	60	80	100	101	110	–	–	■■■ + ■■■ + . . .
4.95	17.5		$M_{2,0}$	Nm	14.2	19.2	24	34	39	38	43.5	58	73	78	97	110	120	110	–	–	
			M_{2max}	Nm	52	69	87	104	80	61	155	192	176	192	192	176	192	176	–	–	
7.23	26	12.38	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	**1FT2206-3AB..-0..0-Z**
...	...	(13.976)	M_{2N}	Nm	19	25.5	32.5	46.5	50	38	53	71	98	104	120	110	120	110	–	–	■■■ + ■■■ + . . .
7.41	26.3		$M_{2,0}$	Nm	21.5	29	36.5	51	50	38	65	87	109	117	120	110	120	110	–	–	
			M_{2max}	Nm	78	105	131	104	80	61	208	192	176	192	192	176	192	176	–	–	
7.09	26	12.38	n_{2N}	r/min	300	250	200	200	150	150	150	100	100	100	75	60	50	37.5	–	–	**1FT2206-3AF..-0..0-Z**
...	...	(13.976)	M_{2N}	Nm	17.1	23	30	33.5	47.5	38	48	70	75	72	104	110	120	110	–	–	■■■ + ■■■ + . . .
7.28	26.3		$M_{2,0}$	Nm	21	28.5	35.5	50	50	38	64	85	107	114	120	110	120	110	–	–	
			M_{2max}	Nm	78	105	131	104	80	61	208	192	176	192	192	176	192	176	–	–	
9.93	36.7	15.98	n_{2N}	r/min	250	200	200	125	125	100	100	100	75	75	50	50	37.5	25	–	–	**1FT2206-4AC..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	22	30.5	31.5	56	50	38	73	74	103	101	120	110	120	110	–	–	■■■ + ■■■ + . . .
10.1	37.1		$M_{2,0}$	Nm	29.5	39.5	50	65	50	38	89	119	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	111	148	176	104	80	61	208	192	176	192	192	176	192	176	–	–	
9.84	34.7	15.976	n_{2N}	r/min	300	250	250	200	200	150	150	100	100	100	75	60	50	37.5	–	–	**1F.2206-4AF..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	24.5	33	35	48	46	38	65	100	100	96	120	110	120	110	–	–	■■■ + ■■■ + . . .
10	35.2		$M_{2,0}$	Nm	29.5	39.5	49.5	65	50	38	88	118	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	105	140	175	104	79	61	208	192	176	192	191	176	192	176	–	–	
9.42	34.7	15.976	n_{2N}	r/min	300	250	200	150	150	150	125	100	75	75	75	60	60	50	–	–	**1FT2206-4AH..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	20	27	37	54	50	38	67	86	110	116	112	110	115	110	–	–	■■■ + ■■■ + . . .
9.6	35.2		$M_{2,0}$	Nm	28	37.5	47.5	65	50	38	84	113	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	105	140	175	104	79	61	208	192	176	192	191	176	192	176	–	–	

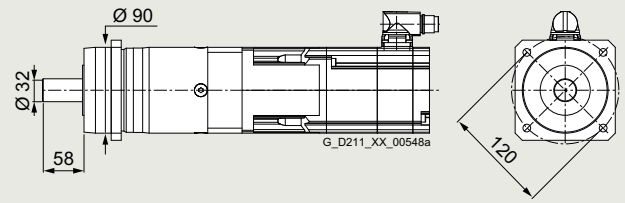
Planetary gearbox data																	
Gearbox type:			**NLC080, 1-stage**						**NLC080, 2-stage**								
1. Order code			**C31**						**C32**								
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

Gearbox type NLC120

Selection and ordering data

NLC120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	6000 N
Average axial force for 20000 h	$F_{A,eq}$	8000 N
Average radial force for 30000 h	$F_{R,eq}$	5400 N
Average axial force for 30000 h	$F_{A,eq}$	7000 N
Maximum radial force	$F_{R,max}$	6000 N
Maximum axial force	$F_{A,max}$	8000 N

3 4

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC120 1 and 2-stage																				
0.176	1.48	0.093	n_{2N}	r/min	–	150	200	200	200	200	150	125	100	100	100	75	75	60	50	30	**1F.2103-2AG..-0.A0-Z**
...	...	(0.112)	M_{2N}	Nm	–	0.475	0.7	1.37	1.64	2.05	1.94	2.85	4.1	4.35	5.4	7.7	9.6	12.6	16.2	29.5	■■■ + ■■■ + . . .
0.468	1.75		$M_{2,0}$	Nm	–	0.7	1.19	2.15	2.65	3.6	3.1	4.55	6	6.4	8.4	10.8	14.1	18	29.5	46.5	
			M_{2max}	Nm	–	5.9	7.7	11.3	13	16.6	14.7	20	25	27	34	42.5	55	69	111	152	
0.211	1.55	0.093	n_{2N}	r/min	–	–	200	200	200	200	150	125	100	100	100	100	75	75	50	25	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	–	–	0.7	1.38	1.65	2.1	1.92	2.85	4.05	4.3	5.4	5.8	9.6	10.2	16.5	33.5	■■■ + ■■■ + . . .
0.441	1.75		$M_{2,0}$	Nm	–	–	1.05	1.97	2.4	3.35	2.85	4.2	5.5	6	7.8	10.1	13.3	16.9	27.5	44	
			M_{2max}	Nm	–	–	7.7	11.3	13	16.6	14.7	20	25	27	34	42.5	55	69	111	152	
0.681	3.45	0.139	n_{2N}	r/min	300	250	250	200	200	200	150	150	125	100	100	75	75	60	37.5	25	**1F.2103-4AG..-0.A0-Z**
...	...	(0.158)	M_{2N}	Nm	1.51	2.65	3.35	5.7	6.2	6.9	7.7	9	11.8	14.6	17.5	23.5	27.5	35.5	59	94	■■■ + ■■■ + . . .
1.07	3.78		$M_{2,0}$	Nm	2	3.1	4.2	6.4	7.5	9.7	8.5	11.7	15	16	20	25.5	33	41.5	67	95	
			M_{2max}	Nm	10.3	14.2	18	25.5	29.5	37	33	44.5	55	59	74	93	120	150	192	152	
0.666	3.45	0.139	n_{2N}	r/min	300	250	250	200	200	200	200	150	125	125	100	100	75	60	37.5	25	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.18	2.15	2.85	4.8	5.4	6	4.9	7.8	10.1	10.6	14.6	15	23.5	30	49.5	78	■■■ + ■■■ + . . .
1.05	3.78		$M_{2,0}$	Nm	1.99	3.05	4.15	6.3	7.3	9.5	8.3	11.5	14.7	15.8	20	25	32.5	41	66	95	
			M_{2max}	Nm	10.3	14.2	18	25.5	29.5	37	33	44.5	55	59	74	93	120	150	192	152	
0.695	3.16	0.35	n_{2N}	r/min	375	300	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1F.2104-4AF..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.51	2.6	3.5	5.5	7	9.3	7	10.8	13.8	14.8	19.3	24.5	32	40.5	65	95	■■■ + ■■■ + . . .
1.08	3.49		$M_{2,0}$	Nm	2.05	3.15	4.3	6.5	7.6	9.8	8.6	11.9	15.2	16.3	20.5	26	33.5	42	68	95	
			M_{2max}	Nm	9.4	13	16.5	23.5	27	34	30.5	41	51	55	69	86	111	139	192	152	
0.688	3.26	0.35	n_{2N}	r/min	37	300	300	250	250	200	200	150	150		125	100	100	75	50	30	**1F.2104-4AK..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.69	2.75	3.8	5.9	7	9.1	7.5	10.5	12.7	12.7	18.2	23.5	24.5	37.5	57	95	■■■ + ■■■ + . . .
1.07	3.59		$M_{2,0}$	Nm	2.05	3.15	4.25	6.4	7.5	9.7	8.5	11.8	15.1	16.1	20.5	**25.5**	33.5	42	68		
			M_{2max}	Nm	9.7	13.4	17	24	28	35	31	42	53	56	71	89	114				

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																				
1.78 ... 2.15	6.96 ... 7.23	0.56 (0.65)	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	100	75	60	37.5	30	**1F.2104-5AK..-0..0-Z**
			M_{2N}	Nm	5	6.5	9.2	11.5	15.5	17.2	14.9	21.5	27.5	28	39	38.5	60	76	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.3	7.5	9.7	14.1	16.3	20.5	18.3	24.5	31	33	42	52	68	85	120	95	
			M_{2max}	Nm	20.5	28	35.5	50	57	72	64	86	107	114	143	179	230	285	192	152	
2.55 ... 2.9	9.33 ... 9.59	0.76 (0.84)	n_{2N}	r/min	300	300	250	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1F.2104-6AF..-0..0-Z**
			M_{2N}	Nm	6.8	8.4	11.8	14.6	19.5	27	18.6	32	41	43	55	69	90	113	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.6	10.6	13.5	19.4	22	28	25	33.5	42.5	45.5	57	71	92	115	120	95	
			M_{2max}	Nm	27.5	37.5	47	66	76	95	85	114	142	152	190	235	305	368	192	152	
4.29 ... 4.6	14.3 ... 14.5	1.71 (2.55)	n_{2N}	r/min	375	300	250	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	9.8	15	20	23.5	32	42.5	29.5	49	62	65	84	106	136	173	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.8	17.5	22	31.5	36	45.5	40.5	54	68	72	91	114	146	183	120	95	
			M_{2max}	Nm	42.5	57	71	101	115	145	129	172	215	230	285	355	416	368	192	152	
4.32 ... 4.63	14.3 ... 14.5	1.71 (2.55)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	100	75	60	50	37.5	25	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	11.5	13.7	18.9	27.5	29	40.5	35.5	47	59	62	65	91	123	149	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.9	17.6	22	31.5	36.5	45.5	40.5	54	68	73	91	115	147	184	120	95	
			M_{2max}	Nm	42.5	57	71	101	115	145	129	172	215	230	285	355	416	368	192	152	
7.26 ... 7.52	23.1 ... 23.4	2.65 (3.5)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	17.6	20.5	27.5	40	42	59	53	67	87	88	122	154	195	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	37	52	59	75	66	89	112	119	149	187	240	230	120	–	
			M_{2max}	Nm	69	92	116	163	186	152	205	275	345	365	416	368	416	368	192	–	
7.64 ... 7.9	25 ... 25.3	4.6 (6.3)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	18.6	21.5	29	42	43.5	62	56	70	90	91	126	159	200	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38.5	54	62	78	70	93	117	125	156	195	250	230	120	–	
			M_{2max}	Nm	75	100	126	176	192	152	225	300	368	400	416	368	416	368	192	–	
10 ... 10.3	31.8 ... 32.2	6 (7.6)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	23.5	32.5	36	51	52	75	67	83	107	106	149	189	235	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40	50	71	81	95	91	121	152	162	200	230	260	230	120	–	
			M_{2max}	Nm	96	128	160	216	192	152	285	380	368	416	416	368	416	368	192	–	
14.3 ... 14.6	43.9 ... 44.5	8.7 (10.4)	n_{2N}	r/min	300	250	250	200	150	150	150	100	100	75	75	60	50	37.5	–	–	**1F.2106-6AF..-0..0-Z**
			M_{2N}	Nm	31.5	42.5	46.5	65	88	95	84	128	131	174	183	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	43	57	72	101	116	95	129	172	215	230	260	230	260	230	–	–	
			M_{2max}	Nm	133	177	220	216	192	152	336	416	368	416	416	365	416	368	–	–	
20.8 ... 21.1	84.1 ... 85.3	20.6 (24.7)	n_{2N}	r/min	250	200	200	150	125	100	100	75	60	60	50	50	37.5	25	–	–	**1FT2108-4AC..-0..0-Z**
			M_{2N}	Nm	42	56	59	86	107	95	127	172	215	215	255	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	84	105	135	120	95	187	250	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
25.6 ... 26	102 ... 103	24.0 (28.0)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	**1FT2108-5AB..-0..0-Z**
			M_{2N}	Nm	52	70	95	135	120	95	152	205	230	260	260	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	77	103	129	135	120	95	210	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	

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Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NLC120

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																				
25.4 ... 25.8	102 ... 103	24.0 (28.0)	n_{2N}	r/min	250	200	150	125	125	100	100	75	75	60	50	50	37.5	25	–	–	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	47	63	87	114	117	95	140	188	183	235	260	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	76	102	128	135	120	95	210	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage																				
0.169 ... 0.462	1.39 ... 1.66	0.2 (0.22)	n_{2N}	r/min	–	250	200	200	200	150	150	125	100	100	100	75	75	60	37.5	25	1F.2203-2AG..-0.A0-Z
			M_{2N}	Nm	–	0.325	0.84	1.67	1.93	3.05	2.25	3.35	4.55	4.95	6.1	8.6	10.5	13.7	23	37	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	–	0.67	1.16	2.1	2.6	3.55	3.05	4.45	5.9	6.3	8.2	10.6	13.9	17.7	29	46	
			M_{2max}	Nm	–	5.5	7.2	10.6	12.3	15.7	13.8	18.8	23.5	25.5	32	40.5	52	65	105	152	
0.198 ... 0.428	1.45 ... 1.66	0.2 (0.22)	n_{2N}	r/min	–	–	200	200	200	150	150	125	100	100	100	75	60	50	37.5	25	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	–	–	0.68	1.29	1.48	2.6	1.88	2.75	3.95	4.15	4.85	7.2	10.6	13.4	19.2	30.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	–	–	0.98	1.88	2.3	3.2	2.7	4.05	5.3	5.8	7.5	9.7	12.8	16.3	26.5	42.5	
			M_{2max}	Nm	–	–	7.2	10.6	12.3	15.7	13.8	18.8	23.5	25.5	32	40.5	52	65	105	152	
0.689 ... 1.07	3.16 ... 3.49	0.35 (0.37)	n_{2N}	r/min	375	300	300	250	250	200	200	150	150	125	125	100	75	75	50	30	1F.2203-4AG..-0.A0-Z
			M_{2N}	Nm	1.51	2.75	3.7	5.9	6.3	9.1	7.5	10.5	11.6	14.4	17.1	22	31	34.5	52	93	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.05	3.15	4.25	6.4	7.5	9.7	8.6	11.8	15.1	16.2	20.5	25.5	33.5	42	68	95	
			M_{2max}	Nm	9.4	13	16.5	23.5	27	34	30.5	41	51	55	69	86	111	139	192	152	
0.649 ... 1.03	3.16 ... 3.49	0.35 (0.37)	n_{2N}	r/min	300	250	250	200	200	200	200	150	125	125	100	75	75	60	37.5	25	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	1.58	2.6	3.45	5.5	6.2	6.7	5.7	8.8	11.4	12	16.3	21.5	26	33	54	84	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.94	3	4.05	6.1	7.2	9.3	8.2	11.3	14.5	15.5	19.7	24.5	32	40.5	65	95	
			M_{2max}	Nm	9.4	13	16.5	23.5	27	34	30.5	41	51	55	69	86	111	139	192	152	
1.76 ... 2.12	6.47 ... 6.74	1.23 (1.31)	n_{2N}	r/min	300	300	250	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2204-5AF..-0..0-Z
			M_{2N}	Nm	4.95	6.3	9	11	15.1	19.7	14.3	23	29	31	39.5	50	65	81	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	5.2	7.4	9.5	13.9	16	20	18	24.5	30.5	33	41.5	52	67	84	120	95	
			M_{2max}	Nm	19.3	26	33	46.5	53	67	59	80	100	107	134	167	215	265	192	152	
1.77 ... 2.14	6.47 ... 6.74	1.23 (1.31)	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	75	75	60	37.5	30	1F.2204-5AK..-0..0-Z
			M_{2N}	Nm	5	6.5	9.1	11.3	15.4	16.7	14.6	21.5	27.5	27.5	38.5	50	58	74	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	5.3	7.4	9.6	14	16.2	20.5	18.2	24.5	31	33	41.5	52	67	84	120	95	
			M_{2max}	Nm	19.3	26	33	46.5	53	67	59	80	100	107	134	167	215	265	192	152	
2.54 ... 2.88	8.84 ... 9.09	1.61 (1.69)	n_{2N}	r/min	300	300	250	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2204-6AF..-0..0-Z
			M_{2N}	Nm	7.2	9.1	12.8	15.3	20.5	27.5	19.4	32	40.5	43.5	55	69	89	112	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	7.6	10.5	13.4	19.3	22	28	25	33.5	42	45	56	71	91	114	120	95	
			M_{2max}	Nm	26.5	35.5	44.5	63	72	90	81	108	135	144	180	225	285	360	192	152	
2.76 ... 3.09	10.1 ... 10.4	3.15 (4.05)	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	6.3	9	12	17.6	20.5	26	23	29.5	38	40	53	62	84	109	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.2	11.4	14.6	20.5	24	30	26.5	36	45	48.5	60	76	98	122	120	95	
			M_{2max}	Nm	30	40.5	51	72	82	103	92	123	154	164	205	255	325	368	192	152	
2.79 ... 3.12	10.1 ... 10.4	3.15 (4.05)	n_{2N}	r/min	375	300	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	5.7	9	10.3	15.1	19.7	25.5	19.3	30	38	40	52	66	85	108	120	94	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.3	11.5	14.7	21	24	30.5	27	36.5	45.5	49	61	77	99	124	120	94	
			M_{2max}	Nm	30	40.5	51	72	82	103	92	123	154	164	205	255	325	368	192	152	

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Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																				
2.73	10.1	3.15	n_{2N}	r/min	300	300	250	200	200	150	200	150	125	100	100	75	60	50	37.5	25	1FT2205-2AH..-0..0-Z
...	...	(4.05)	M_{2N}	Nm	6.5	8.1	11.4	16.8	18.2	24.5	16.6	25	31	38.5	43.5	59	77	96	120	95	■■■ + ■■■ + . . .
3.06	10.4		$M_{2,0}$	Nm	8.1	11.3	14.4	20.5	23.5	30	26.5	35.5	45	48	60	75	97	121	119	95	
			M_{2max}	Nm	30	40.5	51	72	82	103	92	123	154	164	205	255	325	368	192	152	
5.01	17.2	5.1	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	1F.2205-4AF..-0..0-Z
...	...	(6)	M_{2N}	Nm	11.4	16	18.4	27	28	40.5	37	47	61	62	86	109	139	178	120	95	■■■ + ■■■ + . . .
5.28	17.5		$M_{2,0}$	Nm	15	20	25.5	36.5	42	52	46.5	62	78	83	104	131	168	210	120	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
5.07	17.2	7.8	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2206-2AC..-0..0-Z
...	...	(9.4)	M_{2N}	Nm	10.7	15	20.5	31	37.5	48	43	50	69	69	96	106	144	195	120	95	■■■ + ■■■ + . . .
5.37	17.5		$M_{2,0}$	Nm	15.2	20.5	26	37	42	53	47.5	63	79	85	106	133	171	210	120	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
5.18	17.2	7.8	n_{2N}	r/min	375	300	250	200	200	150	200	125	100	100	75	60	50	37.5	25	15	1F.2206-2AF..-0..0-Z
...	...	(9.4)	M_{2N}	Nm	10.9	16.3	21.5	30.5	33.5	44.5	30	51	65	68	88	111	142	181	120	95	■■■ + ■■■ + . . .
5.45	17.5		$M_{2,0}$	Nm	15.5	21	26.5	37.5	43	54	48	64	81	86	108	135	173	215	120	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
5.01	17.2	7.8	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	50	37.5	25	1FT2206-2AH..-0..0-Z
...	...	(9.4)	M_{2N}	Nm	11.8	16.4	18.4	26.5	27	39.5	37	46.5	60	61	85	108	137	136	119	95	■■■ + ■■■ + . . .
5.28	17.5		$M_{2,0}$	Nm	15	20	25.5	36.5	42	52	46.5	62	78	83	105	131	168	210	119	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
7.78	26	11.5	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	12.5	–	1FT2206-3AB..-0..0-Z
...	...	(13.1)	M_{2N}	Nm	19.1	26.5	35	50	56	72	57	76	107	112	143	179	225	230	120	–	■■■ + ■■■ + . . .
8.04	26.3		$M_{2,0}$	Nm	23	31	39.5	55	64	80	71	95	119	127	159	198	255	230	120	–	
			M_{2max}	Nm	78	104	131	183	192	152	230	310	368	416	416	368	416	368	192	–	
7.64	26	11.5	n_{2N}	r/min	300	250	250	200	150	150	150	125	100	100	75	60	50	37.5	25	–	1FT2206-3AF..-0..0-Z
...	...	(13.1)	M_{2N}	Nm	16.1	22	24	35	48	52	48	59	77	77	109	138	174	230	120	–	■■■ + ■■■ + . . .
7.91	26.3		$M_{2,0}$	Nm	22.5	30.5	38.5	54	63	79	70	93	117	125	156	195	250	230	120	–	
			M_{2max}	Nm	78	104	131	183	192	152	230	310	368	416	416	368	416	368	192	–	
10.8	36.6	15.1	n_{2N}	r/min	250	200	200	150	125	100	100	75	75	75	50	50	37.5	25	20	–	1FT2206-4AC..-0..0-Z
...	...	(16.8)	M_{2N}	Nm	20	27.5	29.5	44	55	71	68	93	97	96	149	150	210	230	120	–	■■■ + ■■■ + . . .
11	37.1		$M_{2,0}$	Nm	32	43	54	76	87	95	98	130	163	174	215	230	260	230	120	–	
			M_{2max}	Nm	110	148	185	216	192	152	330	416	368	416	416	368	416	368	192	–	
10.5	34.7	15.1	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1F.2206-4AF..-0..0-Z
...	...	(16.8)	M_{2N}	Nm	24	27.5	36.5	52	53	76	68	84	109	108	152	191	240	230	120	–	■■■ + ■■■ + . . .
10.7	35.2		$M_{2,0}$	Nm	31	42	53	74	85	95	95	127	159	169	210	230	260	230	120	–	
			M_{2max}	Nm	104	140	175	216	192	152	310	416	368	416	416	368	416	368	192	–	
10	34.7	15.1	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	75	60	50	37.5	37.5	–	1FT2206-4AH..-0..0-Z
...	...	(16.8)	M_{2N}	Nm	19.4	26.5	36	52	56	70	66	85	114	117	121	153	191	230	120	–	■■■ + ■■■ + . . .
10.3	35.2		$M_{2,0}$	Nm	30	40	50	71	81	95	90	121	152	162	200	230	260	230	120	–	
			M_{2max}	Nm	104	140	175	216	192	152	310	416	368	416	416	368	416	368	192	–	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NLC120, 1-stage						NLC120, 2-stage									
1. Order code		C41						C42									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLC120

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																				
10.2	36.6	24.86	n_{2N}	r/min	250	250	200	150	150	125	125	100	75	75	60	50	37.5	37.5	25	–	**1FT2208-2AF..-0..0-Z**
...	...	(28.16)	M_{2N}	Nm	25	27.5	38	56	57	72	68	87	119	120	154	186	255	225	120	–	■■■ + ■■■ + . . .
10.4	37.1		$M_{2,0}$	Nm	30.5	41	51	72	83	95	92	123	154	165	205	230	255	225	119	–	
			M_{2max}	Nm	110	147	184	216	192	152	330	416	368	416	416	368	416	368	192	–	
16.3	49.2	31.96	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	**1FT2208-3AB..-0..0-Z**
...	...	(34.96)	M_{2N}	Nm	28.5	39.5	55	85	91	95	93	127	183	188	245	230	260	230	–	–	■■■ + ■■■ + . . .
16.5	49.9		$M_{2,0}$	Nm	48.5	65	81	115	120	95	147	196	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	149	199	245	216	192	152	336	416	368	416	416	368	416	368	–	–	
15.3	49.2	31.96	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	–	–	**1F.2208-3AC..-0..0-Z**
...	...	(35.36)	M_{2N}	Nm	28.5	38	51	75	91	95	108	113	154	154	230	230	260	230	–	–	■■■ + ■■■ + . . .
15.5	49.9		$M_{2,0}$	Nm	45.5	61	76	108	120	95	137	183	225	240	260	230	260	230	–	–	
			M_{2max}	Nm	149	199	245	216	192	152	336	416	368	416	416	368	416	368	–	–	
15.2	49.2	31.96	n_{2N}	r/min	250	200	200	150	125	125	125	100	75	75	60	50	50	37.5	–	–	**1FT2208-3AF..-0..0-Z**
...	...	(35.36)	M_{2N}	Nm	33	45	48.5	70	86	89	84	106	146	145	186	220	197	230	–	–	■■■ + ■■■ + . . .
15.4	49.9		$M_{2,0}$	Nm	45.5	61	76	107	120	95	136	182	225	240	260	230	260	230	–	–	
			M_{2max}	Nm	149	199	245	216	192	152	336	416	368	416	416	368	416	368	–	–	
19.6	63.7	41.16	n_{2N}	r/min	200	150	125	100	100	75	75	60	50	50	37.5	30	25	20	–	–	**1FT2208-4AB..-0..0-Z**
...	...	(46.76)	M_{2N}	Nm	35	50	63	85	86	95	117	149	182	182	245	230	260	230	–	–	■■■ + ■■■ + . . .
20.1	64.6		$M_{2,0}$	Nm	59	79	99	135	120	95	176	235	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
19	63.7	41.16	n_{2N}	r/min	250	200	200	150	125	100	100	75	75	60	50	50	37.5	25	–	–	**1F.2208-4AC..-0..0-Z**
...	...	(46.76)	M_{2N}	Nm	40.5	55	59	85	105	95	124	168	170	210	255	230	260	230	–	–	■■■ + ■■■ + . . .
19.3	64.6		$M_{2,0}$	Nm	57	76	95	134	120	95	170	225	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
18.3	63.7	41.16	n_{2N}	r/min	250	200	200	150	125	125	100	75	75	60	50	50	50	37.5	–	–	**1FT2208-4AF..-0..0-Z**
...	...	(46.76)	M_{2N}	Nm	41	55	59	85	105	95	125	169	170	215	255	230	205	230	–	–	■■■ + ■■■ + . . .
18.5	64.6		$M_{2,0}$	Nm	54	73	92	129	120	95	164	215	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	415	368	416	368	–	–	
23	77.3	50.46	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	–	–	**1FT2208-5AB..-0..0-Z**
...	...	(55.96)	M_{2N}	Nm	45.5	62	85	129	120	95	137	184	230	260	260	230	260	230	–	–	■■■ + ■■■ + . . .
23.3	78.4		$M_{2,0}$	Nm	69	92	116	135	120	95	205	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
22.7	77.3	50.46	n_{2N}	r/min	250	200	200	125	125	100	100	75	60	60	50	50	37.5	25	–	–	**1F.2208-5AC..-0..0-Z**
...	...	(55.96)	M_{2N}	Nm	46	62	63	111	114	95	136	183	225	230	260	230	260	230	–	–	■■■ + ■■■ + . . .
23.1	78.4		$M_{2,0}$	Nm	68	91	115	135	120	95	205	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	415	416	368	416	368	–	–	

Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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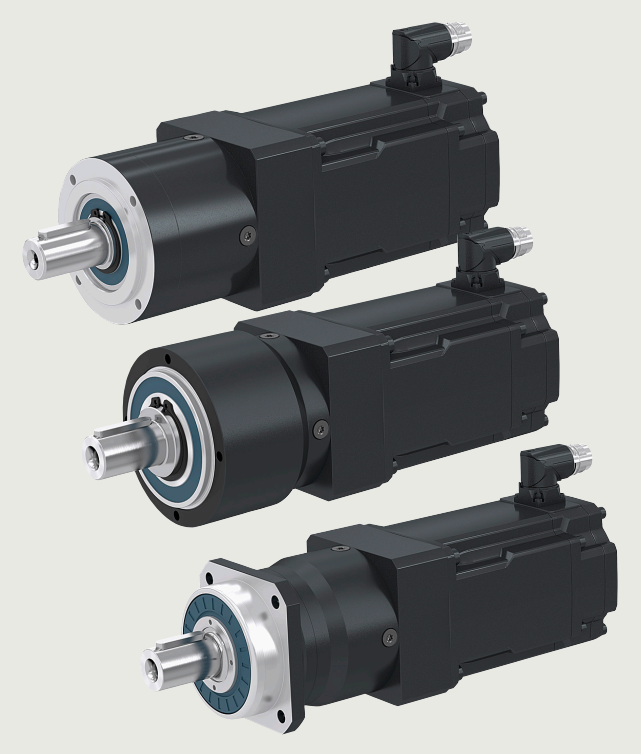
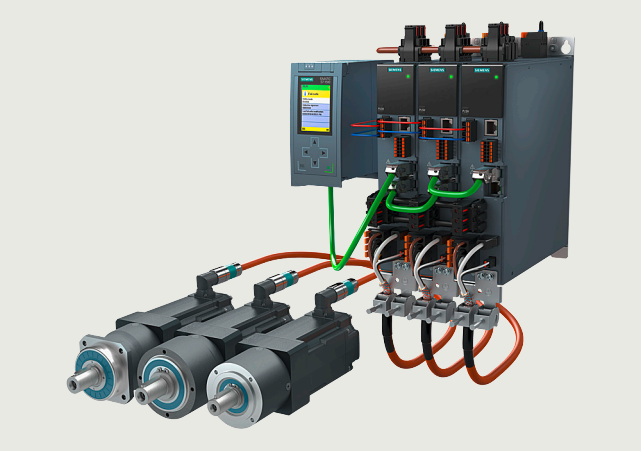
Selection and ordering data



SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors with economy gear units



Example: SINAMICS S210 servo converter with SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

The following pages show the permissible combinations of **servo motors for 400 V 3 AC** converters

and coaxial economy planetary geared motors **NRB, NRK and NLC** geared motors.

They show the most important component data of the motor and gearbox as well as the rating of the system geared motor.

The rated operating points of the geared motors are adapted to the converter supply voltage.

More information on selection is provided in the section "Information on Selection".

Economy gearboxes have straight gearing, are grease-lubricated and have a low torsional backlash.

NRB

NRB is the lightest gearbox with the highest power density. Thanks to its low-friction bearing design it is suitable for high speeds and generates very little heat.

NRK

The NRK series gearbox is suitable for higher radial and axial forces due to the large output bearing. This gearbox is also suitable for higher speeds thanks to low internal friction.

NLC

Thanks to the preloaded tapered roller bearing, the NLC gearbox has a high degree of stiffness and is perfectly suited for high radial and axial loads. The IP65 seal provides protection against dust and water.

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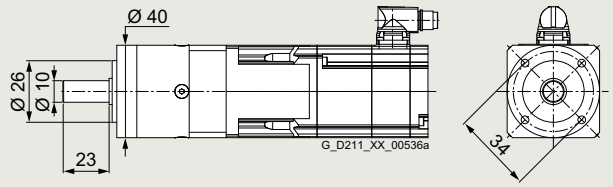
Gearbox type NRB040

Selection and ordering data

NRB040



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	200 N
Average axial force for 20000 h	$F_{A,eq}$	200 N
Average radial force for 30000 h	$F_{R,eq}$	160 N
Average axial force for 30000 h	$F_{A,eq}$	160 N
Maximum radial force	$F_{R,max}$	200 N
Maximum axial force	$F_{A,max}$	240 N

3
4

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB040 1 and 2-stage																			
0.452	1.83	0.1396	n_{2N}	r/min	1000	750	600	375	375	300	375	300	200	200	150	125	100	75	60	1F.2103-2AH..-2..0-Z
...	...	(0.1586)	M_{2N}	Nm	0.86	1.21	1.59	2.45	2.65	3.35	2.65	3.2	4.8	4.9	6.4	7.9	10	13	7.5	■■■ + ■■■ + . . .
0.482	1.89		$M_{2.0}$	Nm	1.43	1.91	2.35	3.35	3.8	4.8	4.2	5.6	7	7.4	9.3	11.6	14.9	18	7.5	
			M_{2max}	Nm	5.6	7.5	9.4	13.2	10	8	16.8	22	28	29.5	32	29	32	29	12	
0.881	3.85	0.1856	n_{2N}	r/min	750	600	600	375	375	375	300	250	200	200	150	125	100	100	–	1F.2103-4AH..-2..0-Z
...	...	(0.2046)	M_{2N}	Nm	2.05	2.65	2.75	4.55	4.6	4	5.9	7	8.8	8.6	11.9	14.2	17.9	14.6	–	■■■ + ■■■ + . . .
0.933	3.96		$M_{2.0}$	Nm	2.75	3.7	4.65	6.5	6	5	8.1	10.8	13.6	14.5	18.1	18	20	18	–	
			M_{2max}	Nm	11.8	15.8	19.7	13.5	10	8	26	32	29	32	32	29	32	29	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB040 1 and 2-stage																			
0.493	1.74	0.2466	n_{2N}	r/min	750	600	500	375	300	250	300	200	150	150	125	100	75	60	50	1F.2203-2AK..-2..0-Z
...	...	(0.2666)	M_{2N}	Nm	0.93	1.2	1.47	2	2.5	3.05	2.35	3.55	4.7	4.75	5.7	7.2	9.6	12.1	7.5	■■■ + ■■■ + . . .
0.527	1.79		$M_{2.0}$	Nm	1.56	2.05	2.6	3.65	4.2	5	4.6	6.1	7.6	8.1	10.2	12.7	16.3	18	7.5	
			M_{2max}	Nm	5.3	7.1	8.9	12.5	10	8	15.9	21	26.5	28	32	29	32	29	12	
1	3.56	0.3966	n_{2N}	r/min	750	500	500	300	300	300	300	200	150	150	125	100	75	75	–	1F.2203-4AK..-2..0-Z
...	...	(0.4166)	M_{2N}	Nm	2.05	3.15	3.15	5.4	5.5	4.75	5.5	8.4	11	11.2	13.7	17.1	20	18	–	■■■ + ■■■ + . . .
1.06	3.67		$M_{2.0}$	Nm	3.15	4.2	5.3	7.4	6	5	9.3	12.4	15.5	16.5	20	18	20	18	–	
			M_{2max}	Nm	10.9	14.6	18.3	13.5	10	8	26	32	29	32	32	29	32	29	–	

Planetary gearbox data																	
Gearbox type:			NRB040, 1-stage						NRB040, 2-stage								
1. Order code			A11						A12								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	11	15	14	8.5	6	5	16.5	20	18	20	20	18	20	18	7.5
	$M_{2max,G}$	Nm	17.5	24	22	13.5	10	8	26	32	29	32	32	29	32	29	12
	$M_{2Em.Off}$	Nm	22.5	30	36	26	27	27	33	40	36	40	40	36	40	36	27
	$J_{1,G}$	kg cm²	0.027	0.021	0.019	0.015	0.015	0.014	0.026	0.025	0.025	0.02	0.018	0.018	0.015	0.015	0.015
	$\varphi_{2,G}$	'	15						19								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox								Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB040 3-stage											
0.452 ... 0.482	1.83 ... 1.89	0.1396 (0.1586)	n_{2N}	r/min	60	50	37.5	37.5	25	20	15	1F.2103-2AH..-2..0-Z
			M_{2N}	Nm	16.4	19.3	20	17.2	20	18	20	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	18	20	18	20	
			M_{2max}	Nm	32	32	32	29	32	29	32	
0.881 ... 0.933	3.85 ... 3.96	0.1856 (0.2046)	n_{2N}	r/min	60	50	37.5	–	–	–	–	1F.2103-4AH..-2..0-Z
			M_{2N}	Nm	20	20	20	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	–	–	–	–	
			M_{2max}	Nm	32	32	32	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB040 3-stage											
0.493 ... 0.527	1.74 ... 1.79	0.2466 (0.2666)	n_{2N}	r/min	37.5	37.5	30	25	20	15	12.5	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	18	17.1	20	18	20	18	20	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	18	20	18	20	
			M_{2max}	Nm	32	32	32	29	32	29	32	
1 ... 1.06	3.56 ... 3.67	0.3966 (0.4166)	n_{2N}	r/min	60	37.5	37.5	–	–	–	–	1F.2203-4AK..-2..0-Z
			M_{2N}	Nm	18.2	20	20	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	20	20	20	–	–	–	–	
			M_{2max}	Nm	32	32	32	–	–	–	–	

Planetary gearbox data								
Gearbox type:		NRB040, 3-stage						
1. Order code		A13						
i		60	80	100	120	160	200	256
2. Order code		R60	R80	R01	R21	R61	R02	R52
$M_{2N,G}$	Nm	20	20	20	18	20	18	20
$M_{2max,G}$	Nm	32	32	32	29	32	29	32
$M_{2Em.Off}$	Nm	40	40	40	36	40	36	40
$J_{1,G}$	kg cm²	0.025	0.018	0.018	0.025	0.015	0.015	0.015
$\varphi_{2,G}$	'	22						

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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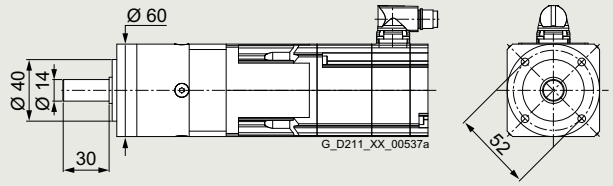
Gearbox type NRB060

Selection and ordering data

NRB060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	400 N
Average axial force for 20000 h	$F_{A,eq}$	500 N
Average radial force for 30000 h	$F_{R,eq}$	340 N
Average axial force for 30000 h	$F_{A,eq}$	450 N
Maximum radial force	$F_{R,max}$	700 N
Maximum axial force	$F_{A,max}$	800 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 1 and 2-stage																				
0.51 ... 0.539	1.83 ... 1.88	0.093 (0.112)	n_{2N}	r/min	1000	750	750	500	500	375	375	300	300	250	200	150	125	100	60	**1F.2103-2AH..-2..0-Z**
			M_{2N}	Nm	1.06	1.53	1.68	2.65	2.75	3.7	3.15	4.1	4.6	5.3	6.8	8.9	11.2	14	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.58	2.1	2.65	3.75	4.3	5.3	4.7	6.2	7.8	8.4	10.5	13.1	16.8	21	18	
			M_{2max}	Nm	5.6	7.5	9.4	13.1	15	18.8	16.8	22	27.5	29.5	37	46.5	59	64	29	
0.972 ... 1.03	3.84 ... 3.95	0.139 (0.158)	n_{2N}	r/min	1000	750	600	500	500	375	375	250	250	200	200	150	125	100	60	**1F.2103-4AH..-2..0-Z**
			M_{2N}	Nm	1.91	2.8	3.65	4.7	4.65	6.5	5.9	8.9	9.8	11.8	12.1	16.4	20	25	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.05	4.05	5.1	7.1	8.2	10.2	9	12	15	16	20	25	32	40	18	
			M_{2max}	Nm	11.8	15.8	19.7	27.5	29	24	35	46.5	58	62	70	64	70	64	29	
1.17 ... 1.2	3.56 ... 3.66	0.371 (0.451)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.85	3.95	5	6.7	8.1	10.2	8.3	11.6	14.8	15.4	19.7	24	31	39.5	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.55	4.75	5.9	8.3	9.5	11.9	10.6	14.2	17.8	19	23.5	29.5	37.5	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	
1.16 ... 1.19	3.65 ... 3.75	0.371 (0.451)	n_{2N}	r/min	1000	1000	750	600	500	375	375	300	250	250	200	150	125	100	60	**1F.2104-4AK..-2..0-Z**
			M_{2N}	Nm	3.1	3.3	4.8	6.2	7.7	10.2	8.9	11.6	14.7	14.6	18.9	24.5	30.5	38.5	18	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.55	4.7	5.9	8.3	9.5	11.9	10.6	14.1	17.7	18.8	23.5	29.5	37.5	40	18	
			M_{2max}	Nm	11.2	15	18.7	26	29	24	33	44.5	55	59	70	64	70	64	29	
2.25 ... 2.3	7.16 ... 7.36	0.581 (0.671)	n_{2N}	r/min	1000	750	600	500	375	300	300	250	200	200	150	125	100	75	–	**1F.2104-5AF..-2..0-Z**
			M_{2N}	Nm	4.6	6.6	8.5	10.6	14	15	16	19.5	25.5	25	33.5	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.8	9.1	11.4	16	18	15	20.5	27	34	36	44	40	44	40	–	
			M_{2max}	Nm	22	29	36.5	40	29	24	65	70	70	70	70	64	70	64	–	
2.23 ... 2.28	7.25 ... 7.46	0.581 (0.671)	n_{2N}	r/min	1000	750	600	500	375	375	300	250	200	200	150	125	125	100	–	**1F.2104-5AK..-2..0-Z**
			M_{2N}	Nm	4.55	6.5	8.4	10.4	13.8	14	15.8	19.3	25	24.5	33.5	40	38.5	40	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.8	9.1	11.4	15.9	18	15	20	27	33.5	36	44	40	44	40	–	
			M_{2max}	Nm	22	29.5	37	40	29	24	66	70	70	70	70	64	70	64	–	
2.98 ... 3.05	9.56 ... 9.83	0.781 (0.861)	n_{2N}	r/min	1000	750	600	500	375	300	300	250	200	200	150	125	100	75	–	**1F.2104-6AF..-2..0-Z**
			M_{2N}	Nm	5.5	7.8	10.1	12.3	16.5	15	18.8	22.5	29.5	28.5	39	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	9.1	12.1	15.2	21	18	15	27	36	44	44	44	40	44	40	–	
			M_{2max}	Nm	29	39	49	40	29	24	70	70	70	70	70	64	70	64	–	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:		NRB060, 1-stage						NRB060, 2-stage								
1. Order code		A21						A22								
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$ Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$ Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$ Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80
	$J_{1.G}$ kg cm²	0.128	0.092	0.08	0.069	0.067	0.065	0.121	0.118	0.076	0.085	0.075	0.075	0.066	0.066	0.066
	$\varphi_{2,G}$ '	10						12								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 1 and 2-stage (continued)																			
4.59 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	600	500	375	300	300	300	200	150	150	150	125	125	100	75	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	11.3	14	18.6	23.5	18	15	32.5	43	43	41	44	33	39.5	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	18.9	23.5	25	18	15	42	44	44	44	44	40	44	40	–	
			M_{2max}	Nm	44	58	64	40	29	24	70	70	70	70	70	64	70	64	–	
4.57 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	600	500	375	250	300	250	200	150	150	125	125	100	75	75	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10	12.1	16.5	24.5	17.9	15	29	38.5	36.5	44	38.5	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19	23.5	25	18	15	42	44	44	44	44	40	44	40	–	
			M_{2max}	Nm	44	58	64	40	29	24	70	70	70	70	70	64	70	64	–	
7.1 ... 7.25	23.2 ... 23.6	2.92 (3.77)	n_{2N}	r/min	600	500	375	300	300	300	–	150	150	150	125	100	75	–	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	14.1	16.8	23	25	18	13	–	44	44	42	44	40	44	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	28.5	36	25	18	15	–	44	44	44	44	40	44	–	–	
			M_{2max}	Nm	45	61	64	40	29	24	–	70	70	70	70	64	70	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 1 and 2-stage																			
0.527 ... 0.538	1.74 ... 1.79	0.2 (0.22)	n_{2N}	r/min	1000	750	600	375	375	300	300	250	200	200	150	125	100	75	60	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	0.85	1.26	1.66	2.7	2.8	3.55	3.1	3.75	5	4.9	6.7	8.1	10.3	13.9	15.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.57	2.1	2.65	3.7	4.25	5.3	4.75	6.3	8	8.5	10.6	13.3	17.1	21	18	
			M_{2max}	Nm	5.3	7.1	8.9	12.4	14.2	17.8	15.9	21	26.5	28	35	44	56	64	29	
1.11 ... 1.15	3.56 ... 3.66	0.35 (0.37)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	60	1F.2203-4AK..-2..0-Z
			M_{2N}	Nm	2.55	3.4	4.25	5.9	5.9	7.6	7	8.6	11.1	11	14.8	17.9	22.5	29.5	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.4	4.55	5.7	8	9.2	11.5	10.2	13.7	17.1	18.2	22.5	28.5	36.5	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	
2.21 ... 2.26	6.78 ... 6.96	1.251 (1.331)	n_{2N}	r/min	750	600	600	375	375	300	300	200	200	150	150	125	100	75	–	1F.2204-5AF..-2..0-Z
			M_{2N}	Nm	5.4	7.1	7.4	12.2	12.3	15	14.6	21.5	22.5	29	30	35.5	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.7	9	11.2	15.7	18	15	20	26.5	33.5	35.5	44	40	44	40	–	
			M_{2max}	Nm	20.5	27.5	34.5	40	29	24	61	70	70	70	70	64	70	64	–	
2.22 ... 2.27	6.78 ... 6.96	1.251 (1.331)	n_{2N}	r/min	750	600	600	375	375	300	300	200	200	150	150	125	100	100	–	1F.2204-5AK..-2..0-Z
			M_{2N}	Nm	5.5	7.3	7.5	12.4	12.6	15	14.8	22	23	29.5	30.5	36.5	44	36.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.8	9	11.3	15.8	18	15	20	27	33.5	35.5	44	40	44	40	–	
			M_{2max}	Nm	20.5	27.5	34.5	40	29	24	61	70	70	70	70	64	70	64	–	
2.96 ... 3.03	9.08 ... 9.33	1.631 (1.711)	n_{2N}	r/min	750	600	500	375	375	300	300	200	200	150	150	125	100	75	–	1F.2204-6AF..-2..0-Z
			M_{2N}	Nm	7.1	9.4	11.6	15.8	15.8	15	18.3	27	28	37	37	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9	12.1	15.1	21	18	15	27	36	44	44	44	40	44	40	–	
			M_{2max}	Nm	27.5	37	46.5	40	29	24	70	70	70	70	70	64	70	64	–	
2.73 ... 2.84	10.3 ... 10.6	3.42 (4.32)	n_{2N}	r/min	600	500	375	250	250	200	200	150	125	100	100	100	75	50	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.9	7.1	9.9	15.1	15	15	18.9	25	30.5	36	37.5	31.5	43.5	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.3	14.2	19.8	18	15	25	33	41.5	44	44	40	44	40	–	
			M_{2max}	Nm	31.5	42	52	40	29	24	70	70	70	70	70	64	70	64	–	
2.79 ... 2.9	10.3 ... 10.6	3.42 (4.32)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	125	100	100	75	75	–	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	7.4	9.3	12.4	16	15.8	15	18.2	22	31	37	44	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.6	14.5	20	18	15	25.5	34	42.5	44	44	40	44	40	–	
			M_{2max}	Nm	31.5	42	52	40	29	24	70	70	70	70	70	64	70	64	–	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:		NRB060, 1-stage						NRB060, 2-stage								
1. Order code		A21						A22								
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80
	$J_{1,G}$	kg cm²	0.128	0.092	0.08	0.069	0.067	0.065	0.121	0.118	0.076	0.085	0.075	0.075	0.066	0.066	0.066
	$\varphi_{2,G}$	'	10						12								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 1 and 2-stage (continued)																			
2.77 ... 2.88	10.3 ... 10.6	3.42 (4.32)	n_{2N}	r/min	600	500	375	300	250	250	200	150	125	125	100	100	75	75	–	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.5	8	10.9	13.6	16.6	14.6	20	27	33	32.5	41	36	44	32	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.5	14.4	20	18	15	25	33.5	42.5	44	44	40	44	40	–	
			M_{2max}	Nm	31.5	42	52	40	29	24	70	70	70	70	70	64	70	64	–	
4.85 ... 4.95	17.4 ... 17.7	5.37 (6.27)	n_{2N}	r/min	600	500	375	250	300	250	200	150	125	125	125	100	75	75	–	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	9.6	11.5	15.8	23.5	17	15	28	37.5	44	43	35.5	40	44	32.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.8	19.8	24.5	25	18	15	43.5	44	44	44	44	40	44	40	–	
			M_{2max}	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	–	

Planetary gearbox data																	
Gearbox type:			**NRB060, 1-stage**						**NRB060, 2-stage**								
1. Order code			**A21**						**A22**								
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80
	$J_{1,G}$	kg cm²	0.128	0.092	0.08	0.069	0.067	0.065	0.121	0.118	0.076	0.085	0.075	0.075	0.066	0.066	0.066
	$\varphi_{2,G}$	'	10						12								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB060 3-stage												
0.51 ... 0.539	1.83 ... 1.88	0.093 (0.112)	n_{2N}	r/min	75	50	37.5	37.5	25	20	15	12.5	**1F.2103-2AH..-2..0-Z**
			M_{2N}	Nm	18.1	26.5	34.5	37	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
0.972 ... 1.03	3.84 ... 3.95	0.139 (0.158)	n_{2N}	r/min	60	50	37.5	37.5	25	20	15	–	**1F.2103-4AH..-2..0-Z**
			M_{2N}	Nm	40.5	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
1.17 ... 1.2	3.56 ... 3.66	0.371 (0.451)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	**1F.2104-4AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
1.16 ... 1.19	3.65 ... 3.75	0.371 (0.451)	n_{2N}	r/min	75	50	37.5	37.5	25	20	15	–	**1F.2104-4AK..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
			M_{2max}	Nm	70	70	70	70	70	64	70	–	
2.25 ... 2.3	7.16 ... 7.36	0.581 (0.671)	n_{2N}	r/min	50	37.5	30	25	–	–	–	–	**1F.2104-5AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.23 ... 2.28	7.25 ... 7.46	0.581 (0.671)	n_{2N}	r/min	75	50	37.5	37.5	–	–	–	–	**1F.2104-5AK..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.98 ... 3.05	9.56 ... 9.83	0.781 (0.861)	n_{2N}	r/min	50	37.5	–	–	–	–	–	–	**1F.2104-6AF..-2..0-Z**
			M_{2N}	Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	–	–	–	–	–	–	
			M_{2max}	Nm	70	70	–	–	–	–	–	–	
4.59 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	50	–	–	–	–	–	–	–	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	44	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	–	–	–	–	–	–	–	
			M_{2max}	Nm	70	–	–	–	–	–	–	–	
4.57 ... 4.75	14.3 ... 14.7	1.98 (2.82)	n_{2N}	r/min	50	–	–	–	–	–	–	–	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	44	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	–	–	–	–	–	–	–	
			M_{2max}	Nm	70	–	–	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 3-stage												
0.527 ... 0.538	1.74 ... 1.79	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	25	20	20	15	12.5	**1F.2203-2AK..-2..0-Z**
			M_{2N}	Nm	19.4	25.5	32	39.5	44	39.5	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	

➥ Continued on the next page

Planetary gearbox data									
Gearbox type:		**NRB060, 3-stage**							
1. Order code		**A23**							
i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code		**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
$J_{1,G}$	kg cm²	0.076	0.075	0.074	0.066	0.066	0.066	0.066	0.066
$\varphi_{2,G}$	'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB060

Servomotor data

$M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²
1.11 ... 1.15	3.56 ... 3.66	0.35 (0.37)
2.21 ... 2.26	6.78 ... 6.96	1.251 (1.331)
2.22 ... 2.27	6.78 ... 6.96	1.251 (1.331)
2.96 ... 3.03	9.08 ... 9.33	1.631 (1.711)
2.73 ... 2.84	10.3 ... 10.6	3.42 (4.32)
2.79 ... 2.9	10.3 ... 10.6	3.42 (4.32)
2.77 ... 2.88	10.3 ... 10.6	3.42 (4.32)

Selection data servomotors with planetary gearbox

SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB060 3-stage (continued)

n_{2N}	r/min	50	50	37.5	37.5	25	20	15	–	1F.2203-4AK..-2..0-Z
M_{2N}	Nm	42.5	38	44	40.5	44	40	44	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	44	44	44	44	40	44	–	
M_{2max}	Nm	70	70	70	70	70	64	70	–	
n_{2N}	r/min	50	37.5	30	25	–	–	–	–	1F.2204-5AF..-2..0-Z
M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
M_{2max}	Nm	70	70	70	70	–	–	–	–	
n_{2N}	r/min	60	50	37.5	37.5	–	–	–	–	1F.2204-5AK..-2..0-Z
M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
M_{2max}	Nm	70	70	70	70	–	–	–	–	
n_{2N}	r/min	50	37.5	–	–	–	–	–	–	1F.2204-6AF..-2..0-Z
M_{2N}	Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	44	–	–	–	–	–	–	
M_{2max}	Nm	70	70	–	–	–	–	–	–	
n_{2N}	r/min	37.5	25	–	–	–	–	–	–	1FT2205-2AC..-0..0-Z
M_{2N}	Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	44	–	–	–	–	–	–	
M_{2max}	Nm	70	70	–	–	–	–	–	–	
n_{2N}	r/min	50	37.5	–	–	–	–	–	–	1F.2205-2AF..-0..0-Z
M_{2N}	Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	44	–	–	–	–	–	–	
M_{2max}	Nm	70	70	–	–	–	–	–	–	
n_{2N}	r/min	50	37.5	–	–	–	–	–	–	1FT2205-2AH..-0..0-Z
M_{2N}	Nm	44	44	–	–	–	–	–	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	44	43.5	–	–	–	–	–	–	
M_{2max}	Nm	70	70	–	–	–	–	–	–	

➥ Continued on the next page

Servomotors with planetary gearbox

Planetary gearbox data

Gearbox type:		NRB060, 3-stage							
1. Order code		A23							
i		60	80	100	120	160	200	256	320
2. Order code		R60	R80	R01	R21	R61	R02	R52	R23
$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
$J_{1,G}$	kg cm²	0.076	0.075	0.074	0.066	0.066	0.066	0.066	0.066
$\varphi_{2,G}$	'	15							

Color legend:

$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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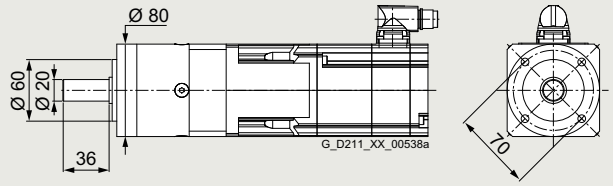
Selection and ordering data

NRB080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	750 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	650 N
Average axial force for 30000 h	$F_{A,eq}$	900 N
Maximum radial force	$F_{R,max}$	1250 N
Maximum axial force	$F_{A,max}$	1600 N

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 1 and 2-stage																			
0.49	1.8	0.093	n_{2N}	r/min	750	750	600	500	375	375	375	300	250	200	200	150	125	100	60	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	1.04	1.19	1.68	2.3	2.95	3.3	2.7	3.4	4.2	5.2	5.7	7.7	10.1	12.7	21	■■■ + ■■■ + . . .
0.516	1.85		M_{2_0}	Nm	1.46	1.99	2.5	3.55	4.05	5.1	4.55	6.1	7.6	8.2	10.2	12.8	16.4	20.5	33	
			M_{2max}	Nm	5.4	7.3	9.1	12.9	14.7	18.4	16.4	21.5	27	29	36.5	45.5	58	73	80	
0.994	3.81	0.139	n_{2N}	r/min	750	600	600	500	375	300	375	250	200	200	150	125	125	100	60	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.3	3.1	3.35	4.35	6.1	7.8	5.4	8.6	10.8	11.1	14.8	18.2	19.9	24.5	42.5	■■■ + ■■■ + . . .
1.06	3.91		M_{2_0}	Nm	3.05	4.15	5.2	7.3	8.4	10.5	9.2	12.3	15.3	16.4	20.5	25.5	32.5	41	50	
			M_{2max}	Nm	11.7	15.6	19.5	27	31	39	34.5	46.5	58	61	77	96	123	154	80	
1.14	3.52	0.35	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1F.2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.55	3.6	4.7	6.4	7.9	10	7.8	11.2	14	14.5	19.1	23.5	30.5	39	50	■■■ + ■■■ + . . .
1.16	3.62		M_{2_0}	Nm	3.4	4.55	5.7	8.1	9.2	11.6	10.3	13.8	17.3	18.4	23	28.5	36.5	46	50	
			M_{2max}	Nm	10.8	14.4	18	25	28.5	36	32	42.5	53	57	71	89	114	142	80	
1.13	3.62	0.35	n_{2N}	r/min	1000	750	600	500	500	375	375	300	250	200	200	150	125	100	60	**1F.2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.65	3.9	5.1	7	6.8	9.9	8.6	10.7	12.6	15.8	16.8	23.5	30	37.5	50	■■■ + ■■■ + . . .
1.16	3.72		M_{2_0}	Nm	3.4	4.55	5.7	8	9.2	11.5	10.3	13.7	17.2	18.3	22.5	28.5	36.5	45.5	50	
			M_{2max}	Nm	11.1	14.8	18.5	25.5	29.5	37	33	44	55	58	73	91	117	146	80	
2.21	7.1	0.56	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	**1F.2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.9	7.7	9.8	14	14.6	18.6	17	20	25.5	24.5	35.5	42	56	74	50	■■■ + ■■■ + . . .
2.26	7.31		M_{2_0}	Nm	6.7	9	11.2	15.8	18	22.5	20	26.5	33.5	35.5	44.5	55	71	89	50	
			M_{2max}	Nm	21.5	29	36.5	51	58	61	65	86	108	115	144	176	192	176	80	
2.19	7.19	0.56	n_{2N}	r/min	750	600	600	375	375	300	300	250	200	150	150	125	100	75	60	**1F.2104-5AK..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.8	7.6	8	13.8	14.3	18.3	16.8	20	25	32.5	35	41.5	55	73	50	■■■ + ■■■ + . . .
2.25	7.41		M_{2_0}	Nm	6.6	8.9	11.1	15.7	17.9	22	20	26.5	33	35.5	44	55	71	88	50	
			M_{2max}	Nm	22	29.5	37	51	59	61	66	87	109	117	146	176	192	176	80	
2.93	9.49	0.76	n_{2N}	r/min	750	600	500	375	375	300	300	200	200	150	150	125	100	75	50	**1F.2104-6AF..-2..0-Z**
...	...	(0.84)	M_{2N}	Nm	7.1	9.3	11.8	16.8	17.3	22	20	29.5	29.5	39.5	41	48.5	64	86	50	■■■ + ■■■ + . . .
3.01	9.78		M_{2_0}	Nm	8.9	12	15	21	24	30	26.5	35.5	44.5	47.5	59	74	95	110	50	
			M_{2max}	Nm	29	39	48.5	68	78	61	87	116	144	154	192	176	192	176	80	

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Planetary gearbox data																
Gearbox type:			NRB080, 1-stage						NRB080, 2-stage							
1. Order code			A31						A32							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 1 and 2-stage (continued)																			
4.62 ... 4.74	14.3 ... 14.7	1.71 (2.55)	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	75	75	50	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	11	14	17.4	24	30.5	37	33.5	42.5	56	56	68	85	117	108	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	18.9	23.5	33	37.5	38	42	56	70	74	93	110	120	110	50	
			M_{2max}	Nm	44	58	73	102	80	61	131	174	176	192	192	176	192	176	80	
4.65 ... 4.77	14.3 ... 14.7	1.71 (2.55)	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	100	100	75	75	60	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	9.6	15	14.9	26	27	33	31	38	51	50	73	75	106	92	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19	23.5	33	38	38	42.5	56	70	75	94	110	120	110	50	
			M_{2max}	Nm	44	58	73	102	80	61	131	174	176	192	192	176	192	176	80	
7.15 ... 7.5	22.9 ... 23.6	2.65 (3.5)	n_{2N}	r/min	600	500	375	300	250	250	200	150	125	125	100	100	75	75	–	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	17.3	21	28	37	44	38	51	67	81	80	101	94	120	107	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	29.5	37	52	50	38	66	88	110	117	120	110	120	110	–	
			M_{2max}	Nm	70	94	117	104	80	61	208	192	176	192	192	176	192	176	–	
7.25 ... 7.57	24.8 ... 25.5	5.476 (7.176)	n_{2N}	r/min	500	375	300	250	200	200	150	125	100	100	75	75	60	60	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	17.2	23	29	35.5	45	38	56	68	84	83	111	104	120	93	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	37.5	52	50	38	66	89	110	119	120	110	120	110	–	
			M_{2max}	Nm	76	101	127	104	80	61	208	192	176	192	192	175	192	176	–	
9.39 ... 9.81	31.5 ... 32.4	6.876 (8.476)	n_{2N}	r/min	500	375	300	200	200	200	150	125	100	100	75	75	60	50	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	20.5	27	34.5	52	50	38	66	78	96	93	120	108	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29	39	49	65	50	38	86	115	110	120	120	110	120	110	–	
			M_{2max}	Nm	97	129	161	104	80	61	208	192	176	192	192	176	192	176	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 1 and 2-stage																			
0.476 ... 0.503	1.71 ... 1.75	0.2 (0.22)	n_{2N}	r/min	750	600	500	375	375	300	300	200	150	150	150	100	100	75	50	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	0.93	1.26	1.66	2.45	2.5	3.25	2.7	4.15	5.5	5.6	5.9	9	9.5	13	19.4	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.42	1.93	2.45	3.45	3.95	5	4.45	5.9	7.4	7.9	10	12.5	16	20	32	
			M_{2max}	Nm	5.1	6.9	8.6	12.2	13.9	17.4	15.5	20.5	26	27.5	34.5	43	55	69	80	
1.09 ... 1.12	3.52 ... 3.62	0.35 (0.37)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	**1F.2203-4AK..-0..0-Z**
			M_{2N}	Nm	2.5	3.25	4.15	5.9	6.1	7.8	6.9	8.4	10.6	10.5	14.6	17.7	22.5	30	46	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.25	4.4	5.5	7.7	8.9	11.1	9.9	13.2	16.6	17.7	22	27.5	35.5	44	50	
			M_{2max}	Nm	10.8	14.4	18	25	28.5	36	32	42.5	53	57	71	89	114	142	80	
2.17 ... 2.22	6.72 ... 6.91	1.23 (1.31)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	150	150	100	100	75	50	**1F.2204-5AF..-2..0-Z**
			M_{2N}	Nm	5.5	7.1	9.1	12.9	12.9	16.6	15.7	18	22.5	29.5	32	46	50	67	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.8	11	15.5	17.7	22	19.8	26	33	35	43.5	54	70	87	50	
			M_{2max}	Nm	20.5	27.5	34.5	48	55	61	61	82	102	109	136	170	192	176	80	
2.18 ... 2.23	6.72 ... 6.91	1.23 (1.31)	n_{2N}	r/min	750	600	500	375	375	300	300	200	200	150	150	100	100	75	60	**1F.2204-5AK..-2..0-Z**
			M_{2N}	Nm	5.6	7.3	9.3	13.2	13.2	16.9	15.9	23	23	30.5	32.5	47.5	50	68	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.8	11.1	15.6	17.8	22	19.9	26.5	33	35	44	55	70	88	50	
			M_{2max}	Nm	20.5	27.5	34.5	48	55	61	61	82	102	109	136	170	192	176	80	
2.92 ... 3	9.01 ... 9.28	1.61 (1.69)	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	75	75	50	**1F.2204-6AF..-2..0-Z**
			M_{2N}	Nm	7.3	9.5	12	17	21	25.5	24	30	40	40	49.5	61	84	84	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	11.9	14.9	20.5	23.5	29.5	26.5	35.5	44.5	47	59	74	94	110	50	
			M_{2max}	Nm	27.5	37	46	64	74	61	82	110	137	146	183	176	192	176	80	

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Planetary gearbox data																
Gearbox type:			NRB080, 1-stage						NRB080, 2-stage							
1. Order code			A31						A32							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 1 and 2-stage (continued)																				
2.83 ... 2.98	10.3 ... 10.6	3.15 (4.05)	n_{2N}	r/min	600	500	500	300	250	200	250	200	150	125	100	100	75	50	37.5	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	7.1	9.1	9	16.2	19	23.5	19.2	24.5	32	36	45.5	50	66	91	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26	34.5	43.5	46.5	58	72	92	110	50	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	156	166	192	176	192	176	80	
2.87 ... 3.02	10.3 ... 10.6	3.15 (4.05)	n_{2N}	r/min	750	600	500	375	375	250	300	200	200	150	125	100	100	75	50	**1F.2205-2AF..-0..0-Z**
			M_{2N}	Nm	7.2	9.3	11.7	16.6	15.9	24.5	19.7	28.5	27	38	47	59	59	81	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9	12	15	21	24	30	26.5	35	44	47	59	73	94	110	50	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	156	166	192	176	192	176	80	
2.85 ... 2.99	10.3 ... 10.6	3.15 (4.05)	n_{2N}	r/min	750	500	500	375	300	250	250	200	150	150	125	100	75	60	60	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.2	9.6	9.9	14	18.2	22	20.5	26.5	34	35	43.5	54	72	90	45.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	11.9	14.8	20.5	23.5	29.5	26	35	43.5	46.5	58	72	93	110	50	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	156	166	192	176	192	176	80	
4.89 ... 5.12	17.2 ... 17.7	5.1 (6)	n_{2N}	r/min	600	500	375	300	250	250	250	150	125	125	100	75	75	60	–	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	11.7	14.4	19.7	25.5	31	30.5	29.5	49	59	59	75	98	100	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.3	20	25.5	35.5	40.5	38	45	60	75	80	100	110	120	110	–	
			M_{2max}	Nm	53	70	88	104	80	61	157	192	176	192	192	176	192	176	–	
5.11 ... 5.35	17.1 ... 17.6	8.676 (10.276)	n_{2N}	r/min	375	300	250	200	150	150	150	125	100	75	75	50	50	37.5	30	**1FT2206-2AC..-0..0-Z**
			M_{2N}	Nm	13	16.6	20	26	34	35	36	42.5	53	69	70	105	104	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16	21	26.5	37	42.5	38	47	62	78	83	104	110	120	110	50	
			M_{2max}	Nm	52	70	87	104	80	61	156	192	176	192	192	176	192	176	80	
5.04 ... 5.26	17.1 ... 17.6	8.676 (10.276)	n_{2N}	r/min	500	375	300	250	200	200	200	150	100	100	75	75	60	50	–	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	12.9	17.3	21.5	27.5	34	33	33.5	44	63	66	84	86	109	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.7	21	26	36.5	42	38	46.5	61	77	82	103	110	120	110	–	
			M_{2max}	Nm	52	70	87	104	80	61	156	192	176	192	192	176	192	176	–	
4.9 ... 5.11	17.1 ... 17.6	8.676 (10.276)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	50	–	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	10.9	14.8	18.8	28.5	29	38	37.5	46.5	58	57	77	96	117	100	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.3	20	25.5	35.5	40.5	38	45	60	75	80	100	110	120	110	–	
			M_{2max}	Nm	52	70	87	104	80	61	156	192	176	192	192	176	192	176	–	
7.3 ... 7.64	25.7 ... 26.5	12.38 (13.976)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	–	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	15.3	20.5	26	39.5	40	38	51	61	76	75	101	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	50	38	67	89	110	119	120	110	120	110	–	
			M_{2max}	Nm	79	105	132	104	80	61	208	192	176	192	192	176	192	176	–	
7.17 ... 7.5	25.7 ... 26.5	12.38 (13.976)	n_{2N}	r/min	500	375	300	200	200	200	150	125	100	75	75	60	60	50	–	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	14.2	19.1	24	37.5	37	29.5	49.5	58	72	94	95	110	102	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	29.5	37	52	50	38	66	88	110	117	120	110	120	110	–	
			M_{2max}	Nm	79	105	132	104	80	61	208	192	176	192	192	176	192	176	–	
9.95 ... 10.4	36.3 ... 37.4	15.98 (17.676)	n_{2N}	r/min	300	250	200	150	150	150	125	75	75	60	60	50	50	37.5	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	22	27	33.5	45.5	44.5	34	56	91	91	113	110	110	94	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	65	50	38	91	120	110	120	120	110	120	110	–	
			M_{2max}	Nm	112	149	176	104	80	61	208	192	176	192	192	176	192	176	–	

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Planetary gearbox data																
Gearbox type:			NRB080, 1-stage						NRB080, 2-stage							
1. Order code			A31						A32							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB080

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 1 and 2-stage (continued)																			
9.84	34.4	15.976	n_{2N}	r/min	500	375	300	200	200	200	150	125	100	100	75	75	60	50	–	**1F.2206-4AF..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	21	28	35.5	53	50	38	67	79	98	95	120	109	120	110	–	■■■ + ■■■ + . . .
10.3	35.4		$M_{2,0}$	Nm	30.5	41	51	65	50	38	90	120	110	120	120	110	120	110	–	
			M_{2max}	Nm	106	141	176	104	79	61	208	192	176	192	191	176	192	176	–	
9.45	34.4	15.976	n_{2N}	r/min	375	300	250	200	200	150	150	100	75	75	75	60	50	50	–	**1FT2206-4AH..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	21.5	27	33	41.5	39	38	54	81	106	106	102	110	120	102	–	■■■ + ■■■ + . . .
9.85	35.4		$M_{2,0}$	Nm	29.5	39	49	65	50	38	86	115	110	120	120	110	120	110	–	
			M_{2max}	Nm	106	141	176	104	79	61	208	192	176	192	191	176	192	176	–	

Planetary gearbox data																	
Gearbox type:			**NRB080, 1-stage**						**NRB080, 2-stage**								
1. Order code			**A31**						**A32**								
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.654	0.455	0.423	0.379	0.37	0.359	0.613	0.589	0.586	0.446	0.406	0.404	0.366	0.365	0.366
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	M_{maxM}	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 3-stage													
0.49	1.8	0.093	n_{2N}	r/min	60	50	37.5	30	25	20	15	12.5	7.5	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	17.5	22.5	30	35.5	49	61	81	98	50	■■■ + ■■■ + . . .
0.516	1.85		$M_{2,0}$	Nm	30.5	40.5	51	61	81	102	120	110	49.5	
			M_{2max}	Nm	108	144	180	176	192	176	192	176	80	
0.994	3.81	0.139	n_{2N}	r/min	60	50	37.5	30	25	20	15	12.5	–	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	37	45	63	75	101	110	120	110	–	■■■ + ■■■ + . . .
1.06	3.91		$M_{2,0}$	Nm	59	79	99	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
1.14	3.52	0.35	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	**1F.2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	55	74	93	110	120	110	120	110	–	■■■ + ■■■ + . . .
1.16	3.62		$M_{2,0}$	Nm	68	91	114	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
1.13	3.62	0.35	n_{2N}	r/min	60	50	37.5	30	25	20	15	12.5	–	**1F.2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	54	69	91	109	120	110	120	110	–	■■■ + ■■■ + . . .
1.16	3.72		$M_{2,0}$	Nm	68	90	113	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.21	7.1	0.56	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	**1F.2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	101	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
2.26	7.31		$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.19	7.19	0.56	n_{2N}	r/min	50	37.5	37.5	30	25	20	15	12.5	–	**1F.2104-5AK..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	99	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
2.25	7.41		$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.93	9.49	0.76	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	–	**1F.2104-6AF..-2..0-Z**
...	...	(0.84)	M_{2N}	Nm	110	120	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
3.01	9.78		$M_{2,0}$	Nm	110	120	120	110	120	110	120	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	–	–	
4.62	14.3	1.71	n_{2N}	r/min	50	37.5	30	25	20	–	–	–	–	**1F.2105-4AF..-0..0-Z**
...	...	(2.55)	M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
4.74	14.7		$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
4.65	14.3	1.71	n_{2N}	r/min	50	37.5	30	30	25	–	–	–	–	**1FT2105-4AH..-0..0-Z**
...	...	(2.55)	M_{2N}	Nm	110	120	120	109	120	–	–	–	–	■■■ + ■■■ + . . .
4.77	14.7		$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
7.15	22.9	2.65	n_{2N}	r/min	50	37.5	30	–	–	–	–	–	–	**1F.2105-6AF..-0..0-Z**
...	...	(3.5)	M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.5	23.6		$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	

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Planetary gearbox data										
Gearbox type:			**NRB080, 3-stage**							
1. Order code			**A33**							
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$		Nm	110	120	120	110	120	110	120	110	50
$M_{2max,G}$		Nm	176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$		Nm	220	240	240	220	240	220	240	220	190
$J_{1,G}$		kg cm²	0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
$\varphi_{2,G}$		'	11							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB080 3-stage (continued)														
7.25 ... 7.57	24.8 ... 25.5	5.476 (7.176)	n_{2N}	r/min	37.5	30	25	–	–	–	–	–	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	
9.39 ... 9.81	31.5 ... 32.4	6.876 (8.476)	n_{2N}	r/min	37.5	–	–	–	–	–	–	–	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 3-stage														
0.476 ... 0.503	1.71 ... 1.75	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	20	20	15	12.5	10	7.5	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	16.4	23	29	41.5	46	62	73	92	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	59	79	99	120	110	50	
			M_{2max}	Nm	102	137	171	176	192	176	192	176	80	
1.09 ... 1.12	3.52 ... 3.62	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	20	15	12.5	–	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	41	56	70	82	109	98	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	65	87	109	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.17 ... 2.22	6.72 ... 6.91	1.23 (1.31)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	–	1F.2204-5AF..-2..0-Z
			M_{2N}	Nm	91	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.18 ... 2.23	6.72 ... 6.91	1.23 (1.31)	n_{2N}	r/min	50	37.5	37.5	30	25	20	15	12.5	–	1F.2204-5AK..-2..0-Z
			M_{2N}	Nm	93	120	100	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.92 ... 3	9.01 ... 9.28	1.61 (1.69)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	–	–	1F.2204-6AF..-2..0-Z
			M_{2N}	Nm	109	120	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	–	–	
2.83 ... 2.98	10.3 ... 10.6	3.15 (4.05)	n_{2N}	r/min	37.5	25	20	20	12.5	10	–	–	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	110	120	120	110	120	110	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	109	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	–	–	–	
2.87 ... 3.02	10.3 ... 10.6	3.15 (4.05)	n_{2N}	r/min	50	37.5	30	25	20	15	–	–	–	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	107	120	120	110	120	110	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	–	–	–	
2.85 ... 2.99	10.3 ... 10.6	3.15 (4.05)	n_{2N}	r/min	50	37.5	30	25	25	20	–	–	–	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	91	120	120	110	104	110	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	109	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	–	–	–	

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Planetary gearbox data										
Gearbox type:			NRB080, 3-stage								
1. Order code			A33								
	i		60	80	100	120	160	200	256	320	512
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23	R51
	$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
	$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
	$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
	$J_{1,G}$	kg cm²	0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB080 3-stage (continued)													
4.89	17.2	5.1	n_{2N}	r/min	50	37.5	30	25	–	–	–	–	–	**1F.2205-4AF..-0..0-Z**
...	...	(6)	M_{2N}	Nm	103	120	120	110	–	–	–	–	–	■■■ + ■■■ + . . .
5.12	17.7		$M_{2,0}$	Nm	110	120	120	110	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	–	–	–	–	–	
5.11	17.1	8.676	n_{2N}	r/min	30	25	20	15	12.5	–	–	–	–	**1FT2206-2AC..-0..0-Z**
...	...	(10.276)	M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
5.35	17.6		$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
5.04	17.1	8.676	n_{2N}	r/min	37.5	30	25	20	–	–	–	–	–	**1F.2206-2AF..-0..0-Z**
...	...	(10.276)	M_{2N}	Nm	110	120	120	110	–	–	–	–	–	■■■ + ■■■ + . . .
5.26	17.6		$M_{2,0}$	Nm	110	120	120	110	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	–	–	–	–	–	
4.9	17.1	8.676	n_{2N}	r/min	37.5	25	20	20	–	–	–	–	–	**1FT2206-2AH..-0..0-Z**
...	...	(10.276)	M_{2N}	Nm	95	119	120	109	–	–	–	–	–	■■■ + ■■■ + . . .
5.11	17.6		$M_{2,0}$	Nm	110	119	119	109	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	–	–	–	–	–	
7.3	25.7	12.38	n_{2N}	r/min	25	20	15	–	–	–	–	–	–	**1FT2206-3AB..-0..0-Z**
...	...	(13.976)	M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.64	26.5		$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	
7.17	25.7	12.38	n_{2N}	r/min	37.5	25	20	–	–	–	–	–	–	**1FT2206-3AF..-0..0-Z**
...	...	(13.976)	M_{2N}	Nm	99	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.5	26.5		$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	
9.95	36.3	15.98	n_{2N}	r/min	30	–	–	–	–	–	–	–	–	**1FT2206-4AC..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	105	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
10.4	37.4		$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	
9.84	34.4	15.976	n_{2N}	r/min	37.5	–	–	–	–	–	–	–	–	**1F.2206-4AF..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
10.3	35.4		$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	
9.45	34.4	15.976	n_{2N}	r/min	30	–	–	–	–	–	–	–	–	**1FT2206-4AH..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	110	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
9.85	35.4		$M_{2,0}$	Nm	110	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	176	–	–	–	–	–	–	–	–	

Planetary gearbox data										
Gearbox type:			**NRB080, 3-stage**							
1. Order code			**A33**							
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$		Nm	110	120	120	110	120	110	120	110	50
$M_{2max,G}$		Nm	176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$		Nm	220	240	240	220	240	220	240	220	190
$J_{1,G}$		kg cm²	0.584	0.405	0.404	0.59	0.365	0.365	0.366	0.366	0.366
$\varphi_{2,G}$		'	11							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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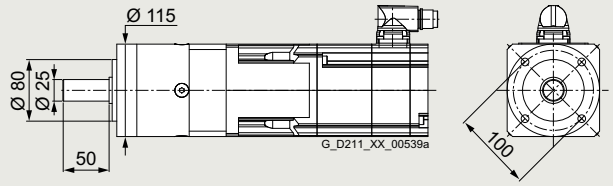
SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy geared motors for servo converters with line connection 400 V 3 AC

Gearbox type NRB120

Selection and ordering data

NRB120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1750 N
Average axial force for 20000 h	$F_{A,eq}$	2500 N
Average radial force for 30000 h	$F_{R,eq}$	1500 N
Average axial force for 30000 h	$F_{A,eq}$	2100 N
Maximum radial force	$F_{R,max}$	2000 N
Maximum axial force	$F_{A,max}$	3800 N

3 4

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 1 and 2-stage																				
0.379	1.72	0.093	n_{2N}	r/min	500	500	500	375	300	300	250	150	150	150	125	100	100	75	50	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.81	0.98	1.19	2.05	2.6	2.9	2.3	3.95	4.2	4.4	6.1	7.8	9.4	12.7	19.4	■■■ + ■■■ + . . .
0.45	1.77		M_{2_0}	Nm	1.13	1.59	2.05	2.95	3.4	4.35	3.85	5.2	6.5	7	8.8	11.1	14.2	17.9	28.5	
			M_{2max}	Nm	5.1	6.9	8.7	12.3	14.1	17.6	15.7	21	26	28	35	43.5	56	70	112	
1	3.74	0.139	n_{2N}	r/min	600	500	375	375	300	250	250	200	150	150	125	100	100	75	50	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.05	2.75	4	4.85	6.3	8	6.4	8	11	11.6	15.1	19.1	21	29.5	43.5	■■■ + ■■■ + . . .
1.06	3.83		M_{2_0}	Nm	3	4.05	5.1	7.3	8.4	10.5	9.3	12.5	15.7	16.8	21	26	33.5	42	67	
			M_{2max}	Nm	11.3	15.2	19	26.5	30.5	38	34	45.5	56	60	75	94	121	151	192	
1.03	3.45	0.35	n_{2N}	r/min	750	600	500	375	375	300	300	200	150	150	150	125	100	75	50	**1F.2104-4AF..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.2	3.2	4.35	6.5	7.1	9.2	7	10.6	13.9	14.7	17.1	21	28.5	37.5	58	■■■ + ■■■ + . . .
1.09	3.54		M_{2_0}	Nm	3.05	4.15	5.3	7.5	8.6	10.8	9.6	12.9	16.2	17.2	21.5	27	34.5	43	69	
			M_{2max}	Nm	10.4	14	17.5	24.5	28	35	31.5	42	52	56	70	87	112	140	192	
1.02	3.55	0.35	n_{2N}	r/min	750	600	500	375	375	300	300	200	150	150	150	125	100	75	50	**1F.2104-4AK..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.35	3.45	4.7	6.8	7.8	9.9	7.5	11.2	14.2	15.2	18.9	22.5	31.5	40	63	■■■ + ■■■ + . . .
1.08	3.64		M_{2_0}	Nm	3.05	4.15	5.2	7.4	8.5	10.7	9.5	12.8	16	17.1	21.5	26.5	34.5	43	69	
			M_{2max}	Nm	10.7	14.4	18	25	29	36	32	43	54	57	72	90	115	144	192	
2.13	7.03	0.56	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	75	75	50	**1F.2104-5AF..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.9	7.7	8.2	12.6	16.4	20.5	17.1	21	29.5	30	38.5	49	67	69	101	■■■ + ■■■ + . . .
2.18	7.23		M_{2_0}	Nm	6.4	8.6	10.8	15.2	17.4	21.5	19.4	25.5	32.5	34.5	43	54	69	86	120	
			M_{2max}	Nm	21.5	28.5	36	50	57	72	64	85	107	114	142	178	225	285	192	
2.12	7.12	0.56	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	75	75	50	**1F.2104-5AK..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.8	7.6	8	12.4	16.1	20	16.8	20.5	28.5	29	38	48	66	68	100	■■■ + ■■■ + . . .
2.17	7.33		M_{2_0}	Nm	6.3	8.5	10.7	15.1	17.3	21.5	19.3	25.5	32	34	43	53	68	86	120	
			M_{2max}	Nm	21.5	29	36.5	51	58	73	65	87	108	115	144	180	230	285	192	
2.87	9.42	0.76	n_{2N}	r/min	600	500	375	375	300	250	250	200	150	150	125	100	75	60	50	**1F.2104-6AF..-0..0-Z**
...	...	(0.84)	M_{2N}	Nm	7.3	9.5	13.6	15.3	19.8	24.5	20.5	25.5	35	35.5	46	58	83	104	117	■■■ + ■■■ + . . .
2.93	9.69		M_{2_0}	Nm	8.6	11.6	14.5	20	23	29	26	34.5	43.5	46.5	58	72	93	116	120	
			M_{2max}	Nm	28.5	38.5	48	67	77	96	86	115	143	153	191	235	305	368	192	

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Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage							
1. Order code			A41						A42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 1 and 2-stage (continued)																			
4.55 ... 4.66	14.2 ... 14.6	1.71 (2.55)	n_{2N}	r/min	600	500	375	300	300	250	250	150	150	125	100	100	75	60	50	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	11.9	15	21	29	29.5	36.5	30.5	50	52	64	82	82	120	150	120	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	13.8	18.5	23	32.5	37	46.5	41.5	55	69	73	92	115	147	184	120	
			M_{2max}	Nm	43.5	58	72	102	116	146	130	173	215	230	285	360	416	368	192	
4.58 ... 4.69	14.2 ... 14.6	1.71 (2.55)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	50	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	10.7	13.3	19.7	26.5	32	40.5	35.5	47.5	58	60	78	99	108	134	105	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	13.9	18.6	23	32.5	37	46.5	41.5	55	69	74	92	116	148	185	120	
			M_{2max}	Nm	43.5	58	72	102	116	146	130	173	215	230	285	360	416	368	192	
7.42 ... 7.62	22.8 ... 23.5	2.65 (3.5)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	75	60	50	50	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	18.8	25.5	27.5	37	45	57	51	68	81	81	106	141	184	220	119	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	22.5	30	38	53	60	76	68	90	113	120	150	188	240	230	120	
			M_{2max}	Nm	70	93	117	164	187	152	205	275	345	370	416	368	416	368	192	
7.8 ... 8.1	24.7 ... 25.5	4.6 (6.3)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	100	100	75	60	50	50	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	19.4	26.5	28.5	38	46.5	59	52	70	84	103	109	145	189	225	120	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	24	32	40	56	64	81	71	95	119	127	159	198	255	230	120	
			M_{2max}	Nm	76	101	127	177	192	152	225	300	368	400	416	368	416	368	192	
10.1 ... 10.5	31.5 ... 32.4	6 (7.6)	n_{2N}	r/min	500	375	375	250	250	200	200	125	100	100	75	75	60	50	37.5	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	23.5	32.5	33.5	53	53	68	60	97	121	123	163	165	210	230	120	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	31.5	42	52	73	84	95	93	124	155	165	205	230	260	230	120	
			M_{2max}	Nm	97	129	161	216	192	152	285	380	368	416	416	368	416	368	192	
14.3 ... 14.9	43.4 ... 44.7	8.7 (10.4)	n_{2N}	r/min	500	375	300	250	200	200	150	125	100	100	75	75	60	60	–	**1F.2106-6AF..-0..0-Z**
			M_{2N}	Nm	31	42	54	69	85	87	101	122	151	152	200	199	255	215	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	44.5	59	74	104	119	95	131	175	215	230	260	230	260	230	–	
			M_{2max}	Nm	134	178	220	216	192	152	336	416	368	416	416	365	416	368	–	
21.1 ... 21.5	84.1 ... 85.6	20.6 (24.7)	n_{2N}	r/min	375	300	250	150	150	150	125	100	75	75	60	60	50	37.5	–	**1FT2108-4AC..-0..0-Z**
			M_{2N}	Nm	40	50	61	104	106	95	118	144	193	190	240	210	245	230	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	64	85	107	135	120	95	190	250	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
25.9 ... 26.4	102 ... 103	24.0 (28.0)	n_{2N}	r/min	375	300	250	200	200	150	125	100	75	75	75	60	50	37.5	–	**1FT2108-5AB..-0..0-Z**
			M_{2N}	Nm	50	63	77	96	90	95	142	174	225	230	210	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	79	105	131	135	120	95	210	260	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
25.6 ... 26.2	102 ... 103	24.0 (28.0)	n_{2N}	r/min	375	250	200	150	150	150	125	100	75	60	60	60	50	37.5	–	**1FT2108-5AC..-0.B0-Z**
			M_{2N}	Nm	44.5	67	84	114	115	95	128	155	205	255	250	215	250	230	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	78	104	130	135	120	95	210	260	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage																			
0.366 ... 0.437	1.62 ... 1.67	0.2 (0.22)	n_{2N}	r/min	500	375	375	300	250	250	200	150	125	125	100	100	75	60	37.5	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	0.79	1.19	1.5	2.25	2.85	3	2.75	3.85	4.75	4.95	7	6.9	10.9	13.8	22	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.09	1.54	1.99	2.85	3.3	4.2	3.7	5	6.3	6.8	8.5	10.7	13.8	17.3	27.5	
			M_{2max}	Nm	4.85	6.5	8.2	11.6	13.3	16.7	14.8	19.8	24.5	26.5	33	41.5	53	66	106	

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Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage							
1. Order code			A41						A42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB120

SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage (continued)

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
0.985 ... 1.04	3.45 ... 3.54	0.35 (0.37)	n_{2N} r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	37.5	1F.2203-4AK..-0..0-Z
			M_{2N} Nm	2.4	3.15	4.55	6.5	7	8.8	7.1	8.8	12.3	12.8	16.5	20.5	29	30.5	58	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	2.95	4	5	7.2	8.2	10.3	9.2	12.3	15.5	16.5	20.5	25.5	33	41.5	66	
			M_{2max} Nm	10.4	14	17.5	24.5	28	35	31.5	42	52	56	70	87	112	140	192	
2.09 ... 2.14	6.64 ... 6.83	1.23 (1.31)	n_{2N} r/min	600	500	375	375	300	250	250	200	150	150	125	100	75	60	37.5	1F.2204-5AF..-0..0-Z
			M_{2N} Nm	5.6	7.3	10	11.4	15.2	18.9	15.9	19.5	27.5	27.5	36	45	63	79	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6.2	8.4	10.6	14.9	17	21	19	25	31.5	34	42.5	53	68	85	120	
			M_{2max} Nm	20	27	34	47.5	54	68	60	81	101	108	135	168	215	265	192	
2.11 ... 2.16	6.64 ... 6.83	1.23 (1.31)	n_{2N} r/min	600	500	375	375	300	250	250	200	150	150	125	100	75	60	37.5	1F.2204-5AK..-0..0-Z
			M_{2N} Nm	5.7	7.4	10.1	11.7	15.6	19.4	16.3	20	28	28	36.5	46	65	82	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6.3	8.4	10.6	15	17.2	21.5	19.2	25.5	32	34	42.5	53	68	85	120	
			M_{2max} Nm	20	27	34	47.5	54	68	60	81	101	108	135	168	215	265	192	
2.85 ... 2.92	8.94 ... 9.19	1.61 (1.69)	n_{2N} r/min	600	500	375	300	300	250	250	200	150	125	100	100	75	60	50	1F.2204-6AF..-0..0-Z
			M_{2N} Nm	7.8	10	13.9	19.7	20.5	25	21	25.5	36.5	44	55	59	86	108	111	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.6	11.5	14.4	20	23	29	26	34.5	43	46	57	72	92	115	120	
			M_{2max} Nm	27.5	36.5	45.5	64	73	91	82	109	136	145	181	225	290	360	192	
3.08 ... 3.2	10.2 ... 10.5	3.15 (4.05)	n_{2N} r/min	500	500	375	300	250	200	200	150	125	125	100	75	75	50	37.5	1FT2205-2AC..-0..0-Z
			M_{2N} Nm	7.4	7.6	11.8	16.1	19.8	25	21.5	29	36	37.5	48.5	62	70	99	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	9.4	12.6	15.8	22	25.5	31.5	28	37.5	47	50	62	78	100	125	120	
			M_{2max} Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	330	368	192	
3.11 ... 3.23	10.2 ... 10.5	3.15 (4.05)	n_{2N} r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	50	1F.2205-2AF..-0..0-Z
			M_{2N} Nm	7.4	9.7	13.1	18.3	19.6	24	20.5	24.5	35.5	35	45	57	80	101	100	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	9.5	12.7	16	22.5	25.5	32	28.5	38	47.5	50	63	79	101	127	120	
			M_{2max} Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	330	368	192	
3.05 ... 3.16	10.2 ... 10.5	3.15 (4.05)	n_{2N} r/min	600	500	375	300	250	250	200	150	150	125	100	100	75	60	37.5	1FT2205-2AH..-0..0-Z
			M_{2N} Nm	6.6	8.4	12.4	17	20	20.5	22	29.5	30.5	38.5	49	49	73	92	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	9.3	12.5	15.6	22	25	31.5	27.5	37	46.5	49.5	62	77	99	124	120	
			M_{2max} Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	330	368	192	
5.25 ... 5.46	17.1 ... 17.6	5.1 (6)	n_{2N} r/min	500	375	375	300	250	200	200	150	125	125	100	75	60	50	37.5	1F.2205-4AF..-0..0-Z
			M_{2N} Nm	12.6	17.5	19.1	25.5	31	40	35.5	48	57	58	76	101	132	159	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	16.2	21.5	27	38	43.5	54	48	64	80	85	107	134	171	210	120	
			M_{2max} Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
5.31 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N} r/min	500	375	300	250	200	150	150	125	100	100	75	60	50	37.5	37.5	1FT2206-2AC..-0..0-Z
			M_{2N} Nm	11	15.5	20	25.5	32.5	43.5	41	50	63	64	87	109	136	178	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	16.2	21.5	27	38	43.5	54	48.5	64	80	86	107	134	172	215	120	
			M_{2max} Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
5.41 ... 5.62	17.1 ... 17.6	7.8 (9.4)	n_{2N} r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	37.5	1F.2206-2AF..-0..0-Z
			M_{2N} Nm	12.2	15	21.5	29	35	44	39	52	64	66	84	108	115	143	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	16.7	22	27.5	39	44.5	56	49.5	66	82	88	110	138	176	220	119	
			M_{2max} Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	

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Planetary gearbox data																
Gearbox type:			NRB120, 1-stage						NRB120, 2-stage							
1. Order code			A41						A42							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage (continued)																			
5.25 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	100	100	75	60	50	37.5	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	12.4	17.3	22	29	29	37.5	34.5	46	55	70	72	97	127	152	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.2	21.5	27	38	43.5	54	48	64	80	85	107	133	171	210	120	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	345	368	416	368	192	
7.94 ... 8.26	25.7 ... 26.4	11.5 (13.1)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	17.5	24	31	40.5	50	66	47	74	93	95	127	158	199	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	24.5	32.5	41	57	66	82	73	97	121	129	162	200	255	230	120	
			M_{2max}	Nm	79	105	132	184	192	152	235	310	368	416	416	368	416	368	192	
7.81 ... 8.12	25.7 ... 26.4	11.5 (13.1)	n_{2N}	r/min	500	375	300	250	200	200	200	125	100	100	75	75	60	50	37.5	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	16.4	22.5	29.5	38	47.5	48	43.5	71	89	90	121	122	159	188	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	24	32	40.5	56	64	81	71	95	119	127	159	199	255	230	120	
			M_{2max}	Nm	79	105	132	184	192	152	235	310	368	416	416	368	416	368	192	
10.8 ... 11.1	36.2 ... 37.3	15.1 (16.8)	n_{2N}	r/min	375	300	250	150	150	125	125	100	75	75	60	50	37.5	37.5	30	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	20	25.5	31.5	54	55	67	66	82	109	109	138	165	225	210	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	33	44	55	77	88	95	99	131	164	175	215	230	260	230	120	
			M_{2max}	Nm	111	149	186	216	192	152	330	416	368	416	416	368	416	368	192	
10.6 ... 11	34.3 ... 35.3	15.1 (16.8)	n_{2N}	r/min	500	375	375	250	250	200	200	125	100	100	75	75	60	50	37.5	**1F.2206-4AF..-0..0-Z**
			M_{2N}	Nm	24	33	34	54	54	70	62	99	123	125	167	168	215	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	32.5	43.5	54	76	87	95	97	129	162	172	215	230	260	230	120	
			M_{2max}	Nm	106	141	176	216	192	152	310	416	368	416	416	368	416	368	192	
10.1 ... 10.5	34.3 ... 35.3	15.1 (16.8)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	50	37.5	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	18.5	25.5	33.5	51	53	71	66	80	100	99	136	169	205	190	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	73	83	95	93	123	154	165	205	230	260	230	120	
			M_{2max}	Nm	106	141	176	216	192	152	310	416	368	416	416	368	416	368	192	
10.3 ... 10.6	36.2 ... 37.3	24.86 (28.16)	n_{2N}	r/min	375	300	250	200	150	125	150	100	100	75	60	50	50	37.5	30	**1FT2208-2AF..-0..0-Z**
			M_{2N}	Nm	25.5	32.5	40.5	52	68	84	67	99	96	132	167	200	199	225	119	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	74	85	95	94	125	157	167	205	230	260	225	120	
			M_{2max}	Nm	111	148	185	216	192	152	330	416	368	416	416	368	416	368	192	
16.2 ... 16.6	48.6 ... 50.1	31.96 (34.96)	n_{2N}	r/min	375	250	200	150	150	125	125	100	75	60	50	50	37.5	37.5	–	**1FT2208-3AB..-0..0-Z**
			M_{2N}	Nm	27.5	42.5	54	74	74	89	87	106	143	176	210	205	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	49.5	66	82	116	120	95	148	197	230	260	260	230	260	230	–	
			M_{2max}	Nm	150	200	245	216	192	152	336	416	368	416	416	368	416	368	–	
15.2 ... 15.8	48.6 ... 50.1	31.96 (35.36)	n_{2N}	r/min	375	300	250	200	150	150	150	100	75	75	60	60	50	50	–	**1F.2208-3AC..-0..0-Z**
			M_{2N}	Nm	34.5	44	54	70	92	93	87	130	170	172	215	205	245	177	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	47	63	79	110	120	95	140	186	230	245	260	230	260	230	–	
			M_{2max}	Nm	150	200	245	216	192	152	336	416	368	416	416	368	416	368	–	
15.1 ... 15.7	48.6 ... 50.1	31.96 (35.36)	n_{2N}	r/min	375	300	250	200	150	150	125	100	75	75	60	50	50	37.5	–	**1FT2208-3AF..-0..0-Z**
			M_{2N}	Nm	32	41	50	64	86	84	98	123	162	162	205	230	225	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	47	62	78	109	120	95	139	185	230	245	260	230	260	230	–	
			M_{2max}	Nm	150	200	245	216	192	152	336	416	368	416	416	368	416	368	–	

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Planetary gearbox data																
Gearbox type:			**NRB120, 1-stage**						**NRB120, 2-stage**							
1. Order code			**A41**						**A42**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 1 and 2-stage (continued)																				
19.7 ... 20.2	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	250	200	150	125	100	100	100	75	60	50	50	37.5	37.5	30	–	**1FT2208-4AB..-0..0-Z**
			M_{2N}	Nm	38	48.5	64	80	99	94	100	133	165	197	194	230	230	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	60	80	100	135	120	95	179	235	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
18.9 ... 19.7	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	375	300	250	150	150	150	125	100	75	75	60	60	50	37.5	–	**1F.2208-4AC..-0..0-Z**
			M_{2N}	Nm	39.5	49.5	60	101	104	94	116	142	190	189	235	210	245	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	58	78	98	135	120	95	174	230	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
18.2 ... 18.8	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	375	300	250	150	150	150	125	100	75	75	60	60	50	37.5	–	**1FT2208-4AF..-0..0-Z**
			M_{2N}	Nm	39.5	49.5	60	101	103	94	117	143	190	189	235	210	245	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	56	75	93	131	120	95	166	220	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	415	368	416	368	–	
22.9 ... 23.7	76.6 ... 78.7	50.46 (55.96)	n_{2N}	r/min	375	250	250	150	150	150	125	100	75	60	60	60	50	37.5	–	**1FT2208-5AB..-0..0-Z**
			M_{2N}	Nm	43	64	65	111	112	95	126	152	205	250	250	215	250	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	71	94	118	135	120	95	210	260	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	
22.7 ... 23.5	76.6 ... 78.7	50.46 (55.96)	n_{2N}	r/min	375	250	200	150	150	150	125	75	75	60	60	60	50	37.5	–	**1F.2208-5AC..-0..0-Z**
			M_{2N}	Nm	42.5	64	81	110	111	92	124	200	200	250	245	200	230	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	70	94	117	135	120	95	205	260	230	260	260	230	260	230	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	415	416	368	416	368	–	

Planetary gearbox data																
Gearbox type:			**NRB120, 1-stage**						**NRB120, 2-stage**							
1. Order code			**A41**						**A42**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.361	1.835	1.633	1.463	1.431	1.378	2.288	2.224	2.203	1.747	1.573	1.566	1.42	1.417	1.414
	$\varphi_{2,G}$	'	7						9								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 3-stage													
0.379	1.72	0.093 (0.112)	n_{2N}	r/min	37.5	37.5	30	20	20	15	12.5	10	6	**1F.2103-2AH..-0..0-Z**
...	...		M_{2N}	Nm	17.6	21	26.5	33.5	48	63	77	97	120	■■■ + ■■■ + . . .
0.45	1.77		$M_{2,0}$	Nm	26.5	35.5	44.5	53	71	89	114	142	119	
			M_{2max}	Nm	104	139	174	205	275	345	416	368	191	
1	3.74	0.139 (0.158)	n_{2N}	r/min	37.5	37.5	30	20	20	15	12.5	10	6	**1F.2103-4AH..-0..0-Z**
...	...		M_{2N}	Nm	44.5	52	66	86	113	147	181	225	119	■■■ + ■■■ + . . .
1.06	3.83		$M_{2,0}$	Nm	62	83	104	125	167	205	260	230	119	
			M_{2max}	Nm	225	300	375	368	416	368	416	368	192	
1.03	3.45	0.35 (0.43)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	**1F.2104-4AF..-0..0-Z**
...	...		M_{2N}	Nm	45	69	86	93	143	185	225	225	120	■■■ + ■■■ + . . .
1.09	3.54		$M_{2,0}$	Nm	64	86	107	129	172	215	260	230	119	
			M_{2max}	Nm	205	275	345	368	416	368	416	368	192	
1.02	3.55	0.35 (0.43)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	**1F.2104-4AK..-0..0-Z**
...	...		M_{2N}	Nm	47.5	76	95	98	157	198	250	230	120	■■■ + ■■■ + . . .
1.08	3.64		$M_{2,0}$	Nm	64	85	107	128	171	210	260	230	119	
			M_{2max}	Nm	210	285	355	368	416	368	416	368	192	
2.13	7.03	0.56 (0.65)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2104-5AF..-0..0-Z**
...	...		M_{2N}	Nm	120	162	197	225	250	230	260	230	120	■■■ + ■■■ + . . .
2.18	7.23		$M_{2,0}$	Nm	129	171	210	230	260	230	260	230	120	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	192	
2.12	7.12	0.56 (0.65)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2104-5AK..-0..0-Z**
...	...		M_{2N}	Nm	118	161	194	220	245	230	260	230	120	■■■ + ■■■ + . . .
2.17	7.33		$M_{2,0}$	Nm	128	170	210	230	260	230	260	230	120	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	192	
2.87	9.42	0.76 (0.84)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	–	**1F.2104-6AF..-0..0-Z**
...	...		M_{2N}	Nm	143	194	230	230	260	230	260	230	–	■■■ + ■■■ + . . .
2.93	9.69		$M_{2,0}$	Nm	172	230	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
4.55	14.2	1.71 (2.55)	n_{2N}	r/min	37.5	30	25	25	20	15	12.5	10	–	**1F.2105-4AF..-0..0-Z**
...	...		M_{2N}	Nm	205	260	260	185	260	230	260	230	–	■■■ + ■■■ + . . .
4.66	14.6		$M_{2,0}$	Nm	260	260	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	415	368	416	368	416	368	–	
4.58	14.2	1.71 (2.55)	n_{2N}	r/min	30	30	25	20	20	15	12.5	10	–	**1FT2105-4AH..-0..0-Z**
...	...		M_{2N}	Nm	230	240	260	230	255	230	260	230	–	■■■ + ■■■ + . . .
4.69	14.6		$M_{2,0}$	Nm	260	260	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
7.42	22.8	2.65 (3.5)	n_{2N}	r/min	37.5	30	25	20	20	15	–	–	–	**1F.2105-6AF..-0..0-Z**
...	...		M_{2N}	Nm	235	260	260	230	260	230	–	–	–	■■■ + ■■■ + . . .
7.62	23.5		$M_{2,0}$	Nm	260	260	260	230	260	230	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	–	–	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$		Nm	260	260	260	230	260	230	260	230	120
$M_{2max,G}$		Nm	416	416	416	368	416	368	416	368	192
$M_{2Em.Off}$		Nm	520	520	520	500	520	500	520	500	380
$J_{1,G}$		kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
$\varphi_{2,G}$		'	11							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRB120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB120 3-stage (continued)													
7.8 ... 8.1	24.7 ... 25.5	4.6 (6.3)	n_{2N}	r/min	37.5	30	25	20	20	–	–	–	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	240	260	260	230	260	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	–	
			M_{2max}	Nm	410	415	416	368	416	–	–	–	–	
10.1 ... 10.5	31.5 ... 32.4	6 (7.6)	n_{2N}	r/min	37.5	30	25	20	–	–	–	–	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	245	260	260	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	–	–	–	–	–	
			M_{2max}	Nm	416	416	416	368	–	–	–	–	–	
14.3 ... 14.9	43.4 ... 44.7	8.7 (10.4)	n_{2N}	r/min	37.5	30	25	–	–	–	–	–	–	**1F.2106-6AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	416	–	–	–	–	–	–	
20.8 ... 20.8	83.3 ... 83.3	20.6 (24.7)	n_{2N}	r/min	30	–	–	–	–	–	–	–	–	**1FT2108-4AC..-0..0-Z**
			M_{2N}	Nm	255	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
25.5 ... 25.5	101 ... 101	24.0 (28.0)	n_{2N}	r/min	25	–	–	–	–	–	–	–	–	**1FT2108-5AB..-0..0-Z**
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
25.3 ... 25.3	101 ... 101	24.0 (28.0)	n_{2N}	r/min	30	–	–	–	–	–	–	–	–	**1FT2108-5AC..-0.B0-Z**
			M_{2N}	Nm	250	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage													
0.366 ... 0.437	1.62 ... 1.67	0.2 (0.22)	n_{2N}	r/min	30	30	20	15	15	12.5	10	7.5	6	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	20	24	36	41	55	66	83	111	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	25.5	34.5	43	52	69	86	111	138	120	
			M_{2max}	Nm	98	131	164	197	260	325	416	368	192	
0.985 ... 1.04	3.45 ... 3.54	0.35 (0.37)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2203-4AK..-0..0-Z**
			M_{2N}	Nm	49	67	82	94	114	152	183	225	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	82	103	124	165	205	260	230	120	
			M_{2max}	Nm	205	275	345	368	416	368	416	368	192	
2.09 ... 2.14	6.64 ... 6.83	1.23 (1.31)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2204-5AF..-0..0-Z**
			M_{2N}	Nm	112	151	184	210	220	230	260	230	119	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	126	168	210	230	260	230	260	230	120	
			M_{2max}	Nm	400	416	416	368	416	368	416	368	192	
2.11 ... 2.16	6.64 ... 6.83	1.23 (1.31)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1F.2204-5AK..-0..0-Z**
			M_{2N}	Nm	116	157	188	215	225	230	260	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	127	169	210	230	260	230	260	230	120	
			M_{2max}	Nm	400	416	416	368	416	368	416	368	192	

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Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage (continued)													
2.85 ... 2.92	8.94 ... 9.19	1.61 (1.69)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	–	**1F.2204-6AF..-0..0-Z**
			M_{2N}	Nm	148	200	235	230	260	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	172	225	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
3.08 ... 3.2	10.2 ... 10.5	3.15 (4.05)	n_{2N}	r/min	37.5	25	20	20	12.5	10	10	7.5	–	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	121	190	235	210	260	230	255	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	185	245	260	230	260	230	260	230	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
3.11 ... 3.23	10.2 ... 10.5	3.15 (4.05)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	–	**1F.2205-2AF..-0..0-Z**
			M_{2N}	Nm	143	192	230	230	250	230	260	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	187	245	260	230	260	230	260	225	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
3.05 ... 3.16	10.2 ... 10.5	3.15 (4.05)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	–	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	128	172	200	225	199	225	255	225	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	183	240	260	225	260	230	255	225	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	–	
5.25 ... 5.46	17.1 ... 17.6	5.1 (6)	n_{2N}	r/min	30	30	25	20	20	15	12.5	–	–	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	240	230	260	230	220	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	260	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	–	–	
5.31 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	25	25	20	20	12.5	10	10	–	–	**1FT2206-2AC..-0..0-Z**
			M_{2N}	Nm	255	250	260	187	260	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	260	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	–	–	
5.41 ... 5.62	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	30	30	25	20	20	15	12.5	–	–	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	250	250	260	230	220	230	260	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	255	225	255	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	–	–	
5.25 ... 5.45	17.1 ... 17.6	7.8 (9.4)	n_{2N}	r/min	30	25	25	20	15	15	12.5	–	–	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	230	255	230	225	255	225	215	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	225	255	225	255	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	–	–	
7.94 ... 8.26	25.7 ... 26.4	11.5 (13.1)	n_{2N}	r/min	25	20	15	12.5	10	–	–	–	–	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	–	–	–	–	
7.81 ... 8.12	25.7 ... 26.4	11.5 (13.1)	n_{2N}	r/min	30	30	25	20	15	–	–	–	–	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	260	235	255	230	260	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	–	–	–	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage (continued)													
10.8 ... 11.1	36.2 ... 37.3	15.1 (16.8)	n_{2N} r/min	25	20	20	15	–	–	–	–	–	1FT2206-4AC..-0..0-Z
			M_{2N} Nm	260	260	220	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
10.6 ... 11	34.3 ... 35.3	15.1 (16.8)	n_{2N} r/min	37.5	30	25	20	–	–	–	–	–	1F.2206-4AF..-0..0-Z
			M_{2N} Nm	250	260	260	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
10.1 ... 10.5	34.3 ... 35.3	15.1 (16.8)	n_{2N} r/min	30	25	25	20	–	–	–	–	–	1FT2206-4AH..-0..0-Z
			M_{2N} Nm	260	260	210	225	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
10.3 ... 10.6	36.2 ... 37.3	24.86 (28.16)	n_{2N} r/min	30	25	20	15	–	–	–	–	–	1FT2208-2AF..-0..0-Z
			M_{2N} Nm	250	250	260	230	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	255	260	255	225	–	–	–	–	–	
			M_{2max} Nm	416	416	416	368	–	–	–	–	–	
16.2 ... 16.6	48.6 ... 50.1	31.96 (34.96)	n_{2N} r/min	25	20	15	–	–	–	–	–	–	1FT2208-3AB..-0..0-Z
			M_{2N} Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	–	–	–	–	–	–	
			M_{2max} Nm	416	416	416	–	–	–	–	–	–	
15.2 ... 15.8	48.6 ... 50.1	31.96 (35.36)	n_{2N} r/min	30	25	20	–	–	–	–	–	–	1F.2208-3AC..-0..0-Z
			M_{2N} Nm	260	260	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	–	–	–	–	–	–	
			M_{2max} Nm	416	416	416	–	–	–	–	–	–	
15.1 ... 15.7	48.6 ... 50.1	31.96 (35.36)	n_{2N} r/min	30	25	20	–	–	–	–	–	–	1FT2208-3AF..-0..0-Z
			M_{2N} Nm	255	250	260	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	–	–	–	–	–	–	
			M_{2max} Nm	416	416	416	–	–	–	–	–	–	
19.7 ... 20.2	63.1 ... 64.9	41.16 (46.76)	n_{2N} r/min	25	20	–	–	–	–	–	–	–	1FT2208-4AB..-0..0-Z
			M_{2N} Nm	210	235	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	–	–	–	–	–	–	–	
			M_{2max} Nm	416	416	–	–	–	–	–	–	–	
18.9 ... 19.7	63.1 ... 64.9	41.16 (46.76)	n_{2N} r/min	30	25	–	–	–	–	–	–	–	1F.2208-4AC..-0..0-Z
			M_{2N} Nm	250	230	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	–	–	–	–	–	–	–	
			M_{2max} Nm	416	416	–	–	–	–	–	–	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			NRB120, 3-stage								
1. Order code			A43								
i			60	80	100	120	160	200	256	320	512
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23	R51
$M_{2N,G}$	Nm		260	260	260	230	260	230	260	230	120
$M_{2max,G}$	Nm		416	416	416	368	416	368	416	368	192
$M_{2Em.Off}$	Nm		520	520	520	500	520	500	520	500	380
$J_{1,G}$	kg cm²		2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
$\varphi_{2,G}$	'		11								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB120 3-stage (continued)														
18.2 ... 18.8	63.1 ... 64.9	41.16 (46.76)	n_{2N}	r/min	30	25	–	–	–	–	–	–	–	1FT2208-4AF..-0..0-Z
			M_{2N}	Nm	255	245	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	255	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	416	–	–	–	–	–	–	–	
22.9 ... 23.7	76.6 ... 78.7	50.46 (55.96)	n_{2N}	r/min	25	–	–	–	–	–	–	–	–	1FT2208-5AB..-0..0-Z
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	
22.7 ... 23.5	76.6 ... 78.7	50.46 (55.96)	n_{2N}	r/min	25	–	–	–	–	–	–	–	–	1F.2208-5AC..-0..0-Z
			M_{2N}	Nm	260	–	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	–	–	–	–	–	–	–	–	
			M_{2max}	Nm	416	–	–	–	–	–	–	–	–	

Planetary gearbox data										
Gearbox type:			**NRB120, 3-stage**							
1. Order code			**A43**							
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230	120
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368	192
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.196	1.57	1.563	2.179	1.416	1.416	1.413	1.413	1.413
	$\varphi_{2,G}$	'	11							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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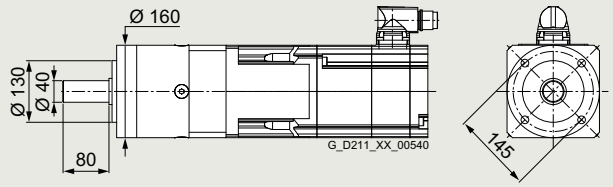
Gearbox type NRB160

Selection and ordering data

NRB160



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5000 N
Average axial force for 20000 h	$F_{A,eq}$	7000 N
Average radial force for 30000 h	$F_{R,eq}$	4200 N
Average axial force for 30000 h	$F_{A,eq}$	6000 N
Maximum radial force	$F_{R,max}$	5000 N
Maximum axial force	$F_{A,max}$	11000 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB160 1 and 2-stage																	
4.16 ... 4.28	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	50	37.5	20	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	11.2	14.8	19.5	31	44	57	60	76	95	96	136	245	■■■ + ■■■ + . . .
			M_{2_0}	Nm	12.4	16.8	21	34	51	63	68	85	106	136	170	270	
			M_{2max}	Nm	42	56	70	113	169	210	225	280	350	450	560	720	
4.19 ... 4.31	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10.6	13.8	18.8	28.5	41	55	56	73	90	120	122	235	■■■ + ■■■ + . . .
			M_{2_0}	Nm	12.5	16.9	21	34	51	64	68	85	107	137	172	275	
			M_{2max}	Nm	42	56	70	113	169	210	225	280	350	450	560	720	
7.13 ... 7.24	22.8 ... 23.1	2.65 (3.5)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	16.5	21	29	43	60	83	82	110	132	187	230	350	■■■ + ■■■ + . . .
			M_{2_0}	Nm	21	28.5	36	57	86	107	114	143	179	230	285	450	
			M_{2max}	Nm	69	92	115	184	270	340	365	455	570	720	910	720	
7.5 ... 7.65	24.7 ... 25	4.6 (6.3)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	17.5	22.5	30.5	45.5	63	88	86	115	139	195	240	365	■■■ + ■■■ + . . .
			M_{2_0}	Nm	22.5	30	38	61	90	112	120	150	187	240	300	450	
			M_{2max}	Nm	75	100	125	200	295	370	395	495	610	790	980	720	
9.84 ... 10	31.5 ... 31.9	6 (7.6)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	22.5	28.5	39	56	76	108	104	140	167	235	295	435	■■■ + ■■■ + . . .
			M_{2_0}	Nm	29.5	39.5	50	80	118	147	157	196	245	310	390	450	
			M_{2max}	Nm	95	127	159	255	375	470	500	630	780	1000	1120	720	
14.1 ... 14.4	43.6 ... 44.3	8.7 (10.4)	n_{2N}	r/min	300	200	200	125	75	60	60	50	37.5	37.5	25	20	1F.2106-6AF..-0..0-Z
			M_{2N}	Nm	30	47	51	88	137	172	173	215	285	290	440	450	■■■ + ■■■ + . . .
			M_{2_0}	Nm	42.5	57	71	114	168	210	225	280	350	450	560	450	
			M_{2max}	Nm	132	176	220	350	520	650	690	870	1090	1280	1120	720	
20.6 ... 21.1	83.8 ... 85.2	18.2 (22.3)	n_{2N}	r/min	250	200	150	100	75	50	50	37.5	37.5	30	20	20	1FT2108-4AC..-0..0-Z
			M_{2N}	Nm	43	56	77	123	155	235	235	315	315	405	600	450	■■■ + ■■■ + . . .
			M_{2_0}	Nm	63	84	105	168	245	310	330	410	510	660	700	450	
			M_{2max}	Nm	255	340	425	680	1010	1120	1280	1280	1120	1280	1120	720	

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Planetary gearbox data													
Gearbox type:			NRB160, 1-stage				NRB160, 2-stage							
1. Order code			A51				A52							
i			3	4	5	8	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R08	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$		Nm	400	450	450	450	800	700	800	800	700	800	700	450
$M_{2max,G}$		Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
$M_{2Em.Off}$		Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
$J_{1,G}$		kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
$\varphi_{2,G}$		'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRB160 1 and 2-stage (continued)																	
25.4 ... 26	101 ... 103	21.6 (25.6)	n_{2N} r/min	250	200	150	125	75	60	50	37.5	37.5	30	25	20	**1FT2108-5AB..-0..0-Z**
			M_{2N} Nm	53	69	94	122	187	235	280	370	375	485	570	450	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	77	103	129	205	305	380	405	500	630	800	700	450	
			M_{2max} Nm	305	410	510	720	1220	1120	1280	1280	1120	1280	1120	720	
25.1 ... 25.7	101 ... 103	21.6 (25.6)	n_{2N} r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	**1FT2108-5AC..-0.B0-Z**
			M_{2N} Nm	48.5	62	87	138	215	260	255	350	435	530	660	450	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	77	102	128	205	300	375	400	500	620	800	700	450	
			M_{2max} Nm	305	410	510	720	1220	1120	1280	1280	1120	1280	1120	720	
32.1 ... 32.8	135 ... 138	28.2 (32.2)	n_{2N} r/min	250	200	150	100	60	50	50	37.5	30	25	25	20	**1FT2108-7AB..-0..0-Z**
			M_{2N} Nm	62	80	110	174	260	315	315	425	530	650	620	450	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	98	131	164	260	385	480	510	640	700	800	700	450	
			M_{2max} Nm	410	540	680	720	1280	1120	1280	1280	1120	1280	1120	720	
31.5 ... 32.3	135 ... 138	28.2 (32.2)	n_{2N} r/min	250	200	150	100	60	50	50	37.5	30	25	25	20	**1FT2108-7AC..-0.B0-Z**
			M_{2N} Nm	60	77	107	169	255	310	305	410	510	630	600	450	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	96	128	161	255	375	470	500	630	700	800	700	450	
			M_{2max} Nm	410	540	680	720	1280	1120	1280	1280	1120	1280	1120	720	
31.3 ... 32	135 ... 138	28.2 (32.2)	n_{2N} r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	**1FT2108-7AE..-0.B0-Z**
			M_{2N} Nm	55	71	100	158	240	290	285	390	490	590	690	445	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	95	127	160	255	375	470	500	620	700	800	700	450	
			M_{2max} Nm	410	540	680	720	1280	1120	1280	1280	1120	1280	1120	720	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB160 1 and 2-stage																	
2.65 ... 2.78	9.99 ... 10.1	3.15 (4.05)	n_{2N} r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	**1FT2205-2AC..-0..0-Z**
			M_{2N} Nm	5.4	7.1	10.2	15.8	22.5	30.5	31	41	51	68	70	135	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	7.9	10.8	13.6	22	32.5	40.5	43.5	54	68	87	110	176	
			M_{2max} Nm	29.5	40	50	80	120	150	160	200	250	320	400	630	
2.68 ... 2.81	9.99 ... 10.1	3.15 (4.05)	n_{2N} r/min	300	250	250	150	100	75	75	75	60	50	37.5	25	**1F.2205-2AF..-0..0-Z**
			M_{2N} Nm	5.9	8.1	8.9	17.6	25	32	33.5	36.5	47	61	85	127	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	8	10.9	13.8	22	33	41	44	55	69	88	111	178	
			M_{2max} Nm	29.5	40	50	80	120	150	160	200	250	320	400	630	
2.62 ... 2.74	9.99 ... 10.1	3.15 (4.05)	n_{2N} r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	5.8	7.7	10.5	16.9	24	31	32.5	42.5	53	70	77	139	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	7.8	10.6	13.4	21.5	32	40.5	43	54	67	87	108	174	
			M_{2max} Nm	29.5	40	50	80	120	150	160	200	250	320	400	630	
4.91 ... 5.02	17 ... 17.2	5.1 (6)	n_{2N} r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	**1F.2205-4AF..-0..0-Z**
			M_{2N} Nm	10.4	13.4	18.8	28	40	56	55	74	89	127	160	240	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	14.7	19.8	24.5	40	59	74	78	98	123	158	197	315	
			M_{2max} Nm	51	68	85	137	200	255	270	335	420	540	670	720	
4.94 ... 5.06	17 ... 17.2	7.8 (9.4)	n_{2N} r/min	250	200	200	125	75	60	60	50	37.5	37.5	30	20	**1FT2206-2AC..-0..0-Z**
			M_{2N} Nm	12.2	16.5	17.5	31.5	52	65	67	85	110	119	150	220	■■■ + ■■■ + . . .
			$M_{2.0}$ Nm	14.8	19.9	25	40	60	75	80	100	126	161	200	320	
			M_{2max} Nm	51	68	85	137	200	255	270	335	420	540	670	720	

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Planetary gearbox data													
Gearbox type:		**NRB160, 1-stage**				**NRB160, 2-stage**							
1. Order code		**A51**				**A52**							
i		**3**	**4**	**5**	**8**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code		**R03**	**R04**	**R05**	**R08**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$	Nm	400	450	450	450	800	700	800	800	700	800	700	450
$M_{2max,G}$	Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
$M_{2Em.Off}$	Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
$J_{1,G}$	kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
$\varphi_{2,G}$	'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRB160

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB160 1 and 2-stage (continued)																	
5.07 ... 5.18	17 ... 17.2	7.8 (9.4)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	37.5	20	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	12.1	16.1	21	33	47.5	61	64	82	102	134	143	260	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	41	61	76	81	102	127	163	200	325	
			M_{2max}	Nm	51	68	85	137	200	255	270	335	420	540	670	720	
4.9 ... 5.02	17 ... 17.2	7.8 (9.4)	n_{2N}	r/min	300	250	200	150	100	75	75	60	50	37.5	30	20	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	10.8	13.8	19.4	28	40.5	57	56	76	91	129	161	240	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.7	19.7	24.5	40	59	74	79	98	123	158	197	315	
			M_{2max}	Nm	51	68	85	137	200	255	270	335	420	540	670	720	
7.64 ... 7.79	25.7 ... 26	11.5 (13.1)	n_{2N}	r/min	300	200	200	125	75	75	60	50	50	37.5	30	20	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	15.7	25	27.5	48.5	76	79	99	125	124	177	220	330	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	30.5	38.5	62	91	114	122	152	191	240	305	450	
			M_{2max}	Nm	77	103	130	205	305	385	410	510	640	820	1020	720	
7.51 ... 7.66	25.7 ... 26	11.5 (13.1)	n_{2N}	r/min	250	200	200	125	75	75	60	50	37.5	37.5	30	20	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	18.2	24	26	46.5	75	76	96	121	157	170	210	310	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	38	61	90	112	120	150	187	240	300	450	
			M_{2max}	Nm	77	103	130	205	305	385	410	510	640	820	1020	720	
10.6 ... 10.7	36.3 ... 36.9	15.1 (16.8)	n_{2N}	r/min	250	200	150	100	75	60	50	37.5	37.5	30	25	15	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	19.7	26	37	59	80	101	122	164	168	215	255	430	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	85	127	159	169	210	265	340	420	450	
			M_{2max}	Nm	110	147	184	290	435	540	580	720	910	1160	1120	720	
10.3 ... 10.5	34.4 ... 34.9	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	75	75	60	60	50	37.5	30	20	**1F.2206-4AF..-0..0-Z**
			M_{2N}	Nm	23	29	39.5	57	106	110	137	143	170	240	300	445	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	84	123	154	164	205	255	325	410	450	
			M_{2max}	Nm	104	139	174	275	410	510	550	680	860	1100	1120	720	
9.83 ... 10	34.4 ... 34.9	15.1 (16.8)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	30	25	20	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	22.5	29.5	31.5	56	91	115	115	143	191	245	295	350	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	80	117	147	157	196	245	310	390	450	
			M_{2max}	Nm	104	139	174	275	410	510	550	680	860	1100	1120	720	
10.1 ... 10.3	36.3 ... 36.9	22.5 (25.8)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	30	25	20	**1FT2208-2AF..-0..0-Z**
			M_{2N}	Nm	25	33.5	35	62	98	123	126	158	205	260	320	370	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	51	82	121	151	161	200	250	320	400	450	
			M_{2max}	Nm	110	147	184	290	435	540	580	720	910	1160	1120	720	
16.1 ... 16.3	48.9 ... 49.7	29.6 (32.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	15	**1FT2208-3AB..-0..0-Z**
			M_{2N}	Nm	29.5	38.5	54	87	143	174	174	235	290	360	450	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	48.5	64	81	130	193	240	255	320	400	510	640	450	
			M_{2max}	Nm	149	198	245	395	580	730	780	980	1120	1280	1120	720	
15 ... 15.3	48.9 ... 49.7	29.6 (33)	n_{2N}	r/min	250	200	200	125	75	60	60	50	37.5	30	25	20	**1F.2208-3AC..-0..0-Z**
			M_{2N}	Nm	35	46	48.5	85	134	169	167	205	275	355	425	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45.5	61	76	122	180	225	240	300	375	480	590	450	
			M_{2max}	Nm	149	198	245	395	580	730	780	980	1120	1280	1120	720	

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Planetary gearbox data													
Gearbox type:			**NRB160, 1-stage**				**NRB160, 2-stage**						
1. Order code			**A51**				**A52**						
	i		**3**	**4**	**5**	**8**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R08**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	400	450	450	450	800	700	800	800	700	800	700	450
	$M_{2max,G}$	Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
	$M_{2Em.Off}$	Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
	$J_{1,G}$	kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
	$\varphi_{2,G}$	'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)															
Nm	Nm	kg cm²															
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRB160 1 and 2-stage (continued)																	
14.9 ... 15.2	48.9 ... 49.7	29.6 (33)	n_{2N}	r/min	250	200	150	125	75	60	60	50	37.5	30	25	20	**1FT2208-3AF..-0..0-Z**
			M_{2N}	Nm	34	44.5	61	80	129	163	161	198	265	340	410	440	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45	60	76	121	179	220	235	295	370	475	590	450	
			M_{2max}	Nm	149	198	245	395	580	730	780	980	1120	1280	1120	720	
19.4 ... 19.8	63.5 ... 64.5	38.8 (44.4)	n_{2N}	r/min	200	150	125	75	60	50	37.5	37.5	30	25	20	15	**1FT2208-4AB..-0..0-Z**
			M_{2N}	Nm	37	51	64	111	143	171	225	230	290	350	440	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	79	99	158	230	290	310	385	480	620	700	450	
			M_{2max}	Nm	193	255	320	510	760	950	1010	1270	1120	1280	1120	720	
18.7 ... 19.1	63.5 ... 64.5	38.8 (44.4)	n_{2N}	r/min	250	200	150	125	75	60	50	50	37.5	30	25	20	**1F.2208-4AC..-0..0-Z**
			M_{2N}	Nm	42	54	75	97	154	194	230	230	315	400	480	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	57	76	95	153	220	280	295	370	465	590	700	450	
			M_{2max}	Nm	193	255	320	510	760	950	1010	1270	1120	1280	1120	720	
18 ... 18.3	63.5 ... 64.5	38.8 (44.4)	n_{2N}	r/min	250	200	150	125	75	60	50	50	37.5	30	25	20	**1FT2208-4AF..-0..0-Z**
			M_{2N}	Nm	42.5	55	74	97	155	195	230	230	315	405	480	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	54	73	91	146	215	270	285	355	445	570	700	450	
			M_{2max}	Nm	193	255	320	510	760	950	1010	1270	1120	1280	1120	720	
22.7 ... 23.3	77 ... 78.3	48.1 (53.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	**1FT2208-5AB..-0..0-Z**
			M_{2N}	Nm	47	61	84	134	205	250	250	340	420	520	650	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	69	92	116	186	270	340	360	455	560	720	700	450	
			M_{2max}	Nm	230	310	390	620	920	1120	1230	1280	1120	1280	1120	720	
22.4 ... 23	77 ... 78.3	48.1 (53.6)	n_{2N}	r/min	250	200	150	100	60	50	50	37.5	30	25	20	20	**1F.2208-5AC..-0..0-Z**
			M_{2N}	Nm	47.5	61	85	135	210	255	250	340	425	520	650	450	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	68	91	114	183	270	335	355	445	560	710	700	450	
			M_{2max}	Nm	230	310	390	620	920	1120	1230	1280	1120	1280	1120	720	

Planetary gearbox data														
Gearbox type:			**NRB160, 1-stage**				**NRB160, 2-stage**							
1. Order code			**A51**				**A52**							
	i		**3**	**4**	**5**	**8**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R08**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	400	450	450	450	800	700	800	800	700	800	700	450
	$M_{2max,G}$	Nm	640	720	720	720	1280	1120	1280	1280	1120	1280	1120	720
	$M_{2Em.Off}$	Nm	800	900	900	900	1600	1400	1600	1600	1400	1600	1400	900
	$J_{1,G}$	kg cm²	11.999	6.912	5.188	3.726	10.087	9.913	6.059	4.695	4.632	3.549	3.524	3.502
	$\varphi_{2,G}$	'	6				9							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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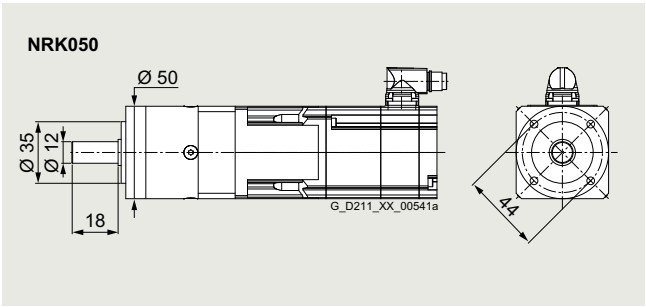
Gearbox type NRK050

Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	800 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	700 N
Average axial force for 30000 h	$F_{A,eq}$	800 N
Maximum radial force	$F_{R,max}$	1300 N
Maximum axial force	$F_{A,max}$	1000 N

3 4

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK050 1 and 2-stage																			
0.5	1.86	0.1396	n_{2N}	r/min	750	600	600	375	375	300	300	250	200	200	150	125	100	100	60	1F.2103-2AH..-2..0-Z
...	...	(0.1586)	M_{2N}	Nm	1.11	1.47	1.55	2.55	2.65	3.35	3.3	4.15	5.2	5.2	7.1	8.6	10.9	9.8	7.5	■■■ + ■■■ + . . .
0.509	1.89		$M_{2.0}$	Nm	1.5	2	2.5	3.5	4.05	5	4.5	6	7.5	8	10	12.5	15	13	7.5	
			M_{2max}	Nm	5.6	7.5	9.4	13.1	9.5	8	16.8	22	21	24	24	21	24	21	12	
0.964	3.9	0.1856	n_{2N}	r/min	750	600	600	375	375	375	300	250	200	200	150	150	125	100	–	1F.2103-4AH..-2..0-Z
...	...	(0.2046)	M_{2N}	Nm	1.99	2.6	2.7	4.5	4.55	4.15	5.7	6.9	8.8	8.7	11.9	10.8	12.4	13	–	■■■ + ■■■ + . . .
0.978	3.96		$M_{2.0}$	Nm	2.9	3.85	4.85	6.8	6	5	8.6	11.5	13	15	15	13	15	13	–	
			M_{2max}	Nm	11.8	15.8	19.7	13.5	9.5	8	19	24	21	24	24	21	24	21	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK050 1 and 2-stage																			
0.531	1.76	0.2466	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	150	150	100	75	75	60	1F.2203-2AK..-2..0-Z
...	...	(0.2666)	M_{2N}	Nm	1	1.32	1.63	2.25	2.2	2.85	2.75	3.3	4.15	5.5	5.6	8.5	11.2	11.5	7.5	■■■ + ■■■ + . . .
0.539	1.79		$M_{2.0}$	Nm	1.59	2.1	2.65	3.75	4.3	5	4.8	6.4	8	8.5	10.6	13	15	13	7.5	
			M_{2max}	Nm	5.3	7.1	8.9	12.4	9.5	8	15.9	21	21	24	24	21	24	21	12	
1.1	3.61	0.3966	n_{2N}	r/min	750	500	500	300	300	300	250	200	150	150	125	125	100	75	–	1F.2203-4AK..-2..0-Z
...	...	(0.4166)	M_{2N}	Nm	1.96	3	3.05	5.3	5.3	4.7	6.6	8.3	11.1	11.1	13.4	11.4	14.2	13	–	■■■ + ■■■ + . . .
1.12	3.66		$M_{2.0}$	Nm	3.3	4.4	5.5	7.7	6	5	9.9	13.2	13	15	15	13	15	13	–	
			M_{2max}	Nm	10.9	14.6	18.2	13.5	9.5	8	19	24	21	24	24	21	24	21	–	

Planetary gearbox data																
Gearbox type:			NRK050, 1-stage						NRK050, 2-stage							
1. Order code			B11						B12							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	11	15	13	8.5	6	5	12	15	13	15	15	13	15	13	7.5
	$M_{2max,G}$	Nm	17.5	24	21	13.5	9.5	8	19	24	21	24	24	21	24	21	12
	$M_{2Em.Off}$	Nm	22.5	30	36	26	27	27	33	40	36	40	40	36	40	36	27
	$J_{1,G}$	kg cm²	0.03	0.022	0.02	0.016	0.015	0.015	0.026	0.026	0.025	0.02	0.018	0.018	0.015	0.015	0.015
	$\varphi_{2,G}$	'	15						19								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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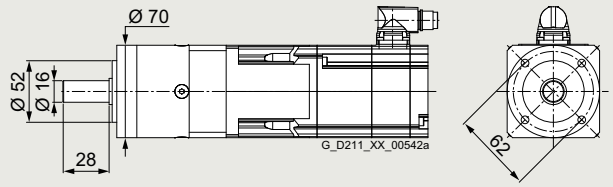
Selection and ordering data

NRK070



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1050 N
Average axial force for 20000 h	$F_{A,eq}$	1350 N
Average radial force for 30000 h	$F_{R,eq}$	900 N
Average axial force for 30000 h	$F_{A,eq}$	1000 N
Maximum radial force	$F_{R,max}$	1650 N
Maximum axial force	$F_{A,max}$	2100 N

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK070 1 and 2-stage																					
0.5	1.84	0.093	n_{2N}	r/min	600	600	500	375	375	300	375	250	250	200	200	150	125	100	60	37.5	**1F.2103-2AH..-2..0-Z**
...	...	(0.112)	M_{2N}	Nm	1.09	1.36	1.84	2.75	2.95	3.9	2.85	4.55	5.2	6.1	6.6	9.2	11.5	14.5	18	15	■■■ + ■■■ + . . .
0.543	1.87		$M_{2.0}$	Nm	1.5	2.05	2.6	3.7	4.25	5.3	4.75	6.4	8	8.5	10.7	13.5	17.3	21.5	18	15	
			M_{2max}	Nm	5.5	7.4	9.2	13	14.9	18.7	16.6	22	27.5	29.5	37	46	53	48	29	24	
0.997	3.89	0.139	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	150	100	100	60	–	**1F.2103-4AH..-2..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.1	2.5	3.3	4.95	5.2	6.8	6.4	8.1	10.8	10.8	14.7	15.1	23	23	18	–	■■■ + ■■■ + . . .
1.03	3.94		$M_{2.0}$	Nm	2.95	4	5	7.1	8.2	10.3	9.1	12.2	15.3	16.4	20.5	25.5	32.5	30	18	–	
			M_{2max}	Nm	11.7	15.6	19.6	27.5	29	24	35	46.5	53	53	53	48	53	48	29	–	
1.15	3.6	0.371	n_{2N}	r/min	750	600	600	500	375	300	375	250	200	200	150	125	100	75	50	–	**1F.2104-4AF..-2..0-Z**
...	...	(0.451)	M_{2N}	Nm	2.7	3.9	4.4	5.8	7.8	10	7.8	11.6	14.9	15.5	19.9	24.5	31.5	30	18	–	■■■ + ■■■ + . . .
1.19	3.64		$M_{2.0}$	Nm	3.45	4.65	5.8	8.2	9.4	11.8	10.5	14.1	17.7	18.9	23.5	29.5	33	30	18	–	
			M_{2max}	Nm	10.8	14.5	18.1	25	29	24	32	43	53	53	53	48	53	48	29	–	
1.15	3.7	0.371	n_{2N}	r/min	750	600	600	500	375	375	375	300	250	200	200	150	125	100	60	–	**1F.2104-4AK..-2..0-Z**
...	...	(0.451)	M_{2N}	Nm	2.85	4.1	4.6	6.1	8.3	8.9	8.1	10.5	13.7	16.7	17.4	23.5	29	30	18	–	■■■ + ■■■ + . . .
1.18	3.74		$M_{2.0}$	Nm	3.4	4.6	5.8	8.2	9.4	11.8	10.5	14	17.6	18.7	23.5	29	33	30	18	–	
			M_{2max}	Nm	11.1	14.9	18.6	26	29	24	33	44	53	53	53	48	53	48	29	–	
2.26	7.24	0.581	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	–	–	**1F.2104-5AF..-2..0-Z**
...	...	(0.671)	M_{2N}	Nm	4.5	6.4	8.2	11.8	12.2	15	14.6	17.9	23.5	23	31.5	30	33	30	–	–	■■■ + ■■■ + . . .
2.29	7.33		$M_{2.0}$	Nm	6.7	9	11.3	15.9	18	15	20	27	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	21.5	29	36.5	40	29	24	53	53	53	53	53	48	53	48	–	–	
2.24	7.34	0.581	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	150	125	100	–	–	**1F.2104-5AK..-2..0-Z**
...	...	(0.671)	M_{2N}	Nm	4.45	6.3	8.1	11.6	12	15	14.4	17.7	23	23	31	30	33	30	–	–	■■■ + ■■■ + . . .
2.27	7.43		$M_{2.0}$	Nm	6.7	9	11.3	15.8	18	15	20	27	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	22	29.5	37	40	29	24	53	53	53	53	53	48	53	48	–	–	
3.01	9.66	0.781	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	–	–	125	100	75	–	–	**1F.2104-6AF..-2..0-Z**
...	...	(0.861)	M_{2N}	Nm	5.4	7.7	9.8	14.1	14.5	15	17	20.5	27	–	–	30	33	30	–	–	■■■ + ■■■ + . . .
3.04	9.79		$M_{2.0}$	Nm	9	12	15.1	21	18	15	27	33	33	–	–	30	33	30	–	–	
			M_{2max}	Nm	29	39	48	40	29	24	53	53	53	–	–	48	53	48	–	–	

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Planetary gearbox data																	
Gearbox type:		NRK070, 1-stage						NRK070, 2-stage									
1. Order code		B21						B22									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	28	33	30	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$ Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$ Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$ kg cm²	0.174	0.117	0.095	0.078	0.074	0.069	0.126	0.121	0.078	0.087	0.076	0.075	0.067	0.066	0.066	0.064
	$\varphi_{2,G}$ '	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRK070

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK070 1 and 2-stage (continued)																					
4.68 ... 4.73	14.5 ... 14.7	1.98 (2.82)	n_{2N}	r/min	600	500	375	300	300	300	–	–	150	150	150	125	100	75	–	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	9.1	11.4	16.3	21	18	13.4	–	–	33	33	28	29	32.5	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	18.8	23.5	25	18	15	–	–	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	44	53	48	40	29	24	–	–	53	53	53	48	53	48	–	–	
4.71 ... 4.77	14.5 ... 14.7	1.98 (2.82)	n_{2N}	r/min	500	375	300	250	250	250	200	150	150	150	125	100	75	75	–	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	13.5	17.4	21.5	18	15	26	33	32	30	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19	23.5	25	18	15	33	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	44	53	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
7.21 ... 7.3	23.2 ... 23.6	2.92 (3.77)	n_{2N}	r/min	500	375	–	300	300	250	200	200	150	150	125	100	–	–	–	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	14	19.5	–	24	18	15	33	28	33	33	33	30	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	–	25	18	15	33	33	33	33	33	30	–	–	–	–	
			M_{2max}	Nm	45	53	–	40	29	24	53	53	53	53	53	48	–	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK070 1 and 2-stage																					
0.489 ... 0.533	1.74 ... 1.77	0.2 (0.22)	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	125	100	75	60	37.5	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	1.01	1.21	1.62	2.4	2.5	3.3	3	3.8	5.1	5	6.9	8.5	10.8	14.5	17	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.46	2	2.55	3.6	4.15	5.2	4.65	6.2	7.8	8.4	10.5	13.2	16.9	21	18	15	
			M_{2max}	Nm	5.2	7	8.8	12.3	14.1	17.7	15.8	21	26	28	35	44	53	48	29	24	
1.11 ... 1.14	3.6 ... 3.64	0.35 (0.37)	n_{2N}	r/min	600	500	375	375	300	250	250	200	200	150	150	100	100	75	60	–	1F.2203-4AK..-2..0-Z
			M_{2N}	Nm	2.25	3.1	4.35	4.85	6.3	7.9	7.6	9.9	10.3	13.8	14.2	21.5	21.5	29.5	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.3	4.45	5.6	7.9	9.1	11.4	10.1	13.6	17	18.1	22.5	28	33	30	18	–	
			M_{2max}	Nm	10.8	14.5	18.1	25	29	24	32	43	53	53	53	48	53	48	29	–	
2.22 ... 2.25	6.85 ... 6.94	1.251 (1.331)	n_{2N}	r/min	600	600	500	375	300	300	300	200	200	150	150	125	100	75	–	–	1F.2204-5AF..-2..0-Z
			M_{2N}	Nm	5.1	5.7	7.3	10.5	13.4	13.5	12.9	20	20.5	27	27.5	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.9	11.1	15.6	17.9	15	20	26.5	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	20.5	27.5	34.5	40	29	24	53	53	53	53	53	48	53	48	–	–	
2.23 ... 2.26	6.85 ... 6.94	1.251 (1.331)	n_{2N}	r/min	600	600	500	375	300	300	300	200	200	150	150	125	100	100	–	–	1F.2204-5AK..-2..0-Z
			M_{2N}	Nm	5.2	5.8	7.5	10.7	13.6	13.8	13.2	20	21	27.5	28	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.9	11.2	15.7	18	15	20	26.5	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	20.5	27.5	34.5	40	29	24	53	53	53	53	53	48	53	48	–	–	
2.99 ... 3.02	9.18 ... 9.3	1.631 (1.711)	n_{2N}	r/min	600	500	500	375	300	300	250	200	200	–	150	125	100	75	–	–	1F.2204-6AF..-2..0-Z
			M_{2N}	Nm	6.8	9	9.6	13.6	17.4	15	19.9	25.5	25.5	–	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	12	15	21	18	15	26.5	33	33	–	33	30	33	30	–	–	
			M_{2max}	Nm	27.5	37	46	40	29	24	53	53	53	–	53	48	53	48	–	–	
2.84 ... 2.87	10.4 ... 10.5	3.42 (4.32)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	100	75	50	–	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.4	7.9	10.3	12.9	16.4	15	16.4	22	27	33	32.5	26.5	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.2	20	18	15	25.5	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	31.5	42	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
2.89 ... 2.93	10.4 ... 10.5	3.42 (4.32)	n_{2N}	r/min	500	500	375	300	250	250	200	150	150	125	125	100	75	75	–	–	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	7	7.5	10.8	14	17.1	15	20.5	28	28.5	33	32	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.5	20	18	15	26	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	31.5	42	48	40	29	24	53	53	53	53	53	48	53	48	–	–	

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Planetary gearbox data																	
Gearbox type:		NRK070, 1-stage						NRK070, 2-stage									
1. Order code		B21						B22									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	33	30	25	18	15	33	33	33	33	33	30	33	30	18	15
$M_{2max,G}$	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	48	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.174	0.117	0.095	0.078	0.074	0.069	0.126	0.121	0.078	0.087	0.076	0.075	0.067	0.066	0.066	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK070 1 and 2-stage (continued)																			
2.87 ... 2.9	10.4 ... 10.5	3.42 (4.32)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	100	75	75	–	–	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.1	8.7	9	14.4	14.4	15	18.2	24.5	30	29.5	33	30	33	24.5	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.5	14.4	20	18	15	25.5	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	31.5	42	48	40	29	24	53	53	53	53	53	48	53	48	–	–	
4.93 ... 4.99	17.4 ... 17.7	5.37 (6.27)	n_{2N}	r/min	500	375	300	250	250	250	200	150	150	125	125	100	75	–	–	–	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	9.3	13.1	16.9	21	18	14.2	25.5	33	30.5	33	31	30	33	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.9	19.9	24.5	25	18	15	33	33	33	33	33	30	33	–	–	–	
			M_{2max}	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	–	–	–	

Planetary gearbox data																		
Gearbox type:			NRK070, 1-stage						NRK070, 2-stage									
1. Order code			B21						B22									
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	28	33	30	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$	Nm	45	53	48	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.174	0.117	0.095	0.078	0.074	0.069	0.126	0.121	0.078	0.087	0.076	0.075	0.067	0.066	0.066	0.064
	$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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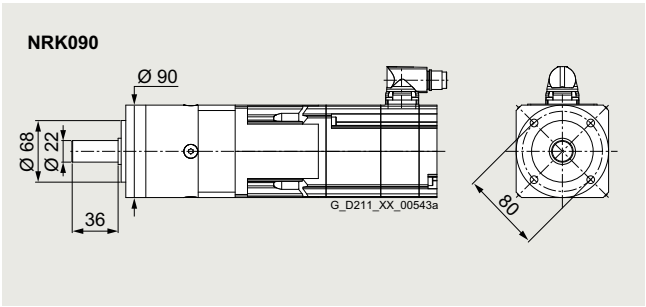
Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1900 N
Average axial force for 20000 h	$F_{A,eq}$	2000 N
Average radial force for 30000 h	$F_{R,eq}$	1700 N
Average axial force for 30000 h	$F_{A,eq}$	1500 N
Maximum radial force	$F_{R,max}$	3100 N
Maximum axial force	$F_{A,max}$	3800 N

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK090 1 and 2-stage																					
0.445	1.78	0.093	n_{2N}	r/min	600	500	500	375	375	300	300	250	200	200	150	150	125	100	60	37.5	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.86	1.28	1.54	2.4	2.6	3.5	2.95	3.85	4.95	5.2	7.2	7.7	10	12.8	21.5	34.5	■■■ + ■■■ + . . .
0.515	1.83		$M_{2.0}$	Nm	1.33	1.86	2.35	3.4	3.95	5	4.45	6	7.5	8	10.1	12.7	16.3	20.5	32.5	38	
			M_{2max}	Nm	5.3	7.2	9	12.7	14.6	18.3	16.3	21.5	27	29	36	45.5	58	73	80	61	
0.998	3.86	0.139	n_{2N}	r/min	600	500	500	375	300	300	300	200	200	200	150	125	100	75	50	37.5	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.96	2.75	3.05	4.85	6.2	6.7	6.1	9.4	9.8	10	14.7	17.9	23.5	31	48.5	38	■■■ + ■■■ + . . .
1.05	3.9		$M_{2.0}$	Nm	2.95	4.05	5.1	7.2	8.3	10.5	9.3	12.4	15.6	16.6	20.5	26	33.5	41.5	50	38	
			M_{2max}	Nm	11.5	15.4	19.3	27	31	38.5	34.5	46	57	61	77	96	123	131	80	61	
1.1	3.56	0.35	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	**1F.2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.3	3.5	4.65	6.8	7.5	9.6	8.4	10.9	13.8	14.5	19.2	23.5	30.5	39.5	50	38	■■■ + ■■■ + . . .
1.15	3.6		$M_{2.0}$	Nm	3.25	4.45	5.6	7.9	9.1	11.4	10.2	13.7	17.1	18.3	22.5	28.5	36.5	46	50	38	
			M_{2max}	Nm	10.6	14.3	17.9	25	28.5	36	32	42.5	53	57	71	89	114	131	80	61	
1.09	3.66	0.35	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	150	125	100	60	37.5	**1F.2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	3.05	3.7	5	7.4	8.1	10.4	9.2	11.9	15.1	15.8	20.5	21.5	27.5	35	50	38	■■■ + ■■■ + . . .
1.15	3.7		$M_{2.0}$	Nm	3.25	4.4	5.6	7.9	9.1	11.4	10.1	13.6	17	18.2	22.5	28.5	36.5	45.5	50	38	
			M_{2max}	Nm	10.9	14.6	18.4	25.5	29.5	37	33	44	55	58	73	91	117	131	80	61	
2.2	7.19	0.56	n_{2N}	r/min	600	500	500	375	300	300	300	200	150	150	150	125	100	75	50	30	**1F.2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.4	7.3	8	12	15.3	16.1	14.7	22.5	30	31	32.5	39	51	69	50	38	■■■ + ■■■ + . . .
2.25	7.29		$M_{2.0}$	Nm	6.6	8.8	11.1	15.6	17.9	22	20	26.5	33	35.5	44.5	55	71	82	50	38	
			M_{2max}	Nm	21.5	29	36	50	58	61	65	86	108	115	144	131	144	131	80	61	
2.19	7.29	0.56	n_{2N}	r/min	600	500	500	375	300	300	300	200	150	150	150	125	100	75	60	37.5	**1F.2104-5AK..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.3	7.2	7.8	11.8	15	15.8	14.4	22	29.5	30.5	32	38.5	50	68	50	38	■■■ + ■■■ + . . .
2.23	7.39		$M_{2.0}$	Nm	6.5	8.8	11	15.5	17.8	22	19.9	26.5	33	35	44	55	71	82	50	38	
			M_{2max}	Nm	22	29	36.5	51	59	61	65	87	109	117	144	131	144	131	80	61	
2.95	9.62	0.76	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	100	75	50	–	**1F.2104-6AF..-2..0-Z**
...	...	(0.84)	M_{2N}	Nm	6.6	8.9	9.6	14.3	18.3	22.5	20.5	27	35.5	36.5	45.5	57	59	80	50	–	■■■ + ■■■ + . . .
3	9.75		$M_{2.0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26.5	35.5	44.5	47.5	59	74	90	82	50	–	
			M_{2max}	Nm	29	38.5	48.5	68	77	61	86	115	131	144	144	131	144	131	80	–	

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Planetary gearbox data																	
Gearbox type:			NRK090, 1-stage						NRK090, 2-stage								
1. Order code			B31						B32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$	Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK090 1 and 2-stage (continued)																				
4.67 ... 4.72	14.5 ... 14.7	1.71 (2.55)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	125	125	100	100	75	50	–	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	10.7	13.9	19.6	26.5	27	33	30.5	38	51	62	63	78	69	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14	18.7	23.5	33	37.5	38	42	56	70	74	90	82	90	82	50	–	
			M_{2max}	Nm	44	58	73	102	80	61	130	144	131	144	144	131	144	131	80	–	
4.7 ... 4.76	14.5 ... 14.7	1.71 (2.55)	n_{2N}	r/min	500	500	375	300	250	200	200	150	125	125	100	100	75	75	60	–	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	11.4	11.9	17.5	23	28.5	36.5	34	45.5	55	56	71	68	90	79	41.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	18.9	23.5	33	38	38	42	56	70	75	90	82	90	82	50	–	
			M_{2max}	Nm	44	58	73	102	80	61	130	144	131	144	144	131	144	131	80	–	
7.4 ... 7.52	23.2 ... 23.6	2.65 (3.5)	n_{2N}	r/min	500	375	375	300	250	250	200	150	125	125	100	100	75	75	–	–	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	16.5	23	24.5	32.5	39.5	37	46	62	74	74	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	29.5	37.5	52	50	38	66	89	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	70	94	117	104	80	61	155	144	131	144	144	131	144	131	–	–	
7.47 ... 7.58	25.1 ... 25.5	5.476 (7.176)	n_{2N}	r/min	375	375	300	200	200	200	150	125	100	100	100	75	60	60	–	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	18.6	19.9	25.5	40	40.5	36.5	51	62	78	77	68	82	90	80	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	37.5	53	50	38	67	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	76	101	127	104	80	61	155	144	131	144	143	131	144	131	–	–	
9.67 ... 9.82	31.8 ... 32.4	6.876 (8.476)	n_{2N}	r/min	375	300	250	200	200	200	–	125	100	100	100	75	60	50	–	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	23	30	36.5	48	47	37	–	71	82	86	67	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29	39	49	65	50	38	–	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	97	129	131	104	80	61	–	144	131	144	144	131	144	131	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK090 1 and 2-stage																				
0.432 ... 0.502	1.68 ... 1.74	0.2 (0.22)	n_{2N}	r/min	500	500	375	375	300	250	250	200	150	150	150	100	100	75	50	30	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	0.92	1.14	1.73	2	2.7	3.45	3	3.95	5.4	5.6	6	9.1	9.6	13.2	19.8	34	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.29	1.8	2.3	3.3	3.85	4.85	4.3	5.8	7.3	7.8	9.8	12.4	15.9	19.9	32	38	
			M_{2max}	Nm	5	6.8	8.5	12	13.8	17.3	15.4	20.5	25.5	27.5	34.5	43	55	69	80	61	
1.05 ... 1.11	3.56 ... 3.6	0.35 (0.37)	n_{2N}	r/min	500	500	375	300	300	250	250	200	150	150	150	125	100	75	50	37.5	**1F.2203-4AK..-0..0-Z**
			M_{2N}	Nm	2.55	3	4.4	6.2	6.6	8.4	7.6	10	13.1	13.6	14.5	17.3	23	31	47	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.15	4.25	5.4	7.6	8.7	11	9.8	13.1	16.5	17.6	22	27.5	35	44	50	38	
			M_{2max}	Nm	10.6	14.3	17.9	25	28.5	36	32	42.5	53	57	71	89	114	131	80	61	
2.16 ... 2.21	6.8 ... 6.9	1.23 (1.31)	n_{2N}	r/min	600	500	375	375	300	250	250	200	150	150	125	100	75	75	50	30	**1F.2204-5AF..-2..0-Z**
			M_{2N}	Nm	5.1	6.8	9.7	10.7	14.1	17.6	16.4	21	28	29	36	45	61	61	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.4	8.7	10.9	15.4	17.6	22	19.6	26	32.5	35	43.5	54	70	82	50	38	
			M_{2max}	Nm	20.5	27.5	34	48	55	61	61	82	102	109	136	131	144	131	80	61	
2.17 ... 2.22	6.8 ... 6.9	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	60	37.5	**1F.2204-5AK..-2..0-Z**
			M_{2N}	Nm	5.2	7	9.9	13.7	14.4	18	16.8	21.5	28.5	29.5	36.5	46	62	62	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.5	8.7	10.9	15.4	17.7	22	19.7	26	33	35	44	55	70	82	50	38	
			M_{2max}	Nm	20.5	27.5	34	48	55	61	61	82	102	109	136	131	144	131	80	61	
2.94 ... 2.98	9.13 ... 9.26	1.61 (1.69)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	50	–	**1F.2204-6AF..-2..0-Z**
			M_{2N}	Nm	6.9	9.2	13	17.9	18.6	23	21	27	36.5	37	46	57	78	76	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26.5	35	44	47	59	73	90	82	50	–	
			M_{2max}	Nm	27.5	36.5	46	64	74	61	82	110	131	144	144	131	144	131	80	–	

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Planetary gearbox data																	
Gearbox type:		NRK090, 1-stage						NRK090, 2-stage									
1. Order code		B31						B32									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$ Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$ Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$ kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
	$\varphi_{2,G}$ '	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK090

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK090 1 and 2-stage (continued)																				
2.94 ... 2.98	10.4 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	100	75	50	37.5	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	6.7	9.6	10.5	14.1	17.5	22.5	21	28	29	36	46	45	63	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26	35	44	47	58	73	90	82	49.5	–	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	131	144	144	131	144	131	80	–	
2.98 ... 3.02	10.4 ... 10.5	3.15 (4.05)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	50	–	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	6.9	9.1	12.6	17.5	18.2	22.5	21	26.5	36	36.5	45	56	77	73	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	11.9	15	21	24	30	26.5	35.5	44.5	47.5	59	74	90	82	50	–	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	131	144	144	131	144	131	80	–	
2.94 ... 2.99	10.4 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	500	375	300	250	200	250	200	150	125	100	100	75	60	50	–	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	7.2	7.7	11.4	15.4	18.9	24	18.4	22.5	31.5	38	48	48.5	68	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.8	20.5	23.5	29.5	26.5	35	44	47	59	73	90	82	50	–	
			M_{2max}	Nm	31.5	42	52	73	80	61	94	125	131	144	144	131	144	131	80	–	
5.06 ... 5.13	17.4 ... 17.6	5.1 (6)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	100	75	75	–	–	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	11.1	15.7	16.9	22	27.5	35	33	44.5	54	54	68	63	89	69	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	35.5	41	38	45.5	60	76	81	90	82	90	82	–	–	
			M_{2max}	Nm	52	70	88	104	80	61	155	144	131	144	144	131	144	131	–	–	
5.27 ... 5.3	17.3 ... 17.6	8.676 (10.276)	n_{2N}	r/min	375	300	250	200	150	125	150	100	75	75	60	60	50	50	30	–	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	10.8	14.3	17.7	22.5	31	37	31.5	47	62	63	79	78	89	61	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.8	21	26	37	42	38	47.5	63	79	84	90	82	90	82	50	–	
			M_{2max}	Nm	52	70	87	104	80	61	155	144	131	144	144	131	144	131	80	–	
5.19 ... 5.27	17.3 ... 17.6	8.676 (10.276)	n_{2N}	r/min	500	375	300	200	200	200	200	125	100	100	75	75	60	50	–	–	1F.2206-2AF..-0..0-Z
			M_{2N}	Nm	10.6	15.3	20	30.5	31.5	28.5	29	49.5	62	62	84	79	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.6	20.5	26	36.5	42	38	46.5	62	78	83	90	82	90	82	–	–	
			M_{2max}	Nm	52	70	87	104	80	61	155	144	131	144	144	131	144	131	–	–	
5.05 ... 5.12	17.3 ... 17.6	8.676 (10.276)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	60	50	–	–	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	12	15.8	19.7	25.5	25	35	34.5	41.5	52	51	71	82	77	81	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25	35.5	40.5	38	45.5	60	75	80	90	82	90	82	–	–	
			M_{2max}	Nm	52	70	87	104	80	61	155	144	131	144	144	131	144	131	–	–	
7.54 ... 7.66	26 ... 26.5	12.38 (13.976)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	–	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	16.7	22	27	35.5	35	38	46.5	55	69	68	89	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	50	38	68	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	79	105	131	104	80	61	155	144	131	144	144	131	144	131	–	–	
7.41 ... 7.52	26 ... 26.5	12.38 (13.976)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	75	75	60	50	–	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	15.9	20.5	25.5	33	44	38	44	65	64	87	87	70	87	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	30	37.5	52	50	38	66	89	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	79	105	131	104	80	61	155	144	131	144	144	131	144	131	–	–	
10.3 ... 10.5	36.7 ... 37.3	15.98 (17.676)	n_{2N}	r/min	300	250	200	150	125	125	100	75	75	75	60	50	37.5	37.5	–	–	1FT2206-4AC..-0..0-Z
			M_{2N}	Nm	18.9	23	29	40	48.5	38	61	81	79	76	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	65	50	38	94	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	111	144	131	104	80	61	155	144	131	144	144	131	144	131	–	–	

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Planetary gearbox data																	
Gearbox type:		NRK090, 1-stage						NRK090, 2-stage									
1. Order code		B31						B32									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
$M_{2max,G}$	Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK090 1 and 2-stage (continued)																			
10.1	34.7	15.976	n_{2N}	r/min	375	300	250	200	200	200	–	125	100	100	100	75	60	50	–	–	**1F.2206-4AF..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	23.5	30.5	37.5	49	48.5	38	–	73	82	88	70	82	90	82	–	–	■■■ + ■■■ + . . .
10.3	35.3		$M_{2,0}$	Nm	30.5	41	51	65	50	38	–	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	106	141	131	104	79	61	–	144	131	144	144	131	144	131	–	–	
9.7	34.7	15.976	n_{2N}	r/min	375	300	250	150	150	150	125	100	100	75	75	60	60	50	–	–	**1FT2206-4AH..-0..0-Z**
...	...	(17.676)	M_{2N}	Nm	18.3	23.5	28.5	49	49.5	38	59	73	68	90	90	82	77	80	–	–	■■■ + ■■■ + . . .
9.86	35.3		$M_{2,0}$	Nm	29.5	39	49	65	50	38	87	90	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	106	141	131	104	79	61	155	144	131	144	144	131	144	131	–	–	

Planetary gearbox data																		
Gearbox type:			**NRK090, 1-stage**						**NRK090, 2-stage**									
1. Order code			**B31**						**B32**									
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	85	90	82	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$	Nm	136	144	131	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.789	0.557	0.476	0.409	0.394	0.374	0.625	0.601	0.592	0.453	0.41	0.406	0.368	0.366	0.367	0.356
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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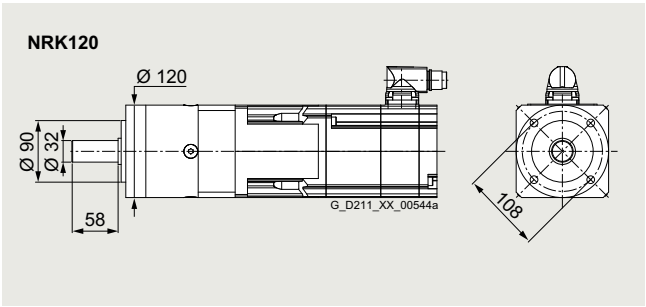
Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	2500 N
Average axial force for 20000 h	$F_{A,eq}$	4000 N
Average radial force for 30000 h	$F_{R,eq}$	2150 N
Average axial force for 30000 h	$F_{A,eq}$	3000 N
Maximum radial force	$F_{R,max}$	4000 N
Maximum axial force	$F_{A,max}$	5900 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK120 1 and 2-stage																				
0.318 ... 0.449	1.66 ... 1.76	0.093 (0.112)	n_{2N}	r/min	375	300	300	300	250	250	200	150	125	125	125	100	75	75	37.5	30	1F.2103-2AH..-0..0-Z
			M_{2N}	Nm	0.55	0.98	1.29	1.73	2.2	2.45	2.35	3.4	4.35	4.55	5.3	6.8	10.1	10.6	21	28.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.95	1.41	1.87	2.75	3.25	4.15	3.65	5	6.4	6.8	8.6	10.9	14.1	17.7	28.5	44.5	
			M_{2max}	Nm	4.95	6.7	8.5	12.1	13.9	17.5	15.5	20.5	26	27.5	34.5	43.5	56	70	112	152	
0.941 ... 1.06	3.73 ... 3.82	0.139 (0.158)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	125	100	75	60	37.5	25	1F.2103-4AH..-0..0-Z
			M_{2N}	Nm	2	2.55	3.7	5.3	5.7	7.7	6.5	8.9	11.2	11.8	12.7	16.5	24	30	49	76	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.8	3.9	4.95	7.1	8.2	10.3	9.2	12.4	15.5	16.6	20.5	26	33.5	42	67	95	
			M_{2max}	Nm	11.1	15	18.8	26.5	30	38	33.5	45	56	60	75	94	121	151	192	152	
0.969 ... 1.09	3.43 ... 3.52	0.35 (0.43)	n_{2N}	r/min	500	375	375	300	300	250	250	200	150	150	125	100	100	75	50	30	1F.2104-4AF..-0..0-Z
			M_{2N}	Nm	2.25	3.45	4.25	6.2	6.8	8.8	7.3	9.7	13	13.6	17.6	22	24	34	51	88	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.9	4	5.1	7.3	8.4	10.6	9.4	12.7	16	17.1	21	26.5	34.5	43	69	95	
			M_{2max}	Nm	10.2	13.8	17.4	24.5	28	35	31	41.5	52	55	69	87	112	139	192	152	
0.963 ... 1.08	3.53 ... 3.62	0.35 (0.43)	n_{2N}	r/min	500	500	375	300	300	250	250	200	150	150	125	100	100	75	50	30	1F.2104-4AK..-0..0-Z
			M_{2N}	Nm	2.45	2.65	4.55	6.7	7.4	9.7	8.1	10.5	14.2	15	19.4	24.5	25	37	53	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.85	3.95	5	7.2	8.3	10.6	9.4	12.6	15.9	17	21	26.5	34	43	69	95	
			M_{2max}	Nm	10.5	14.2	17.8	25	28.5	36	32	43	53	57	71	89	115	143	192	152	
2.07 ... 2.17	7.13 ... 7.21	0.56 (0.65)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	100	75	60	37.5	30	1F.2104-5AF..-0..0-Z
			M_{2N}	Nm	4.9	7.6	8.5	12.2	15.3	20	18.1	24.5	30.5	31.5	41	41	60	75	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.2	8.4	10.6	15	17.2	21.5	19.2	25.5	32	34.5	43	54	69	86	120	95	
			M_{2max}	Nm	21	28.5	35.5	50	57	72	64	85	107	114	142	178	225	275	192	152	
2.06 ... 2.15	7.23 ... 7.31	0.56 (0.65)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	100	75	60	37.5	30	1F.2104-5AK..-0..0-Z
			M_{2N}	Nm	4.8	7.5	8.3	12	15.1	19.8	17.7	24	30	30.5	40.5	40.5	59	74	119	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.1	8.3	10.5	14.9	17.1	21	19.1	25.5	32	34	42.5	53	68	85	120	95	
			M_{2max}	Nm	21.5	29	36	51	58	73	65	86	108	115	144	180	230	275	192	152	
2.82 ... 2.92	9.55 ... 9.67	0.76 (0.84)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	75	75	60	37.5	30	1F.2104-6AF..-0..0-Z
			M_{2N}	Nm	6.2	9.5	10.5	14.9	18.7	24.5	22	30	37	37.5	49.5	65	71	89	120	95	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.4	11.4	14.3	20	23	29	25.5	34.5	43	46	57	72	92	116	120	95	
			M_{2max}	Nm	28.5	38	48	67	77	96	86	114	143	153	191	235	305	275	192	152	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:		NRK120, 1-stage						NRK120, 2-stage								
1. Order code		B41						B42								
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$ Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$ Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$ kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$ '	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																				
4.56 ... 4.64	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	50	30	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	10.5	15.8	16.8	28	29	38	34.5	47	57	57	75	100	128	157	92	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.6	18.3	23	32	37	46	41	55	69	73	92	115	147	172	120	95	
			M_{2max}	Nm	43.5	58	72	102	116	145	130	173	215	230	285	275	312	275	192	152	
4.59 ... 4.67	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	37.5	30	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.3	14.4	19.6	25.5	32	34	31	42.5	51	63	67	91	119	143	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.7	18.4	23	32.5	37	46.5	41.5	55	69	74	92	115	148	172	120	95	
			M_{2max}	Nm	43.5	58	72	102	116	145	130	173	215	230	285	275	312	275	192	152	
7.52 ... 7.6	23.1 ... 23.4	2.65 (3.5)	n_{2N}	r/min	375	375	300	250	200	200	200	125	100	100	75	75	60	50	37.5	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	18.8	21	28	36.5	46.5	47.5	43	71	89	90	121	124	161	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	37.5	53	60	76	67	90	112	120	150	172	195	172	120	–	
			M_{2max}	Nm	70	93	117	163	187	152	205	275	275	312	312	275	312	275	192	–	
7.76 ... 7.88	25 ... 25.4	4.6 (6.3)	n_{2N}	r/min	500	375	300	250	200	200	200	125	100	100	75	75	60	60	37.5	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	14.8	22	29.5	38	48.5	50	45	73	93	94	126	128	166	146	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39	55	62	78	70	93	116	124	155	172	195	172	120	–	
			M_{2max}	Nm	76	101	126	177	192	152	225	300	275	312	312	275	312	270	192	–	
10.1 ... 10.2	31.8 ... 32.3	6 (7.6)	n_{2N}	r/min	375	375	300	200	200	150	150	125	100	100	75	75	60	50	37.5	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	24.5	26	35.5	56	58	79	71	87	109	109	148	142	184	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	40.5	50	71	81	95	90	121	151	161	195	172	195	172	120	–	
			M_{2max}	Nm	96	129	161	216	192	152	251	312	275	312	312	275	312	275	192	–	
14.3 ... 14.5	43.9 ... 44.7	8.7 (10.4)	n_{2N}	r/min	375	300	300	200	200	150	150	125	100	100	75	75	60	60	–	–	1F.2106-6AF..-0..0-Z
			M_{2N}	Nm	32	43	45	72	73	95	89	106	134	132	181	168	195	165	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	43	57	72	101	116	95	128	171	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	133	178	220	216	192	152	251	312	275	312	312	275	312	275	–	–	
20.7 ... 21	84.1 ... 85.6	20.6 (24.7)	n_{2N}	r/min	300	250	200	150	125	125	100	75	75	75	60	60	50	37.5	–	–	1FT2108-4AC..-0..0-Z
			M_{2N}	Nm	41.5	51	66	92	110	95	129	171	168	165	195	166	191	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	83	104	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	–	–	
25.4 ... 25.8	102 ... 103	24.0 (28.0)	n_{2N}	r/min	300	250	200	150	150	150	125	100	75	75	75	60	50	–	–	–	1FT2108-5AB..-0..0-Z
			M_{2N}	Nm	51	64	82	113	114	95	124	152	172	194	173	172	195	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	77	103	129	135	120	95	157	195	172	195	195	172	195	–	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	–	–	–	
25.2 ... 25.6	102 ... 103	24.0 (28.0)	n_{2N}	r/min	300	250	200	150	125	125	100	75	75	75	60	60	50	–	–	–	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	46.5	57	73	100	119	95	142	187	172	175	195	167	192	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	76	102	127	135	120	95	157	195	172	195	195	172	195	–	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	–	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage																				
0.304 ... 0.436	1.56 ... 1.66	0.2 (0.22)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	100	75	75	50	37.5	25	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	0.54	0.98	1.22	1.89	2.5	2.8	2.9	3.85	5	5.2	5.9	8.1	8.9	13.7	18.8	29	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.91	1.36	1.8	2.7	3.1	4	3.55	4.85	6.2	6.6	8.4	10.6	13.6	17.2	27.5	43.5	
			M_{2max}	Nm	4.65	6.3	8	11.4	13.1	16.5	14.6	19.7	24.5	26	33	41	53	66	106	152	

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Planetary gearbox data																	
Gearbox type:		NRK120, 1-stage						NRK120, 2-stage									
1. Order code		B41						B42									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK120

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																				
0.924 ... 1.04	3.43 ... 3.52	0.35 (0.37)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	100	75	60	37.5	25	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	2.35	3	4.2	6	6.4	8.5	7.3	10	12.5	13.1	17.2	17.3	26	33	53	82	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.75	3.8	4.85	7	8	10.2	9	12.2	15.3	16.3	20.5	25.5	33	41.5	66	95	
			M_{2max}	Nm	10.2	13.8	17.4	24.5	28	35	31	41.5	52	55	69	87	112	139	192	152	
2.03 ... 2.13	6.74 ... 6.82	1.23 (1.31)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	100	75	60	37.5	30	1F.2204-5AF..-0..0-Z
			M_{2N}	Nm	4.65	7.3	7.9	13.7	14.4	19	17.1	23	28.5	29.5	38.5	37.5	55	70	113	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6	8.2	10.4	14.7	16.9	21	18.9	25	31.5	33.5	42	53	67	84	120	95	
			M_{2max}	Nm	20	27	33.5	47.5	54	68	60	81	101	107	134	168	215	265	192	152	
2.05 ... 2.14	6.74 ... 6.82	1.23 (1.31)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	100	75	60	37.5	30	1F.2204-5AK..-0..0-Z
			M_{2N}	Nm	4.8	7.5	8.1	14	14.8	19.4	17.6	24	29.5	30	40	38	57	71	116	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.1	8.3	10.4	14.8	17	21	19	25	31.5	34	42.5	53	68	85	120	95	
			M_{2max}	Nm	20	27	33.5	47.5	54	68	60	81	101	107	134	168	215	265	192	152	
2.81 ... 2.9	9.06 ... 9.18	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	125	100	75	75	50	37.5	30	1F.2204-6AF..-0..0-Z
			M_{2N}	Nm	6.5	10.1	13.7	18.8	19.5	25.5	23	31.5	39	39.5	52	69	72	110	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.4	11.3	14.3	20	23	29	25.5	34.5	43	46	57	72	92	115	120	95	
			M_{2max}	Nm	27	36.5	45.5	64	73	91	81	109	136	145	181	225	290	275	192	152	
2.98 ... 3.07	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	200	200	200	150	125	100	100	75	60	50	37.5	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	7.1	8.2	11.5	15.3	19.5	20	19	26	32	38.5	42.5	58	75	91	113	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.9	12	15.1	21	24.5	30.5	27	36	45.5	48.5	60	76	97	121	120	95	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	312	275	192	152	
3.02 ... 3.11	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	75	75	60	37.5	30	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	6.5	9.8	10.7	14.9	19.1	25	22	29.5	36.5	38.5	49	63	70	89	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	9	12.1	15.3	21.5	24.5	31	27.5	36.5	46	49	61	76	98	123	120	95	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	312	275	192	152	
2.96 ... 3.05	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	125	100	75	60	50	37.5	30	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.6	8.9	12.2	16.4	16.5	22	20	28	34	34	45.5	60	77	95	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.9	15	21	24	30.5	27	36	45	48	60	75	96	120	120	95	
			M_{2max}	Nm	31	41.5	52	73	83	104	93	124	155	165	205	255	312	275	192	152	
5.21 ... 5.29	17.3 ... 17.5	5.1 (6)	n_{2N}	r/min	375	375	300	250	200	200	200	125	100	100	100	75	60	50	37.5	30	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	12.5	14	19.1	25	31.5	32.5	30	49.5	62	64	65	89	116	138	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.6	20.5	26	36.5	42	52	46.5	62	78	83	104	130	167	172	120	95	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
5.34 ... 5.42	17.3 ... 17.5	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	30	20	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	11.6	15.7	20	27	27	38	36.5	44.5	56	56	78	98	121	161	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16	21	26.5	37.5	43	54	48	64	80	86	107	134	172	172	120	95	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
5.38 ... 5.46	17.3 ... 17.5	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	100	100	75	60	50	37.5	30	1F.2206-2AF..-0..0-Z
			M_{2N}	Nm	11.2	16.8	22	29.5	29	38.5	35.5	48	58	69	75	102	133	158	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	16.1	21.5	27	38	43.5	54	48.5	64	80	86	107	134	172	172	120	95	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	

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Planetary gearbox data																	
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage								
1. Order code			B41						B42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																					
5.22 ... 5.3	17.3 ... 17.5	7.8 (9.4)	n_{2N}	r/min	375	300	300	200	200	150	150	125	100	100	75	60	50	50	37.5	25	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	12.7	17.3	18.7	30	31	42.5	39	49.5	62	63	86	107	134	130	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.6	20.5	26	36.5	42	53	47	62	78	83	104	130	167	172	120	94	
			M_{2max}	Nm	52	70	87	122	140	152	156	205	260	275	312	275	312	275	192	152	
7.89 ... 8.01	26 ... 26.4	11.5 (13.1)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	17.8	24	26	33.5	43	59	54	66	84	84	115	143	179	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23.5	31.5	39.5	55	64	80	71	94	118	126	157	172	195	172	120	–	
			M_{2max}	Nm	79	105	131	184	192	152	235	312	275	312	312	275	312	275	192	–	
7.76 ... 7.88	26 ... 26.4	11.5 (13.1)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	50	37.5	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	17.1	23	29	39.5	40	55	51	63	79	79	109	136	169	156	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39	55	62	78	69	93	116	124	155	172	195	172	120	–	
			M_{2max}	Nm	79	105	131	184	192	152	235	312	275	312	312	275	312	275	192	–	
11 ... 11.1	36.6 ... 37.2	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	125	100	125	100	75	75	60	50	37.5	37.5	30	–	1FT2206-4AC..-0..0-Z
			M_{2N}	Nm	20.5	26	34	47.5	57	73	58	72	98	97	123	146	195	172	108	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	33	44	55	77	88	95	98	131	164	175	195	172	195	172	120	–	
			M_{2max}	Nm	111	148	186	216	192	152	251	312	275	312	312	275	312	275	192	–	
10.5 ... 10.7	34.7 ... 35.3	15.1 (16.8)	n_{2N}	r/min	375	375	300	200	200	150	150	125	100	100	75	75	60	60	37.5	–	1F.2206-4AF..-0..0-Z
			M_{2N}	Nm	25	27	36	57	59	80	73	88	111	111	151	145	186	144	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42.5	53	74	85	95	95	126	158	168	195	172	195	172	120	–	
			M_{2max}	Nm	105	141	176	216	192	152	251	312	275	312	312	275	310	275	192	–	
10.1 ... 10.2	34.7 ... 35.3	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	75	60	50	50	37.5	–	1FT2206-4AH..-0..0-Z
			M_{2N}	Nm	20	26.5	33.5	44.5	59	62	58	87	87	117	120	150	183	152	117	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40.5	50	71	81	95	90	121	151	161	195	172	195	172	120	–	
			M_{2max}	Nm	105	141	176	216	192	152	251	312	275	312	312	275	310	275	192	–	
10.3 ... 10.4	36.6 ... 37.2	24.86 (28.16)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	50	37.5	30	–	1FT2208-2AF..-0..0-Z
			M_{2N}	Nm	25.5	33	42.5	59	61	75	71	89	119	120	152	172	164	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	51	72	83	95	92	123	154	164	195	171	195	172	120	–	
			M_{2max}	Nm	111	148	185	216	192	152	251	312	275	312	312	275	312	275	192	–	
16.3 ... 16.6	49.2 ... 50	31.96 (34.96)	n_{2N}	r/min	300	200	200	150	125	100	100	75	60	60	50	50	37.5	37.5	–	–	1FT2208-3AB..-0..0-Z
			M_{2N}	Nm	28.5	44.5	46	64	78	95	95	127	158	159	190	170	195	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	49.5	66	82	115	120	95	146	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	150	199	245	216	192	152	251	312	275	312	312	275	312	275	–	–	
15.1 ... 15.4	49.2 ... 50	31.96 (35.36)	n_{2N}	r/min	375	250	250	150	150	125	125	100	75	75	60	60	50	37.5	–	–	1F.2208-3AC..-0..0-Z
			M_{2N}	Nm	28	44	45.5	79	81	95	92	115	154	153	192	171	194	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45.5	61	76	107	120	95	136	181	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	150	199	245	216	192	152	251	312	275	312	312	275	312	275	–	–	
15.1 ... 15.3	49.2 ... 50	31.96 (35.36)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	60	50	37.5	–	–	1FT2208-3AF..-0..0-Z
			M_{2N}	Nm	33	42	54	75	76	92	87	108	146	144	183	159	185	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45.5	61	76	107	120	95	136	181	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	150	199	245	216	192	152	251	312	275	312	312	275	312	275	–	–	

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Planetary gearbox data																	
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage								
1. Order code			B41						B42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK120 1 and 2-stage (continued)																				
19.3 ... 19.7	63.8 ... 64.9	41.16 (46.76)	n_{2N}	r/min	250	200	150	100	100	100	75	60	60	50	50	37.5	37.5	30	–	–	**1FT2208-4AB..-0..0-Z**
			M_{2N}	Nm	32.5	41.5	57	87	89	84	117	148	145	177	166	172	184	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	78	98	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	–	–	
18.8 ... 19.1	63.8 ... 64.9	41.16 (46.76)	n_{2N}	r/min	300	250	200	150	125	125	125	75	75	75	60	60	50	37.5	–	–	**1F.2208-4AC..-0..0-Z**
			M_{2N}	Nm	40.5	51	65	90	108	95	102	167	168	165	195	168	192	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	57	76	95	134	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	270	310	312	275	312	275	–	–	
18.1 ... 18.4	63.8 ... 64.9	41.16 (46.76)	n_{2N}	r/min	300	250	200	150	125	125	125	75	75	75	60	60	50	37.5	–	–	**1FT2208-4AF..-0..0-Z**
			M_{2N}	Nm	41	51	65	90	108	95	102	169	168	166	195	168	192	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	55	73	92	128	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	270	312	312	275	312	275	–	–	
22.8 ... 23.2	77.3 ... 78.7	50.46 (55.96)	n_{2N}	r/min	300	250	200	150	125	150	100	75	75	75	60	60	50	37.5	–	–	**1FT2208-5AB..-0..0-Z**
			M_{2N}	Nm	45	55	71	98	118	79	139	182	171	173	195	168	191	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	69	92	115	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	–	–	
22.5 ... 22.9	77.3 ... 78.7	50.46 (55.96)	n_{2N}	r/min	300	250	200	150	125	125	100	75	75	75	60	60	50	37.5	–	–	**1F.2208-5AC..-0..0-Z**
			M_{2N}	Nm	45	55	71	98	118	95	138	183	170	170	195	159	173	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	68	91	114	135	120	95	157	195	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	184	248	275	216	192	152	251	310	275	312	312	275	312	275	–	–	

Planetary gearbox data																	
Gearbox type:			NRK120, 1-stage						NRK120, 2-stage								
1. Order code			B41						B42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	172	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	184	248	275	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.764	2.051	1.768	1.546	1.495	1.419	2.334	2.248	2.218	1.76	1.582	1.571	1.423	1.419	1.415	1.376
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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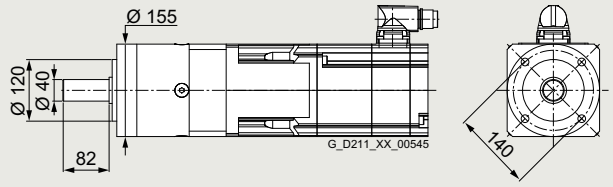
Selection and ordering data

NRK155



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5200 N
Average axial force for 20000 h	$F_{A,eq}$	7000 N
Average radial force for 30000 h	$F_{R,eq}$	4600 N
Average axial force for 30000 h	$F_{A,eq}$	6000 N
Maximum radial force	$F_{R,max}$	8400 N
Maximum axial force	$F_{A,max}$	11000 N

Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK155 1 and 2-stage													
4.5	14.3	1.71	n_{2N}	r/min	375	300	200	100	100	75	50	37.5	30	**1F.2105-4AF..-0..0-Z**
...	...	(2.55)	M_{2N}	Nm	15.1	20.5	39.5	65	71	98	161	205	186	■■■ + ■■■ + . . .
4.58	14.5		M_{2_0}	Nm	18	22.5	45.5	72	91	113	182	225	210	
			M_{2max}	Nm	57	72	145	225	285	355	570	712	336	
4.53	14.3	1.71	n_{2N}	r/min	375	300	200	100	100	75	50	37.5	25	**1FT2105-4AH..-0..0-Z**
...	...	(2.55)	M_{2N}	Nm	13.6	19.6	35	61	63	90	150	195	210	■■■ + ■■■ + . . .
4.62	14.5		M_{2_0}	Nm	18.1	22.5	46	73	91	114	183	225	210	
			M_{2max}	Nm	57	72	145	225	285	355	570	712	336	
7.47	23	2.65	n_{2N}	r/min	300	300	200	100	75	60	50	37.5	25	**1F.2105-6AF..-0..0-Z**
...	...	(3.5)	M_{2N}	Nm	25.5	28.5	50	87	124	156	200	270	210	■■■ + ■■■ + . . .
7.54	23.4		M_{2_0}	Nm	29.5	37	75	119	149	187	295	370	210	
			M_{2max}	Nm	93	116	230	365	460	570	736	712	336	
7.89	25	4.6	n_{2N}	r/min	375	300	200	100	75	60	50	37.5	25	**1F.2106-3AF..-0..0-Z**
...	...	(6.3)	M_{2N}	Nm	21	29.5	52	91	128	161	205	280	210	■■■ + ■■■ + . . .
8.04	25.3		M_{2_0}	Nm	31.5	39.5	80	126	158	197	315	395	210	
			M_{2max}	Nm	101	126	250	400	500	620	736	712	336	
10.3	31.7	6	n_{2N}	r/min	300	300	150	100	75	60	37.5	30	25	**1F.2106-4AF..-0..0-Z**
...	...	(7.6)	M_{2N}	Nm	33	36	82	106	153	192	320	400	210	■■■ + ■■■ + . . .
10.5	32.2		M_{2_0}	Nm	41.5	52	104	164	205	255	410	445	210	
			M_{2max}	Nm	128	161	320	500	630	712	736	712	336	
14.5	43.9	8.7	n_{2N}	r/min	300	250	150	75	75	60	37.5	37.5	–	**1F.2106-6AF..-0..0-Z**
...	...	(10.4)	M_{2N}	Nm	43.5	56	107	179	189	235	400	380	–	■■■ + ■■■ + . . .
14.8	44.5		M_{2_0}	Nm	59	73	148	230	290	360	460	445	–	
			M_{2max}	Nm	178	220	336	700	736	712	736	712	–	
21.2	84.1	18.2	n_{2N}	r/min	250	200	125	60	60	50	30	30	–	**1FT2108-4AC..-0..0-Z**
...	...	(22.3)	M_{2N}	Nm	57	74	130	235	240	285	460	440	–	■■■ + ■■■ + . . .
21.6	85.4		M_{2_0}	Nm	86	107	210	335	420	445	460	445	–	
			M_{2max}	Nm	340	425	336	736	736	712	736	712	–	

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Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage				
1. Order code			B51			B52				
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRK155

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NRK155 1 and 2-stage (continued)													
26 ... 26.5	102 ... 103	21.6 (25.6)	n_{2N}	r/min	250	250	125	75	60	50	37.5	30	–	1FT2108-5AB..-0..0-Z
			M_{2N}	Nm	70	73	161	220	290	340	445	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	105	132	210	415	460	445	460	445	–	
			M_{2max}	Nm	410	510	336	736	736	712	736	712	–	
25.8 ... 26.3	102 ... 103	21.6 (25.6)	n_{2N}	r/min	250	200	125	60	50	37.5	37.5	30	–	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	63	82	141	255	315	415	380	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	104	131	210	410	460	445	460	445	–	
			M_{2max}	Nm	410	510	336	736	736	712	736	712	–	
32.8 ... 33.4	135 ... 138	28.2 (32.2)	n_{2N}	r/min	250	200	125	60	50	50	37.5	30	–	1FT2108-7AB..-0..0-Z
			M_{2N}	Nm	80	104	178	310	380	370	450	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	133	167	210	460	460	445	460	445	–	
			M_{2max}	Nm	550	680	336	736	736	712	736	712	–	
32.2 ... 32.8	135 ... 138	28.2 (32.2)	n_{2N}	r/min	250	200	125	60	50	50	37.5	30	–	1FT2108-7AC..-0.B0-Z
			M_{2N}	Nm	76	100	167	300	365	345	415	445	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	131	164	210	460	460	445	460	445	–	
			M_{2max}	Nm	550	680	336	736	736	712	736	712	–	
32 ... 32.6	135 ... 138	28.2 (32.2)	n_{2N}	r/min	200	200	100	60	50	37.5	30	30	–	1FT2108-7AE..-0.B0-Z
			M_{2N}	Nm	87	91	193	275	340	440	460	425	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	130	162	210	460	460	445	460	445	–	
			M_{2max}	Nm	550	680	336	736	736	712	736	712	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage													
3.04 ... 3.12	10.3 ... 10.4	3.15 (4.05)	n_{2N}	r/min	300	300	200	100	100	75	50	37.5	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	9.4	11.4	21	37	39	55	94	121	210	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	12.1	15.3	31	49	61	77	123	154	210	
			M_{2max}	Nm	41	51	103	164	205	255	410	510	336	
3.07 ... 3.15	10.3 ... 10.4	3.15 (4.05)	n_{2N}	r/min	375	375	200	125	100	75	60	50	25	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	9.2	9.8	24.5	32.5	47.5	61	90	106	210	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	12.2	15.4	31.5	49.5	62	77	124	156	210	
			M_{2max}	Nm	41	51	103	164	205	255	410	510	336	
3 ... 3.08	10.3 ... 10.4	3.15 (4.05)	n_{2N}	r/min	375	300	200	100	100	75	50	37.5	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	8.2	11.8	22.5	37.5	42	58	96	122	183	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	11.9	15.1	30.5	48.5	60	76	122	152	205	
			M_{2max}	Nm	41	51	103	164	205	255	410	510	336	
5.3 ... 5.39	17.2 ... 17.5	5.1 (6)	n_{2N}	r/min	300	300	200	100	75	60	50	37.5	25	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	17.1	19.2	34	61	87	109	146	196	210	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	21	26.5	53	84	106	132	210	265	210	
			M_{2max}	Nm	69	87	174	275	345	430	690	712	336	
5.29 ... 5.37	17.2 ... 17.5	7.8 (9.4)	n_{2N}	r/min	300	250	150	75	75	60	37.5	30	20	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	15.8	20.5	40.5	73	79	100	171	215	205	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	21	26.5	53	85	106	133	210	265	210	
			M_{2max}	Nm	69	87	174	275	345	430	690	712	336	

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Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage					
1. Order code			B51			B52					
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	M_{maxM} Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage (continued)													
5.46 ... 5.54	17.2 ... 17.5	7.8 (9.4)	n_{2N} r/min	375	300	200	100	100	75	50	37.5	25	**1F.2206-2AF..-0..0-Z**
			M_{2N} Nm	16	21.5	39.5	68	71	100	165	210	210	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	21.5	27	55	87	109	136	215	270	205	
			M_{2max} Nm	69	87	174	275	345	430	690	712	336	
5.29 ... 5.37	17.2 ... 17.5	7.8 (9.4)	n_{2N} r/min	300	300	150	100	75	60	50	37.5	25	**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	17.2	18.8	44.5	60	86	108	138	189	200	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	21	26.5	53	84	105	132	210	265	210	
			M_{2max} Nm	69	87	174	275	345	430	690	712	336	
8.04 ... 8.19	25.9 ... 26.3	11.5 (13.1)	n_{2N} r/min	300	300	150	100	75	60	37.5	30	15	**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	24	26.5	62	81	117	148	250	310	210	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	32	40.5	81	128	161	200	320	400	210	
			M_{2max} Nm	105	131	260	415	520	650	736	712	336	
7.91 ... 8.06	25.9 ... 26.3	11.5 (13.1)	n_{2N} r/min	300	250	150	75	75	60	37.5	30	25	**1FT2206-3AF..-0..0-Z**
			M_{2N} Nm	23	30	59	103	111	140	235	295	210	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	31.5	40	80	126	158	198	315	395	210	
			M_{2max} Nm	105	131	260	415	520	650	736	712	336	
10.9 ... 11	36.6 ... 37.1	15.1 (16.8)	n_{2N} r/min	250	200	125	60	60	50	30	25	20	**1FT2206-4AC..-0..0-Z**
			M_{2N} Nm	27.5	36.5	64	125	131	156	275	330	162	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	43.5	54	110	174	215	270	435	445	210	
			M_{2max} Nm	148	185	336	580	730	712	736	712	336	
10.7 ... 10.9	34.6 ... 35.2	15.1 (16.8)	n_{2N} r/min	300	300	150	100	75	60	37.5	30	25	**1F.2206-4AF..-0..0-Z**
			M_{2N} Nm	34	37	84	108	155	195	325	405	210	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	43	54	109	171	210	265	425	445	210	
			M_{2max} Nm	140	175	336	550	690	712	736	712	336	
10.2 ... 10.4	34.6 ... 35.2	15.1 (16.8)	n_{2N} r/min	300	250	150	75	75	50	37.5	30	20	**1FT2206-4AH..-0..0-Z**
			M_{2N} Nm	27	35	67	119	124	188	265	330	210	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	41	51	104	164	205	255	410	445	210	
			M_{2max} Nm	140	175	336	550	690	712	736	712	336	
10.5 ... 10.7	36.6 ... 37.1	22.5 (25.8)	n_{2N} r/min	300	250	125	75	60	50	37.5	30	20	**1FT2208-2AF..-0..0-Z**
			M_{2N} Nm	29.5	38	85	129	166	200	280	350	210	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	42	53	106	167	205	260	415	445	210	
			M_{2max} Nm	148	185	336	580	730	712	736	712	336	
16.4 ... 16.6	49.2 ... 49.9	29.6 (32.6)	n_{2N} r/min	250	200	100	60	50	37.5	30	25	–	**1FT2208-3AB..-0..0-Z**
			M_{2N} Nm	39.5	52	113	174	215	280	370	435	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	66	82	165	260	325	405	460	445	–	
			M_{2max} Nm	199	245	336	736	736	712	736	712	–	
15.5 ... 15.8	49.2 ... 49.9	29.6 (33)	n_{2N} r/min	300	250	125	75	60	50	30	30	–	**1F.2208-3AC..-0..0-Z**
			M_{2N} Nm	40.5	52	115	169	215	260	450	440	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	63	78	158	245	310	385	460	445	–	
			M_{2max} Nm	199	245	336	736	736	712	736	712	–	

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Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage				
1. Order code			B51			B52				
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRK155

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage (continued)														
15.4 ... 15.7	49.2 ... 49.9	29.6 (33)	n_{2N}	r/min	250	250	125	75	60	50	30	30	–	**1FT2208-3AF..-0..0-Z**
			M_{2N}	Nm	45.5	48	108	160	205	245	425	410	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	78	156	245	305	385	460	445	–	
			M_{2max}	Nm	199	245	336	736	736	712	736	712	–	
19.9 ... 20.1	63.8 ... 64.7	38.8 (44.4)	n_{2N}	r/min	200	150	100	50	37.5	37.5	25	20	–	**1FT2208-4AB..-0..0-Z**
			M_{2N}	Nm	46.5	64	102	197	260	265	405	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	80	100	200	315	395	445	460	445	–	
			M_{2max}	Nm	255	320	336	736	736	712	736	712	–	
19.2 ... 19.6	63.8 ... 64.7	38.8 (44.4)	n_{2N}	r/min	250	200	125	75	60	50	37.5	30	–	**1F.2208-4AC..-0..0-Z**
			M_{2N}	Nm	56	73	129	186	240	285	365	440	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	78	98	196	305	385	445	460	445	–	
			M_{2max}	Nm	255	320	336	736	736	712	730	712	–	
18.4 ... 18.8	63.8 ... 64.7	38.8 (44.4)	n_{2N}	r/min	250	200	125	75	60	50	37.5	30	–	**1FT2208-4AF..-0..0-Z**
			M_{2N}	Nm	56	73	128	186	240	285	370	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	74	93	187	295	365	445	460	445	–	
			M_{2max}	Nm	255	320	336	736	736	712	730	712	–	
23.3 ... 23.8	77.3 ... 78.5	48.1 (53.6)	n_{2N}	r/min	250	200	125	60	50	37.5	37.5	30	–	**1FT2208-5AB..-0..0-Z**
			M_{2N}	Nm	61	80	138	250	305	405	375	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	95	118	210	370	460	445	460	445	–	
			M_{2max}	Nm	310	390	336	736	736	712	736	712	–	
23.1 ... 23.5	77.3 ... 78.5	48.1 (53.6)	n_{2N}	r/min	250	200	125	60	50	37.5	30	30	–	**1F.2208-5AC..-0..0-Z**
			M_{2N}	Nm	61	80	137	250	310	405	460	435	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	94	117	210	365	455	445	460	445	–	
			M_{2max}	Nm	310	390	336	736	736	712	736	712	–	
18.2 ... 18.6	57.9 ... 58.7	66.7 (72.7)	n_{2N}	r/min	250	200	100	60	50	37.5	30	30	–	**1FT2210-2AC..-0..0-Z**
			M_{2N}	Nm	57	74	153	235	290	370	460	400	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	74	92	185	290	365	445	460	445	–	
			M_{2max}	Nm	230	290	336	736	736	712	736	712	–	
18 ... 18.3	57.9 ... 58.7	66.7 (72.7)	n_{2N}	r/min	250	200	100	60	50	37.5	30	25	–	**1FT2210-2AF..-0..0-Z**
			M_{2N}	Nm	53	69	148	220	270	360	440	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	73	91	183	285	360	445	460	445	–	
			M_{2max}	Nm	230	290	336	736	736	712	736	712	–	
28.3 ... 28.7	86.9 ... 88.3	93.8 (99.8)	n_{2N}	r/min	250	200	100	60	50	37.5	30	30	–	**1F.2210-3AB..-0..0-Z**
			M_{2N}	Nm	73	96	200	290	355	445	460	435	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	114	143	210	450	460	445	460	445	–	
			M_{2max}	Nm	350	440	336	736	736	712	736	712	–	
28.3 ... 28.7	86.9 ... 88.3	93.8 (99.8)	n_{2N}	r/min	250	200	100	60	50	37.5	30	30	–	**1F.2210-3AC..-0..0-Z**
			M_{2N}	Nm	73	95	200	285	350	445	460	435	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	114	143	210	450	460	445	460	445	–	
			M_{2max}	Nm	350	440	336	736	736	710	736	712	–	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:			NRK155, 1-stage			NRK155, 2-stage				
1. Order code			B51			B52				
	i		4	5	10	16	20	25	40	50	100
2. Order code			R04	R05	R10	R16	R20	R25	R40	R50	R00
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NRK155 1 and 2-stage (continued)													
27.8 ... 28.2	86.9 ... 88.3	93.8 (99.8)	n_{2N} r/min	200	200	100	50	37.5	37.5	30	25	–	**1FT2210-3AF..-0..0-Z**
			M_{2N} Nm	85	86	184	325	435	435	455	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	112	140	210	445	460	445	455	440	–	
			M_{2max} Nm	350	440	336	736	736	712	736	712	–	
37.6 ... 38.5	116 ... 118	122 (138)	n_{2N} r/min	200	200	100	50	50	37.5	30	30	–	**1F.2210-4AB..-0..0-Z**
			M_{2N} Nm	105	107	210	385	380	445	460	395	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	153	192	210	460	460	445	460	445	–	
			M_{2max} Nm	470	580	335	736	736	712	736	712	–	
37 ... 37.8	116 ... 118	122 (138)	n_{2N} r/min	200	200	100	50	50	37.5	30	30	–	**1F.2210-4AC..-0..0-Z**
			M_{2N} Nm	104	106	210	380	375	445	460	390	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	151	188	210	460	460	445	460	445	–	
			M_{2max} Nm	470	580	335	736	736	712	736	712	–	
35.5 ... 36.2	116 ... 118	122 (138)	n_{2N} r/min	200	150	100	50	50	37.5	30	25	–	**1FT2210-4AF..-0.B0-Z**
			M_{2N} Nm	102	138	205	375	360	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	144	180	210	460	460	445	460	440	–	
			M_{2max} Nm	470	580	335	736	736	712	736	712	–	
42.9 ... 43.7	145 ... 147	19.5 (21.1)	n_{2N} r/min	200	200	125	50	50	50	30	30	–	**1FT2210-5AB..-0..0-Z**
			M_{2N} Nm	125	126	187	440	430	350	460	435	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	174	215	210	460	460	445	460	445	–	
			M_{2max} Nm	580	712	336	736	736	712	736	712	–	
43.9 ... 44.9	145 ... 147	150 (166)	n_{2N} r/min	200	150	100	50	50	37.5	30	25	–	**1F.2210-5AC..-0.B0-Z**
			M_{2N} Nm	114	154	210	410	390	445	460	445	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	179	220	210	460	460	445	460	445	–	
			M_{2max} Nm	580	712	336	736	736	712	736	712	–	

Planetary gearbox data										
Gearbox type:			**NRK155, 1-stage**			**NRK155, 2-stage**					
1. Order code			**B51**			**B52**					
	i		**4**	**5**	**10**	**16**	**20**	**25**	**40**	**50**	**100**
2. Order code			**R04**	**R05**	**R10**	**R16**	**R20**	**R25**	**R40**	**R50**	**R00**
	$M_{2N,G}$	Nm	460	445	210	460	460	445	460	445	210
	$M_{2max,G}$	Nm	736	712	336	736	736	712	736	712	336
	$M_{2Em.Off}$	Nm	920	890	420	920	920	890	920	890	420
	$J_{1,G}$	kg cm²	7.611	6.482	4.932	7.108	6.172	6.117	5.107	4.774	4.759
	$\varphi_{2,G}$	'	6			9					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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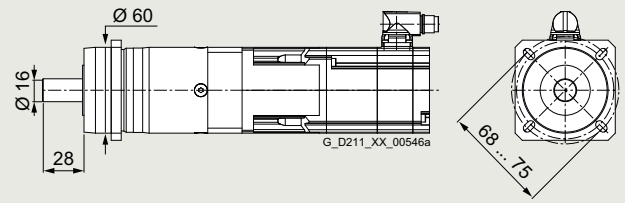
Selection and ordering data

NLC060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	3200 N
Average axial force for 20000 h	$F_{A,eq}$	4400 N
Average radial force for 30000 h	$F_{R,eq}$	3200 N
Average axial force for 30000 h	$F_{A,eq}$	3900 N
Maximum radial force	$F_{R,max}$	3200 N
Maximum axial force	$F_{A,max}$	4400 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC060 1 and 2-stage																					
0.326 ... 0.5	1.7 ... 1.85	0.093 (0.112)	n_{2N}	r/min	375	375	375	300	300	300	300	250	250	200	200	150	150	125	100	60	37.5	1F.2103-2AH..-2..0-Z
			M_{2N}	Nm	0.6	0.96	1.28	2.1	2.35	2.8	2.4	3.35	3.95	4.8	5.3	7.4	9.6	12.3	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.97	1.49	2	3.05	3.55	4.6	4	5.5	7	7.5	9.5	12.1	15.6	19.6	18	15	
			M_{2max}	Nm	5	6.9	8.8	12.6	14.5	18.3	16.2	21.5	27	29	36.5	46	59	64	28.5	24	
0.801 ... 0.958	3.77 ... 3.9	0.139 (0.158)	n_{2N}	r/min	375	375	375	300	300	250	250	250	200	200	150	150	125	100	60	–	1F.2103-4AH..-2..0-Z
			M_{2N}	Nm	1.79	2.35	2.8	4.65	5	6.8	6.1	6.8	9.9	10.1	13.7	15.2	19.4	24.5	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.4	3.35	4.35	6.3	7.3	9.3	8.1	11	13.9	14.9	18.8	23.5	30	38	18	–	
			M_{2max}	Nm	11.3	15.2	19.2	27	29	24	34.5	46	58	61	70	64	70	64	29	–	
1.01 ... 1.18	3.48 ... 3.6	0.371 (0.451)	n_{2N}	r/min	500	375	375	375	300	300	300	250	200	200	150	125	100	75	50	–	1F.2104-4AF..-2..0-Z
			M_{2N}	Nm	2	3.45	4.35	5.5	7.2	8.6	7.6	10.2	13.3	13.8	18.2	22.5	29	37.5	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3	4.2	5.4	7.8	9	11.4	10.1	13.7	17.3	18.4	23	29	37	40	18	–	
			M_{2max}	Nm	10.4	14	17.7	25	28.5	24	32	42.5	53	57	70	64	70	64	29	–	
1.01 ... 1.17	3.58 ... 3.7	0.371 (0.451)	n_{2N}	r/min	500	375	375	375	300	300	300	250	250	200	200	150	125	100	60	–	1F.2104-4AK..-2..0-Z
			M_{2N}	Nm	2.15	3.75	4.75	5.8	7.8	9.1	8.2	11	11.7	15	15.9	22.5	28.5	36.5	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3	4.2	5.4	7.8	9	11.3	10.1	13.6	17.1	18.3	23	28.5	37	40	18	–	
			M_{2max}	Nm	10.7	14.4	18.2	25.5	29	24	32.5	44	55	58	70	64	70	64	29	–	
2.12 ... 2.26	7.18 ... 7.29	0.581 (0.671)	n_{2N}	r/min	375	375	375	300	300	300	250	200	200	150	150	125	100	75	–	–	1F.2104-5AF..-2..0-Z
			M_{2N}	Nm	5.4	6.8	7.9	12	12.7	13.1	15.5	21	22.5	29.5	32	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.3	8.6	10.9	15.5	17.8	15	19.9	26.5	33.5	35.5	44	40	44	40	–	–	
			M_{2max}	Nm	21.5	28.5	36	40	29	24	64	70	70	70	70	64	70	64	–	–	
2.1 ... 2.24	7.28 ... 7.39	0.581 (0.671)	n_{2N}	r/min	375	375	375	300	300	300	250	200	200	150	150	125	125	100	–	–	1F.2104-5AK..-2..0-Z
			M_{2N}	Nm	5.3	6.7	7.8	11.8	12.6	12.9	15.2	20.5	22.5	30	32	39.5	37.5	40	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.3	8.5	10.8	15.4	17.7	15	19.8	26.5	33	35.5	44	40	44	40	–	–	
			M_{2max}	Nm	21.5	29	36.5	40	29	24	65	70	70	70	70	64	70	64	–	–	
2.87 ... 3	9.65 ... 9.75	0.781 (0.861)	n_{2N}	r/min	375	375	375	300	300	300	250	200	150	150	150	125	100	75	–	–	1F.2104-6AF..-2..0-Z
			M_{2N}	Nm	6.7	8.4	9.6	14.5	15.2	15	18.2	24.5	35	35.5	37	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.6	11.6	14.7	20.5	18	15	26.5	35.5	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	28.5	38.5	48.5	40	29	24	70	70	70	70	70	64	70	64	–	–	

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Planetary gearbox data																	
Gearbox type:		NLC060, 1-stage						NLC060, 2-stage									
1. Order code		C21						C22									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1.G}$	kg cm²	0.178	0.12	0.097	0.078	0.074	0.069	0.135	0.129	0.081	0.091	0.079	0.078	0.068	0.067	0.067	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC060 1 and 2-stage (continued)																				
4.51 ... 4.63	14.5 ... 14.6	1.98 (2.82)	n_{2N}	r/min	375	300	300	250	250	250	200	150	150	125	125	100	100	75	–	–	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	10.6	15.4	17.1	22.5	18	15	28.5	40.5	39	44	43.5	40	38	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.5	18.2	22.5	25	18	15	41	44	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	43.5	58	64	40	29	24	70	70	70	70	70	64	70	64	–	–	
4.49 ... 4.61	14.5 ... 14.6	1.98 (2.82)	n_{2N}	r/min	375	300	250	200	250	200	200	150	125	125	125	100	75	75	–	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	14.3	18.7	25	17.7	15	25	36.5	44	43.5	36.5	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	18.1	22.5	25	18	15	40.5	44	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	43.5	58	64	40	29	24	70	70	70	70	70	64	70	64	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC060 1 and 2-stage																				
0.348 ... 0.529	1.6 ... 1.76	0.2 (0.22)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	125	100	100	75	50	37.5	1F.2203-2AK..-2..0-Z
			M_{2N}	Nm	0.55	0.83	1.32	1.74	2.25	2.55	2.25	3.2	4.75	4.8	6.2	8	8.3	11.7	17.9	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.04	1.58	2.1	3.2	3.75	4.8	4.25	5.8	7.4	8	10.1	12.8	16.5	20.5	18	15	
			M_{2max}	Nm	4.8	6.5	8.3	11.9	13.7	17.3	15.3	20.5	25.5	27.5	34.5	43.5	55	64	29	24	
0.942 ... 1.09	3.48 ... 3.6	0.35 (0.37)	n_{2N}	r/min	375	375	300	300	250	250	250	200	200	200	150	125	100	75	60	–	1F.2203-4AK..-2..0-Z
			M_{2N}	Nm	2.05	2.6	3.8	4.85	6.1	6.9	6.3	8.5	9.2	9	12.7	15.6	20	27	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.8	3.95	5	7.3	8.4	10.7	9.4	12.7	16	17.1	21.5	27	34.5	40	18	–	
			M_{2max}	Nm	10.4	14	17.7	25	28.5	24	32	42.5	53	57	70	64	70	64	29	–	
2.08 ... 2.22	6.78 ... 6.89	1.251 (1.331)	n_{2N}	r/min	375	375	375	300	250	250	250	200	200	150	150	125	100	75	–	–	1F.2204-5AF..-2..0-Z
			M_{2N}	Nm	5.2	6.5	7.3	11.2	14.2	14.9	14.3	19.5	19.9	27.5	28.5	35.5	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.2	8.4	10.7	15.2	17.5	15	19.6	26	33	35	44	40	44	40	–	–	
			M_{2max}	Nm	20	27	34	40	29	24	61	70	70	70	70	64	70	64	–	–	
2.09 ... 2.23	6.78 ... 6.89	1.251 (1.331)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	125	125	100	100	–	–	1F.2204-5AK..-2..0-Z
			M_{2N}	Nm	5.3	6.6	9.4	11.4	14.5	15	14.6	19.9	27.5	28.5	35.5	36	44	38.5	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.2	8.5	10.8	15.3	17.6	15	19.7	26	33	35	44	40	44	40	–	–	
			M_{2max}	Nm	20	27	34	40	29	24	61	70	70	70	70	64	70	64	–	–	
2.85 ... 2.98	9.15 ... 9.26	1.631 (1.711)	n_{2N}	r/min	375	375	300	250	250	300	200	200	150	150	125	125	100	75	–	–	1F.2204-6AF..-2..0-Z
			M_{2N}	Nm	7.1	8.7	12.4	17.5	18	13.3	22.5	24	35.5	35.5	43.5	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.5	14.6	20.5	18	15	26.5	35.5	44	44	44	40	44	40	–	–	
			M_{2max}	Nm	27	36.5	46	40	29	24	70	70	70	70	70	64	70	64	–	–	
2.6 ... 2.73	10.4 ... 10.5	3.42 (4.32)	n_{2N}	r/min	375	300	250	200	200	200	200	150	125	125	100	100	75	50	–	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.4	8.3	10.9	15.3	16.7	15	16.5	24	30.5	30	39.5	33.5	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.7	10.5	13.3	18.9	18	15	24	32	40	43	44	40	44	40	–	–	
			M_{2max}	Nm	31	41.5	52	40	29	24	70	70	70	70	70	64	70	64	–	–	
2.66 ... 2.79	10.4 ... 10.5	3.42 (4.32)	n_{2N}	r/min	375	375	300	250	250	250	200	150	150	125	100	100	75	75	–	–	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	6.7	7.6	11.3	15.5	15.4	12.4	20.5	27.5	29	36	44	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	10.8	13.6	19.3	18	15	24.5	33	41.5	43.5	44	40	44	40	–	–	
			M_{2max}	Nm	31	41.5	52	40	29	24	70	70	70	70	70	64	70	64	–	–	
2.65 ... 2.77	10.4 ... 10.5	3.42 (4.32)	n_{2N}	r/min	375	300	300	250	200	200	200	150	125	125	100	100	75	75	–	–	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	6	9	9.9	13.4	17.9	15	18.2	26	33	32.5	42.5	37.5	44	38	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	10.7	13.6	19.2	18	15	24.5	32.5	41	43.5	44	40	44	40	–	–	
			M_{2max}	Nm	31	41.5	52	40	29	24	70	70	70	70	70	64	70	64	–	–	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NLC060, 1-stage						NLC060, 2-stage									
1. Order code		C21						C22									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.178	0.12	0.097	0.078	0.074	0.069	0.135	0.129	0.081	0.091	0.079	0.078	0.068	0.067	0.067	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NLC060

Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²
4.69 ... 4.81	17.4 ... 17.6	5.37 (6.27)

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC060 1 and 2-stage (continued)

1F.2205-4AF..-0..0-Z
■■■ + ■■■ + . . .

n_{2N}	r/min	300	300	250	200	250	200	150	125	125	125	100	100	75	75	–	–
M_{2N}	Nm	11.9	13.9	18.4	24.5	17.2	15	35	43.5	44	42.5	44	40	44	39	–	–
$M_{2,0}$	Nm	14	18.9	23.5	25	18	15	42.5	44	44	44	44	40	44	40	–	–
M_{2max}	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	–	–

Planetary gearbox data

Gearbox type:		NLC060, 1-stage						NLC060, 2-stage									
1. Order code		C21						C22									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	28	38	40	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	45	61	64	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	88	80	80	80	80	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.178	0.12	0.097	0.078	0.074	0.069	0.135	0.129	0.081	0.091	0.079	0.078	0.068	0.067	0.067	0.064
$\varphi_{2,G}$	'	10						12									

Color legend:

$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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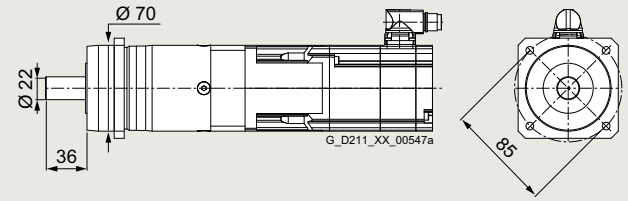
Selection and ordering data

NLC080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5500 N
Average axial force for 20000 h	$F_{A,eq}$	6400 N
Average radial force for 30000 h	$F_{R,eq}$	4800 N
Average axial force for 30000 h	$F_{A,eq}$	5700 N
Maximum radial force	$F_{R,max}$	5500 N
Maximum axial force	$F_{A,max}$	6400 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC080 1 and 2-stage																					
0.224	1.56	0.093	n_{2N}	r/min	250	300	300	300	300	250	250	250	200	200	150	150	125	100	60	37.5	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.35	0.63	0.98	1.59	1.83	2.6	2.1	2.5	3.6	3.65	5.6	6	8.3	10.8	19	31.5	■■■ + ■■■ + . . .
0.501	1.82		$M_{2.0}$	Nm	0.67	1.19	1.72	2.75	3.3	4.35	3.7	5.2	6.7	7.3	9.3	11.8	15.4	19.5	31.5	38	
			M_{2max}	Nm	4.65	6.5	8.3	12.1	13.9	17.6	15.6	21	26.5	28	35.5	44.5	57	72	80	61	
0.727	3.64	0.139	n_{2N}	r/min	375	375	300	300	300	250	250	200	200	200	150	125	125	100	60	37.5	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.5	2	3.1	4.35	4.65	6.6	5.7	7.8	8.9	8.5	12.9	16.2	18.6	23.5	40	38	■■■ + ■■■ + . . .
0.984	3.85		$M_{2.0}$	Nm	2.15	3.2	4.2	6.2	7.3	9.3	8.1	11	14	15	19	23.5	30.5	38.5	50	38	
			M_{2max}	Nm	10.9	14.8	18.7	26.5	30	38	34	45.5	57	61	76	95	122	153	80	61	
0.875	3.34	0.35	n_{2N}	r/min	375	375	375	300	300	300	300	250	200	200	150	125	100	75	50	30	**1F.2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.1	3	3.85	5.9	6.7	7.8	7	9.4	12.2	12.7	17.3	21.5	28.5	37	50	38	■■■ + ■■■ + . . .
1.15	3.56		$M_{2.0}$	Nm	2.6	3.75	4.95	7.3	8.4	10.8	9.5	13	16.5	17.6	22	28	36	45	50	38	
			M_{2max}	Nm	10	13.6	17.2	24.5	28	35	31	42	52	56	70	88	113	142	80	61	
0.869	3.44	0.35	n_{2N}	r/min	375	375	375	300	300	300	300	250	200	200	150	150	125	100	60	37.5	**1F.2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.35	3.3	4.25	6.5	7.3	8.2	7.6	10.1	13.4	13.9	18.9	21	28	35.5	50	38	■■■ + ■■■ + . . .
1.14	3.66		$M_{2.0}$	Nm	2.6	3.75	4.9	7.2	8.4	10.7	9.5	12.9	16.4	17.5	22	27.5	35.5	45	50	38	
			M_{2max}	Nm	10.3	14	17.7	25	28.5	36	32	43	54	58	72	91	116	145	80	61	
1.98	7.04	0.56	n_{2N}	r/min	375	375	375	300	300	250	250	200	200	150	150	125	100	75	50	30	**1F.2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.3	6.6	7.5	12.2	12.7	17.4	16.1	21.5	21	29.5	33.5	41	56	73	50	38	■■■ + ■■■ + . . .
2.23	7.22		$M_{2.0}$	Nm	5.9	8.2	10.4	15	17.2	21.5	19.3	26	32.5	35	44	55	70	88	50	38	
			M_{2max}	Nm	21	28	35.5	50	57	61	64	86	107	114	143	176	192	176	80	61	
1.96	7.14	0.56	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	150	100	100	75	60	37.5	**1F.2104-5AK..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.3	6.5	9.7	12	15.5	17.1	16	22	29.5	31	33	49.5	56	77	50	38	■■■ + ■■■ + . . .
2.21	7.32		$M_{2.0}$	Nm	5.8	8.1	10.4	14.9	17.1	21.5	19.2	25.5	32.5	34.5	43.5	54	70	88	50	38	
			M_{2max}	Nm	21	28.5	36	51	58	61	65	87	109	116	145	176	192	176	80	61	
2.73	9.51	0.76	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	125	100	100	75	50	–	**1F.2104-6AF..-2..0-Z**
...	...	(0.84)	M_{2N}	Nm	6.8	8.3	12.2	14.9	19.3	20.5	19.4	26.5	37.5	37.5	48.5	62	66	91	50	–	■■■ + ■■■ + . . .
2.96	9.68		$M_{2.0}$	Nm	8.1	11.2	14.2	20	23	29	26	35	43.5	46.5	58	73	94	110	50	–	
			M_{2max}	Nm	28.5	38	48	67	77	61	86	115	144	153	192	176	192	176	80	–	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NLC080, 1-stage						NLC080, 2-stage								
1. Order code			C31						C32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NLC080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC080 1 and 2-stage (continued)																				
4.47 ... 4.66	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	125	100	75	75	50	–	**1F.2105-4AF..-0..0-Z**
			M_{2N}	Nm	11.5	14	19.3	23	29.5	30	28	37	53	53	68	87	115	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	18.1	22.5	32	37	38	41	55	69	74	92	110	120	110	50	–	
			M_{2max}	Nm	43	57	72	101	80	61	130	173	176	192	192	176	192	176	80	–	
4.5 ... 4.69	14.4 ... 14.6	1.71 (2.55)	n_{2N}	r/min	375	375	300	250	250	200	200	200	150	150	125	100	75	75	60	–	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	11	12.5	18.3	25	27	35.5	32	32.5	49.5	48	61	79	107	104	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	18.2	23	32.5	37	38	41.5	55	70	74	93	110	120	110	50	–	
			M_{2max}	Nm	43	57	72	101	80	61	130	173	176	192	192	176	192	176	80	–	
7.08 ... 7.26	23.2 ... 23.4	2.65 (3.5)	n_{2N}	r/min	375	300	300	250	200	250	200	150	125	100	100	100	75	75	–	–	**1F.2105-6AF..-0..0-Z**
			M_{2N}	Nm	16.7	24	26.5	37	48	33	47	65	81	95	104	96	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21	28.5	35.5	50	50	38	64	85	107	114	120	110	120	110	–	–	
			M_{2max}	Nm	70	93	116	104	80	61	208	192	176	192	192	176	192	176	–	–	
7.18 ... 7.36	25 ... 25.3	5.476 (7.176)	n_{2N}	r/min	300	300	250	200	200	200	150	125	100	100	75	75	60	60	–	–	**1F.2106-3AF..-0..0-Z**
			M_{2N}	Nm	18.7	21	28.5	39.5	39.5	32.5	54	67	86	85	118	108	120	104	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	28.5	36	51	50	38	65	87	109	116	120	110	120	110	–	–	
			M_{2max}	Nm	75	101	126	104	80	61	208	192	176	192	192	175	192	176	–	–	
9.37 ... 9.55	31.8 ... 32.2	6.876 (8.476)	n_{2N}	r/min	300	250	250	200	200	200	150	125	100	100	75	75	60	60	–	–	**1F.2106-4AF..-0..0-Z**
			M_{2N}	Nm	23.5	31.5	34	47	45	32	64	76	98	94	120	109	120	95	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	28	37.5	47	65	50	38	84	112	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	96	128	160	104	80	61	208	192	176	192	192	176	192	176	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC080 1 and 2-stage																				
0.286 ... 0.496	1.54 ... 1.72	0.2 (0.22)	n_{2N}	r/min	–	250	250	250	200	200	200	150	150	125	125	100	75	75	37.5	30	**1F.2203-2AK..-0..0-Z**
			M_{2N}	Nm	–	0.73	1.07	1.61	2.2	2.65	2.25	3.5	3.9	4.75	5.3	7.1	10.4	10.8	22	30	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	1.14	1.65	2.65	3.15	4.2	3.65	5.1	6.7	7.2	9.2	11.7	15.3	19.3	31	38	
			M_{2max}	Nm	–	6.1	7.9	11.4	13.1	16.6	14.8	20	25	26.5	33.5	42.5	54	68	80	61	
0.83 ... 1.1	3.34 ... 3.56	0.35 (0.37)	n_{2N}	r/min	375	375	300	300	250	250	250	200	200	150	150	125	100	75	50	37.5	**1F.2203-4AK..-0..0-Z**
			M_{2N}	Nm	1.74	2.3	3.45	4.7	5.8	6.7	5.9	8.1	8.4	11.4	12.3	15.1	20	27.5	42	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.45	3.6	4.7	7	8.1	10.3	9.1	12.5	15.8	16.9	21	26.5	34.5	43.5	50	38	
			M_{2max}	Nm	10	13.6	17.2	24.5	28	35	31	42	52	56	70	88	113	142	80	61	
1.94 ... 2.19	6.65 ... 6.83	1.23 (1.31)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	150	125	100	75	50	30	**1F.2204-5AF..-2..0-Z**
			M_{2N}	Nm	5	6.3	8.9	11.3	14.3	15.9	15	20	26	27.5	30	37	50	66	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	8	10.2	14.7	16.9	21	19	25.5	32	34	43	54	69	87	50	38	
			M_{2max}	Nm	19.9	26.5	33.5	47.5	54	61	60	81	101	108	135	169	192	176	80	61	
1.95 ... 2.2	6.65 ... 6.83	1.23 (1.31)	n_{2N}	r/min	375	375	300	300	250	250	250	200	150	150	150	125	100	75	60	37.5	**1F.2204-5AK..-2..0-Z**
			M_{2N}	Nm	5.2	6.4	9.2	11.6	14.8	16.2	15.4	20.5	27	28.5	30.5	37.5	52	68	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	8	10.3	14.8	17	21.5	19.1	25.5	32	34.5	43	54	70	87	50	38	
			M_{2max}	Nm	19.9	26.5	33.5	47.5	54	61	60	81	101	108	135	169	192	176	80	61	
2.72 ... 2.95	9.02 ... 9.19	1.61 (1.69)	n_{2N}	r/min	375	375	300	250	250	200	250	200	150	150	125	100	100	75	50	–	**1F.2204-6AF..-2..0-Z**
			M_{2N}	Nm	7.3	8.7	12.9	18.6	20	26.5	19.6	26.5	38	38.5	49	63	63	89	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.1	11.1	14.1	20	23	29	25.5	34.5	43.5	46.5	58	73	94	110	50	–	
			M_{2max}	Nm	27	36	45.5	64	73	61	81	109	136	145	182	176	192	176	80	–	

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Planetary gearbox data																
Gearbox type:		NLC080, 1-stage						NLC080, 2-stage								
1. Order code		C31						C32								
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC080 1 and 2-stage (continued)																				
2.62 ... 2.82	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	250	200	250	200	150	125	100	100	75	50	37.5	–	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	6.2	6.9	10.6	15	16.4	21	15.8	21.5	29.5	34	43	46.5	63	88	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.5	22	28	24.5	33	41.5	44.5	56	70	90	110	50	–	
			M_{2max}	Nm	30.5	41	51	73	80	61	93	124	155	166	192	176	192	176	80	–	
2.67 ... 2.87	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	375	375	300	250	250	250	200	150	150	125	100	100	75	50	–	**1F.2205-2AF..-0..0-Z**
			M_{2N}	Nm	6.7	8.8	9.6	15.3	18.6	20.5	19.7	26	34	35.5	45	56	62	86	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8	10.9	13.9	19.8	22.5	28.5	25	33.5	42.5	45	57	71	91	110	50	–	
			M_{2max}	Nm	30.5	41	51	73	80	61	93	124	155	166	192	176	192	176	80	–	
2.64 ... 2.85	10.3 ... 10.5	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	250	200	250	200	150	150	125	100	100	75	60	–	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.5	7.8	11.2	15.8	17.6	22.5	17.4	23.5	32	33.5	41.5	52	53	78	49.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	10.8	13.7	19.6	22.5	28	25	33.5	42	45	56	70	90	110	50	–	
			M_{2max}	Nm	30.5	41	51	73	80	61	93	124	155	166	192	176	192	176	80	–	
4.75 ... 4.94	17.4 ... 17.5	5.1 (6)	n_{2N}	r/min	375	300	300	250	200	200	200	150	125	125	100	100	75	75	–	–	**1F.2205-4AF..-0..0-Z**
			M_{2N}	Nm	11	16.2	18.3	25.5	32.5	36	34	47	58	60	77	75	110	95	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19.2	24	34	39	38	43.5	58	73	77	97	110	120	110	–	–	
			M_{2max}	Nm	52	69	87	104	80	61	156	192	176	192	192	176	192	176	–	–	
4.98 ... 5.17	17.3 ... 17.5	8.676 (10.276)	n_{2N}	r/min	300	250	200	200	150	150	150	125	100	100	75	60	50	50	37.5	–	**1FT2206-2AC..-0..0-Z**
			M_{2N}	Nm	11.7	16.2	21	23	33.5	34.5	35.5	43.5	56	54	78	99	119	101	49.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.9	20	25	35.5	41	38	45.5	61	76	81	102	110	120	110	50	–	
			M_{2max}	Nm	52	69	87	104	80	61	155	192	176	192	192	176	192	176	80	–	
4.9 ... 5.09	17.3 ... 17.5	8.676 (10.276)	n_{2N}	r/min	375	300	250	200	200	150	150	150	125	100	100	75	60	50	–	–	**1F.2206-2AF..-0..0-Z**
			M_{2N}	Nm	10.9	16.2	20.5	29	31	38	37.5	41	50	64	62	91	119	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.7	19.8	25	35	40.5	38	45	60	75	80	100	110	120	110	–	–	
			M_{2max}	Nm	52	69	87	104	80	61	155	192	176	192	192	176	192	176	–	–	
4.76 ... 4.95	17.3 ... 17.5	8.676 (10.276)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	60	50	–	–	**1FT2206-2AH..-0..0-Z**
			M_{2N}	Nm	12.2	16.5	18.6	26	25	38	36	47.5	59	60	80	100	101	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.2	19.2	24	34	39	38	43.5	58	73	78	97	110	120	110	–	–	
			M_{2max}	Nm	52	69	87	104	80	61	155	192	176	192	192	176	192	176	–	–	
7.23 ... 7.41	26 ... 26.3	12.38 (13.976)	n_{2N}	r/min	300	250	250	200	150	150	150	100	100	100	75	60	50	37.5	–	–	**1FT2206-3AB..-0..0-Z**
			M_{2N}	Nm	17.7	24	25.5	35.5	49	38	50	73	79	77	109	110	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	36.5	51	50	38	65	87	109	117	120	110	120	110	–	–	
			M_{2max}	Nm	78	105	131	104	80	61	208	192	176	192	192	176	192	176	–	–	
7.09 ... 7.28	26 ... 26.3	12.38 (13.976)	n_{2N}	r/min	300	250	200	200	150	150	150	125	100	100	75	75	60	50	–	–	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	17	23	30	33.5	47.5	38	48	58	75	72	104	89	117	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21	28.5	35.5	50	50	38	64	85	107	114	120	110	120	110	–	–	
			M_{2max}	Nm	78	105	131	104	80	61	208	192	176	192	192	176	192	176	–	–	
9.93 ... 10.1	36.7 ... 37.1	15.98 (17.676)	n_{2N}	r/min	250	200	200	125	150	150	100	100	75	75	60	60	50	37.5	–	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	22	30.5	31.5	56	45.5	34.5	73	74	103	101	120	110	119	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	50	65	50	38	89	119	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	111	148	176	104	80	61	208	192	176	192	192	176	192	176	–	–	

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Planetary gearbox data																	
Gearbox type:			NLC080, 1-stage						NLC080, 2-stage								
1. Order code			C31						C32								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NLC080

SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC080 1 and 2-stage (continued)

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
9.84 ... 10	34.7 ... 35.2	15.976 (17.676)	n_{2N}	r/min	300	250	250	200	200	200	150	100	100	100	75	75	60	60	–	–	1F.2206-4AF..-0..0-Z
			M_{2N}	Nm	24.5	33	35	48	46	34	65	100	100	96	120	110	120	97	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	65	50	38	88	118	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	105	140	175	104	79	61	208	192	176	192	191	176	192	176	–	–	
9.42 ... 9.6	34.7 ... 35.2	15.976 (17.676)	n_{2N}	r/min	300	250	200	150	150	150	125	100	75	75	75	60	60	50	–	–	1FT2206-4AH..-0..0-Z
			M_{2N}	Nm	20	27	37	54	50	38	67	86	110	116	112	110	115	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	28	37.5	47.5	65	50	38	84	113	110	120	120	110	120	110	–	–	
			M_{2max}	Nm	105	140	175	104	79	61	208	192	176	192	191	176	192	176	–	–	

Planetary gearbox data																	
Gearbox type:		NLC080, 1-stage						NLC080, 2-stage									
1. Order code		C31						C32									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	85	115	110	65	50	38	130	120	110	120	120	110	120	110	50	38
$M_{2max,G}$	Nm	136	184	176	104	80	61	208	192	176	192	192	176	192	176	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	200	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	0.775	0.54	0.466	0.401	0.387	0.37	0.641	0.615	0.607	0.46	0.415	0.412	0.37	0.368	0.369	0.357
$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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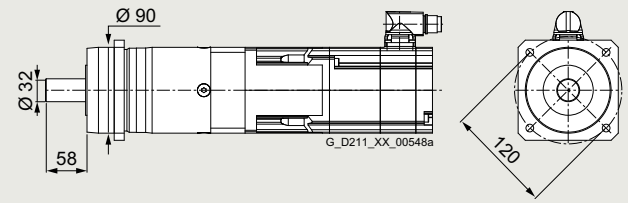
Selection and ordering data

NLC120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	6000 N
Average axial force for 20000 h	$F_{A,eq}$	8000 N
Average radial force for 30000 h	$F_{R,eq}$	5400 N
Average axial force for 30000 h	$F_{A,eq}$	7000 N
Maximum radial force	$F_{R,max}$	6000 N
Maximum axial force	$F_{A,max}$	8000 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC120 1 and 2-stage																					
0.211	1.55	0.093	n_{2N}	r/min	–	–	200	200	200	200	150	125	100	100	100	100	75	75	50	30	**1F.2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	–	–	0.7	1.38	1.65	2.1	1.92	2.85	4.05	4.3	5.4	5.8	9.6	10.2	16.5	29.5	■■■ + ■■■ + . . .
0.441	1.75		$M_{2.0}$	Nm	–	–	1.05	1.97	2.4	3.35	2.85	4.2	5.5	6	7.8	10.1	13.3	16.9	27.5	44	
			M_{2max}	Nm	–	–	7.7	11.3	13	16.6	14.7	20	25	27	34	42.5	55	69	111	152	
0.666	3.45	0.139	n_{2N}	r/min	300	250	250	200	200	200	200	150	125	125	100	100	75	60	37.5	30	**1F.2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.18	2.15	2.85	4.8	5.4	6	4.9	7.8	10.1	10.6	14.6	15	23.5	30	49.5	67	■■■ + ■■■ + . . .
1.05	3.78		$M_{2.0}$	Nm	1.99	3.05	4.15	6.3	7.3	9.5	8.3	11.5	14.7	15.8	20	25	32.5	41	66	95	
			M_{2max}	Nm	10.3	14.2	18	25.5	29.5	37	33	44.5	55	59	74	93	120	150	192	152	
0.695	3.16	0.35	n_{2N}	r/min	375	300	300	250	250	200	200	150	150	150	125	100	100	75	50	30	**1F.2104-4AF..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.51	2.6	3.5	5.5	6.3	8.6	7	10.1	11.6	11.9	16.4	21	23.5	34	54	90	■■■ + ■■■ + . . .
1.08	3.49		$M_{2.0}$	Nm	2.05	3.15	4.3	6.5	7.6	9.8	8.6	11.9	15.2	16.3	20.5	26	33.5	42	68	95	
			M_{2max}	Nm	9.4	13	16.5	23.5	27	34	30.5	41	51	55	69	86	111	139	192	152	
0.688	3.26	0.35	n_{2N}	r/min	375	300	300	250	250	200	200	150	150	150	125	100	100	75	50	30	**1F.2104-4AK..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.69	2.75	3.8	5.9	7	9.1	7.5	10.5	12.7	12.7	18.2	23.5	24.5	37.5	57	95	■■■ + ■■■ + . . .
1.07	3.59		$M_{2.0}$	Nm	2.05	3.15	4.25	6.4	7.5	9.7	8.5	11.8	15.1	16.1	20.5	25.5	33.5	42	68	95	
			M_{2max}	Nm	9.7	13.4	17	24	28	35	31	42	53	56	71	89	114	143	192	152	
1.8	6.86	0.56	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	100	75	60	37.5	30	**1F.2104-5AF..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.1	6.6	9.3	11.8	15.7	17.6	15.2	22	28	29	40	39	61	77	120	95	■■■ + ■■■ + . . .
2.16	7.13		$M_{2.0}$	Nm	5.3	7.6	9.8	14.2	16.4	20.5	18.4	25	31.5	33.5	42	53	68	85	120	95	
			M_{2max}	Nm	20.5	27.5	35	49.5	56	71	63	84	106	113	141	177	225	280	192	152	
1.78	6.96	0.56	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	100	75	60	37.5	30	**1F.2104-5AK..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	5	6.5	9.2	11.5	15.5	17.2	14.9	21.5	27.5	28	39	38.5	60	76	120	95	■■■ + ■■■ + . . .
2.15	7.23		$M_{2.0}$	Nm	5.3	7.5	9.7	14.1	16.3	20.5	18.3	24.5	31	33	42	52	68	85	120	95	
			M_{2max}	Nm	20.5	28	35.5	50	57	72	64	86	107	114	143	179	230	285	192	152	
2.55	9.33	0.76	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	75	75	60	50	30	**1F.2104-6AF..-0..0-Z**
...	...	(0.84)	M_{2N}	Nm	6.8	8.4	11.8	14.6	19.5	21.5	18.6	27	34.5	35	48	65	72	92	97	95	■■■ + ■■■ + . . .
2.9	9.59		$M_{2.0}$	Nm	7.6	10.6	13.5	19.4	22	28	25	33.5	42.5	45.5	57	71	92	115	120	95	
			M_{2max}	Nm	27.5	37.5	47	66	76	95	85	114	142	152	190	235	305	368	192	152	

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Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy geared motors for servo converters with line connection 400 V 3 AC

Gearbox type NLC120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 High Dynamic servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																				
4.29 ... 4.6	14.3 ... 14.5	1.71 (2.55)	n_{2N}	r/min	375	300	250	250	200	200	200	150	125	100	100	75	75	50	50	30	1F.2105-4AF..-0..0-Z
			M_{2N}	Nm	9.8	15	20	23.5	32	33.5	29.5	42.5	53	65	73	99	104	160	106	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.8	17.5	22	31.5	36	45.5	40.5	54	68	72	91	114	146	183	120	95	
			M_{2max}	Nm	42.5	57	71	101	115	145	129	172	215	230	285	355	416	368	192	152	
4.32 ... 4.63	14.3 ... 14.5	1.71 (2.55)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	100	75	60	50	37.5	30	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	11.5	13.7	18.9	27.5	29	40.5	35.5	47	59	62	65	91	123	149	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.9	17.6	22	31.5	36.5	45.5	40.5	54	68	73	91	115	147	184	120	95	
			M_{2max}	Nm	42.5	57	71	101	115	145	129	172	215	230	285	355	416	368	192	152	
7.26 ... 7.52	23.1 ... 23.4	2.65 (3.5)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	75	60	50	37.5	–	1F.2105-6AF..-0..0-Z
			M_{2N}	Nm	17.6	20.5	27.5	40	42	59	53	67	87	88	122	124	165	199	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	37	52	59	75	66	89	112	119	149	187	240	230	120	–	
			M_{2max}	Nm	69	92	116	163	186	152	205	275	345	365	416	368	416	368	192	–	
7.64 ... 7.9	25 ... 25.3	4.6 (6.3)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	75	60	50	37.5	–	1F.2106-3AF..-0..0-Z
			M_{2N}	Nm	18.6	21.5	29	42	43.5	62	56	70	90	91	126	129	171	205	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38.5	54	62	78	70	93	117	125	156	195	250	230	120	–	
			M_{2max}	Nm	75	100	126	176	192	152	225	300	368	400	416	368	416	368	192	–	
10 ... 10.3	31.8 ... 32.2	6 (7.6)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	50	37.5	–	1F.2106-4AF..-0..0-Z
			M_{2N}	Nm	23.5	32.5	36	51	52	75	67	83	107	106	149	189	235	225	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40	50	71	81	95	91	121	152	162	200	230	260	230	120	–	
			M_{2max}	Nm	96	128	160	216	192	152	285	380	368	416	416	368	416	368	192	–	
14.3 ... 14.6	43.9 ... 44.5	8.7 (10.4)	n_{2N}	r/min	300	250	250	200	150	150	150	100	100	75	75	60	60	50	–	–	1F.2106-6AF..-0..0-Z
			M_{2N}	Nm	31.5	42.5	46.5	65	88	95	84	128	131	174	183	230	225	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	43	57	72	101	116	95	129	172	215	230	260	230	260	230	–	–	
			M_{2max}	Nm	133	177	220	216	192	152	336	416	368	416	416	365	416	368	–	–	
20.8 ... 21.1	84.1 ... 85.3	20.6 (24.7)	n_{2N}	r/min	250	200	200	150	125	125	100	75	60	60	50	50	50	37.5	–	–	1FT2108-4AC..-0..0-Z
			M_{2N}	Nm	41.5	56	59	86	107	95	127	172	215	215	255	230	210	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	62	84	105	135	120	95	187	250	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
25.6 ... 26	102 ... 103	24.0 (28.0)	n_{2N}	r/min	250	200	200	150	150	150	100	75	75	60	60	60	50	37.5	–	–	1FT2108-5AB..-0..0-Z
			M_{2N}	Nm	52	70	74	107	107	92	152	205	205	255	255	220	255	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	77	103	129	135	120	95	210	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
25.4 ... 25.8	102 ... 103	24.0 (28.0)	n_{2N}	r/min	250	200	150	125	125	125	100	75	60	60	60	50	50	37.5	–	–	1FT2108-5AC..-0.B0-Z
			M_{2N}	Nm	47	63	87	114	117	95	140	188	230	235	225	230	210	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	76	102	128	135	120	95	210	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage																				
0.198 ... 0.428	1.45 ... 1.66	0.2 (0.22)	n_{2N}	r/min	–	–	200	200	200	150	150	125	100	100	100	75	60	50	37.5	25	1F.2203-2AK..-0..0-Z
			M_{2N}	Nm	–	–	0.68	1.29	1.48	2.6	1.88	2.75	3.95	4.15	4.85	7.2	10.6	13.4	19.2	30.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	–	0.98	1.88	2.3	3.2	2.7	4.05	5.3	5.8	7.5	9.7	12.8	16.3	26.5	42.5	
			M_{2max}	Nm	–	–	7.2	10.6	12.3	15.7	13.8	18.8	23.5	25.5	32	40.5	52	65	105	152	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																				
0.649 ... 1.03	3.16 ... 3.49	0.35 (0.37)	n_{2N}	r/min	300	250	250	200	200	200	200	150	125	125	100	75	75	60	37.5	25	1F.2203-4AK..-0..0-Z
			M_{2N}	Nm	1.58	2.6	3.45	5.5	6.2	6.7	5.7	8.8	11.4	12	16.3	21.5	26	33	54	84	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.94	3	4.05	6.1	7.2	9.3	8.2	11.3	14.5	15.5	19.7	24.5	32	40.5	65	95	
			M_{2max}	Nm	9.4	13	16.5	23.5	27	34	30.5	41	51	55	69	86	111	139	192	152	
1.76 ... 2.12	6.47 ... 6.74	1.23 (1.31)	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	75	75	60	37.5	30	1F.2204-5AF..-0..0-Z
			M_{2N}	Nm	4.95	6.3	9	11	15.1	16.3	14.3	21	26.5	27	37.5	49	56	72	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.2	7.4	9.5	13.9	16	20	18	24.5	30.5	33	41.5	52	67	84	120	95	
			M_{2max}	Nm	19.3	26	33	46.5	53	67	59	80	100	107	134	167	215	265	192	152	
1.77 ... 2.14	6.47 ... 6.74	1.23 (1.31)	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	125	100	75	75	60	37.5	30	1F.2204-5AK..-0..0-Z
			M_{2N}	Nm	5	6.5	9.1	11.3	15.4	16.7	14.6	21.5	27.5	27.5	38.5	50	58	74	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.3	7.4	9.6	14	16.2	20.5	18.2	24.5	31	33	41.5	52	67	84	120	95	
			M_{2max}	Nm	19.3	26	33	46.5	53	67	59	80	100	107	134	167	215	265	192	152	
2.54 ... 2.88	8.84 ... 9.09	1.61 (1.69)	n_{2N}	r/min	300	300	250	250	200	200	200	150	125	100	100	75	75	60	37.5	30	1F.2204-6AF..-0..0-Z
			M_{2N}	Nm	7.2	9.1	12.8	15.3	20.5	22	19.4	28.5	36	43.5	50	68	74	95	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.6	10.5	13.4	19.3	22	28	25	33.5	42	45	56	71	91	114	120	95	
			M_{2max}	Nm	26.5	35.5	44.5	63	72	90	81	108	135	144	180	225	285	360	192	152	
2.76 ... 3.09	10.1 ... 10.4	3.15 (4.05)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	100	75	60	50	37.5	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	6.3	9	10.7	16.2	16.9	24	21	28	35.5	37.5	40.5	57	76	94	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.2	11.4	14.6	20.5	24	30	26.5	36	45	48.5	60	76	98	122	120	95	
			M_{2max}	Nm	30	40.5	51	72	82	103	92	123	154	164	205	255	325	368	192	152	
2.79 ... 3.12	10.1 ... 10.4	3.15 (4.05)	n_{2N}	r/min	375	300	300	250	200	200	200	150	125	125	100	75	75	60	37.5	30	1F.2205-2AF..-0..0-Z
			M_{2N}	Nm	5.7	9	10.3	15.1	19.7	21.5	19.3	28	35	35.5	48.5	62	72	92	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.3	11.5	14.7	21	24	30.5	27	36.5	45.5	49	61	77	99	124	120	94	
			M_{2max}	Nm	30	40.5	51	72	82	103	92	123	154	164	205	255	325	368	192	152	
2.73 ... 3.06	10.1 ... 10.4	3.15 (4.05)	n_{2N}	r/min	300	300	250	200	200	150	200	150	125	100	100	75	60	50	37.5	30	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	6.5	8.1	11.4	16.8	18.2	24.5	16.6	25	31	38.5	43.5	59	77	96	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.1	11.3	14.4	20.5	23.5	30	26.5	35.5	45	48	60	75	97	121	119	95	
			M_{2max}	Nm	30	40.5	51	72	82	103	92	123	154	164	205	255	325	368	192	152	
5.01 ... 5.28	17.2 ... 17.5	5.1 (6)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	75	60	50	37.5	30	1F.2205-4AF..-0..0-Z
			M_{2N}	Nm	11.4	16	18.4	27	28	40.5	37	47	61	62	86	89	119	144	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15	20	25.5	36.5	42	52	46.5	62	78	83	104	131	168	210	120	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
5.07 ... 5.37	17.2 ... 17.5	7.8 (9.4)	n_{2N}	r/min	300	250	200	200	150	125	150	100	100	75	75	60	50	37.5	37.5	20	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	10.7	15	20.5	23.5	33	42	33.5	52	54	72	77	99	125	167	110	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20.5	26	37	42	53	47.5	63	79	85	106	133	171	210	120	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
5.18 ... 5.45	17.2 ... 17.5	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	200	150	200	150	125	100	100	75	60	50	37.5	30	1F.2206-2AF..-0..0-Z
			M_{2N}	Nm	10.9	16.3	21.5	30.5	33.5	44.5	30	43.5	54	68	73	102	134	164	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.5	21	26.5	37.5	43	54	48	64	81	86	108	135	173	215	120	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	

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Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLC120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																					
5.01 ... 5.28	17.2 ... 17.5	7.8 (9.4)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	50	37.5	30	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	11.8	16.4	18.4	26.5	27	39.5	37	46.5	60	61	85	108	137	136	119	85	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15	20	25.5	36.5	42	52	46.5	62	78	83	105	131	168	210	119	95	
			M_{2max}	Nm	51	69	86	121	139	152	155	205	255	275	345	368	416	368	192	152	
7.78 ... 8.04	26 ... 26.3	11.5 (13.1)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	16.8	23	26	37.5	38.5	55	50	63	81	82	115	145	184	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39.5	55	64	80	71	95	119	127	159	198	255	230	120	–	
			M_{2max}	Nm	78	104	131	183	192	152	230	310	368	416	416	368	416	368	192	–	
7.64 ... 7.91	26 ... 26.3	11.5 (13.1)	n_{2N}	r/min	300	250	250	200	150	150	150	125	100	100	75	60	50	37.5	37.5	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	16.1	22	24	35	48	52	48	59	77	76	109	138	174	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38.5	54	63	79	70	93	117	125	156	195	250	230	120	–	
			M_{2max}	Nm	78	104	131	183	192	152	230	310	368	416	416	368	416	368	192	–	
10.8 ... 11	36.6 ... 37.1	15.1 (16.8)	n_{2N}	r/min	250	200	200	150	125	100	100	75	75	60	60	50	37.5	37.5	30	–	1FT2206-4AC..-0..0-Z
			M_{2N}	Nm	19.9	27.5	29.5	44	55	71	68	93	97	121	125	151	210	193	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	32	43	54	76	87	95	98	130	163	174	215	230	260	230	120	–	
			M_{2max}	Nm	110	148	185	216	192	152	330	416	368	416	416	368	416	368	192	–	
10.5 ... 10.7	34.7 ... 35.2	15.1 (16.8)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	50	37.5	–	1F.2206-4AF..-0..0-Z
			M_{2N}	Nm	24	27.5	36.5	52	53	76	68	84	109	108	152	191	240	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	42	53	74	85	95	95	127	159	169	210	230	260	230	120	–	
			M_{2max}	Nm	104	140	175	216	192	152	310	416	368	416	416	368	416	368	192	–	
10 ... 10.3	34.7 ... 35.2	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	75	60	50	37.5	37.5	–	1FT2206-4AH..-0..0-Z
			M_{2N}	Nm	19.4	26.5	36	52	56	70	66	85	114	117	121	153	191	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40	50	71	81	95	90	121	152	162	200	230	260	230	120	–	
			M_{2max}	Nm	104	140	175	216	192	152	310	416	368	416	416	368	416	368	192	–	
10.2 ... 10.4	36.6 ... 37.1	24.86 (28.16)	n_{2N}	r/min	250	250	200	150	150	125	125	100	75	75	60	50	37.5	37.5	30	–	1FT2208-2AF..-0..0-Z
			M_{2N}	Nm	25	27.5	38	56	57	72	68	87	119	120	154	186	255	225	119	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	41	51	72	83	95	92	123	154	165	205	230	255	225	119	–	
			M_{2max}	Nm	110	147	184	216	192	152	330	416	368	416	416	368	416	368	192	–	
16.3 ... 16.5	49.2 ... 49.9	31.96 (34.96)	n_{2N}	r/min	250	200	150	125	125	100	100	75	60	60	50	50	37.5	37.5	–	–	1FT2208-3AB..-0..0-Z
			M_{2N}	Nm	28.5	39.5	55	73	74	94	93	127	160	161	197	185	255	215	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	48.5	65	81	115	120	95	147	196	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	149	199	245	216	192	152	336	416	368	416	416	368	416	368	–	–	
15.3 ... 15.5	49.2 ... 49.9	31.96 (35.36)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	50	37.5	–	–	1F.2208-3AC..-0..0-Z
			M_{2N}	Nm	28.5	38	51	75	77	94	89	113	154	154	198	230	220	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45.5	61	76	108	120	95	137	183	225	240	260	230	260	230	–	–	
			M_{2max}	Nm	149	199	245	216	192	152	336	416	368	416	416	368	416	368	–	–	
15.2 ... 15.4	49.2 ... 49.9	31.96 (35.36)	n_{2N}	r/min	250	200	200	150	125	125	125	100	75	75	60	50	50	37.5	–	–	1FT2208-3AF..-0..0-Z
			M_{2N}	Nm	33	45	48.5	70	86	89	84	106	146	145	186	220	197	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	45.5	61	76	107	120	95	136	182	225	240	260	230	260	230	–	–	
			M_{2max}	Nm	149	199	245	216	192	152	336	416	368	416	416	368	416	368	–	–	

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Planetary gearbox data																	
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage								
1. Order code			C41						C42								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FK2 and S-1FT2 Compact servomotors with planetary gearbox NLC120 1 and 2-stage (continued)																			
19.6	63.7	41.16	n_{2N}	r/min	200	150	125	100	100	100	75	60	50	50	37.5	37.5	30	30	–	–	1FT2208-4AB..-0..0-Z
...	...	(46.76)	M_{2N}	Nm	35	50	63	85	86	80	117	149	181	181	240	225	260	230	–	–	■■■ + ■■■ + . . .
20.1	64.6		$M_{2,0}$	Nm	59	79	99	135	120	95	176	235	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
19	63.7	41.16	n_{2N}	r/min	250	200	200	150	125	125	100	75	75	60	60	50	50	37.5	–	–	1F.2208-4AC..-0..0-Z
...	...	(46.76)	M_{2N}	Nm	40.5	55	59	85	105	95	124	168	170	210	210	230	205	230	–	–	■■■ + ■■■ + . . .
19.3	64.6		$M_{2,0}$	Nm	57	76	95	134	120	95	170	225	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
18.3	63.7	41.16	n_{2N}	r/min	250	200	200	150	125	125	100	75	75	60	50	50	50	37.5	–	–	1FT2208-4AF..-0..0-Z
...	...	(46.76)	M_{2N}	Nm	41	55	59	85	105	95	125	169	170	215	255	230	205	230	–	–	■■■ + ■■■ + . . .
18.5	64.6		$M_{2,0}$	Nm	54	73	92	129	120	95	164	215	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	415	368	416	368	–	–	
23	77.3	50.46	n_{2N}	r/min	250	200	200	125	125	125	100	75	60	60	60	50	50	37.5	–	–	1FT2208-5AB..-0..0-Z
...	...	(55.96)	M_{2N}	Nm	45.5	61	63	111	114	95	137	184	225	230	220	230	210	230	–	–	■■■ + ■■■ + . . .
23.3	78.4		$M_{2,0}$	Nm	69	92	116	135	120	95	205	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	–	–	
22.7	77.3	50.46	n_{2N}	r/min	250	200	200	125	125	125	100	75	60	60	60	50	37.5	37.5	–	–	1F.2208-5AC..-0..0-Z
...	...	(55.96)	M_{2N}	Nm	46	62	63	111	114	95	136	183	225	230	220	230	260	230	–	–	■■■ + ■■■ + . . .
23.1	78.4		$M_{2,0}$	Nm	68	91	115	135	120	95	205	260	230	260	260	230	260	230	–	–	
			M_{2max}	Nm	184	248	312	216	192	152	336	416	368	415	416	368	416	368	–	–	

Planetary gearbox data																		
Gearbox type:			NLC120, 1-stage						NLC120, 2-stage									
1. Order code			C41						C42									
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	115	155	195	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	184	248	312	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	390	520	500	340	380	480	500	520	500	520	520	500	520	500	380	480
	$J_{1,G}$	kg cm²	2.486	1.905	1.677	1.486	1.434	1.39	2.326	2.256	2.233	1.765	1.585	1.577	1.424	1.421	1.417	1.378
	$\varphi_{2,G}$	'	7						9									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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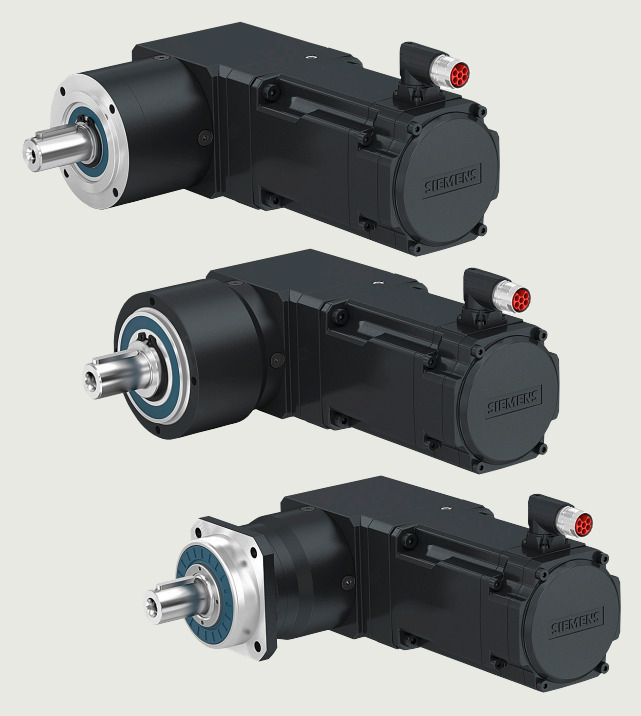
Selection and ordering data



SIMOTICS S-1FT2 servo planetary geared motors with economy angular gearbox

The following pages show the permissible combinations of **servo motors for 230 V 1 AC / 240 V 3 AC** converters

and the economy angled planetary gearboxes **NRBW, NRKW and NLCW** geared motors.

They show the most important component data of the motor and gearbox as well as the rating of the system geared motor.

The rated operating points of the geared motors are adapted to the converter supply voltage.

More information on selection is provided in the section "Information on Selection".

Right-angle gearboxes

As a result of the preliminary bevel gear stage, NRB, NRK and NLC planetary gearboxes are also available as NRBW, NRKW or NLCW angled gearboxes.

The angled versions are ideal when space is restricted.

Due to the additional angle stage, the losses in the angled gearboxes are somewhat higher and the rated specifications are reduced in comparison to the corresponding coaxial version.

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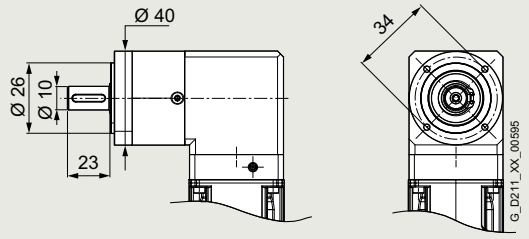
Selection and ordering data

NRBW040



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	200 N
Average axial force for 20000 h	$F_{A,eq}$	200 N
Average radial force for 30000 h	$F_{R,eq}$	160 N
Average axial force for 30000 h	$F_{A,eq}$	160 N
Maximum radial force	$F_{R,max}$	200 N
Maximum axial force	$F_{A,max}$	240 N

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW040 1 and 2-stage																			
0.106	0.498	0.0245	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1FT2102-0AG..-0.A0-Z**
...	...	(0.0285)	M_{2N}	Nm	0.175	0.25	0.33	0.44	0.57	0.73	0.57	0.85	1.07	1.1	1.48	1.82	2.35	3.05	4.75	■■■ + ■■■ + . . .
0.113	0.511		$M_{2,0}$	Nm	0.315	0.43	0.54	0.77	0.88	1.11	1	1.34	1.68	1.8	2.25	2.8	3.6	4.5	7.2	
			M_{2max}	Nm	1.51	2	2.5	3.55	4.05	5.1	4.55	6	7.5	8	10.1	12.6	16.1	20	12	
0.25	1.01	0.036	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1FT2102-1AG..-0.A0-Z**
...	...	(0.04)	M_{2N}	Nm	0.54	0.73	0.94	1.26	1.55	1.96	1.64	2.3	2.9	3	3.9	4.8	6.1	7.9	7.5	■■■ + ■■■ + . . .
0.256	1.04		$M_{2,0}$	Nm	0.74	1	1.26	1.77	2	2.55	2.25	3.05	3.8	4.05	5.1	6.3	8.1	10.2	7.5	
			M_{2max}	Nm	3.1	4.15	5.1	7.2	8.3	8	9.2	12.3	15.4	16.4	20.5	25.5	32	29	12	

Planetary gearbox data																
Gearbox type:			**NRBW040, 1-stage**						**NRBW040, 2-stage**							
1. Order code			**A16**						**A17**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	4.5	6	7.5	8.5	6	5	16.5	20	18	20	20	18	20	18	7.5
	$M_{2max,G}$	Nm	7	10	12	13.5	10	8	26	32	29	32	32	29	32	29	12
	$M_{2Em.Off}$	Nm	22.5	28	35	26	27	25	33	40	36	40	40	36	40	36	27
	$J_{1,G}$	kg cm²	0.049	0.041	0.035	0.033	0.032	0.032	0.048	0.048	0.048	0.038	0.034	0.033	0.032	0.032	0.032
	$\varphi_{2,G}$	'	21						25								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW040

Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW040 3-stage

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
0.106 ... 0.113	0.498 ... 0.511	0.0245 (0.0285)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	1FT2102-0AG..-0.A0-Z
			M_{2N}	Nm	4.4	6	7.5	8.9	12	15.5	19.1	18	7.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.7	9	11.3	13.5	18	18	20	18	7.4	
			M_{2max}	Nm	30	32	32	29	32	29	32	29	12	
0.25 ... 0.256	1.01 ... 1.04	0.036 (0.04)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	6	1FT2102-1AG..-0.A0-Z
			M_{2N}	Nm	11.6	15.6	19.6	18	20	18	20	18	7.4	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	20	18	20	18	20	18	7.5	
			M_{2max}	Nm	32	32	32	29	32	29	32	29	12	

Planetary gearbox data

Gearbox type:		NRBW040, 3-stage							
1. Order code		A18							
i		60	80	100	120	160	200	256	320	512
2. Order code		R60	R80	R01	R21	R61	R02	R52	R23	R51
$M_{2N,G}$	Nm	20	20	20	18	20	18	20	18	7.5
$M_{2max,G}$	Nm	32	32	32	29	32	29	32	29	12
$M_{2Em.Off}$	Nm	40	40	40	36	40	36	40	36	27
$J_{1,G}$	kg cm²	0.047	0.033	0.033	0.047	0.032	0.032	0.032	0.032	0.032
$\varphi_{2,G}$	'	28								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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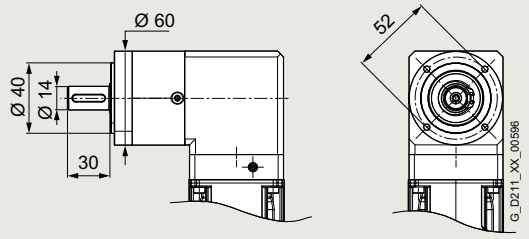
Selection and ordering data

NRBW060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	400 N
Average axial force for 20000 h	$F_{A,eq}$	500 N
Average radial force for 30000 h	$F_{R,eq}$	340 N
Average axial force for 30000 h	$F_{A,eq}$	450 N
Maximum radial force	$F_{R,max}$	700 N
Maximum axial force	$F_{A,max}$	800 N

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW060 1 and 2-stage																				
0.0764	0.468	0.0245	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	75	75	60	37.5	**1FT2102-0AG..-0.A0-Z**
...	...	(0.0285)	M_{2N}	Nm	0.107	0.182	0.205	0.29	0.365	0.48	0.41	0.57	0.66	0.78	1.03	1.37	1.47	1.86	3	■■■ + ■■■ + . . .
0.0919	0.479		M_{2_0}	Nm	0.225	0.32	0.415	0.6	0.69	0.88	0.78	1.06	1.34	1.43	1.8	2.25	2.9	3.65	5.8	
			M_{2max}	Nm	1.4	1.88	2.35	3.3	3.8	4.75	4.25	5.7	7.1	7.6	9.5	11.9	15.2	19	29	
0.226	0.986	0.036	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1FT2102-1AG..-0.A0-Z**
...	...	(0.04)	M_{2N}	Nm	0.36	0.55	0.73	0.95	1.26	1.6	1.17	1.8	2.4	2.4	3.25	4	5.1	6.7	10.4	■■■ + ■■■ + . . .
0.238	1.01		M_{2_0}	Nm	0.67	0.91	1.16	1.64	1.88	2.35	2.1	2.8	3.55	3.75	4.7	5.9	7.6	9.5	15.2	
			M_{2max}	Nm	3	4	5	7	8	10	9	12	15	16	20	25	31.5	39.5	29	
0.512	1.77	0.093	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	**1FT2103-2AG..-2.A0-Z**
...	...	(0.112)	M_{2N}	Nm	0.86	1.25	1.61	2.05	2.7	3.4	2.6	3.9	5.1	5.1	6.9	8.4	10.7	14	18	■■■ + ■■■ + . . .
0.525	1.82		M_{2_0}	Nm	1.53	2.05	2.55	3.6	4.15	5.2	4.7	6.2	7.8	8.3	10.4	13.1	16.7	20.5	18	
			M_{2max}	Nm	5.4	7.2	9	12.7	14.5	18.1	16.2	21.5	27	28.5	36	45	57	64	29	
0.498	1.77	0.093	n_{2N}	r/min	750	600	500	375	375	250	300	250	200	200	125	100	100	75	50	**1FT2103-2AH..-2..0-Z**
...	...	(0.112)	M_{2N}	Nm	1.02	1.38	1.73	2.4	2.55	3.6	3	3.75	4.95	4.95	7.3	9.1	10.3	13.5	18	■■■ + ■■■ + . . .
0.51	1.82		M_{2_0}	Nm	1.49	2	2.5	3.5	4.05	5	4.55	6	7.6	8.1	10.1	12.7	16.3	20	18	
			M_{2max}	Nm	5.4	7.2	9	12.7	14.5	18.1	16.2	21.5	27	28.5	36	45	57	64	29	
1.11	3.74	0.139	n_{2N}	r/min	750	600	500	375	300	250	300	200	200	150	125	100	75	75	50	**1FT2103-4AG..-2.A0-Z**
...	...	(0.158)	M_{2N}	Nm	2.25	3	3.7	5.1	6.4	7.8	6.2	9.5	9.7	13	15.9	19.9	26.5	26.5	18	■■■ + ■■■ + . . .
1.13	3.85		M_{2_0}	Nm	3.35	4.45	5.6	7.8	9	11.2	10.1	13.4	16.8	17.9	22	28	35.5	40	18	
			M_{2max}	Nm	11.5	15.3	19.2	26.5	29	24	34	45.5	57	60	70	64	70	64	29	
0.983	3.74	0.139	n_{2N}	r/min	750	600	500	375	300	250	300	200	200	150	125	100	75	75	50	**1FT2103-4AH..-2..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.05	2.7	3.35	4.65	5.8	7.1	5.7	8.6	8.9	11.8	14.5	18.1	24	24.5	18	■■■ + ■■■ + . . .
0.993	3.85		M_{2_0}	Nm	2.95	3.9	4.9	6.9	7.9	9.9	8.9	11.9	14.8	15.8	19.8	24.5	31.5	39.5	18	
			M_{2max}	Nm	11.5	15.3	19.2	26.5	29	24	34	45.5	57	60	70	64	70	64	29	
1.12	3.46	0.368	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-4AF..-2..0-Z**
...	...	(0.448)	M_{2N}	Nm	3.1	4.2	5.2	7.2	8.4	10.6	9.1	12.6	15.9	16.7	21	26.5	33.5	40	18	■■■ + ■■■ + . . .
1.15	3.56		M_{2_0}	Nm	3.4	4.55	5.7	8	9.1	11.4	10.2	13.6	17	18.2	22.5	28	36	40	18	
			M_{2max}	Nm	10.6	14.2	17.7	24.5	28	24	31.5	42	52	56	70	64	70	64	29	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:			NRBW060, 1-stage						NRBW060, 2-stage							
1. Order code			A26						A27							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80
	$J_{1.G}$	kg cm²	0.357	0.248	0.236	0.225	0.223	0.221	0.35	0.346	0.232	0.241	0.231	0.231	0.222	0.222	0.222
	$\varphi_{2,G}$	'	16						18								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy angular geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRBW060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW060 1 and 2-stage (continued)																			
1.11 ... 1.14	3.55 ... 3.65	0.368 (0.448)	n_{2N}	r/min	750	750	600	375	375	300	300	250	200	200	150	125	100	75	50	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	3.05	3.3	4.3	7	7.2	9.1	8.7	10.3	13.7	13.2	18.3	21.5	27.5	37	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.35	4.5	5.6	7.9	9.1	11.4	10.1	13.5	16.9	18	22.5	28	36	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	
2.18 ... 2.23	7 ... 7.18	0.578 (0.668)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	6.2	8.3	10.4	14.1	16.5	15	17.6	24.5	31	32.5	41	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.8	11.1	15.5	17.8	15	19.8	26	33	35	44	40	44	40	–	
			M_{2max}	Nm	21.5	28.5	35.5	40	29	24	63	70	70	70	70	64	70	64	–	
2.16 ... 2.21	7.09 ... 7.28	0.578 (0.668)	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	100	75	–	**1FT2104-5AK..-2..0-Z**
			M_{2N}	Nm	4.75	6.1	7.5	10.2	12.9	15	14.8	18.6	25	25	30	38	35	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.6	8.8	11	15.4	17.6	15	19.7	26	32.5	35	43.5	40	44	40	–	
			M_{2max}	Nm	21.5	29	36	40	29	24	64	70	70	70	70	64	70	64	–	
2.89 ... 2.96	9.35 ... 9.6	0.778 (0.858)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1FT2104-6AF..-2..0-Z**
			M_{2N}	Nm	7.5	10.1	12.7	16.7	18	15	20.5	30	38	39	44	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.8	14.7	20.5	18	15	26	35	43.5	44	44	40	44	40	–	
			M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW060 1 and 2-stage																			
0.523 ... 0.534	1.68 ... 1.72	0.2 (0.22)	n_{2N}	r/min	750	600	600	375	375	300	300	250	200	200	150	125	100	75	50	**1FT2203-2AG..-2.A0-Z**
			M_{2N}	Nm	1.12	1.5	1.57	2.6	2.65	3.35	3.15	3.85	5.1	5	6.8	8.2	10.5	14	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.56	2.1	2.6	3.7	4.25	5.3	4.75	6.3	7.9	8.4	10.6	13.2	16.9	21	18	
			M_{2max}	Nm	5.1	6.8	8.6	12	13.7	17.2	15.3	20	25.5	27	34	42.5	54	64	29	
0.489 ... 0.5	1.68 ... 1.72	0.2 (0.22)	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	75	60	50	**1FT2203-2AK..-2..0-Z**
			M_{2N}	Nm	0.89	1.19	1.47	2	2.55	3.1	2.95	3.8	5.2	5.2	6.4	8	10.7	13.5	15.1	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.46	1.97	2.45	3.45	3.95	4.95	4.45	5.9	7.4	7.9	9.9	12.4	15.9	19.8	18	
			M_{2max}	Nm	5.1	6.8	8.6	12	13.7	17.2	15.3	20	25.5	27	34	42.5	54	64	29	
1.12 ... 1.14	3.46 ... 3.56	0.35 (0.37)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	100	100	75	50	**1FT2203-4AG..-2.A0-Z**
			M_{2N}	Nm	2.85	3.8	4.7	6.5	6.4	8.2	8	9.2	12.4	11.7	16.5	24	24.5	33.5	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.4	4.5	5.6	7.9	9.1	11.4	10.1	13.5	16.9	18.1	22.5	28	36	40	18	
			M_{2max}	Nm	10.6	14.2	17.7	24.5	28	24	31.5	42	52	56	70	64	70	64	29	
1.08 ... 1.1	3.46 ... 3.56	0.35 (0.37)	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	125	100	75	60	50	**1FT2203-4AK..-2..0-Z**
			M_{2N}	Nm	2.1	3.35	3.35	5.8	6	7.2	7.1	8.9	12.2	12.3	14.9	18.6	25	31.5	18	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.25	4.35	5.5	7.7	8.8	11	9.8	13.1	16.4	17.5	21.5	27	34.5	40	18	
			M_{2max}	Nm	10.6	14.2	17.7	24.5	28	24	31.5	42	52	56	70	64	70	64	29	
2.14 ... 2.19	6.62 ... 6.8	1.248 (1.328)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1FT2204-5AF..-2..0-Z**
			M_{2N}	Nm	5.9	7.9	9.9	13.5	15.7	15	16.8	23.5	29.5	31	39.5	40	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.5	8.7	10.9	15.3	17.4	15	19.5	25.5	32	34.5	43	40	44	40	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	60	70	70	70	70	64	70	64	–	
2.15 ... 2.2	6.62 ... 6.8	1.248 (1.328)	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	125	100	75	75	–	**1FT2204-5AK..-2..0-Z**
			M_{2N}	Nm	4.5	7	7	12.1	12.2	14.6	14.2	17.6	24	24	28.5	35.5	44	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.5	8.7	10.9	15.3	17.5	15	19.6	26	32.5	34.5	43.5	40	44	40	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	60	70	70	70	70	64	70	64	–	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:		NRBW060, 1-stage						NRBW060, 2-stage								
1. Order code		A26						A27								
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18
$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29
$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80
$J_{1,G}$	kg cm²	0.357	0.248	0.236	0.225	0.223	0.221	0.35	0.346	0.232	0.241	0.231	0.231	0.222	0.222	0.222
$\varphi_{2,G}$	'	16						18								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²
2.88 ... 2.95	8.88 ... 9.12	1.628 (1.708)

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW060 1 and 2-stage (continued)

n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	**1FT2204-6AF..-2..0-Z**
M_{2N}	Nm	7.9	10.7	13.4	17.3	18	15	21	31.5	40	40.5	44	40	44	40	–	■■■ + ■■■ + . . .
$M_{2,0}$	Nm	8.8	11.7	14.7	20.5	18	15	26	35	43.5	44	44	40	44	40	–	
M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	

Planetary gearbox data

Gearbox type:		**NRBW060, 1-stage**						**NRBW060, 2-stage**								
1. Order code		**A26**						**A27**								
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18
$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29
$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80
$J_{1,G}$	kg cm²	0.357	0.248	0.236	0.225	0.223	0.221	0.35	0.346	0.232	0.241	0.231	0.231	0.222	0.222	0.222
$\varphi_{2,G}$	'	16						18								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW060

Servomotor data			Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)										
Nm	Nm	kg cm²										
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW060 3-stage												
0.0764 ... 0.0919	0.468 ... 0.479	0.0245 (0.0285)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	1FT2102-0AG..-0.A0-Z
			M_{2N}	Nm	2.9	3.65	4.4	5.8	7.8	9.3	11.6	15.6	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.4	7.3	9.1	10.9	14.6	18.2	23	29	
			M_{2max}	Nm	28	37.5	47	56	70	64	70	64	
0.226 ... 0.238	0.986 ... 1.01	0.036 (0.04)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1FT2102-1AG..-0.A0-Z
			M_{2N}	Nm	10	13.4	16.7	20.5	26	34	42	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	18.9	23.5	28	37.5	40	44	40	
			M_{2max}	Nm	59	70	70	70	70	64	70	64	
0.512 ... 0.525	1.77 ... 1.82	0.093 (0.112)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1FT2103-2AG..-2.A0-Z
			M_{2N}	Nm	20.5	27.5	34.5	42	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
0.498 ... 0.51	1.77 ... 1.82	0.093 (0.112)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	10	1FT2103-2AH..-2..0-Z
			M_{2N}	Nm	20	26.5	36.5	40.5	44	40	44	39.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.11 ... 1.13	3.74 ... 3.85	0.139 (0.158)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1FT2103-4AG..-2.A0-Z
			M_{2N}	Nm	39	44	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
0.983 ... 0.993	3.74 ... 3.85	0.139 (0.158)	n_{2N}	r/min	50	37.5	25	25	20	12.5	10	10	1FT2103-4AH..-2..0-Z
			M_{2N}	Nm	36	44	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.12 ... 1.15	3.46 ... 3.56	0.368 (0.448)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	1FT2104-4AF..-2..0-Z
			M_{2N}	Nm	44	44	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.11 ... 1.14	3.55 ... 3.65	0.368 (0.448)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	1FT2104-4AK..-2..0-Z
			M_{2N}	Nm	44	44	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
2.18 ... 2.23	7 ... 7.18	0.578 (0.668)	n_{2N}	r/min	25	20	15	12.5	–	–	–	–	1FT2104-5AF..-2..0-Z
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.16 ... 2.21	7.09 ... 7.28	0.578 (0.668)	n_{2N}	r/min	50	37.5	30	25	–	–	–	–	1FT2104-5AK..-2..0-Z
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	

➥ Continued on the next page

Planetary gearbox data									
Gearbox type:			NRBW060, 3-stage						
1. Order code			A28						
	i		60	80	100	120	160	200	256	320
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23
	$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
	$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
	$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
	$J_{1,G}$	kg cm²	0.232	0.231	0.231	0.222	0.222	0.222	0.222	0.222
	$\varphi_{2,G}$	'	21							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW060 3-stage (continued)													
2.89 ... 2.96	9.35 ... 9.6	0.778 (0.858)	n_{2N}	r/min	25	20	15	–	–	–	–	–	**1FT2104-6AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	–	–	–	–	–	
			M_{2max}	Nm	70	70	70	–	–	–	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW060 3-stage													
0.523 ... 0.534	1.68 ... 1.72	0.2 (0.22)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	**1FT2203-2AG..-2.A0-Z**
			M_{2N}	Nm	20.5	27.5	34.5	42	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
0.489 ... 0.5	1.68 ... 1.72	0.2 (0.22)	n_{2N}	r/min	50	30	25	20	20	15	12.5	10	**1FT2203-2AK..-2..0-Z**
			M_{2N}	Nm	15.8	26.5	32	40.5	38.5	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.12 ... 1.14	3.46 ... 3.56	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	**1FT2203-4AG..-2.A0-Z**
			M_{2N}	Nm	44	44	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
1.08 ... 1.1	3.46 ... 3.56	0.35 (0.37)	n_{2N}	r/min	50	37.5	30	25	20	15	12.5	10	**1FT2203-4AK..-2..0-Z**
			M_{2N}	Nm	33.5	43.5	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	44	40	44	40	
			M_{2max}	Nm	70	70	70	70	70	64	70	64	
2.14 ... 2.19	6.62 ... 6.8	1.248 (1.328)	n_{2N}	r/min	25	20	15	12.5	–	–	–	–	**1FT2204-5AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.15 ... 2.2	6.62 ... 6.8	1.248 (1.328)	n_{2N}	r/min	50	37.5	30	25	–	–	–	–	**1FT2204-5AK..-2..0-Z**
			M_{2N}	Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	44	–	–	–	–	
			M_{2max}	Nm	70	70	70	70	–	–	–	–	
2.88 ... 2.95	8.88 ... 9.12	1.628 (1.708)	n_{2N}	r/min	25	20	15	–	–	–	–	–	**1FT2204-6AF..-2..0-Z**
			M_{2N}	Nm	44	44	44	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	44	44	44	–	–	–	–	–	
			M_{2max}	Nm	70	70	70	–	–	–	–	–	

Planetary gearbox data									
Gearbox type:			**NRBW060, 3-stage**						
1. Order code			**A28**						
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
	$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
	$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
	$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
	$J_{1,G}$	kg cm²	0.232	0.231	0.231	0.222	0.222	0.222	0.222	0.222
	$\varphi_{2,G}$	'	21							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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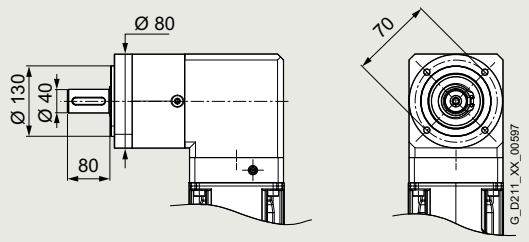
Gearbox type NRBW080

Selection and ordering data

NRBW080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	750 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	650 N
Average axial force for 30000 h	$F_{A,eq}$	900 N
Maximum radial force	$F_{R,max}$	1250 N
Maximum axial force	$F_{A,max}$	1600 N

3
4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 1 and 2-stage																			
0.45 ... 0.477	1.71 ... 1.75	0.093 (0.112)	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2103-2AG..-0.A0-Z**
			M_{2N}	Nm	0.84	1.09	1.17	1.73	2.2	2.7	2.5	3.2	4.35	4.35	5.5	6.9	9.6	12.1	19.5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.34	1.83	2.3	3.25	3.75	4.7	4.2	5.6	7	7.5	9.4	11.8	15.2	19	30.5	
			M_{2max}	Nm	5.2	6.9	8.7	12.2	14	17.5	15.6	20.5	26	27.5	34.5	43	55	69	80	
0.422 ... 0.45	1.71 ... 1.75	0.093 (0.112)	n_{2N}	r/min	750	500	500	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	0.66	1.07	1.15	1.7	2.15	2.7	2.45	3.15	4.25	4.25	5.4	6.8	9.4	11.8	19.1	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.26	1.72	2.15	3.05	3.55	4.45	3.95	5.3	6.6	7.1	8.9	11.2	14.3	17.9	28.5	
			M_{2max}	Nm	5.2	6.9	8.7	12.2	14	17.5	15.6	20.5	26	27.5	34.5	43	55	69	80	
1.05 ... 1.07	3.68 ... 3.78	0.139 (0.158)	n_{2N}	r/min	600	500	375	300	250	200	250	200	150	125	100	100	75	60	37.5	**1FT2103-4AG..-0.A0-Z**
			M_{2N}	Nm	2.5	3.1	4.35	5.7	6.9	8.8	6.8	8.4	11.7	13.9	17.6	17.5	24.5	31	49.5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3.1	4.2	5.2	7.4	8.5	10.6	9.5	12.7	15.9	16.9	21	26.5	34	42.5	50	
			M_{2max}	Nm	11.3	15	18.8	26	30	37.5	33.5	44.5	56	59	74	93	119	149	80	
0.983 ... 1.01	3.68 ... 3.78	0.139 (0.158)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	2.1	2.7	3.65	5	5	6	6.1	7.5	10.4	10.1	12.5	15.7	22	27.5	44.5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	2.9	3.95	4.95	7	8	10	9	12	15	16	20	25	32	40	50	
			M_{2max}	Nm	11.3	15	18.8	26	30	37.5	33.5	44.5	56	59	74	93	119	149	80	
1.06 ... 1.08	3.4 ... 3.49	0.35 (0.43)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.85	3.9	4.95	6.8	8	10.2	8.6	12	15.1	15.8	20	25	32	40.5	50	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3.15	4.25	5.3	7.5	8.6	10.8	9.6	12.8	16.1	17.2	21.5	26.5	34	43	50	
			M_{2max}	Nm	10.4	13.9	17.4	24	27.5	34.5	31	41	51	55	69	86	110	137	80	
1.05 ... 1.08	3.49 ... 3.59	0.35 (0.43)	n_{2N}	r/min	750	600	500	375	300	250	300	200	150	150	125	100	75	60	50	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	2.65	3.4	4.3	6.1	7.6	9.5	7.2	11.2	14.5	15	18.8	23.5	31	39	41.5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	3.15	4.2	5.3	7.5	8.5	10.7	9.5	12.8	16	17	21	26.5	34	42.5	50	
			M_{2max}	Nm	10.7	14.3	17.8	25	28.5	35.5	31.5	42.5	53	56	70	88	113	141	80	
2.11 ... 2.16	6.91 ... 7.11	0.56 (0.65)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	6.1	8.2	10.3	14.2	16.5	21	17.9	24.5	31	32.5	41.5	51	66	83	50	■■■ + ■■■ + . . .
			M_{2_0}	Nm	6.4	8.5	10.7	15.1	17.2	21.5	19.2	25.5	32	34	42.5	53	68	85	50	
			M_{2max}	Nm	21	28	35.5	49.5	56	61	63	84	105	112	140	175	192	176	80	

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Planetary gearbox data																
Gearbox type:			NRBW080, 1-stage						NRBW080, 2-stage							
1. Order code			A36						A37							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190
	$J_{1.G}$	kg cm²	1.273	1.004	0.973	0.929	0.92	0.91	1.232	1.209	1.205	0.996	0.955	0.954	0.917	0.916	0.917
	$\varphi_{2,G}$	'	13						15								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 1 and 2-stage (continued)																			
2.09 ... 2.15	7 ... 7.2	0.56 (0.65)	n_{2N} r/min	600	500	375	300	250	200	250	150	150	125	100	75	75	50	50	**1FT2104-5AK..-2..0-Z**
			M_{2N} Nm	5.6	6.8	9.5	12.4	14.9	18.9	14.5	24	24	29	37	49	50	75	49.5	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6.3	8.5	10.6	14.9	17.1	21	19.1	25.5	31.5	34	42.5	53	68	84	50	
			M_{2max} Nm	21.5	28.5	35.5	50	57	61	64	85	106	113	142	176	192	176	80	
2.82 ... 2.89	9.25 ... 9.53	0.76 (0.84)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-6AF..-2..0-Z**
			M_{2N} Nm	7.8	10.5	13.4	17.5	21	27.5	21.5	32.5	40.5	41.5	54	68	84	109	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.6	11.5	14.4	20	23	28.5	25.5	34	43	45.5	57	71	91	110	50	
			M_{2max} Nm	28.5	38	47.5	66	76	61	84	113	141	150	188	176	192	176	80	
4.47 ... 4.59	14 ... 14.4	1.71 (2.55)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2105-4AF..-0..0-Z**
			M_{2N} Nm	12	16	20	26.5	31.5	38	32	47.5	59	62	79	99	120	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	13.7	18.3	22.5	32	36.5	38	40.5	54	68	72	90	110	120	110	50	
			M_{2max} Nm	43	57	71	100	80	61	127	170	176	192	192	176	192	176	80	
4.5 ... 4.62	14 ... 14.4	1.71 (2.55)	n_{2N} r/min	500	375	375	250	200	200	200	150	100	100	75	75	50	50	37.5	**1FT2105-4AH..-0..0-Z**
			M_{2N} Nm	11.3	15.2	15.4	24	30	29.5	29	38.5	57	58	76	76	117	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	13.8	18.4	23	32	36.5	38	41	54	68	73	91	110	120	110	50	
			M_{2max} Nm	43	57	71	100	80	61	127	170	176	192	192	176	192	176	80	
7.27 ... 7.4	22.4 ... 23.1	2.65 (3.5)	n_{2N} r/min	500	375	300	250	200	150	150	125	100	100	75	60	50	37.5	–	**1FT2105-6AF..-0..0-Z**
			M_{2N} Nm	15.6	20.5	26.5	32	40.5	38	51	61	76	76	101	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	22	29.5	36.5	51	50	38	66	88	110	117	120	110	120	110	–	
			M_{2max} Nm	64	85	107	104	80	61	205	192	176	192	192	176	192	176	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 1 and 2-stage																			
0.444 ... 0.471	1.62 ... 1.66	0.2 (0.22)	n_{2N} r/min	600	500	375	300	250	200	250	200	150	125	100	100	75	60	37.5	**1FT2203-2AG..-0.A0-Z**
			M_{2N} Nm	0.93	1.19	1.7	2.3	2.8	3.55	2.7	3.35	4.65	5.5	7.1	7.2	10.2	12.8	20.5	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	1.33	1.8	2.25	3.2	3.7	4.65	4.15	5.5	7	7.4	9.3	11.7	15	18.8	30	
			M_{2max} Nm	4.9	6.5	8.2	11.5	13.2	16.5	14.7	19.7	24.5	26	32.5	41	52	65	80	
0.409 ... 0.437	1.62 ... 1.66	0.2 (0.22)	n_{2N} r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	30	**1FT2203-2AK..-0..0-Z**
			M_{2N} Nm	0.9	1.26	1.37	2.2	2.25	2.9	2.75	3.7	4.5	4.5	5.8	7.8	10.2	12.3	20.5	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	1.22	1.67	2.1	3	3.45	4.3	3.85	5.1	6.4	6.9	8.6	10.8	13.9	17.4	27.5	
			M_{2max} Nm	4.9	6.5	8.2	11.5	13.2	16.5	14.7	19.7	24.5	26	32.5	41	52	65	80	
1.06 ... 1.08	3.4 ... 3.49	0.35 (0.37)	n_{2N} r/min	750	500	500	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2203-4AG..-0.A0-Z**
			M_{2N} Nm	2.45	3.7	3.85	5.5	7.2	8.9	8.2	10.6	13.8	14.2	17.6	22	29.5	36.5	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	3.15	4.25	5.3	7.5	8.6	10.7	9.6	12.8	16	17.1	21	26.5	34	42.5	50	
			M_{2max} Nm	10.4	13.9	17.4	24	27.5	34.5	31	41	51	55	69	86	110	137	80	
1.02 ... 1.04	3.4 ... 3.49	0.35 (0.37)	n_{2N} r/min	600	500	375	300	250	200	250	200	150	125	100	100	75	60	37.5	**1FT2203-4AK..-0..0-Z**
			M_{2N} Nm	2.35	2.95	4	5.4	6.4	8.1	6.5	7.8	11.1	12.8	16.2	16.2	23.5	29.5	47.5	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	3	4.05	5.1	7.2	8.2	10.3	9.2	12.3	15.4	16.4	20.5	25.5	33	41	50	
			M_{2max} Nm	10.4	13.9	17.4	24	27.5	34.5	31	41	51	55	69	86	110	137	80	
2.07 ... 2.12	6.53 ... 6.72	1.23 (1.31)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2204-5AF..-2..0-Z**
			M_{2N} Nm	5.8	7.8	9.8	13.4	15.7	20	16.9	23.5	29.5	31	39.5	49.5	62	79	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6.3	8.4	10.5	14.8	16.9	21	18.9	25	31.5	33.5	42	52	67	83	50	
			M_{2max} Nm	20	26.5	33.5	47	53	61	59	79	99	106	132	165	192	176	80	

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Planetary gearbox data																
Gearbox type:		NRBW080, 1-stage						NRBW080, 2-stage								
1. Order code		A36						A37								
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190
$J_{1,G}$	kg cm²	1.273	1.004	0.973	0.929	0.92	0.91	1.232	1.209	1.205	0.996	0.955	0.954	0.917	0.916	0.917
$\varphi_{2,G}$	'	13						15								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy angular geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRBW080

Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 1 and 2-stage (continued)

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
2.08 ... 2.13	6.53 ... 6.72	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	60	50	50	**1FT2204-5AK..-2..0-Z**
			M_{2N}	Nm	5.5	6.7	9.3	12.1	14.7	18.5	17.6	23	28.5	28.5	36.5	48	61	74	39.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.4	10.6	14.9	17	21	19	25	31.5	33.5	42	52	67	84	50	
			M_{2max}	Nm	20	26.5	33.5	47	53	61	59	79	99	106	132	165	192	176	80	
2.81 ... 2.88	8.78 ... 9.04	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2204-6AF..-2..0-Z**
			M_{2N}	Nm	8.2	11.1	14	18.4	22	28	22.5	33	41.5	43.5	55	69	88	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34	42.5	45.5	57	71	91	110	50	
			M_{2max}	Nm	27	36	45	63	72	61	80	107	134	142	178	176	192	176	80	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	7.3	10	12.6	17.7	20	25.5	23	29	37	39	50	59	78	101	49.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.6	14.5	20	23	29	26	34.5	43.5	46	58	72	92	110	49.5	
			M_{2max}	Nm	30.5	41	51	72	80	61	91	122	152	162	192	176	192	176	80	
2.91 ... 2.96	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2205-2AF..-0..0-Z**
			M_{2N}	Nm	7.4	9.9	12.5	17.1	20	25	21.5	30	37.5	39	50	62	79	100	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.7	14.7	20.5	23.5	29.5	26.5	35	44	47	58	73	94	110	50	
			M_{2max}	Nm	30.5	41	51	72	80	61	91	122	152	162	192	176	192	176	80	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	600	500	375	250	250	200	200	150	125	100	100	75	60	50	37.5	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.3	7.4	10.6	16.3	16.4	20.5	20.5	27	32.5	37.5	40.5	55	70	83	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.6	14.5	20	23	29	26	34.5	43.5	46	57	72	92	110	49.5	
			M_{2max}	Nm	30.5	41	51	72	80	61	91	122	152	162	192	176	192	176	80	
4.95 ... 5.04	16.8 ... 17.3	5.1 (6)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2205-4AF..-0..0-Z**
			M_{2N}	Nm	11.2	15.1	19.2	23.5	29.5	38	28.5	45.5	57	57	76	94	116	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.1	20	25	35	40	38	45	60	75	80	100	110	120	110	50	
			M_{2max}	Nm	51	69	86	104	80	61	153	192	176	192	192	176	192	176	80	

Planetary gearbox data

Gearbox type:		**NRBW080, 1-stage**						**NRBW080, 2-stage**								
1. Order code		**A36**						**A37**								
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190
$J_{1,G}$	kg cm²	1.273	1.004	0.973	0.929	0.92	0.91	1.232	1.209	1.205	0.996	0.955	0.954	0.917	0.916	0.917
$\varphi_{2,G}$	'	13						15								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 3-stage													
0.45 ... 0.477	1.71 ... 1.75	0.093 (0.112)	n_{2N}	r/min	37.5	30	25	20	15	15	10	7.5	6	**1FT2103-2AG..-0.A0-Z**
			M_{2N}	Nm	18.1	23.5	28.5	34.5	49	49.5	75	98	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	28	37.5	47	56	75	94	120	110	50	
			M_{2max}	Nm	103	137	171	176	192	176	192	176	80	
0.422 ... 0.45	1.71 ... 1.75	0.093 (0.112)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	5	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	17.7	23	28	33.5	48	58	73	96	49.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	26.5	35.5	44.5	53	71	89	114	110	49.5	
			M_{2max}	Nm	103	137	171	176	192	176	192	176	80	
1.05 ... 1.07	3.68 ... 3.78	0.139 (0.158)	n_{2N}	r/min	37.5	30	25	20	15	15	12.5	10	6	**1FT2103-4AG..-0.A0-Z**
			M_{2N}	Nm	48.5	61	72	90	120	107	115	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	63	84	105	110	120	110	120	110	50	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
0.983 ... 1.01	3.68 ... 3.78	0.139 (0.158)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	10	5	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	42	55	65	80	112	110	120	110	49.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	60	80	100	110	120	110	120	110	50	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
1.06 ... 1.08	3.4 ... 3.49	0.35 (0.43)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	3	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	60	79	101	110	120	110	120	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	64	85	106	110	120	110	120	110	49.5	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
1.05 ... 1.08	3.49 ... 3.59	0.35 (0.43)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	58	76	93	110	108	110	120	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	63	84	105	110	120	110	120	110	49.5	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
2.11 ... 2.16	6.91 ... 7.11	0.56 (0.65)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	110	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.09 ... 2.15	7 ... 7.2	0.56 (0.65)	n_{2N}	r/min	37.5	30	25	25	20	15	12.5	10	–	**1FT2104-5AK..-2..0-Z**
			M_{2N}	Nm	97	119	120	107	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.82 ... 2.89	9.25 ... 9.53	0.76 (0.84)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	**1FT2104-6AF..-2..0-Z**
			M_{2N}	Nm	110	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
4.47 ... 4.59	14 ... 14.4	1.71 (2.55)	n_{2N}	r/min	25	20	15	12.5	10	–	–	–	–	**1FT2105-4AF..-0..0-Z**
			M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	

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Planetary gearbox data										
Gearbox type:		**NRBW080, 3-stage**								
1. Order code		**A38**								
i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code		**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
$J_{1,G}$	kg cm²	1.203	0.955	0.954	1.209	0.916	0.916	0.917	0.917	0.917
$\varphi_{2,G}$	'	17								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy angular geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRBW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 3-stage (continued)														
4.5 ... 4.62	14 ... 14.4	1.71 (2.55)	n_{2N}	r/min	37.5	30	25	20	15	–	–	–	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
7.27 ... 7.4	22.4 ... 23.1	2.65 (3.5)	n_{2N}	r/min	25	20	15	–	–	–	–	–	–	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 3-stage														
0.444 ... 0.471	1.62 ... 1.66	0.2 (0.22)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	6	1FT2203-2AG..-0.A0-Z
			M_{2N}	Nm	19.4	25	30	36.5	52	62	78	105	49.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	27.5	37	46.5	55	74	93	119	110	50	
			M_{2max}	Nm	97	130	162	176	192	176	192	176	80	
0.409 ... 0.437	1.62 ... 1.66	0.2 (0.22)	n_{2N}	r/min	30	25	20	15	12.5	10	7.5	7.5	6	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	19.5	24	30.5	39	50	63	83	83	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	25.5	34.5	43	51	69	86	110	110	49.5	
			M_{2max}	Nm	97	130	162	176	192	176	192	176	80	
1.06 ... 1.08	3.4 ... 3.49	0.35 (0.37)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	6	1FT2203-4AG..-0.A0-Z
			M_{2N}	Nm	55	72	88	107	94	110	120	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	63	84	105	110	120	110	120	110	50	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
1.02 ... 1.04	3.4 ... 3.49	0.35 (0.37)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	10	6	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	45	58	68	85	119	110	120	100	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	61	81	102	110	120	110	120	110	50	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
2.07 ... 2.12	6.53 ... 6.72	1.23 (1.31)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	110	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.08 ... 2.13	6.53 ... 6.72	1.23 (1.31)	n_{2N}	r/min	37.5	30	25	25	20	15	12.5	10	–	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	94	116	120	88	107	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.81 ... 2.88	8.78 ... 9.04	1.61 (1.69)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	–	1FT2204-6AF..-2..0-Z
			M_{2N}	Nm	110	120	120	110	120	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	20	12.5	10	10	7.5	5	5	–	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	110	120	120	110	120	109	119	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	110	120	120	110	120	110	120	–	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	–	–	

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Planetary gearbox data										
Gearbox type:			NRBW080, 3-stage								
1. Order code			A38								
	i		60	80	100	120	160	200	256	320	512
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23	R51
	$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
	$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
	$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
	$J_{1,G}$	kg cm²	1.203	0.955	0.954	1.209	0.916	0.916	0.917	0.917	0.917
	$\varphi_{2,G}$	'	17								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 3-stage (continued)													
2.91 ... 2.96	10 ... 10.3	3.15 (4.05)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	–	–	**1FT2205-2AF..-0..0-Z**
			M_{2N} Nm	110	120	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	110	119	–	–	
			M_{2max} Nm	176	192	192	176	192	176	192	–	–	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N} r/min	37.5	30	25	20	15	12.5	10	–	–	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	98	116	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	119	110	120	109	119	–	–	
			M_{2max} Nm	176	192	192	176	192	176	192	–	–	
4.95 ... 5.04	16.8 ... 17.3	5.1 (6)	n_{2N} r/min	25	20	15	12.5	10	–	–	–	–	**1FT2205-4AF..-0..0-Z**
			M_{2N} Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	–	–	–	–	
			M_{2max} Nm	176	192	192	176	192	–	–	–	–	

Planetary gearbox data										
Gearbox type:		**NRBW080, 3-stage**								
1. Order code		**A38**								
i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code		**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
$J_{1,G}$	kg cm²	1.203	0.955	0.954	1.209	0.916	0.916	0.917	0.917	0.917
$\varphi_{2,G}$	'	17								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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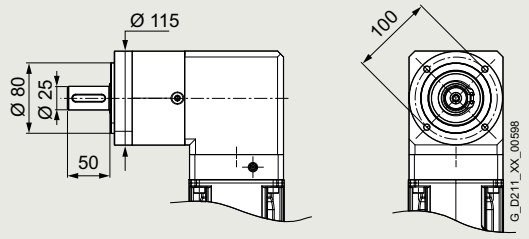
Gearbox type NRBW120

Selection and ordering data

NRBW120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1750 N
Average axial force for 20000 h	$F_{A,eq}$	2500 N
Average radial force for 30000 h	$F_{R,eq}$	1500 N
Average axial force for 30000 h	$F_{A,eq}$	2100 N
Maximum radial force	$F_{R,max}$	2000 N
Maximum axial force	$F_{A,max}$	3800 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 1 and 2-stage																				
0.338 ... 0.407	1.62 ... 1.67	0.093 (0.112)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	75	60	50	30	**1FT2103-2AG..-0.A0-Z**
			M_{2N}	Nm	0.61	0.91	1.09	1.57	2	2.1	2.25	2.85	3.65	3.75	5.5	5.7	8.1	9.8	16.6	■■■ + ■■■ + . . .
			M_{2_0}	Nm	1.01	1.42	1.84	2.65	3.05	3.9	3.45	4.7	5.9	6.3	7.9	10	12.9	16.2	26	
			M_{2max}	Nm	4.85	6.5	8.2	11.6	13.3	16.7	14.8	19.9	24.5	26.5	33	41.5	53	66	106	
0.31 ... 0.379	1.62 ... 1.67	0.093 (0.112)	n_{2N}	r/min	375	375	300	250	200	200	150	125	100	100	100	75	60	50	30	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	0.56	0.69	1.07	1.55	2	2.1	2.1	2.75	3.55	3.7	4.1	5.7	8	9.7	16.4	■■■ + ■■■ + . . .
			M_{2_0}	Nm	0.92	1.31	1.7	2.45	2.85	3.65	3.2	4.35	5.5	5.9	7.4	9.3	12	15.1	24	
			M_{2max}	Nm	4.85	6.5	8.2	11.6	13.3	16.7	14.8	19.9	24.5	26.5	33	41.5	53	66	106	
0.934 ... 0.992	3.61 ... 3.7	0.139 (0.158)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	37.5	**1FT2103-4AG..-0.A0-Z**
			M_{2N}	Nm	1.98	2.45	3.95	5.5	6.6	8.4	7.2	9.8	12.2	12.7	16.7	21	25	31.5	50	■■■ + ■■■ + . . .
			M_{2_0}	Nm	2.8	3.8	4.8	6.8	7.8	9.8	8.7	11.7	14.7	15.7	19.7	24.5	31.5	39.5	63	
			M_{2max}	Nm	10.9	14.6	18.3	25.5	29.5	36.5	32.5	43.5	54	58	73	91	117	146	192	
0.92 ... 0.978	3.61 ... 3.7	0.139 (0.158)	n_{2N}	r/min	600	500	375	300	300	200	250	150	150	125	125	100	75	60	37.5	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	1.61	2.1	3.1	4.4	4.4	6.7	4.65	7.8	8.3	10	10.8	13.8	20	25	40.5	■■■ + ■■■ + . . .
			M_{2_0}	Nm	2.75	3.75	4.75	6.7	7.7	9.7	8.6	11.6	14.5	15.5	19.4	24	31	39	62	
			M_{2max}	Nm	10.9	14.6	18.3	25.5	29.5	36.5	32.5	43.5	54	58	73	91	117	146	192	
0.948 ... 1.01	3.33 ... 3.41	0.35 (0.43)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-4AF..-0..0-Z**
			M_{2N}	Nm	2.35	3.3	4.25	6.1	7.1	9	7.4	10.2	12.9	13.7	17.7	22	28.5	36	57	■■■ + ■■■ + . . .
			M_{2_0}	Nm	2.8	3.85	4.85	6.9	7.9	10	8.9	11.9	14.9	15.9	20	25	32	40	64	
			M_{2max}	Nm	10	13.5	16.9	23.5	27	34	30	40.5	50	54	67	84	108	135	192	
0.941 ... 0.999	3.42 ... 3.5	0.35 (0.43)	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2104-4AK..-0..0-Z**
			M_{2N}	Nm	2.25	3.1	3.1	5	6.7	8.4	7.1	9.2	12	12.7	16.5	20.5	27.5	34.5	55	■■■ + ■■■ + . . .
			M_{2_0}	Nm	2.8	3.8	4.85	6.8	7.9	9.9	8.8	11.8	14.8	15.8	19.8	24.5	31.5	39.5	63	
			M_{2max}	Nm	10.3	13.9	17.4	24	27.5	35	31	41.5	52	55	69	86	111	138	192	
2.03 ... 2.08	6.84 ... 7.02	0.56 (0.65)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-5AF..-0..0-Z**
			M_{2N}	Nm	5.6	7.6	9.6	13.6	15.7	19.7	17	23	28.5	30.5	38.5	48.5	62	78	120	■■■ + ■■■ + . . .
			M_{2_0}	Nm	6	8.1	10.2	14.4	16.5	20.5	18.5	24.5	30.5	33	41	51	66	82	120	
			M_{2max}	Nm	20.5	28	35	49	56	70	62	83	104	111	138	173	220	275	192	

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Planetary gearbox data																
Gearbox type:			NRBW120, 1-stage						NRBW120, 2-stage							
1. Order code			A46						A47							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 1 and 2-stage (continued)																			
2.02 ... 2.07	6.93 ... 7.12	0.56 (0.65)	n_{2N} r/min	600	500	375	300	250	200	200	150	125	125	100	100	75	60	37.5	**1FT2104-5AK..-0..0-Z**
			M_{2N} Nm	5.1	6.4	9.4	12.9	15.4	19.4	16.8	22.5	28	30	38	36	55	68	110	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	6	8.1	10.2	14.3	16.4	20.5	18.3	24.5	30.5	32.5	41	51	65	82	120	
			M_{2max} Nm	21	28	35.5	49.5	56	71	63	84	105	112	140	175	225	280	192	
2.75 ... 2.81	9.18 ... 9.44	0.76 (0.84)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2104-6AF..-0..0-Z**
			M_{2N} Nm	7.8	10.5	13.3	18.7	21.5	27	23	31.5	39.5	42	53	66	85	107	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.3	11.1	13.9	19.6	22	28	25	33	41.5	44.5	55	69	89	111	120	
			M_{2max} Nm	28	37.5	47	65	75	94	84	112	140	149	186	230	295	368	192	
4.4 ... 4.51	13.9 ... 14.3	1.71 (2.55)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2105-4AF..-0..0-Z**
			M_{2N} Nm	11.9	16.1	20.5	27.5	32.5	41.5	34	48.5	61	64	82	103	130	166	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	13.4	17.9	22	31.5	36	45	40	53	67	71	89	111	142	178	120	
			M_{2max} Nm	42.5	57	71	99	114	142	127	169	210	225	280	350	416	368	192	
4.43 ... 4.54	13.9 ... 14.3	1.71 (2.55)	n_{2N} r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2105-4AH..-0..0-Z**
			M_{2N} Nm	11.3	15.4	16.8	26	26.5	34.5	32	43	51	50	66	90	117	139	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	13.5	18	22.5	31.5	36	45	40	53	67	71	89	112	143	179	120	
			M_{2max} Nm	42.5	57	71	99	114	142	127	169	210	225	280	350	416	368	192	
7.22 ... 7.41	22.3 ... 23	2.65 (3.5)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2105-6AF..-0..0-Z**
			M_{2N} Nm	17	23	30	37.5	48	63	43	72	90	90	122	152	188	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	22	29.5	36.5	51	59	74	66	88	110	117	146	183	230	230	120	
			M_{2max} Nm	68	91	114	160	183	152	200	270	340	360	416	368	416	368	192	
7.66 ... 7.8	24.2 ... 24.9	4.6 (6.3)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2106-3AF..-0..0-Z**
			M_{2N} Nm	17.6	24	31	39	49.5	63	44.5	74	93	93	125	156	194	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	23	31	38.5	54	62	78	69	93	116	124	154	193	245	230	120	
			M_{2max} Nm	74	99	124	174	192	152	220	295	368	390	416	368	416	368	192	
9.97 ... 10.1	30.8 ... 31.7	6 (7.6)	n_{2N} r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	**1FT2106-4AF..-0..0-Z**
			M_{2N} Nm	20.5	28.5	37	55	57	78	70	86	107	106	146	182	220	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	30	40.5	50	70	81	95	90	121	151	161	200	230	260	230	120	
			M_{2max} Nm	95	126	158	216	192	152	280	375	368	416	416	368	416	368	192	
14.1 ... 14.4	42.5 ... 43.8	8.7 (10.4)	n_{2N} r/min	375	300	250	200	200	150	150	100	75	75	60	60	50	37.5	–	**1FT2106-6AF..-0..0-Z**
			M_{2N} Nm	34.5	44	54	70	69	94	87	129	170	171	215	210	255	230	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	43	57	71	100	115	95	128	171	210	225	260	230	260	230	–	
			M_{2max} Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 1 and 2-stage																			
0.33 ... 0.401	1.52 ... 1.58	0.2 (0.22)	n_{2N} r/min	500	375	300	250	250	200	200	150	125	125	100	75	60	50	30	**1FT2203-2AG..-0.A0-Z**
			M_{2N} Nm	0.52	0.83	1.2	1.82	1.84	2.45	1.91	2.65	3.25	3.2	4.8	6.5	9	11.2	18.3	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	0.99	1.4	1.81	2.6	3	3.85	3.4	4.6	5.8	6.2	7.8	9.8	12.7	15.9	25.5	
			M_{2max} Nm	4.55	6.1	7.7	10.9	12.5	15.7	14	18.7	23	25	31	39	50	62	100	
0.297 ... 0.367	1.52 ... 1.58	0.2 (0.22)	n_{2N} r/min	375	375	300	250	200	150	150	125	100	100	75	75	60	50	30	**1FT2203-2AK..-0..0-Z**
			M_{2N} Nm	0.52	0.66	1.06	1.45	1.95	2.6	2	2.6	3.35	3.55	5	5.2	7.5	9	15.5	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	0.88	1.26	1.64	2.35	2.75	3.5	3.1	4.2	5.3	5.7	7.1	9	11.6	14.5	23	
			M_{2max} Nm	4.55	6.1	7.7	10.9	12.5	15.7	14	18.7	23	25	31	39	50	62	100	

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Planetary gearbox data																
Gearbox type:			NRBW120, 1-stage						NRBW120, 2-stage							
1. Order code			A46						A47							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRBW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 1 and 2-stage (continued)																			
0.943	3.33	0.35	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2203-4AG..-0.A0-Z**
...	...	(0.37)	M_{2N}	Nm	2.25	3.05	4.1	5.9	6.4	8	6.8	8.6	11.7	12.1	15.6	19.6	27	34	55	■■■ + ■■■ + . . .
1	3.41		$M_{2,0}$	Nm	2.8	3.8	4.85	6.9	7.9	9.9	8.8	11.8	14.8	15.8	19.8	24.5	31.5	39.5	64	
			M_{2max}	Nm	10	13.5	16.9	23.5	27	34	30	40.5	50	54	67	84	108	135	192	
0.903	3.33	0.35	n_{2N}	r/min	600	500	375	300	250	200	200	150	150	125	100	100	75	60	37.5	**1FT2203-4AK..-0..0-Z**
...	...	(0.37)	M_{2N}	Nm	1.85	2.4	3.5	4.95	5.9	7.6	6.6	8.9	9.3	11.4	15	14.9	22	27.5	44.5	■■■ + ■■■ + . . .
0.961	3.41		$M_{2,0}$	Nm	2.7	3.65	4.65	6.6	7.6	9.5	8.5	11.4	14.3	15.2	19.1	23.5	30.5	38	61	
			M_{2max}	Nm	10	13.5	16.9	23.5	27	34	30	40.5	50	54	67	84	108	135	192	
1.99	6.47	1.23	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2204-5AF..-0..0-Z**
...	...	(1.31)	M_{2N}	Nm	5.4	7.4	9.4	13.2	15.3	19.2	16.4	22	28	29.5	37.5	47.5	61	76	120	■■■ + ■■■ + . . .
2.04	6.64		$M_{2,0}$	Nm	5.9	8	10	14.2	16.2	20	18.1	24	30	32	40	50	64	81	120	
			M_{2max}	Nm	19.8	26	33	46	53	66	59	78	98	105	131	164	210	260	192	
2	6.47	1.23	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	37.5	**1FT2204-5AK..-0..0-Z**
...	...	(1.31)	M_{2N}	Nm	5.1	6.2	9.3	12.6	15.2	19.1	16.6	22	27.5	29.5	37.5	47	53	66	107	■■■ + ■■■ + . . .
2.05	6.64		$M_{2,0}$	Nm	6	8	10.1	14.3	16.3	20.5	18.2	24	30.5	32.5	40.5	50	65	81	120	
			M_{2max}	Nm	19.8	26	33	46	53	66	59	78	98	105	131	164	210	260	192	
2.74	8.71	1.61	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2204-6AF..-0..0-Z**
...	...	(1.69)	M_{2N}	Nm	7.7	10.4	13.1	18.5	21	26.5	23	31	39	41.5	52	66	85	106	120	■■■ + ■■■ + . . .
2.8	8.95		$M_{2,0}$	Nm	8.2	11	13.8	19.5	22	27.5	24.5	33	41.5	44	55	69	88	111	120	
			M_{2max}	Nm	26.5	35.5	44.5	62	71	89	79	106	132	141	177	220	280	350	192	
2.99	9.93	3.15	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	**1FT2205-2AC..-0..0-Z**
...	...	(4.05)	M_{2N}	Nm	7.3	10.1	12.8	18.1	20.5	26	23.5	29.5	37.5	39.5	52	60	80	105	120	■■■ + ■■■ + . . .
3.03	10.2		$M_{2,0}$	Nm	8.9	12	15	21	24	30	27	36	45	48	60	75	96	120	120	
			M_{2max}	Nm	30.5	40.5	50	71	81	102	91	121	151	161	200	250	320	368	192	
3.02	9.93	3.15	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2205-2AF..-0..0-Z**
...	...	(4.05)	M_{2N}	Nm	7.1	9.7	12.4	17	20	25.5	21	29.5	37	39	50	63	80	102	120	■■■ + ■■■ + . . .
3.06	10.2		$M_{2,0}$	Nm	9	12.1	15.2	21	24	30.5	27	36.5	45.5	48.5	61	76	97	122	120	
			M_{2max}	Nm	30.5	40.5	50	71	81	102	91	121	151	161	200	250	320	368	192	
2.96	9.93	3.15	n_{2N}	r/min	600	375	375	300	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2205-2AH..-0..0-Z**
...	...	(4.05)	M_{2N}	Nm	5.9	9.3	11	14.2	17.9	22.5	20	26.5	33	34.5	44	56	73	90	114	■■■ + ■■■ + . . .
3	10.2		$M_{2,0}$	Nm	8.8	11.8	14.9	20.5	23.5	30	26.5	35.5	44.5	47.5	59	74	95	119	120	
			M_{2max}	Nm	30.5	40.5	50	71	81	102	91	121	151	161	200	250	320	368	192	
5.14	16.7	5.1	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2205-4AF..-0..0-Z**
...	...	(6)	M_{2N}	Nm	11.9	16.5	21	27	33.5	43	31.5	50	63	65	85	106	134	171	120	■■■ + ■■■ + . . .
5.23	17.2		$M_{2,0}$	Nm	15.5	20.5	26	36.5	41.5	52	46.5	62	78	83	103	129	166	205	120	
			M_{2max}	Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
5.15	16.7	7.8	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	**1FT2206-2AC..-0..0-Z**
...	...	(9.4)	M_{2N}	Nm	13.5	18.8	23.5	33	38	48	43	52	68	69	94	103	140	190	120	■■■ + ■■■ + . . .
5.27	17.2		$M_{2,0}$	Nm	15.7	20.5	26	36.5	42	52	47	62	78	83	104	130	167	205	119	
			M_{2max}	Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	

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Planetary gearbox data																
Gearbox type:			**NRBW120, 1-stage**						**NRBW120, 2-stage**							
1. Order code			**A46**						**A47**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 1 and 2-stage (continued)																			
5.29 ... 5.39	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	**1FT2206-2AF..-0..0-Z**
			M_{2N} Nm	12.5	16.9	21.5	29	34	43.5	35.5	51	64	67	86	107	136	173	119	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	16	21	26.5	37.5	43	53	48	64	80	85	107	133	171	210	120	
			M_{2max} Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
5.13 ... 5.23	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	75	50	50	37.5	**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	11.8	16.5	20.5	26.5	33.5	42.5	30.5	50	62	65	84	85	133	129	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	15.5	20.5	26	36.5	41.5	52	46.5	62	77	83	103	129	166	205	120	
			M_{2max} Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
7.8 ... 7.95	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	12.5	**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	21	27.5	35.5	50	56	71	56	75	105	111	141	176	220	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	23.5	31.5	39.5	55	63	79	71	94	118	126	157	197	250	230	120	
			M_{2max} Nm	77	103	129	180	192	152	230	305	368	405	416	368	416	368	192	
7.68 ... 7.82	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	**1FT2206-3AF..-0..0-Z**
			M_{2N} Nm	15.1	21	27.5	42.5	43	58	54	65	82	81	112	139	171	225	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	23	31	38.5	54	62	78	70	93	116	124	155	193	245	230	120	
			M_{2max} Nm	77	103	129	180	192	152	230	305	368	405	416	368	416	368	192	
10.6 ... 10.8	35.5 ... 36.5	15.1 (16.8)	n_{2N} r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	**1FT2206-4AC..-0..0-Z**
			M_{2N} Nm	20.5	31.5	40	54	65	82	77	80	107	107	160	160	215	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	32	43	54	75	86	95	96	128	160	171	210	230	260	230	120	
			M_{2max} Nm	109	145	182	216	192	152	325	416	368	416	416	368	416	368	192	
10.4 ... 10.6	33.6 ... 34.6	15.1 (16.8)	n_{2N} r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	**1FT2206-4AF..-0..0-Z**
			M_{2N} Nm	21	29	37.5	58	58	79	73	87	109	107	148	184	225	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	31.5	42	52	74	84	95	94	126	158	168	210	230	260	230	120	
			M_{2max} Nm	103	138	172	216	192	152	305	405	368	416	416	368	416	368	192	
9.93 ... 10.1	33.6 ... 34.6	15.1 (16.8)	n_{2N} r/min	375	300	250	200	150	150	150	100	75	75	60	50	37.5	37.5	37.5	**1FT2206-4AH..-0..0-Z**
			M_{2N} Nm	23.5	30	37.5	48	63	65	61	92	120	122	154	185	245	230	113	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	30	40	50	70	80	95	90	120	150	160	200	230	260	230	119	
			M_{2max} Nm	103	138	172	216	192	152	305	405	368	416	416	368	416	368	192	

Planetary gearbox data																
Gearbox type:		**NRBW120, 1-stage**						**NRBW120, 2-stage**								
1. Order code		**A46**						**A47**								
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 3-stage												
0.338 ... 0.407	1.62 ... 1.67	0.093 (0.112)	n_{2N}	r/min	25	25	20	12.5	12.5	10	7.5	6	**1FT2103-2AG..-0.A0-Z**
			M_{2N}	Nm	15.9	17.9	22.5	32	41	51	68	85	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	24	32	40	48	64	80	103	129	
			M_{2max}	Nm	99	131	164	197	260	325	416	368	
0.31 ... 0.379	1.62 ... 1.67	0.093 (0.112)	n_{2N}	r/min	30	25	20	15	12.5	10	7.5	6	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	12.9	17.9	22.5	26.5	40.5	50	67	84	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30	37.5	45	60	75	96	120	
			M_{2max}	Nm	99	131	164	197	260	325	416	368	
0.934 ... 0.992	3.61 ... 3.7	0.139 (0.158)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	**1FT2103-4AG..-0.A0-Z**
			M_{2N}	Nm	43.5	59	69	77	128	156	192	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	58	78	98	117	157	196	250	230	
			M_{2max}	Nm	215	285	360	368	416	368	416	368	
0.92 ... 0.978	3.61 ... 3.7	0.139 (0.158)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	34.5	48	58	66	102	124	157	205	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	58	77	96	116	155	193	245	230	
			M_{2max}	Nm	215	285	360	368	416	368	416	368	
0.948 ... 1.01	3.33 ... 3.41	0.35 (0.43)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	**1FT2104-4AF..-0..0-Z**
			M_{2N}	Nm	51	70	88	103	143	180	230	225	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	79	99	119	159	198	250	230	
			M_{2max}	Nm	200	265	330	368	416	368	416	368	
0.941 ... 0.999	3.42 ... 3.5	0.35 (0.43)	n_{2N}	r/min	37.5	30	25	20	15	15	10	10	**1FT2104-4AK..-0..0-Z**
			M_{2N}	Nm	48	66	82	96	137	149	215	188	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	79	98	118	158	197	250	230	
			M_{2max}	Nm	205	270	340	368	416	368	416	368	
2.03 ... 2.08	6.84 ... 7.02	0.56 (0.65)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	**1FT2104-5AF..-0..0-Z**
			M_{2N}	Nm	114	154	193	225	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	122	163	200	230	260	230	260	230	
			M_{2max}	Nm	410	416	416	368	416	368	416	368	
2.02 ... 2.07	6.93 ... 7.12	0.56 (0.65)	n_{2N}	r/min	37.5	30	20	20	15	15	10	10	**1FT2104-5AK..-0..0-Z**
			M_{2N}	Nm	98	129	188	174	260	210	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	122	162	200	230	260	230	260	230	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
2.75 ... 2.81	9.18 ... 9.44	0.76 (0.84)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	**1FT2104-6AF..-0..0-Z**
			M_{2N}	Nm	157	210	260	230	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	165	220	260	230	260	230	260	230	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
4.4 ... 4.51	13.9 ... 14.3	1.71 (2.55)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	**1FT2105-4AF..-0..0-Z**
			M_{2N}	Nm	240	260	260	230	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	260	230	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	

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Planetary gearbox data									
Gearbox type:			**NRBW120, 3-stage**						
1. Order code			**A48**						
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$		Nm	260	260	260	230	260	230	260	230
$M_{2max,G}$		Nm	416	416	416	368	416	368	416	368
$M_{2Em.Off}$		Nm	520	520	520	500	520	500	520	500
$J_{1,G}$		kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
$\varphi_{2,G}$		'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 3-stage (continued)													
4.43 ... 4.54	13.9 ... 14.3	1.71 (2.55)	n_{2N}	r/min	30	25	20	20	15	12.5	10	7.5	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	215	255	260	220	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	260	225	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
7.22 ... 7.41	22.3 ... 23	2.65 (3.5)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	–	**1FT2105-6AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	230	260	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	260	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	–	
7.66 ... 7.8	24.2 ... 24.9	4.6 (6.3)	n_{2N}	r/min	25	20	15	12.5	10	7.5	–	–	**1FT2106-3AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	–	–	
9.97 ... 10.1	30.8 ... 31.7	6 (7.6)	n_{2N}	r/min	25	20	15	12.5	10	–	–	–	**1FT2106-4AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	–	–	–	
14.1 ... 14.4	42.5 ... 43.8	8.7 (10.4)	n_{2N}	r/min	25	20	15	–	–	–	–	–	**1FT2106-6AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	–	–	–	–	–	
			M_{2max}	Nm	416	416	416	–	–	–	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 3-stage													
0.33 ... 0.401	1.52 ... 1.58	0.2 (0.22)	n_{2N}	r/min	30	25	20	15	12.5	10	7.5	7.5	**1FT2203-2AG..-0.A0-Z**
			M_{2N}	Nm	14.5	20.5	26	29.5	45	56	73	74	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23.5	31.5	39.5	47.5	63	79	101	127	
			M_{2max}	Nm	93	124	155	186	245	310	395	368	
0.297 ... 0.367	1.52 ... 1.58	0.2 (0.22)	n_{2N}	r/min	30	25	20	15	12.5	10	7.5	6	**1FT2203-2AK..-0..0-Z**
			M_{2N}	Nm	12.1	16.3	20.5	25	38	47.5	64	80	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	36	43.5	58	72	93	116	
			M_{2max}	Nm	93	124	155	186	245	310	395	368	
0.943 ... 1	3.33 ... 3.41	0.35 (0.37)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	**1FT2203-4AG..-0.A0-Z**
			M_{2N}	Nm	48	65	80	92	137	169	210	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	59	79	99	118	158	197	250	230	
			M_{2max}	Nm	200	265	330	368	416	368	416	368	
0.903 ... 0.961	3.33 ... 3.41	0.35 (0.37)	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	**1FT2203-4AK..-0..0-Z**
			M_{2N}	Nm	39	53	63	73	113	136	170	225	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	57	76	95	114	152	190	240	230	
			M_{2max}	Nm	200	265	330	368	416	368	416	368	
1.99 ... 2.04	6.47 ... 6.64	1.23 (1.31)	n_{2N}	r/min	25	20	15	12.5	10	7.5	6	5	**1FT2204-5AF..-0..0-Z**
			M_{2N}	Nm	111	150	188	220	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	120	160	200	230	260	230	260	230	
			M_{2max}	Nm	385	416	416	368	416	368	416	368	

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Planetary gearbox data									
Gearbox type:			**NRBW120, 3-stage**						
1. Order code			**A48**						
	i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500
	$J_{1,G}$	kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
	$\varphi_{2,G}$	'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 3-stage (continued)												
2 ... 2.05	6.47 ... 6.64	1.23 (1.31)	n_{2N} r/min	37.5	30	20	15	15	12.5	10	10	**1FT2204-5AK..-0..0-Z**
			M_{2N} Nm	95	125	186	220	260	230	260	197	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	121	161	200	230	260	230	260	230	
			M_{2max} Nm	385	416	416	368	416	368	416	368	
2.74 ... 2.8	8.71 ... 8.95	1.61 (1.69)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	**1FT2204-6AF..-0..0-Z**
			M_{2N} Nm	156	205	260	230	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	165	215	260	230	260	230	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
2.99 ... 3.03	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	20	12.5	10	10	7.5	5	5	3.75	**1FT2205-2AC..-0..0-Z**
			M_{2N} Nm	148	205	255	225	260	230	255	225	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	180	240	260	230	260	230	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
3.02 ... 3.06	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	**1FT2205-2AF..-0..0-Z**
			M_{2N} Nm	149	198	250	225	260	230	260	225	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	182	240	260	230	255	230	255	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
2.96 ... 3	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	30	25	20	15	15	12.5	10	7.5	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	135	176	220	230	260	225	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	178	235	260	230	260	225	260	225	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.14 ... 5.23	16.7 ... 17.2	5.1 (6)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	**1FT2205-4AF..-0..0-Z**
			M_{2N} Nm	250	260	260	230	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	230	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.15 ... 5.27	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	20	12.5	10	10	7.5	5	5	3.75	**1FT2206-2AC..-0..0-Z**
			M_{2N} Nm	255	260	260	230	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	225	255	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.29 ... 5.39	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	25	20	15	12.5	10	7.5	6	5	**1FT2206-2AF..-0..0-Z**
			M_{2N} Nm	250	260	260	225	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	255	230	255	225	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.13 ... 5.23	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	30	25	20	20	15	12.5	10	7.5	**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	205	240	255	175	260	230	255	225	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	255	255	230	260	230	260	225	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
7.8 ... 7.95	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	12.5	10	7.5	7.5	5	3.75	–	–	**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	255	230	–	–	
			M_{2max} Nm	416	416	416	368	416	368	–	–	

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Planetary gearbox data									
Gearbox type:			NRBW120, 3-stage						
1. Order code			A48						
	i		60	80	100	120	160	200	256	320
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500
	$J_{1,G}$	kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
	$\varphi_{2,G}$	'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 3-stage (continued)												
7.68 ... 7.82	25.1 ... 25.9	11.5 (13.1)	n_{2N}	r/min	25	20	15	12.5	10	7.5	–	–	**1FT2206-3AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	230	–	–	
			M_{2max}	Nm	416	416	416	368	416	368	–	–	
10.6 ... 10.8	35.5 ... 36.5	15.1 (16.8)	n_{2N}	r/min	20	12.5	10	10	7.5	–	–	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	–	–	–	
10.4 ... 10.6	33.6 ... 34.6	15.1 (16.8)	n_{2N}	r/min	25	20	15	12.5	10	–	–	–	**1FT2206-4AF..-0..0-Z**
			M_{2N}	Nm	260	260	260	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	260	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	–	–	–	
9.93 ... 10.1	33.6 ... 34.6	15.1 (16.8)	n_{2N}	r/min	30	25	20	15	15	–	–	–	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	250	260	260	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	260	260	260	230	255	–	–	–	
			M_{2max}	Nm	416	416	416	368	416	–	–	–	

Planetary gearbox data									
Gearbox type:			**NRBW120, 3-stage**						
1. Order code			**A48**						
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$		Nm	260	260	260	230	260	230	260	230
$M_{2max,G}$		Nm	416	416	416	368	416	368	416	368
$M_{2Em.Off}$		Nm	520	520	520	500	520	500	520	500
$J_{1,G}$		kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
$\varphi_{2,G}$		'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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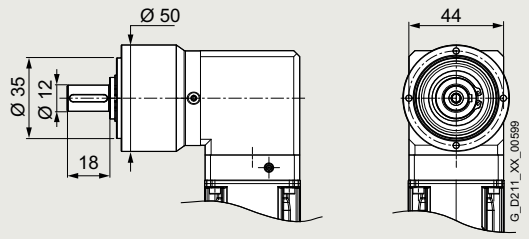
Gearbox type NRKW050

Selection and ordering data

NRKW050



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	800 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	700 N
Average axial force for 30000 h	$F_{A,eq}$	800 N
Maximum radial force	$F_{R,max}$	1300 N
Maximum axial force	$F_{A,max}$	1000 N

3
4

Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW050 1 and 2-stage

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
0.103 ... 0.116	0.501 ... 0.509	0.0245 (0.0285)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	30
			M_{2N}	Nm	0.152	0.235	0.32	0.435	0.57	0.74	0.57	0.86	1.1	1.15	1.53	1.89	2.45	3.15	4.95	5
			$M_{2.0}$	Nm	0.305	0.425	0.54	0.77	0.89	1.12	1	1.35	1.7	1.82	2.25	2.85	3.65	4.6	7.3	5
			M_{2max}	Nm	1.5	2	2.5	3.55	4.05	5	4.5	6	7.5	8	10.1	12.6	16.1	20	12	8
0.249 ... 0.261	1.03 ... 1.04	0.036 (0.04)	n_{2N}	r/min	1000	750	600	500	375	300	375	250	200	200	150	125	100	75	50	30
			M_{2N}	Nm	0.52	0.73	0.95	1.28	1.58	2	1.67	2.35	2.95	3.1	4	4.95	6.3	8.1	7.5	5
			$M_{2.0}$	Nm	0.74	1.01	1.27	1.79	2.05	2.55	2.3	3.1	3.85	4.1	5.1	6.4	8.3	10.4	7.5	5
			M_{2max}	Nm	3.05	4.1	5.1	7.2	8.3	8	9.2	12.3	15.4	16.4	20.5	21	24	21	12	8

1FT2102-0AG..-0.A0-Z ■■■ + ■■■ + . . .

1FT2102-1AG..-0.A0-Z ■■■ + ■■■ + . . .

Planetary gearbox data

Gearbox type:			**NRKW050, 1-stage**						**NRKW050, 2-stage**									
1. Order code			**B16**						**B17**									
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	4.5	6	7.5	8.5	6	5	12	15	13	15	15	13	15	13	7.5	5
	$M_{2max,G}$	Nm	7	10	12	13.5	10	8	19	24	21	24	24	21	24	21	12	8
	$M_{2Em.Off}$	Nm	22.5	28	35	26	27	25	33	40	36	40	40	36	40	36	27	27
	$J_{1.G}$	kg cm²	0.052	0.04	0.035	0.033	0.033	0.032	0.049	0.048	0.048	0.038	0.034	0.033	0.032	0.032	0.032	0.031
	$\varphi_{2,G}$	'	21						25									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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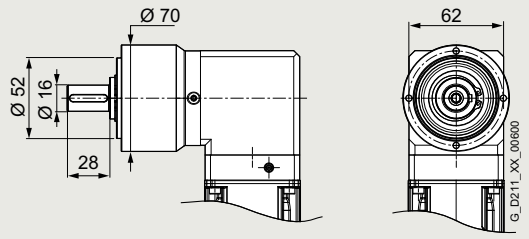
Selection and ordering data

NRKW070



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1050 N
Average axial force for 20000 h	$F_{A,eq}$	1350 N
Average radial force for 30000 h	$F_{R,eq}$	900 N
Average axial force for 30000 h	$F_{A,eq}$	1000 N
Maximum radial force	$F_{R,max}$	1650 N
Maximum axial force	$F_{A,max}$	2100 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW070 1 and 2-stage																					
0.053	0.444	0.0245	n_{2N}	r/min	–	200	200	200	200	150	150	125	125	125	100	75	60	50	37.5	25	1FT2102-0AG..-0.A0-Z
...	...	(0.0285)	M_{2N}	Nm	–	0.112	0.168	0.25	0.28	0.44	0.38	0.53	0.64	0.63	0.88	1.23	1.64	2	2.8	4.35	■■■ + ■■■ + . . .
0.0911	0.475		$M_{2.0}$	Nm	–	0.21	0.305	0.49	0.58	0.77	0.67	0.95	1.23	1.32	1.69	2.15	2.8	3.55	5.7	9.1	
			M_{2max}	Nm	–	1.77	2.25	3.2	3.7	4.65	4.15	5.5	7	7.5	9.4	11.8	15.1	18.9	29	24	
0.189	0.963	0.036	n_{2N}	r/min	600	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	1FT2102-1AG..-0.A0-Z
...	...	(0.04)	M_{2N}	Nm	0.33	0.44	0.62	0.98	1.04	1.4	1.26	1.64	2.25	2.25	3.1	3.8	4.95	6.5	10.2	15	■■■ + ■■■ + . . .
0.237	0.998		$M_{2.0}$	Nm	0.56	0.8	1.05	1.53	1.77	2.25	2	2.7	3.4	3.65	4.6	5.8	7.5	9.4	15.1	15	
			M_{2max}	Nm	2.85	3.9	4.9	6.9	7.9	9.9	8.8	11.8	14.9	15.8	19.8	24.5	31.5	39.5	29	24	
0.475	1.78	0.093	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	1FT2103-2AG..-2.A0-Z
...	...	(0.112)	M_{2N}	Nm	0.79	1.17	1.54	2.25	2.4	3.1	2.9	3.7	4.9	4.9	6.6	8.1	10.4	13.7	18	15	■■■ + ■■■ + . . .
0.523	1.81		$M_{2.0}$	Nm	1.42	1.95	2.45	3.5	4.05	5.1	4.55	6.1	7.7	8.2	10.3	12.9	16.6	20.5	18	15	
			M_{2max}	Nm	5.3	7.1	8.9	12.6	14.4	18	16.1	21.5	26.5	28.5	35.5	44.5	53	48	29	24	
0.461	1.78	0.093	n_{2N}	r/min	600	500	500	375	300	250	300	250	200	200	125	100	100	75	50	25	1FT2103-2AH..-2..0-Z
...	...	(0.112)	M_{2N}	Nm	0.91	1.28	1.43	2.15	2.7	3.4	2.8	3.35	4.65	4.35	7	8.9	9.9	13.2	18	14.9	■■■ + ■■■ + . . .
0.508	1.81		$M_{2.0}$	Nm	1.38	1.89	2.4	3.4	3.95	4.95	4.45	5.9	7.5	8	10	12.6	16.1	20	18	15	
			M_{2max}	Nm	5.3	7.1	8.9	12.6	14.4	18	16.1	21.5	26.5	28.5	35.5	44.5	53	48	29	24	
1.08	3.79	0.139	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	75	50	30	1FT2103-4AG..-2.A0-Z
...	...	(0.158)	M_{2N}	Nm	2.15	2.9	4.1	5.6	5.7	7.2	6.9	8.9	12.3	12.4	15.1	19.2	25.5	25	18	15	■■■ + ■■■ + . . .
1.12	3.83		$M_{2.0}$	Nm	3.25	4.35	5.5	7.7	8.9	11.1	10	13.3	16.7	17.8	22	27.5	33	30	18	15	
			M_{2max}	Nm	11.4	15.2	19.1	26.5	29	24	34	45.5	53	53	53	48	53	48	29	24	
0.948	3.79	0.139	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	50	25	1FT2103-4AH..-2..0-Z
...	...	(0.158)	M_{2N}	Nm	1.92	2.6	3.65	5	5.2	6.4	6.2	8.1	11.1	11.2	13.8	17.4	23	29	18	15	■■■ + ■■■ + . . .
0.989	3.83		$M_{2.0}$	Nm	2.8	3.8	4.8	6.8	7.8	9.8	8.8	11.7	14.7	15.7	19.7	24.5	31.5	30	18	15	
			M_{2max}	Nm	11.4	15.2	19.1	26.5	29	24	34	45.5	53	53	53	48	53	48	29	24	
1.1	3.5	0.368	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2104-4AF..-2..0-Z
...	...	(0.448)	M_{2N}	Nm	2.85	3.95	5	7	8.2	10.4	8.9	12.4	15.7	16.5	21	26	33	30	18	15	■■■ + ■■■ + . . .
1.14	3.54		$M_{2.0}$	Nm	3.3	4.45	5.6	7.9	9	11.3	10.1	13.5	16.9	18	22.5	28	33	30	18	15	
			M_{2max}	Nm	10.5	14.1	17.6	24.5	28	24	31.5	42	52	53	53	48	53	48	29	24	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NRKW070, 1-stage						NRKW070, 2-stage									
1. Order code		B26						B27									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	14	19	24	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
	$J_{1.G}$	kg cm²	0.329	0.23	0.224	0.22	0.219	0.218	0.326	0.326	0.224	0.228	0.223	0.223	0.219	0.219	0.219	0.218
	$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy angular geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRKW070

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW070 1 and 2-stage (continued)																					
1.1 ... 1.13	3.6 ... 3.64	0.368 (0.448)	n_{2N}	r/min	600	600	500	375	300	250	300	200	200	150	150	100	100	75	50	30	1FT2104-4AK..-2..0-Z
			M_{2N}	Nm	2.95	3.4	4.4	6.3	8	10	7.9	12	12.7	16.2	17.3	25	26	30	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.25	4.4	5.5	7.8	9	11.3	10	13.4	16.8	17.9	22.5	28	33	30	18	15	
			M_{2max}	Nm	10.8	14.4	18.1	25	29	24	32	43	53	53	53	48	53	48	29	24	
2.19 ... 2.22	7.07 ... 7.16	0.578 (0.668)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1FT2104-5AF..-2..0-Z
			M_{2N}	Nm	5.6	7.8	10	13.3	16.1	15	16.8	24.5	30.5	32	33	30	33	30	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.5	8.7	11	15.4	17.6	15	19.7	26	32.5	33	33	30	33	30	18	–	
			M_{2max}	Nm	21	28.5	35.5	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.17 ... 2.2	7.16 ... 7.26	0.578 (0.668)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	125	100	75	50	–	1FT2104-5AK..-2..0-Z
			M_{2N}	Nm	4.75	6.2	8.6	11.5	11.7	14.5	13.8	17.5	24	24	29	26.5	32.5	30	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.5	8.7	10.9	15.3	17.5	15	19.6	26	32.5	33	33	30	33	30	18	–	
			M_{2max}	Nm	21.5	28.5	36	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.92 ... 2.95	9.45 ... 9.57	0.778 (0.858)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	1FT2104-6AF..-2..0-Z
			M_{2N}	Nm	6.7	9.4	12	15.9	18	15	19.7	29	33	33	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.7	14.6	20.5	18	15	26	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW070 1 and 2-stage																					
0.486 ... 0.529	1.68 ... 1.71	0.2 (0.22)	n_{2N}	r/min	600	600	500	375	300	250	300	200	200	200	150	125	100	75	50	30	1FT2203-2AG..-2.A0-Z
			M_{2N}	Nm	1.01	1.19	1.56	2.25	2.9	3.6	2.9	4.45	4.8	4.65	6.5	7.9	10	13.6	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.45	1.99	2.5	3.6	4.1	5.2	4.6	6.2	7.8	8.3	10.4	13.1	16.8	21	18	15	
			M_{2max}	Nm	5	6.7	8.4	11.9	13.6	17.1	15.2	20	25	27	33.5	42.5	53	48	29	24	
0.452 ... 0.495	1.68 ... 1.71	0.2 (0.22)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	50	30	1FT2203-2AK..-2..0-Z
			M_{2N}	Nm	0.8	1.12	1.6	2.2	2.25	2.8	2.7	3.55	4.95	4.95	6.1	7.7	10.4	13.1	14.6	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.35	1.85	2.35	3.35	3.85	4.85	4.3	5.8	7.3	7.8	9.8	12.3	15.7	19.7	18	15	
			M_{2max}	Nm	5	6.7	8.4	11.9	13.6	17.1	15.2	20	25	27	33.5	42.5	53	48	29	24	
1.1 ... 1.13	3.5 ... 3.54	0.35 (0.37)	n_{2N}	r/min	600	500	500	375	300	250	300	200	200	150	125	100	100	75	50	30	1FT2203-4AG..-2.A0-Z
			M_{2N}	Nm	2.8	3.75	3.9	5.7	7.4	9.2	7.1	11.2	11.4	15.2	18.9	23.5	23	30	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.25	4.4	5.5	7.8	9	11.3	10	13.4	16.8	18	22.5	28	33	30	18	15	
			M_{2max}	Nm	10.5	14.1	17.6	24.5	28	24	31.5	42	52	53	53	48	53	48	29	24	
1.06 ... 1.09	3.5 ... 3.54	0.35 (0.37)	n_{2N}	r/min	600	500	375	300	250	200	250	200	150	150	125	100	75	60	50	30	1FT2203-4AK..-2..0-Z
			M_{2N}	Nm	2.05	2.75	3.95	5.3	6.5	8.3	6.5	8.2	11.7	11.5	13.9	17.7	24	29.5	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3.15	4.25	5.3	7.6	8.7	10.9	9.7	13	16.3	17.3	21.5	27	33	30	18	15	
			M_{2max}	Nm	10.5	14.1	17.6	24.5	28	24	31.5	42	52	53	53	48	53	48	29	24	
2.15 ... 2.18	6.69 ... 6.77	1.248 (1.328)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	5.3	7.5	9.6	12.7	15.4	15	16	23	29	30.5	33	30	33	30	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.4	8.6	10.8	15.1	17.3	15	19.3	25.5	32	33	33	30	33	30	18	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.16 ... 2.19	6.69 ... 6.77	1.248 (1.328)	n_{2N}	r/min	600	500	375	300	250	250	250	150	150	125	100	100	100	75	50	–	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	4.65	6	8.4	11.1	13.5	13.4	13.1	21.5	23	27	33	30	26.5	30	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.4	8.6	10.8	15.2	17.4	15	19.5	26	32.5	33	33	30	33	30	18	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	53	53	53	53	53	48	53	48	29	–	

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Planetary gearbox data																	
Gearbox type:		NRKW070, 1-stage						NRKW070, 2-stage									
1. Order code		B26						B27									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	14	19	24	25	18	15	33	33	33	33	33	30	33	30	18	15
$M_{2max,G}$	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	29	24
$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.329	0.23	0.224	0.22	0.219	0.218	0.326	0.326	0.224	0.228	0.223	0.223	0.219	0.219	0.219	0.218
$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW070 1 and 2-stage (continued)																			
2.91 ... 2.93	8.98 ... 9.09	1.628 (1.708)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	–	–	**1FT2204-6AF..-2..0-Z**
			M_{2N}	Nm	7	9.8	12.6	16.4	18	15	20	30.5	33	33	33	30	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.6	14.6	20.5	18	15	26	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	–	–	

Planetary gearbox data																		
Gearbox type:			**NRKW070, 1-stage**						**NRKW070, 2-stage**									
1. Order code			**B26**						**B27**									
i			**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	14	19	24	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.329	0.23	0.224	0.22	0.219	0.218	0.326	0.326	0.224	0.228	0.223	0.223	0.219	0.219	0.219	0.218
	$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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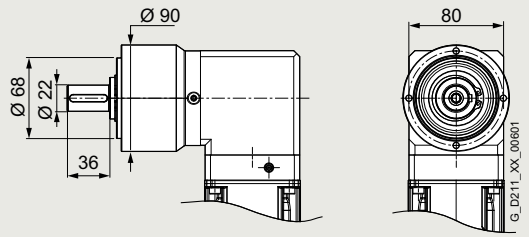
Gearbox type NRKW090

Selection and ordering data

NRKW090



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1900 N
Average axial force for 20000 h	$F_{A,eq}$	2000 N
Average radial force for 30000 h	$F_{R,eq}$	1700 N
Average axial force for 30000 h	$F_{A,eq}$	1500 N
Maximum radial force	$F_{R,max}$	3100 N
Maximum axial force	$F_{A,max}$	3800 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW090 1 and 2-stage																				
0.407 ... 0.476	1.69 ... 1.74	0.093 (0.112)	n_{2N}	r/min	500	375	375	300	300	250	250	200	150	150	125	100	75	60	37.5	25	**1FT2103-2AG..-0.A0-Z**
			M_{2N}	Nm	0.67	1.07	1.26	1.82	1.89	2.4	2.2	2.85	4	4.1	5.2	6.6	9.2	11.6	18.8	28.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.22	1.7	2.15	3.15	3.6	4.6	4.05	5.5	6.9	7.4	9.3	11.7	15	18.9	30	38	
			M_{2max}	Nm	5	6.8	8.5	12.1	13.8	17.4	15.5	20.5	25.5	27.5	34.5	43	55	69	80	61	
0.379 ... 0.449	1.69 ... 1.74	0.093 (0.112)	n_{2N}	r/min	500	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	25	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	0.66	0.79	1.24	1.8	1.85	2.3	2.15	2.85	3.95	4.05	5.1	6.5	9	11.4	18.5	28	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.13	1.59	2.05	2.95	3.4	4.3	3.85	5.2	6.5	7	8.8	11	14.2	17.8	28.5	38	
			M_{2max}	Nm	5	6.8	8.5	12.1	13.8	17.4	15.5	20.5	25.5	27.5	34.5	43	55	69	80	61	
1 ... 1.06	3.72 ... 3.77	0.139 (0.158)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	75	50	37.5	30	**1FT2103-4AG..-0.A0-Z**
			M_{2N}	Nm	2.25	3.35	3.65	6	6.2	8	7.7	10.5	13	13.2	17	22	23	35	47	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3	4.05	5.1	7.3	8.4	10.5	9.4	12.6	15.7	16.8	21	26	33.5	42	50	38	
			M_{2max}	Nm	11.1	14.9	18.7	26	30	37.5	33.5	44.5	55	59	74	93	119	131	80	61	
0.938 ... 1	3.72 ... 3.77	0.139 (0.158)	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	100	75	60	37.5	25	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	1.97	2.8	3.2	4.35	5.5	7.1	6.5	8.8	9.4	11.4	14.6	14.5	20.5	26	42	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.8	3.8	4.8	6.8	7.8	9.9	8.8	11.8	14.9	15.9	19.9	24.5	31.5	39.5	50	38	
			M_{2max}	Nm	11.1	14.9	18.7	26	30	37.5	33.5	44.5	55	59	74	93	119	131	80	61	
1.02 ... 1.07	3.43 ... 3.48	0.35 (0.43)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.55	3.6	4.65	6.5	7.7	9.9	8.2	11.7	14.8	15.6	20	25	31.5	40.5	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.05	4.1	5.2	7.4	8.5	10.7	9.5	12.7	16	17	21	26.5	34	42.5	50	38	
			M_{2max}	Nm	10.3	13.7	17.2	24	27.5	34.5	31	41	51	55	68	86	110	131	80	61	
1.01 ... 1.07	3.53 ... 3.57	0.35 (0.43)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	30	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	2.6	3.45	4.75	6.6	6.9	8.5	8.2	10.6	14.1	14.7	18.2	23	30.5	38	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3	4.1	5.2	7.3	8.4	10.6	9.4	12.6	15.8	16.9	21	26.5	34	42.5	50	38	
			M_{2max}	Nm	10.5	14.1	17.7	24.5	28.5	35.5	31.5	42.5	53	56	70	88	113	131	80	61	
2.1 ... 2.15	7 ... 7.09	0.56 (0.65)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	5.5	7.8	10	13.4	16.2	20.5	17	24.5	30.5	32	41	51	65	82	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.3	8.4	10.6	14.9	17.1	21	19.1	25.5	32	34	42.5	53	68	82	50	38	
			M_{2max}	Nm	21	28	35	49.5	56	61	63	84	105	112	140	131	144	131	80	61	

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Planetary gearbox data																	
Gearbox type:			NRKW090, 1-stage						NRKW090, 2-stage								
1. Order code			B36						B37								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	40	53	67	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	170
	$J_{1.G}$	kg cm²	1.408	1.107	1.026	0.96	0.944	0.925	1.245	1.22	1.211	1.002	0.96	0.956	0.918	0.917	0.917	0.907
	$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRKW090

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW090 1 and 2-stage (continued)																				
2.08 ... 2.13	7.09 ... 7.19	0.56 (0.65)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	30	1FT2104-5AK..-2..0-Z
			M_{2N}	Nm	5.4	7.7	8.3	13.2	13.6	17.5	16.7	22.5	27.5	27.5	35.5	47	60	72	46	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.2	8.4	10.5	14.8	17	21	19	25	31.5	33.5	42	52	67	82	50	38	
			M_{2max}	Nm	21	28.5	35.5	50	57	61	64	85	106	113	142	131	144	131	80	61	
2.84 ... 2.88	9.37 ... 9.5	0.76 (0.84)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2104-6AF..-2..0-Z
			M_{2N}	Nm	6.7	9.5	12.3	16.1	20	26	20	31	39	40	52	65	82	82	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34	42.5	45.5	57	71	90	82	50	38	
			M_{2max}	Nm	28	37.5	47	66	76	61	84	112	131	144	144	131	144	131	80	61	
4.52 ... 4.57	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25		1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	10.6	15	19.4	24	30.5	38	29.5	47	59	60	79	82	90	82	50		■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.6	18.1	22.5	31.5	36.5	38	40.5	54	67	72	90	82	90	82	50	–	
			M_{2max}	Nm	42.5	57	71	100	80	61	127	144	131	144	144	131	144	131	80	–	
4.56 ... 4.61	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	75	60	60	37.5	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	13.7	17.9	22	28	37.5	26.5	44	55	55	74	72	89	72	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.7	18.3	22.5	32	36.5	38	41	54	68	73	90	82	90	82	50	–	
			M_{2max}	Nm	42.5	57	71	100	80	61	127	144	131	144	144	131	144	131	80	–	
7.31 ... 7.38	22.7 ... 23	2.65 (3.5)	n_{2N}	r/min	375	375	300	200	200	150	150	125	100	100	75	60	50	37.5	–	–	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	17.7	18.7	24	37.5	37.5	38	48	58	72	72	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	29	36.5	51	50	38	66	87	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW090 1 and 2-stage																				
0.401 ... 0.47	1.59 ... 1.64	0.2 (0.22)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	75	75	60	37.5	25	1FT2203-2AG..-0.A0-Z
			M_{2N}	Nm	0.77	1.22	1.38	1.95	2.45	3.2	2.95	4.1	5.1	5.2	6.8	9.1	9.7	12.2	19.8	30	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.2	1.68	2.15	3.1	3.55	4.55	4	5.4	6.8	7.3	9.2	11.5	14.9	18.6	30	38	
			M_{2max}	Nm	4.75	6.4	8.1	11.4	13.1	16.4	14.6	19.5	24.5	26	32.5	40.5	52	65	80	61	
0.366 ... 0.436	1.59 ... 1.64	0.2 (0.22)	n_{2N}	r/min	375	375	300	250	200	200	200	150	125	125	100	75	60	50	30	20	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	0.82	0.99	1.39	1.9	2.4	2.55	2.4	3.35	4.15	4.2	5.5	7.5	9.7	11.8	19.9	30	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.09	1.54	1.98	2.85	3.3	4.2	3.7	5	6.3	6.8	8.5	10.7	13.8	17.3	27.5	38	
			M_{2max}	Nm	4.75	6.4	8.1	11.4	13.1	16.4	14.6	19.5	24.5	26	32.5	40.5	52	65	80	61	
1.01 ... 1.07	3.43 ... 3.48	0.35 (0.37)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	30	1FT2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.4	3.15	4.55	6.3	6.2	7.6	7.7	9.7	13.3	13.6	16.7	21	28.5	36	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3	4.1	5.2	7.3	8.4	10.6	9.4	12.7	15.9	16.9	21	26.5	34	42.5	50	38	
			M_{2max}	Nm	10.3	13.7	17.2	24	27.5	34.5	31	41	51	55	68	86	110	131	80	61	
0.974 ... 1.03	3.43 ... 3.48	0.35 (0.37)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	75	60	37.5	30	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	2.2	3.15	3.55	5.6	6	7.7	7.1	9.7	12	12.5	15.9	20.5	21.5	27	44.5	33.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.9	3.95	5	7.1	8.1	10.2	9.1	12.2	15.3	16.3	20	25.5	32.5	41	50	38	
			M_{2max}	Nm	10.3	13.7	17.2	24	27.5	34.5	31	41	51	55	68	86	110	131	80	61	
2.06 ... 2.11	6.62 ... 6.71	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	5.2	7.4	9.5	12.8	15.3	19.6	16.2	23	29	30.5	39	49	62	78	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.1	8.3	10.4	14.6	16.8	21	18.7	25	31	33	41.5	52	67	82	50	38	
			M_{2max}	Nm	20	26.5	33	46.5	53	61	59	79	99	106	132	131	144	131	80	61	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:		NRKW090, 1-stage						NRKW090, 2-stage								
1. Order code		B36						B37								
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	40	53	67	65	50	38	97	90	82	90	90	82	90	82	50	38
$M_{2max,G}$	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	170
$J_{1,G}$	kg cm²	1.408	1.107	1.026	0.96	0.944	0.925	1.245	1.22	1.211	1.002	0.96	0.956	0.918	0.917	0.917	0.907
$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Economy angular geared motors for servo converters with line connection 230 V 1 AC / 240 V 3 AC

Gearbox type NRKW090

Servomotor data

$M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²
2.07 ... 2.12	6.62 ... 6.71	1.23 (1.31)
2.82 ... 2.87	8.9 ... 9.02	1.61 (1.69)
2.85 ... 2.9	10.1 ... 10.3	3.15 (4.05)
2.89 ... 2.94	10.1 ... 10.3	3.15 (4.05)
2.85 ... 2.9	10.1 ... 10.3	3.15 (4.05)
4.98 ... 5.02	17 ... 17.2	5.1 (6)

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW090 1 and 2-stage (continued)

			n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	30	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	5.4	7.7	8.1	13.1	13.2	17.1	16.5	22	27	27	34.5	46.5	59	71	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.2	8.3	10.4	14.7	16.9	21	18.9	25	31.5	33.5	42	52	67	82	50	38	
			M_{2max}	Nm	20	26.5	33	46.5	53	61	59	79	99	106	132	131	144	131	80	61	
			n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2204-6AF..-2..0-Z
			M_{2N}	Nm	7	10	13	16.8	21	27.5	21	32.5	41	42	55	68	86	82	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.4	11.3	14.2	20	22.5	28.5	25.5	34	42.5	45	56	71	90	82	50	38	
			M_{2max}	Nm	27	36	45	63	72	61	80	107	131	142	144	131	144	131	80	61	
			n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	–	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	7	9.8	12.3	17.3	20	25	22.5	28.5	36.5	38.5	50	58	77	82	49.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34.5	43	46	57	72	90	82	49.5	–	
			M_{2max}	Nm	30.5	41	51	71	80	61	91	122	131	144	144	131	144	131	80	–	
			n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	–	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	7	9.6	12.1	16.6	19.6	24.5	21	29.5	37	39	49.5	62	78	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.5	20.5	23	29	26	35	43.5	46.5	58	73	90	82	50	–	
			M_{2max}	Nm	30.5	41	51	71	80	61	91	122	131	144	144	131	144	131	80	–	
			n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	37.5	–	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	6.4	9.1	11.7	15.1	18.8	18.8	18.8	25.5	30.5	37.5	38	52	66	78	49.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34.5	43	46	57	72	90	82	49.5	–	
			M_{2max}	Nm	30.5	41	51	71	80	61	91	122	131	144	144	131	144	131	80	–	
			n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2205-4AF..-0..0-Z
			M_{2N}	Nm	9.3	13.4	17.4	27	27.5	37	35	43	54	54	72	82	90	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.9	19.9	25	35	40	38	44.5	59	74	79	90	82	90	82	50	–	
			M_{2max}	Nm	51	68	86	104	80	61	153	144	131	144	144	131	144	131	80	–	

Planetary gearbox data

Gearbox type:		NRKW090, 1-stage						NRKW090, 2-stage									
1. Order code		B36						B37									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	40	53	67	65	50	38	97	90	82	90	90	82	90	82	50	38
$M_{2max,G}$	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	170
$J_{1,G}$	kg cm²	1.408	1.107	1.026	0.96	0.944	0.925	1.245	1.22	1.211	1.002	0.96	0.956	0.918	0.917	0.917	0.907
$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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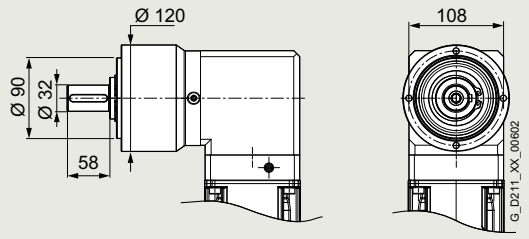
Selection and ordering data

NRKW120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	2500 N
Average axial force for 20000 h	$F_{A,eq}$	4000 N
Average radial force for 30000 h	$F_{R,eq}$	2150 N
Average axial force for 30000 h	$F_{A,eq}$	3000 N
Maximum radial force	$F_{R,max}$	4000 N
Maximum axial force	$F_{A,max}$	5900 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW120 1 and 2-stage																					
0.277	1.56	0.093	n_{2N}	r/min	250	250	200	200	200	150	150	125	100	100	75	60	60	50	30	20	1FT2103-2AG..-0.A0-Z
...	...	(0.112)	M_{2N}	Nm	0.495	0.7	1.11	1.45	1.53	2.3	1.9	2.45	3.25	3.3	5	6.4	7	8.5	14.7	22.5	■■■ + ■■■ + . . .
0.406	1.67		$M_{2.0}$	Nm	0.83	1.24	1.66	2.45	2.9	3.7	3.3	4.5	5.7	6.1	7.8	9.8	12.7	16	25.5	40.5	
			M_{2max}	Nm	4.65	6.3	8	11.4	13.1	16.5	14.7	19.7	24.5	26	33	41	53	66	106	152	
0.249	1.56	0.093	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	60	50	30	20	1FT2103-2AH..-0..0-Z
...	...	(0.112)	M_{2N}	Nm	0.38	0.68	0.88	1.44	1.54	2.25	1.88	2.4	3.2	3.3	4.9	6.3	7	8.5	14.7	22.5	■■■ + ■■■ + . . .
0.379	1.67		$M_{2.0}$	Nm	0.74	1.13	1.52	2.3	2.65	3.45	3.05	4.2	5.3	5.7	7.2	9.1	11.8	14.9	24	37.5	
			M_{2max}	Nm	4.65	6.3	8	11.4	13.1	16.5	14.7	19.7	24.5	26	33	41	53	66	106	152	
0.874	3.59	0.139	n_{2N}	r/min	375	375	300	250	200	200	200	150	125	125	100	75	60	50	30	20	1FT2103-4AG..-0.A0-Z
...	...	(0.158)	M_{2N}	Nm	2.15	2.65	3.8	5.2	6.6	6.8	6.4	9	11	10.8	14.8	20	26.5	32.5	54	83	■■■ + ■■■ + . . .
0.992	3.68		$M_{2.0}$	Nm	2.6	3.6	4.6	6.6	7.6	9.6	8.6	11.5	14.5	15.5	19.5	24.5	31.5	39	63	95	
			M_{2max}	Nm	10.7	14.4	18.2	25.5	29	36.5	32.5	43.5	54	58	73	91	117	146	192	152	
0.86	3.59	0.139	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	75	60	50	30	20	1FT2103-4AH..-0..0-Z
...	...	(0.158)	M_{2N}	Nm	1.7	2.15	3	4.25	4.25	5.9	5.2	7.3	9.1	9.4	12.4	16.3	21.5	26	43.5	67	■■■ + ■■■ + . . .
0.978	3.68		$M_{2.0}$	Nm	2.55	3.55	4.55	6.5	7.5	9.5	8.4	11.4	14.3	15.3	19.2	24	31	38.5	62	95	
			M_{2max}	Nm	10.7	14.4	18.2	25.5	29	36.5	32.5	43.5	54	58	73	91	117	146	192	152	
0.888	3.3	0.35	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2104-4AF..-0..0-Z
...	...	(0.43)	M_{2N}	Nm	1.89	2.85	3.9	5.5	6.7	8.8	6.8	10.1	12.8	13.6	17.6	22	28.5	36	57	91	■■■ + ■■■ + . . .
1.01	3.39		$M_{2.0}$	Nm	2.65	3.65	4.7	6.7	7.7	9.8	8.7	11.7	14.7	15.7	19.8	24.5	31.5	39.5	64	95	
			M_{2max}	Nm	9.9	13.3	16.7	23.5	27	33.5	30	40	50	53	67	84	107	134	192	152	
0.881	3.4	0.35	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	100	75	60	37.5	25	1FT2104-4AK..-0..0-Z
...	...	(0.43)	M_{2N}	Nm	2.05	3	3.85	5.4	6.6	8.5	7.2	9.8	11	13.2	17	17.1	26.5	33.5	54	84	■■■ + ■■■ + . . .
0.998	3.49		$M_{2.0}$	Nm	2.6	3.65	4.65	6.7	7.7	9.7	8.6	11.6	14.6	15.6	19.6	24.5	31.5	39.5	63	95	
			M_{2max}	Nm	10.2	13.7	17.2	24	27.5	34.5	31	41	51	55	69	86	110	138	192	152	
1.97	6.93	0.56	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2104-5AF..-0..0-Z
...	...	(0.65)	M_{2N}	Nm	4.6	7.1	9.4	12.8	15.4	19.5	15.7	22.5	28.5	30.5	38.5	48.5	62	78	120	95	■■■ + ■■■ + . . .
2.07	7.01		$M_{2.0}$	Nm	5.9	8	10.1	14.3	16.4	20.5	18.3	24.5	30.5	32.5	41	51	65	82	120	95	
			M_{2max}	Nm	20.5	27.5	34.5	48.5	55	70	62	83	104	111	138	173	220	275	192	152	

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Planetary gearbox data																	
Gearbox type:			NRKW120, 1-stage						NRKW120, 2-stage								
1. Order code			B46						B47								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1.G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRKW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW120 1 and 2-stage (continued)																				
1.96 ... 2.05	7.03 ... 7.1	0.56 (0.65)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	100	100	75	60	50	30	25	1FT2104-5AK..-0..0-Z
			M_{2N}	Nm	4.5	7	9.3	12.6	12.4	16.4	15.4	21	25.5	30	34	46.5	60	72	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	7.9	10	14.2	16.2	20	18.2	24	30.5	32.5	40.5	51	65	81	120	95	
			M_{2max}	Nm	21	28	35	49.5	56	71	63	84	105	112	140	175	225	275	192	152	
2.71 ... 2.8	9.3 ... 9.42	0.76 (0.84)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2104-6AF..-0..0-Z
			M_{2N}	Nm	5.7	8.8	12	15.6	20	26.5	19	31.5	39.5	40.5	53	66	85	107	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.1	10.9	13.7	19.4	22	27.5	24.5	33	41.5	44	55	69	89	111	120	95	
			M_{2max}	Nm	28	37	46.5	65	75	94	83	111	139	149	186	230	295	275	192	152	
4.41 ... 4.49	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	9.5	14.4	19.4	24	31	40	28.5	47	59	61	79	100	126	161	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.2	17.7	22	31	35.5	44.5	40	53	66	71	89	111	142	172	120	95	
			M_{2max}	Nm	42.5	56	71	99	113	142	127	169	210	225	280	275	312	275	192	152	
4.44 ... 4.52	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	11.6	13.1	17.9	21.5	29	38.5	34.5	45	56	58	76	95	120	154	110	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.3	17.8	22	31.5	36	45	40	53	67	71	89	112	143	172	120	95	
			M_{2max}	Nm	42.5	56	71	99	113	142	127	169	210	225	280	275	312	275	192	152	
7.32 ... 7.39	22.6 ... 22.9	2.65 (3.5)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	18	24	30	40	40	55	51	62	78	77	107	133	163	172	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	36.5	51	59	73	65	87	109	117	146	172	195	172	120	95	
			M_{2max}	Nm	68	91	114	160	183	152	200	270	275	312	312	275	312	275	192	152	
7.64 ... 7.72	24.5 ... 24.8	4.6 (6.3)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2106-3AF..-0..0-Z
			M_{2N}	Nm	18.7	24.5	31	41.5	41.5	57	53	64	81	80	111	139	169	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	61	77	69	92	115	122	153	172	195	172	120	–	
			M_{2max}	Nm	74	99	124	173	192	152	220	295	275	312	312	275	312	275	192	–	
9.94 ... 10	31.1 ... 31.6	6 (7.6)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	60	60	50	37.5	25	–	1FT2106-4AF..-0..0-Z
			M_{2N}	Nm	23	30	37.5	49	64	67	62	94	92	125	158	157	189	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	50	70	80	95	89	119	149	159	195	172	195	172	120	–	
			M_{2max}	Nm	94	126	157	216	192	152	251	312	275	312	312	275	312	275	192	–	
14.1 ... 14.2	43 ... 43.7	8.7 (10.4)	n_{2N}	r/min	375	300	250	200	150	150	125	100	75	75	60	60	50	37.5	–	–	1FT2106-6AF..-0..0-Z
			M_{2N}	Nm	28.5	37	46	58	80	80	90	114	151	152	190	172	195	172	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	42.5	56	71	99	113	95	127	169	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW120 1 and 2-stage																				
0.271 ... 0.4	1.46 ... 1.57	0.2 (0.22)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	75	60	50	30	20	1FT2203-2AG..-0.A0-Z
			M_{2N}	Nm	0.365	0.69	1.05	1.7	1.84	2.65	2.1	2.85	3.75	3.95	5.4	5.8	8	9.6	16.8	25.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.81	1.22	1.63	2.45	2.85	3.65	3.2	4.45	5.6	6	7.6	9.6	12.5	15.7	25	39.5	
			M_{2max}	Nm	4.35	5.9	7.5	10.7	12.3	15.5	13.8	18.5	23	24.5	31	39	50	62	100	152	
0.236 ... 0.366	1.46 ... 1.57	0.2 (0.22)	n_{2N}	r/min	300	250	250	200	150	150	150	125	100	100	75	60	50	37.5	25	15	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	0.34	0.63	0.87	1.39	1.89	2.15	1.87	2.3	3.1	3.1	4.8	6.2	8	10.8	16.8	27.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.7	1.08	1.46	2.2	2.55	3.3	2.9	4.05	5.1	5.5	7	8.8	11.4	14.4	23	36.5	
			M_{2max}	Nm	4.35	5.9	7.5	10.7	12.3	15.5	13.8	18.5	23	24.5	31	39	50	62	100	152	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NRKW120, 1-stage						NRKW120, 2-stage									
1. Order code		B46						B47									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
$J_{1,G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW120 1 and 2-stageg (continued)																				
0.883 ... 1	3.3 ... 3.39	0.35 (0.37)	n_{2N}	r/min	500	375	375	300	250	200	200	150	125	125	100	75	75	60	37.5	25	1FT2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.05	3	3.65	5	6.4	8.3	7.2	9.8	12.4	13.1	16.9	21.5	25	31.5	51	78	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.6	3.65	4.65	6.7	7.7	9.7	8.6	11.6	14.7	15.7	19.7	24.5	31.5	39.5	63	95	
			M_{2max}	Nm	9.9	13.3	16.7	23.5	27	33.5	30	40	50	53	67	84	107	134	192	152	
0.843 ... 0.961	3.3 ... 3.39	0.35 (0.37)	n_{2N}	r/min	375	375	300	250	200	200	200	150	125	125	100	75	60	50	30	20	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	2	2.5	3.5	4.85	6	6.7	6	8.3	10.3	10.6	13.9	18.4	24	29.5	49	75	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.5	3.5	4.45	6.4	7.4	9.3	8.3	11.2	14.1	15	18.9	23.5	30.5	38	61	95	
			M_{2max}	Nm	9.9	13.3	16.7	23.5	27	33.5	30	40	50	53	67	84	107	134	192	152	
1.93 ... 2.03	6.55 ... 6.62	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2204-5AF..-0..0-Z
			M_{2N}	Nm	4.35	6.8	9	12.2	14.9	19	14.9	22	28	29.5	37.5	47	61	76	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.7	7.8	9.9	14	16	20	17.9	24	30	32	40	50	64	80	120	95	
			M_{2max}	Nm	19.6	26	32.5	46	52	66	59	78	98	104	131	163	205	260	192	152	
1.94 ... 2.04	6.55 ... 6.62	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	30	25	1FT2204-5AK..-0..0-Z
			M_{2N}	Nm	4.5	7	9.2	12.5	15.1	16	15.3	21	25.5	30	33	46	59	71	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	7.9	9.9	14.1	16.1	20	18.1	24	30	32	40.5	50	65	81	120	95	
			M_{2max}	Nm	19.6	26	32.5	46	52	66	59	78	98	104	131	163	205	260	192	152	
2.69 ... 2.78	8.83 ... 8.94	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2204-6AF..-0..0-Z
			M_{2N}	Nm	6.1	9.4	12.9	16.5	21	26.5	19.9	31	39	41.5	52	66	84	106	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8	10.8	13.7	19.3	22	27.5	24.5	33	41	44	55	69	88	110	120	95	
			M_{2max}	Nm	26.5	35.5	44.5	62	71	89	79	106	132	141	176	220	280	275	192	152	
2.89 ... 2.98	10.1 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	6.7	9.5	12.2	17.3	20	25	22.5	28.5	36.5	38.5	50	58	78	102	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.6	20.5	23.5	29.5	26.5	35.5	44.5	47.5	59	74	95	119	120	95	
			M_{2max}	Nm	30	40.5	50	71	81	101	90	121	151	161	200	250	312	275	192	152	
2.92 ... 3.01	10.1 ... 10.2	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	6.1	9	11.6	16	19.1	24.5	19.8	28.5	36	38	49	61	78	99	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.8	14.8	20.5	23.5	30	26.5	35.5	45	48	60	75	96	120	120	95	
			M_{2max}	Nm	30	40.5	50	71	81	101	90	121	151	161	200	250	312	275	192	152	
2.86 ... 2.95	10.1 ... 10.2	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	150	125	100	100	75	60	50	30	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.3	8.4	11.2	14.5	18.3	23.5	17.5	24	28.5	36.5	36.5	52	67	79	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.5	14.5	20.5	23.5	29.5	26	35	44	47	58	73	94	117	119	94	
			M_{2max}	Nm	30	40.5	50	71	81	101	90	121	151	161	200	250	312	275	192	152	
5.08 ... 5.16	16.9 ... 17.1	5.1 (6)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2205-4AF..-0..0-Z
			M_{2N}	Nm	12.3	16.6	21	28	28.5	39.5	37	45	57	56	78	98	120	160	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	36	41	51	46	61	77	82	102	128	164	172	120	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
5.18 ... 5.26	16.9 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	11.7	18.1	22.5	32	37	46.5	42	50	67	67	92	100	137	172	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.5	20.5	26	36.5	41.5	52	46.5	62	78	83	104	130	166	172	120	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	

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Planetary gearbox data																	
Gearbox type:			NRKW120, 1-stage						NRKW120, 2-stage								
1. Order code			B46						B47								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRKW120

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW120 1 and 2-stageg (continued)																					
5.25 ... 5.33	16.9 ... 17.1	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	1FT2206-2AF..-0..0-Z
			M_{2N}	Nm	10	15.2	20.5	24.5	32.5	42.5	29	49.5	62	64	84	105	132	170	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.7	21	26	37	42.5	53	47.5	63	79	84	105	132	169	172	120	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
5.09 ... 5.17	16.9 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	30	25	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	12.5	16.7	21	28	28	39	37	44.5	56	55	78	97	119	159	119	91	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	36	41	51	46	61	77	82	102	128	164	172	119	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
7.78 ... 7.85	25.4 ... 25.8	11.5 (13.1)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	12.5	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	20	27	34.5	49	55	70	55	74	103	109	138	172	195	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39	54	62	78	70	93	117	124	155	172	195	172	120	–	
			M_{2max}	Nm	77	103	128	180	192	152	230	305	275	312	312	275	312	275	192	–	
7.65 ... 7.72	25.4 ... 25.8	11.5 (13.1)	n_{2N}	r/min	375	300	250	200	150	125	150	100	75	75	60	50	37.5	37.5	25	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	16.5	21.5	27.5	35.5	48	59	47	71	93	95	120	145	193	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	61	77	69	92	115	122	153	172	195	172	120	–	
			M_{2max}	Nm	77	103	128	180	192	152	230	305	275	312	312	275	312	275	192	–	
10.7 ... 10.8	35.9 ... 36.5	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	60	50	50	37.5	25	20	–	1FT2206-4AC..-0..0-Z
			M_{2N}	Nm	21	26	34	46.5	57	72	68	91	92	116	140	134	186	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	32	43	53	75	86	95	96	128	160	171	195	172	195	172	120	–	
			M_{2max}	Nm	109	145	182	216	192	152	251	312	275	312	312	275	312	275	192	–	
10.4 ... 10.5	34 ... 34.5	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	150	100	75	75	60	60	50	37.5	25	–	1FT2206-4AF..-0..0-Z
			M_{2N}	Nm	23	30.5	38	49.5	66	68	63	95	126	127	161	160	191	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	73	83	95	93	125	156	166	195	172	195	172	120	–	
			M_{2max}	Nm	103	138	172	216	192	152	251	312	275	312	312	275	312	275	192	–	
9.93 ... 10	34 ... 34.5	15.1 (16.8)	n_{2N}	r/min	375	250	250	150	150	125	125	100	75	75	60	50	50	37.5	30	–	1FT2206-4AH..-0..0-Z
			M_{2N}	Nm	19.1	30	31	53	55	67	64	80	107	107	136	163	152	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	70	80	95	89	119	149	159	195	172	195	172	120	–	
			M_{2max}	Nm	103	138	172	216	192	152	251	312	275	312	312	275	312	275	192	–	

Planetary gearbox data																	
Gearbox type:			NRKW120, 1-stage						NRKW120, 2-stage								
1. Order code			B46						B47								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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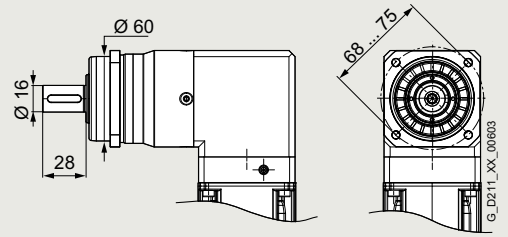
Selection and ordering data

NLCW060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	3200 N
Average axial force for 20000 h	$F_{A,eq}$	4400 N
Average radial force for 30000 h	$F_{R,eq}$	3200 N
Average axial force for 30000 h	$F_{A,eq}$	3900 N
Maximum radial force	$F_{R,max}$	3200 N
Maximum axial force	$F_{A,max}$	4400 N

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW060 1 and 2-stage																				
0.0258 ... 0.0878	0.416 ... 0.477	0.0245 (0.0285)	n_{2N}	r/min	–	–	–	–	–	60	30	50	50	50	50	50	37.5	37.5	25	20	**1FT2102-0AG..-0.A0-Z**
			M_{2N}	Nm	–	–	–	–	–	0.165	0.119	0.23	0.415	0.46	0.64	0.81	1.33	1.54	2.75	3.75	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	–	–	–	–	–	0.325	0.23	0.51	0.79	0.89	1.26	1.73	2.35	3.1	5.3	8.7	
			M_{2max}	Nm	–	–	–	–	–	4.2	3.7	5.1	6.6	7.1	9	11.4	14.8	18.7	29	24	
0.0892 ... 0.236	0.863 ... 1	0.036 (0.04)	n_{2N}	r/min	–	200	250	250	250	200	150	150	125	125	100	100	75	60	37.5	30	**1FT2102-1AG..-0.A0-Z**
			M_{2N}	Nm	–	0.2	0.315	0.6	0.72	1.13	0.99	1.34	1.94	2	2.75	3.05	4.55	5.9	10	13.4	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	–	0.355	0.59	1.08	1.32	1.81	1.57	2.25	3	3.25	4.2	5.4	7.1	9	14.8	15	
			M_{2max}	Nm	–	3.45	4.45	6.4	7.5	9.5	8.5	11.5	14.6	15.6	19.6	24.5	31.5	39.5	29	24	
0.323 ... 0.502	1.63 ... 1.81	0.093 (0.112)	n_{2N}	r/min	375	375	375	300	300	250	200	150	150	150	125	100	75	60	50	30	**1FT2103-2AG..-2.A0-Z**
			M_{2N}	Nm	0.48	0.77	1	1.74	1.89	2.6	2.4	3.6	4.3	4.35	5.7	7.5	10.3	13.2	15.8	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.96	1.49	2	3.05	3.6	4.65	3.95	5.5	7	7.5	9.5	12.1	15.6	19.7	18	15	
			M_{2max}	Nm	4.85	6.6	8.5	12.1	13.9	17.6	15.8	21	26.5	28.5	35.5	44.5	57	64	29	24	
0.309 ... 0.489	1.63 ... 1.81	0.093 (0.112)	n_{2N}	r/min	375	300	300	250	250	200	150	150	125	125	100	75	75	60	37.5	25	**1FT2103-2AH..-2..0-Z**
			M_{2N}	Nm	0.455	0.91	1.2	1.94	2.05	3	2.75	3.25	4.5	4.45	6.1	8.5	8.9	11.7	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.92	1.43	1.95	2.95	3.45	4.5	3.85	5.3	6.8	7.3	9.3	11.7	15.2	19.2	18	15	
			M_{2max}	Nm	4.85	6.6	8.5	12.1	13.9	17.6	15.8	21	26.5	28.5	35.5	44.5	57	64	29	24	
0.93 ... 1.09	3.66 ... 3.83	0.139 (0.158)	n_{2N}	r/min	300	300	300	250	200	200	150	125	125	125	100	75	60	50	50	30	**1FT2103-4AG..-2.A0-Z**
			M_{2N}	Nm	2.05	2.65	3.1	4.6	6.1	6.7	6.5	8.7	9.6	9.6	12.9	17.9	23	28.5	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.75	3.9	5	7.3	8.4	10.7	9.2	12.5	15.8	16.9	21	26.5	34	40	18	15	
			M_{2max}	Nm	10.9	14.8	18.6	26	29	24	34	45.5	57	60	70	64	70	64	29	24	
0.795 ... 0.962	3.66 ... 3.83	0.139 (0.158)	n_{2N}	r/min	300	300	250	250	200	200	150	125	125	100	100	75	60	50	50	25	**1FT2103-4AH..-2..0-Z**
			M_{2N}	Nm	1.77	2.3	3.25	4.05	5.4	5.9	5.7	7.7	8.5	10.6	11.4	15.9	20.5	25.5	17.3	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.35	3.35	4.35	6.3	7.3	9.3	8.1	11	13.9	14.9	18.7	23.5	30	38	18	15	
			M_{2max}	Nm	10.9	14.8	18.6	26	29	24	34	45.5	57	60	70	64	70	64	29	24	
0.952 ... 1.14	3.37 ... 3.54	0.368 (0.448)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	60	50	37.5	25	15	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.3	2.95	4.25	6.1	7.3	9.6	6.8	11.1	14.4	15.1	19.5	24.5	31.5	40	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.85	4	5.1	7.4	8.6	10.9	9.7	13.2	16.7	17.8	22	28	36	40	18	15	
			M_{2max}	Nm	10.1	13.6	17.2	24	27.5	24	31	42	52	56	70	64	70	64	29	24	

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Planetary gearbox data																	
Gearbox type:		NLCW060, 1-stage						NLCW060, 2-stage									
1. Order code		C26						C27									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18	15
	$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29	24
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.406	0.275	0.253	0.234	0.23	0.225	0.355	0.35	0.234	0.242	0.233	0.231	0.223	0.222	0.222	0.22
	$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLCW060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW060 1 and 2-stage (continued)																				
0.945 ... 1.14	3.46 ... 3.64	0.368 (0.448)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	75	75	60	50	30	1FT2104-4AK..-2..0-Z
			M_{2N}	Nm	2.5	3.1	4.6	6.6	7	9.6	7.1	10.6	13.9	14	18.5	25	26.5	34.5	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.8	3.95	5.1	7.4	8.5	10.8	9.7	13.1	16.6	17.7	22	28	36	40	18	15	
			M_{2max}	Nm	10.3	14	17.6	24.5	28.5	24	32	43	54	57	70	64	70	64	29	24	
2.03 ... 2.22	7 ... 7.15	0.578 (0.668)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2104-5AF..-2..0-Z
			M_{2N}	Nm	4.45	6.6	7.5	10.5	13.6	15	14.9	19.4	25.5	26	35	40	44	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.1	8.3	10.5	15	17.2	15	19.4	26	32.5	35	43.5	40	44	40	18	–	
			M_{2max}	Nm	20.5	28	35	40	29	24	63	70	70	70	70	64	70	64	29	–	
2.02 ... 2.2	7.09 ... 7.24	0.578 (0.668)	n_{2N}	r/min	375	300	300	250	200	200	150	150	125	125	100	75	75	60	50	–	1FT2104-5AK..-2..0-Z
			M_{2N}	Nm	4.35	6.5	7.4	10.3	13.4	14.5	14.6	16.1	21	20.5	27	37.5	37.5	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6	8.2	10.4	14.9	17.1	15	19.3	25.5	32.5	34.5	43.5	40	44	40	18	–	
			M_{2max}	Nm	21	28.5	35.5	40	29	24	64	70	70	70	70	64	70	64	29	–	
2.77 ... 2.94	9.42 ... 9.55	0.778 (0.858)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	–	–	1FT2104-6AF..-2..0-Z
			M_{2N}	Nm	5.5	8.1	9.1	12.5	16.3	15	17.9	23	30.5	31	41.5	40	44	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.3	11.2	14.2	20	18	15	26	34.5	43.5	44	44	40	44	40	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW060 1 and 2-stage																				
0.335 ... 0.531	1.53 ... 1.72	0.2 (0.22)	n_{2N}	r/min	375	300	300	250	250	200	200	150	150	125	125	100	75	60	50	30	1FT2203-2AG..-2.A0-Z
			M_{2N}	Nm	0.56	1.06	1.36	2.1	2.3	3.25	2.55	3.8	4.35	5.2	5.5	7.4	10.4	13.4	15.6	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1	1.54	2.05	3.15	3.65	4.75	4.2	5.8	7.4	8	10.1	12.8	16.6	20.5	18	15	
			M_{2max}	Nm	4.55	6.3	8	11.4	13.2	16.6	14.9	20	25	27	33.5	42.5	54	64	29	24	
0.301 ... 0.497	1.53 ... 1.72	0.2 (0.22)	n_{2N}	r/min	300	300	250	250	200	200	150	150	125	125	100	75	60	50	37.5	30	1FT2203-2AK..-2..0-Z
			M_{2N}	Nm	0.55	0.83	1.27	1.67	2.25	2.55	2.6	3	4.05	4.05	5.4	7.6	10	12.3	17.1	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.9	1.4	1.91	2.9	3.4	4.4	3.9	5.4	6.9	7.4	9.4	11.9	15.5	19.5	18	15	
			M_{2max}	Nm	4.55	6.3	8	11.4	13.2	16.6	14.9	20	25	27	33.5	42.5	54	64	29	24	
0.947 ... 1.14	3.37 ... 3.54	0.35 (0.37)	n_{2N}	r/min	375	300	300	250	250	200	150	150	125	125	100	75	60	60	50	30	1FT2203-4AG..-2.A0-Z
			M_{2N}	Nm	2.25	3.5	4.15	6	6.3	8.7	8.4	9.4	12.6	12.5	16.7	23	30	30.5	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.8	3.95	5.1	7.4	8.5	10.8	9.7	13.1	16.6	17.7	22	28	36	40	18	15	
			M_{2max}	Nm	10.1	13.6	17.2	24	27.5	24	31	42	52	56	70	64	70	64	29	24	
0.907 ... 1.1	3.37 ... 3.54	0.35 (0.37)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	75	60	50	37.5	30	1FT2203-4AK..-2..0-Z
			M_{2N}	Nm	2.1	2.65	3.75	5.5	5.9	8.3	6.4	8.4	11.4	11.5	15.9	16.6	21.5	26.5	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.7	3.8	4.9	7.1	8.2	10.4	9.3	12.6	16	17.1	21.5	27	34.5	40	18	15	
			M_{2max}	Nm	10.1	13.6	17.2	24	27.5	24	31	42	52	56	70	64	70	64	29	24	
1.99 ... 2.18	6.61 ... 6.76	1.248 (1.328)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	–	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	4.25	6.4	7.1	9.8	12.9	15	14.3	18.5	24	24.5	33.5	40	44	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.9	8.1	10.3	14.7	16.9	15	19.1	25.5	32	34	43	40	44	40	18	–	
			M_{2max}	Nm	19.8	26.5	33	40	29	24	60	70	70	70	70	64	70	64	29	–	
2.01 ... 2.19	6.61 ... 6.76	1.248 (1.328)	n_{2N}	r/min	375	300	300	250	200	200	150	125	125	100	100	75	60	60	50	–	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	4.35	6.5	7.3	10	13.2	13.9	14.5	18.8	20	25	25.5	36	44	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6	8.2	10.4	14.8	17	15	19.2	25.5	32	34.5	43	40	44	40	18	–	
			M_{2max}	Nm	19.8	26.5	33	40	29	24	60	70	70	70	70	64	70	64	29	–	

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Planetary gearbox data																
Gearbox type:		NLCW060, 1-stage						NLCW060, 2-stage								
1. Order code		C26						C27								
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.406	0.275	0.253	0.234	0.23	0.225	0.355	0.35	0.234	0.242	0.233	0.231	0.223	0.222	0.222	0.22
$\varphi_{2,G}$	'	16						18									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²
2.76 ... 2.93	8.93 ... 9.07	1.628 (1.708)

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW060 1 and 2-stage (continued)

n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	–	–	**1FT2204-6AF..-2..0-Z**	
M_{2N}	Nm	5.7	8.5	11.2	15.8	16.7	15	18.5	23.5	31.5	31.5	43	40	44	40	–	–	■■■ + ■■■	+ . . .
$M_{2,0}$	Nm	8.2	11.2	14.1	20	18	15	25.5	34.5	43.5	44	44	40	44	40	–	–		
M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	–		

Planetary gearbox data

Gearbox type:		**NLCW060, 1-stage**						**NLCW060, 2-stage**									
1. Order code		**C26**						**C27**									
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.406	0.275	0.253	0.234	0.23	0.225	0.355	0.35	0.234	0.242	0.233	0.231	0.223	0.222	0.222	0.22
$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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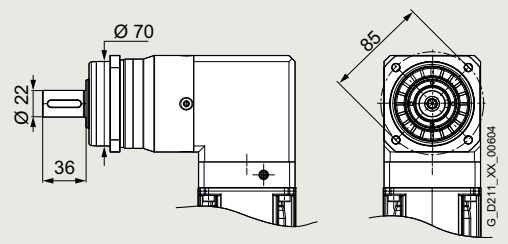
Gearbox type NLCW080

Selection and ordering data

NLCW080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5500 N
Average axial force for 20000 h	$F_{A,eq}$	6400 N
Average radial force for 30000 h	$F_{R,eq}$	4800 N
Average axial force for 30000 h	$F_{A,eq}$	5700 N
Maximum radial force	$F_{R,max}$	5500 N
Maximum axial force	$F_{A,max}$	6400 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW080 1 and 2-stage																				
0.25 ... 0.475	1.53 ... 1.75	0.093 (0.112)	n_{2N}	r/min	–	200	200	200	200	150	150	125	100	100	100	75	60	50	37.5	25	**1FT2103-2AG..-0.A0-Z**
			M_{2N}	Nm	–	0.51	0.81	1.31	1.49	2.35	1.85	2.65	3.7	3.8	4.3	6.2	8.5	10.6	15	23.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	–	0.99	1.48	2.45	2.9	3.9	3.4	4.85	6.3	6.8	8.7	11.1	14.5	18.4	30	38	
			M_{2max}	Nm	–	6.1	7.8	11.4	13.1	16.7	14.9	20	25	27	34	43	55	69	80	61	
0.223 ... 0.447	1.53 ... 1.75	0.093 (0.112)	n_{2N}	r/min	–	200	200	200	200	150	150	125	100	100	75	75	60	50	30	20	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	–	0.495	0.8	1.3	1.49	2.35	1.83	2.65	3.65	3.8	5.4	6.1	8.4	10.5	18.2	28.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	–	0.89	1.35	2.25	2.7	3.6	3.15	4.55	5.9	6.3	8.2	10.4	13.7	17.3	28	38	
			M_{2max}	Nm	–	6.1	7.8	11.4	13.1	16.7	14.9	20	25	27	34	43	55	69	80	61	
0.769 ... 1.07	3.49 ... 3.76	0.139 (0.158)	n_{2N}	r/min	250	250	250	200	200	150	150	125	100	100	75	60	50	37.5	30	25	**1FT2103-4AG..-0.A0-Z**
			M_{2N}	Nm	1.88	2.5	3	4.75	5	7.6	5.9	7.8	10.5	10.6	15.3	19.9	25	34	45	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.3	3.35	4.45	6.6	7.7	9.8	8.7	12	15.2	16.3	20.5	26	33.5	42	50	38	
			M_{2max}	Nm	10.4	14.2	18	25.5	29	36.5	33	44.5	55	59	74	93	120	150	80	61	
0.695 ... 0.975	3.49 ... 3.76	0.139 (0.158)	n_{2N}	r/min	300	250	250	200	200	150	150	100	100	100	75	60	50	37.5	30	25	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	1.27	2.1	2.55	4.15	4.3	6.6	5.1	8.4	9.2	9.2	13.5	17.6	22.5	30	40	37	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.05	3.05	4.05	6.1	7.1	9.1	7.9	10.9	13.8	14.8	18.7	23.5	30.5	38	50	38	
			M_{2max}	Nm	10.4	14.2	18	25.5	29	36.5	33	44.5	55	59	74	93	120	150	80	61	
0.782 ... 1.08	3.2 ... 3.48	0.35 (0.43)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	1.62	2.7	3.25	4.9	6.4	8.6	7.4	10	13	13.6	18	22.5	29.5	37.5	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.3	3.4	4.5	6.7	7.8	9.9	8.9	12.1	15.4	16.5	20.5	26	34	42.5	50	38	
			M_{2max}	Nm	9.5	13	16.5	23.5	27	34	30.5	41	51	54	68	86	110	138	80	61	
0.776 ... 1.07	3.3 ... 3.57	0.35 (0.43)	n_{2N}	r/min	375	300	250	250	200	200	150	125	100	100	100	75	60	50	37.5	30	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	1.77	3.05	4.15	5.1	7.1	7.5	8.2	11	14.2	14.9	15.6	22.5	30	37	46.5	32.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.3	3.4	4.45	6.6	7.7	9.9	8.8	12	15.3	16.4	20.5	26	33.5	42	50	38	
			M_{2max}	Nm	9.8	13.4	17	24	27.5	35	31	42	52	56	70	88	113	142	80	61	
1.87 ... 2.16	6.83 ... 7.08	0.56 (0.65)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	4.9	7	8.1	12	12.5	18	14.8	19.1	25	25	35	45	57	76	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	5.5	7.7	9.9	14.2	16.4	20.5	18.6	25	31.5	33.5	42	53	68	85	50	38	
			M_{2max}	Nm	20	27.5	34.5	48.5	56	61	63	84	105	112	141	176	192	176	80	61	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NLCW080, 1-stage						NLCW080, 2-stage								
1. Order code			C36						C37								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	200
	$J_{1.G}$	kg cm²	1.394	1.089	1.016	0.951	0.937	0.921	1.246	1.218	1.21	1.001	0.959	0.956	0.918	0.917	0.917	0.906
	$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLCW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW080 1 and 2-stage (continued)																				
1.85 ... 2.14	6.93 ... 7.17	0.56 (0.65)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	60	50	37.5	30	1FT2104-5AK..-2..0-Z
			M_{2N}	Nm	4.8	6.9	7.9	11.7	12.3	17.7	14.5	18.7	24.5	24.5	34.5	44.5	47	56	50	35.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.5	7.7	9.8	14.1	16.3	20.5	18.4	24.5	31	33.5	42	52	67	85	50	38	
			M_{2max}	Nm	20.5	27.5	35	49.5	56	61	64	85	107	114	143	176	192	176	80	61	
2.6 ... 2.88	9.25 ... 9.48	0.76 (0.84)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2104-6AF..-2..0-Z
			M_{2N}	Nm	6.2	8.8	10	14.6	15.2	21.5	18	23	30	30.5	42.5	54	68	91	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.4	22	28	25	33.5	42.5	45	57	71	91	110	50	38	
			M_{2max}	Nm	27.5	37	46.5	65	75	61	84	113	141	151	189	176	192	176	80	61	
4.3 ... 4.57	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	300	250	250	200	150	150	150	100	100	75	75	60	50	37.5	25	–	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	10.9	15	16.4	23	31.5	34	28.5	44.5	46	61	65	83	104	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.9	17.5	22	31	35.5	38	40	54	67	72	90	110	120	110	50	–	
			M_{2max}	Nm	42	56	70	99	80	61	128	171	176	192	192	176	192	176	80	–	
4.33 ... 4.6	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	300	250	200	200	150	125	125	100	75	75	60	50	50	37.5	37.5	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10.2	14	18.9	20.5	29.5	37	31.5	41.5	56	57	73	90	92	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.9	17.6	22	31	36	38	40.5	54	68	73	91	110	120	110	50	–	
			M_{2max}	Nm	42	56	70	99	80	61	128	171	176	192	192	176	192	176	80	–	
7.09 ... 7.28	22.8 ... 23	2.65 (3.5)	n_{2N}	r/min	300	250	200	150	150	150	125	100	75	75	60	60	50	37.5	–	–	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	14.7	19.9	26.5	39	41	38	44	57	77	78	101	100	120	110	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21	28.5	35.5	50	50	38	64	86	108	115	120	110	120	110	–	–	
			M_{2max}	Nm	64	85	107	104	80	61	205	192	176	192	192	176	192	176	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW080 1 and 2-stage																				
0.244 ... 0.469	1.44 ... 1.65	0.2 (0.22)	n_{2N}	r/min	–	200	200	200	150	150	150	125	100	100	75	75	60	50	30	20	1FT2203-2AG..-0.A0-Z
			M_{2N}	Nm	–	0.71	1.03	1.53	2.25	2.7	2.1	3	4.15	4.2	6.2	6.6	9.1	11.3	19.9	31	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	0.97	1.45	2.4	2.85	3.85	3.35	4.8	6.2	6.7	8.6	11	14.3	18.2	29.5	38	
			M_{2max}	Nm	–	5.7	7.4	10.7	12.4	15.7	14	19	24	25.5	32	40.5	52	65	80	61	
0.209 ... 0.434	1.44 ... 1.65	0.2 (0.22)	n_{2N}	r/min	–	200	150	150	150	125	125	100	100	75	75	60	50	37.5	25	20	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	–	0.52	1.04	1.61	1.83	2.55	2	3	3.25	4.45	5	6.7	8.7	12	19.1	24	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	0.83	1.28	2.15	2.6	3.5	3.05	4.35	5.7	6.1	7.9	10.1	13.2	16.8	27	38	
			M_{2max}	Nm	–	5.7	7.4	10.7	12.4	15.7	14	19	24	25.5	32	40.5	52	65	80	61	
0.777 ... 1.08	3.2 ... 3.48	0.35 (0.37)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	75	60	50	37.5	25	1FT2203-4AG..-0.A0-Z
			M_{2N}	Nm	2.05	2.8	4	6	6.7	9.1	7.8	10.4	13.6	14.1	18.9	20.5	27.5	33.5	40.5	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.3	3.4	4.5	6.6	7.7	9.9	8.8	12.1	15.3	16.4	20.5	26	33.5	42.5	50	38	
			M_{2max}	Nm	9.5	13	16.5	23.5	27	34	30.5	41	51	54	68	86	110	138	80	61	
0.738 ... 1.04	3.2 ... 3.48	0.35 (0.37)	n_{2N}	r/min	300	250	250	200	200	150	150	100	100	100	75	60	50	37.5	30	25	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	1.65	2.55	3.05	4.8	4.85	7.5	5.9	9.5	10.5	10.3	15.4	19.8	25	33	43	30.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.2	3.25	4.3	6.4	7.4	9.5	8.5	11.6	14.7	15.8	20	25	32.5	40.5	50	38	
			M_{2max}	Nm	9.5	13	16.5	23.5	27	34	30.5	41	51	54	68	86	110	138	80	61	
1.83 ... 2.11	6.44 ... 6.69	1.23 (1.31)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	4.75	6.8	7.8	11.4	11.8	17.3	14.1	18.1	23.5	23.5	33.5	43	54	73	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.4	7.6	9.7	14	16.1	20	18.2	24.5	30.5	33	41.5	52	67	84	50	38	
			M_{2max}	Nm	19.3	26	32.5	46	52	61	59	79	99	106	133	166	192	176	80	61	

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Planetary gearbox data																
Gearbox type:		NLCW080, 1-stage						NLCW080, 2-stage								
1. Order code		C36						C37								
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50	38
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	1.394	1.089	1.016	0.951	0.937	0.921	1.246	1.218	1.21	1.001	0.959	0.956	0.918	0.917	0.917	0.906
$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

3 4

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Gearbox type NLCW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW080 1 and 2-stage (continued)																					
1.84 ... 2.13	6.44 ... 6.69	1.23 (1.31)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	4.9	7	8	11.7	12.1	17.6	14.5	18.5	24	24	34.5	44	55	74	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.5	7.6	9.7	14	16.2	20	18.3	24.5	31	33	41.5	52	67	84	50	38	
			M_{2max}	Nm	19.3	26	32.5	46	52	61	59	79	99	106	133	166	192	176	80	61	
2.59 ... 2.87	8.77 ... 9	1.61 (1.69)	n_{2N}	r/min	300	250	250	200	150	150	150	125	100	100	75	60	50	37.5	25	15	1FT2204-6AF..-2..0-Z
			M_{2N}	Nm	6.7	9.4	10.6	15.3	20.5	22.5	18.9	23.5	31	31	44.5	56	71	95	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.7	10.6	13.5	19.3	22	27.5	25	33.5	42	45	56	71	91	110	50	38	
			M_{2max}	Nm	26	35	44	62	71	61	80	107	134	143	179	176	192	176	80	61	
2.6 ... 2.85	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.8	8.2	11	16	18.7	23.5	21	25.5	34.5	35.5	47.5	55	75	97	49.5	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.4	22	28	24.5	33	42	44.5	56	70	90	110	50	38	
			M_{2max}	Nm	30	40	50	71	80	61	91	122	153	163	192	176	192	176	80	61	
2.64 ... 2.89	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	6.5	7.9	10.9	15.6	15.9	23	19.3	24	31.5	31.5	45	57	72	95	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	10.8	13.8	19.7	22.5	28.5	25	33.5	42.5	45.5	57	71	92	110	50	38	
			M_{2max}	Nm	30	40	50	71	80	61	91	122	153	163	192	176	192	176	80	61	
2.61 ... 2.86	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	300	250	250	200	150	150	125	100	100	75	75	60	50	37.5	37.5	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	6.2	8.7	9.6	13.9	18.6	20.5	20.5	27	28	37.5	40	51	64	87	44	37.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.4	22	28	24.5	33.5	42	45	56	70	90	110	50	37.5	
			M_{2max}	Nm	30	40	50	71	80	61	91	122	153	163	192	176	192	176	80	61	
4.73 ... 4.94	17 ... 17.2	5.1 (6)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	50	37.5	25	–	1FT2205-4AF..-0..0-Z
			M_{2N}	Nm	9.9	13.6	18.5	27	29	36.5	30.5	40.5	55	56	72	88	90	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	19.2	24	34	39	38	43.5	58	73	78	98	110	120	110	50	–	
			M_{2max}	Nm	50	68	85	104	80	61	154	192	176	192	192	176	192	176	80	–	

Planetary gearbox data																	
Gearbox type:			NLCW080, 1-stage						NLCW080, 2-stage								
1. Order code			C36						C37								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	200
	$J_{1,G}$	kg cm²	1.394	1.089	1.016	0.951	0.937	0.921	1.246	1.218	1.21	1.001	0.959	0.956	0.918	0.917	0.917	0.906
	$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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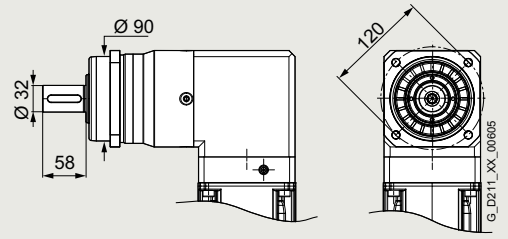
Selection and ordering data

NLCW120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	6000 N
Average axial force for 20000 h	$F_{A,eq}$	8000 N
Average radial force for 30000 h	$F_{R,eq}$	5400 N
Average axial force for 30000 h	$F_{A,eq}$	7000 N
Maximum radial force	$F_{R,max}$	6000 N
Maximum axial force	$F_{A,max}$	8000 N

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW120 1 and 2-stage																					
0.159 ... 0.402	1.44 ... 1.68	0.093 (0.112)	n_{2N}	r/min	–	–	150	150	150	125	100	75	75	75	60	50	50	37.5	25	20	1FT2103-2AG..-0.A0-Z
			M_{2N}	Nm	–	–	0.39	1.01	1.23	1.92	1.45	2.45	2.9	3	4.55	5.9	7.1	9.9	16	20.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	–	0.79	1.63	2	2.85	2.45	3.7	4.9	5.3	7	9.1	12	15.3	25	40	
			M_{2max}	Nm	–	–	7.1	10.5	12.2	15.6	13.9	19	24	25.5	32.5	40.5	52	66	106	152	
0.132 ... 0.375	1.44 ... 1.68	0.093 (0.112)	n_{2N}	r/min	–	–	150	150	150	150	100	100	75	75	75	60	50	37.5	30	20	1FT2103-2AH..-0..0-Z
			M_{2N}	Nm	–	–	0.255	0.85	1.12	1.54	1.35	1.77	2.85	3	3.6	4.95	7	9.8	13.2	21	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	–	0.65	1.43	1.82	2.6	2.2	3.35	4.5	4.9	6.4	8.4	11.1	14.2	23.5	37	
			M_{2max}	Nm	–	–	7.1	10.5	12.2	15.6	13.9	19	24	25.5	32.5	40.5	52	66	106	152	
0.584 ... 0.995	3.3 ... 3.69	0.139 (0.158)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	75	60	50	30	20	1FT2103-4AG..-0.A0-Z
			M_{2N}	Nm	1.25	2.2	2.95	4.6	5.9	6.8	6.3	8.3	11.3	11.4	16.3	16.8	24	29	51	79	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.75	2.75	3.75	5.7	6.8	8.8	7.8	10.8	13.8	14.8	18.9	23.5	31	39	63	95	
			M_{2max}	Nm	9.9	13.6	17.3	24.5	28	35.5	32	43	54	58	73	91	117	147	192	152	
0.569 ... 0.981	3.3 ... 3.69	0.139 (0.158)	n_{2N}	r/min	300	300	300	250	250	200	150	125	100	100	75	75	60	50	30	20	1FT2103-4AH..-0..0-Z
			M_{2N}	Nm	0.98	1.56	2.1	3.45	3.75	5.4	4.9	6.6	8.8	9.3	13	14.6	20	25	42	66	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.7	2.7	3.7	5.6	6.6	8.6	7.6	10.6	13.6	14.6	18.6	23.5	30.5	38.5	62	95	
			M_{2max}	Nm	9.9	13.6	17.3	24.5	28	35.5	32	43	54	58	73	91	117	147	192	152	
0.597 ... 1.01	3.01 ... 3.41	0.35 (0.43)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2104-4AF..-0..0-Z
			M_{2N}	Nm	1.27	1.87	2.95	4.7	6	7.9	6.5	8.8	11.5	12.1	16.7	21	28	35.5	57	91	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.79	2.8	3.8	5.8	6.9	8.9	7.9	11	14	15	19.1	24	31	39.5	64	95	
			M_{2max}	Nm	9	12.4	15.8	22.5	26	33	29.5	39.5	50	53	67	84	108	135	192	152	
0.59 ... 1	3.11 ... 3.5	0.35 (0.43)	n_{2N}	r/min	375	375	375	300	250	200	200	150	125	125	100	75	75	60	37.5	25	1FT2104-4AK..-0..0-Z
			M_{2N}	Nm	1.31	2.1	2.5	4.6	5.8	7.6	5.2	8.7	11.1	10.9	16	20.5	22	29.5	51	77	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.77	2.75	3.8	5.8	6.8	8.8	7.8	10.9	13.9	14.9	19	24	31	39	63	95	
			M_{2max}	Nm	9.3	12.8	16.3	23	26.5	33.5	30	41	51	55	69	86	111	139	192	152	
1.68 ... 2.08	6.64 ... 7.01	0.56 (0.65)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2104-5AF..-0..0-Z
			M_{2N}	Nm	4.55	5.6	8.5	12.4	14.6	18.6	16.4	21.5	28	29	38	48	62	78	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5	7.1	9.2	13.4	15.5	19.7	17.6	23.5	30	32	40.5	51	65	82	120	95	
			M_{2max}	Nm	19.9	26.5	33.5	48	55	69	62	83	104	111	139	174	220	275	192	152	

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Planetary gearbox data																	
Gearbox type:		NLCW120, 1-stage						NLCW120, 2-stage									
1. Order code		C46						C47									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLCW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW120 1 and 2-stage (continued)																					
1.67 ... 2.07	6.74 ... 7.1	0.56 (0.65)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	75	75	60	50	30	25	1FT2104-5AK..-0..0-Z
			M_{2N}	Nm	4.5	5.4	8.4	12.2	12.3	17.3	16.2	21	27.5	28.5	37.5	41	56	68	118	95	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	4.95	7	9.1	13.3	15.4	19.6	17.5	23.5	29.5	32	40	50	65	82	120	95	
			M_{2max}	Nm	20	27	34	48.5	55	70	63	84	105	112	141	176	225	280	192	152	
2.42 ... 2.81	9.06 ... 9.41	0.76 (0.84)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2104-6AF..-0..0-Z
			M_{2N}	Nm	6.5	9.5	11	15.5	20	26	21	26.5	35	35.5	51	64	83	107	120	95	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	7.2	10	12.9	18.5	21	27	24	32.5	41	44	55	69	89	111	120	95	
			M_{2max}	Nm	27	36.5	46	64	74	93	83	112	140	149	187	230	300	368	192	152	
4.11 ... 4.5	13.9 ... 14.2	1.71 (2.55)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	11	15.2	18.4	24.5	31	40	34.5	43	56	56	78	99	126	161	120	95	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	12.3	16.8	21	30	34.5	44	39.5	53	66	71	89	111	143	179	120	95	
			M_{2max}	Nm	41.5	55	70	98	112	141	127	169	210	225	280	350	416	368	192	152	
4.15 ... 4.53	13.9 ... 14.2	1.71 (2.55)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	50	37.5	37.5	25	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10.5	14.6	16.9	22	29.5	29	32	39.5	51	51	75	94	120	154	97	95	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	12.4	17	21.5	30.5	35	44	39.5	53	67	71	89	112	144	180	120	95	
			M_{2max}	Nm	41.5	55	70	98	112	141	127	169	210	225	280	350	416	368	192	152	
7.03 ... 7.39	22.6 ... 22.9	2.65 (3.5)	n_{2N}	r/min	375	300	250	200	200	150	125	100	100	75	75	60	50	37.5	25	15	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	16	22.5	30	42	42.5	61	54	71	71	98	103	131	164	220	120	95	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	21	28.5	35.5	50	58	73	65	87	110	117	147	184	235	230	120	95	
			M_{2max}	Nm	67	90	113	159	182	152	205	270	340	365	416	368	416	368	192	152	
7.48 ... 7.75	24.6 ... 24.8	4.6 (6.3)	n_{2N}	r/min	375	300	250	200	200	150	150	100	100	75	75	60	50	37.5	25	–	1FT2106-3AF..-0..0-Z
			M_{2N}	Nm	16.8	23.5	30.5	43	44	62	47	74	74	101	107	136	171	230	120	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	22	30	38	53	61	77	68	91	114	122	153	192	245	230	120	–	
			M_{2max}	Nm	73	98	123	172	192	152	220	295	368	395	416	368	416	368	192	–	
9.85 ... 10.1	31.3 ... 31.5	6 (7.6)	n_{2N}	r/min	375	300	250	200	200	150	125	100	75	75	60	50	50	37.5	25	–	1FT2106-4AF..-0..0-Z
			M_{2N}	Nm	20.5	29	37.5	52	51	74	69	89	120	123	158	193	194	230	120	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	29.5	39.5	49.5	70	80	95	89	119	149	159	199	230	260	230	120	–	
			M_{2max}	Nm	93	125	157	216	192	152	280	375	368	416	416	368	416	368	192	–	
14.1 ... 14.4	43.4 ... 43.6	8.7 (10.4)	n_{2N}	r/min	300	250	250	200	150	150	125	100	75	75	60	50	50	37.5	–	–	1FT2106-6AF..-0..0-Z
			M_{2N}	Nm	33.5	44.5	46.5	63	88	90	85	109	148	151	195	225	225	230	–	–	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	42	56	71	100	114	95	127	169	210	225	260	230	260	230	–	–	
			M_{2max}	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW120 1 and 2-stage																					
0.153 ... 0.396	1.34 ... 1.58	0.2 (0.22)	n_{2N}	r/min	–	–	150	200	200	150	125	100	75	75	75	60	50	37.5	25	20	1FT2203-2AG..-0.A0-Z
			M_{2N}	Nm	–	–	0.35	0.84	1.03	1.79	1.35	2.15	3.15	3.4	4.4	6	8.4	11.1	18.4	23.5	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	–	–	0.76	1.58	1.99	2.8	2.4	3.6	4.85	5.2	6.9	8.9	11.8	15	24.5	39.5	
			M_{2max}	Nm	–	–	6.7	9.9	11.5	14.7	13.1	17.8	22.5	24	30.5	38.5	49.5	62	100	152	
0.192 ... 0.362	1.42 ... 1.58	0.2 (0.22)	n_{2N}	r/min	–	–	–	150	150	150	125	100	75	75	60	50	50	37.5	25	15	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	–	–	–	0.76	1.02	1.47	1.01	1.73	2.7	2.95	4.3	5.6	6.6	9.5	15.2	27	■■■ + ■■■ + ...
			$M_{2,0}$	Nm	–	–	–	1.34	1.72	2.45	2.05	3.2	4.3	4.7	6.2	8	10.7	13.7	22.5	36	
			M_{2max}	Nm	–	–	–	9.9	11.5	14.7	13.1	17.8	22.5	24	30.5	38.5	49.5	62	100	152	

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Planetary gearbox data																	
Gearbox type:		NLCW120, 1-stage						NLCW120, 2-stage									
1. Order code		C46						C47									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLCW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW120 1 and 2-stage (continued)																				
0.592 ... 1	3.01 ... 3.41	0.35 (0.37)	n_{2N}	r/min	375	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	20	1FT2203-4AG..-0.A0-Z
			M_{2N}	Nm	1.31	2.1	3.1	4.15	5.7	7.6	6.6	8	10.2	12.7	15.3	20.5	27	34.5	46	88	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.77	2.75	3.8	5.8	6.8	8.9	7.8	10.9	13.9	15	19	24	31	39	63	95	
			M_{2max}	Nm	9	12.4	15.8	22.5	26	33	29.5	39.5	50	53	67	84	108	135	192	152	
0.552 ... 0.964	3.01 ... 3.41	0.35 (0.37)	n_{2N}	r/min	375	300	300	250	250	200	150	125	100	100	75	75	60	50	30	20	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	1.07	1.99	2.55	4.1	4.45	6.2	5.7	7.7	10.2	10.7	15	16.5	22.5	28	47.5	74	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.65	2.6	3.6	5.5	6.5	8.5	7.5	10.4	13.3	14.3	18.2	23	30	37.5	61	95	
			M_{2max}	Nm	9	12.4	15.8	22.5	26	33	29.5	39.5	50	53	67	84	108	135	192	152	
1.64 ... 2.04	6.26 ... 6.62	1.23 (1.31)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2204-5AF..-0..0-Z
			M_{2N}	Nm	4.4	5.2	8.1	11.7	14.2	18.2	15.7	20.5	26.5	27.5	37	46.5	60	76	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	4.9	6.9	9	13.1	15.2	19.3	17.2	23	29.5	31.5	39.5	50	64	80	120	95	
			M_{2max}	Nm	18.7	25	32	45	52	65	58	78	98	105	131	164	210	260	192	152	
1.65 ... 2.06	6.26 ... 6.62	1.23 (1.31)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	75	75	60	50	30	25	1FT2204-5AK..-0..0-Z
			M_{2N}	Nm	4.45	5.4	8.3	12.1	12	17	16	21	27.5	28.5	37.5	40.5	55	66	116	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	4.95	7	9.1	13.2	15.3	19.4	17.4	23.5	29.5	31.5	40	50	65	81	120	95	
			M_{2max}	Nm	18.7	25	32	45	52	65	58	78	98	105	131	164	210	260	192	152	
2.4 ... 2.8	8.58 ... 8.93	1.61 (1.69)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2204-6AF..-0..0-Z
			M_{2N}	Nm	6.7	7.6	11.9	16.4	20	25.5	22.5	28.5	37.5	37.5	52	65	85	106	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.2	10	12.8	18.4	21	26.5	24	32.5	40.5	43.5	55	69	88	111	120	95	
			M_{2max}	Nm	25.5	34.5	43.5	61	70	88	79	106	133	142	177	220	285	355	192	152	
2.66 ... 2.99	9.84 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.6	8.6	11.4	16.7	19.6	25	21.5	27	35	37	49.5	57	78	102	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	11	14.1	20	23	29.5	25.5	34.5	43.5	46.5	58	73	95	119	120	95	
			M_{2max}	Nm	29.5	39.5	49.5	70	80	101	90	121	151	162	200	250	325	368	192	152	
2.69 ... 3.03	9.84 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	6	7.6	10.7	15.3	18.5	24	20	27	34.5	36	47.5	60	77	99	119	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8	11.1	14.2	20.5	23.5	29.5	26	35	44	47	59	74	96	120	120	95	
			M_{2max}	Nm	29.5	39.5	49.5	70	80	101	90	121	151	162	200	250	325	368	192	152	
2.63 ... 2.97	9.84 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	60	50	30	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.8	8.3	10.3	14.3	17.7	19.4	19.8	25.5	33	33.5	45.5	57	62	74	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.9	13.9	20	23	29	25.5	34.5	43.5	46.5	58	73	94	118	120	94	
			M_{2max}	Nm	29.5	39.5	49.5	70	80	101	90	121	151	162	200	250	325	368	192	152	
4.88 ... 5.17	16.8 ... 17.1	5.1 (6)	n_{2N}	r/min	375	300	250	200	200	150	150	100	100	75	75	60	50	37.5	25	15	1FT2205-4AF..-0..0-Z
			M_{2N}	Nm	10.7	15.6	20	29	30	41.5	31.5	49.5	50	68	73	93	118	159	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.6	19.9	25	35.5	41	51	45.5	61	76	81	102	128	164	205	120	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
4.89 ... 5.27	16.8 ... 17.1	7.8 (9.4)	n_{2N}	r/min	300	250	200	150	125	100	100	100	75	75	50	50	37.5	25	20	10	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	12.7	17.3	22	31.5	37	46.5	41	45.5	63	63	92	96	137	187	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.6	19.9	25	35.5	41	51	46	62	78	83	104	130	168	210	120	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	

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Planetary gearbox data																	
Gearbox type:			NLCW120, 1-stage						NLCW120, 2-stage								
1. Order code			C46						C47								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLCW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW120 1 and 2-stage (continued)																					
5.04 ... 5.33	16.8 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	300	250	200	150	150	125	100	100	75	60	50	37.5	25	15	1FT2206-2AF..-0..0-Z
			M_{2N}	Nm	11.8	16.3	19.5	25	32.5	42	37	45.5	59	59	83	104	133	170	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.1	20.5	25.5	36.5	42	53	47	63	79	84	105	132	170	210	120	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
4.87 ... 5.17	16.8 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	200	150	150	100	100	75	75	60	50	37.5	30	20	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	10.9	15.7	20	28.5	29.5	41	31.5	50	49.5	67	72	93	116	158	119	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.6	19.8	25	35.5	40.5	51	45.5	61	76	81	102	128	165	205	119	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
7.62 ... 7.89	25.5 ... 25.8	11.5 (13.1)	n_{2N}	r/min	250	200	150	100	100	75	100	75	50	50	37.5	30	25	20	12.5	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	19.5	26	34	49	55	70	54	73	103	108	138	173	220	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38.5	54	62	78	69	93	116	124	156	195	250	230	120	–	
			M_{2max}	Nm	76	102	128	179	192	152	230	305	368	410	416	368	416	368	192	–	
7.49 ... 7.76	25.5 ... 25.8	11.5 (13.1)	n_{2N}	r/min	300	300	250	200	150	150	125	100	75	75	60	50	37.5	37.5	25	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	18.4	20.5	27.5	38	50	55	50	65	88	90	117	143	196	198	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	30	38	53	61	77	68	91	114	122	153	192	245	230	120	–	
			M_{2max}	Nm	76	102	128	179	192	152	230	305	368	410	416	368	416	368	192	–	
10.5 ... 10.8	36.2 ... 36.3	15.1 (16.8)	n_{2N}	r/min	250	200	200	150	125	100	100	75	60	60	50	37.5	30	25	20	–	1FT2206-4AC..-0..0-Z
			M_{2N}	Nm	24	33	35.5	51	63	81	63	86	110	112	138	184	235	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	42	53	74	85	95	96	128	161	172	215	230	260	230	120	–	
			M_{2max}	Nm	108	144	181	216	192	152	325	416	368	416	416	368	416	368	192	–	
10.3 ... 10.6	34.2 ... 34.4	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	125	100	75	75	60	50	50	37.5	25	–	1FT2206-4AF..-0..0-Z
			M_{2N}	Nm	21	29.5	38.5	52	70	75	70	91	122	125	161	196	199	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	41.5	52	73	84	95	93	124	156	166	205	230	260	230	120	–	
			M_{2max}	Nm	102	137	171	216	192	152	305	410	368	416	416	368	416	368	192	–	
9.81 ... 10.1	34.2 ... 34.4	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	37.5	37.5	30	–	1FT2206-4AH..-0..0-Z
			M_{2N}	Nm	22.5	30	40	57	60	75	58	74	102	103	134	161	220	215	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29	39.5	49.5	70	80	95	89	119	149	159	199	230	260	230	120	–	
			M_{2max}	Nm	102	137	171	216	192	152	305	410	368	416	416	368	416	368	192	–	

Planetary gearbox data																	
Gearbox type:		**NLCW120, 1-stage**						**NLCW120, 2-stage**									
1. Order code		**C46**						**C47**									
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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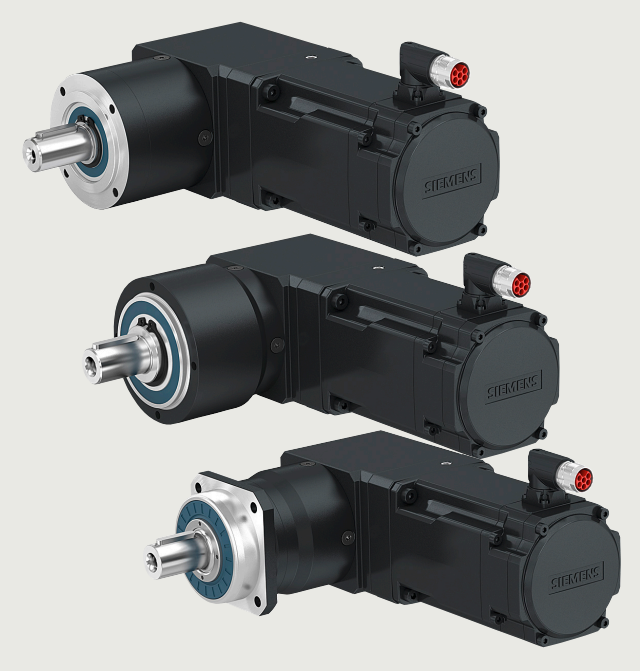
Selection and ordering data



SIMOTICS S-1FT2 servo planetary geared motors with economy angular gearbox

The following pages show the permissible combinations of **servo motors for 400 V 3AC** converters

and the economy angled planetary gearboxes **NRBW, NRKW and NLCW** geared motors.

They show the most important component data of the motor and gearbox as well as the rating of the system geared motor.

The rated operating points of the geared motors are adapted to the converter supply voltage.

More information on selection is provided in the section "Information on Selection".

Right-angle gearboxes

As a result of the preliminary bevel gear stage, NRB, NRK and NLC planetary gearboxes are also available as NRBW, NRKW or NLCW angled gearboxes.

The angled versions are ideal when space is restricted.

Due to the additional angle stage, the losses in the angled gearboxes are somewhat higher and the rated specifications are reduced in comparison to the corresponding coaxial version.

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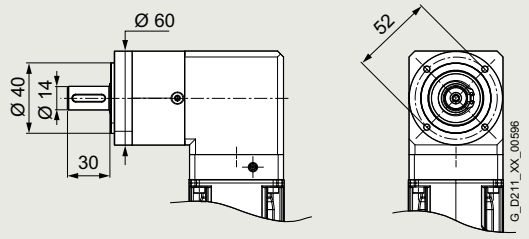
Gearbox type NRBW060

Selection and ordering data

NRBW060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	400 N
Average axial force for 20000 h	$F_{A,eq}$	500 N
Average radial force for 30000 h	$F_{R,eq}$	340 N
Average axial force for 30000 h	$F_{A,eq}$	450 N
Maximum radial force	$F_{R,max}$	700 N
Maximum axial force	$F_{A,max}$	800 N

3
4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW060 1 and 2-stage																				
0.498	1.77	0.093	n_{2N}	r/min	750	600	600	375	375	300	300	250	200	200	150	125	100	75	50	**1FT2103-2AH..-2..0-Z**
...	...	(0.112)	M_{2N}	Nm	1.02	1.38	1.48	2.4	2.55	3.25	3	3.75	4.95	4.95	6.6	8.1	10.3	13.5	18	■■■ + ■■■ + . . .
0.51	1.82		$M_{2.0}$	Nm	1.49	2	2.5	3.5	4.05	5	4.55	6	7.6	8.1	10.1	12.7	16.3	20	18	
			M_{2max}	Nm	5.4	7.2	9	12.7	14.5	18.1	16.2	21.5	27	28.5	36	45	57	64	29	
0.983	3.74	0.139	n_{2N}	r/min	750	600	500	375	300	250	300	200	200	150	125	100	75	75	60	**1FT2103-4AH..-2..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.05	2.7	3.35	4.65	5.8	7.1	5.7	8.6	8.9	11.8	14.5	18.1	24	24.5	18	■■■ + ■■■ + . . .
0.993	3.85		$M_{2.0}$	Nm	2.95	3.9	4.9	6.9	7.9	9.9	8.9	11.9	14.8	15.8	19.8	24.5	31.5	39.5	18	
			M_{2max}	Nm	11.5	15.3	19.2	26.5	29	24	34	45.5	57	60	70	64	70	64	29	
1.12	3.46	0.368	n_{2N}	r/min	1000	750	600	375	375	300	300	250	200	200	150	125	100	75	50	**1FT2104-4AF..-2..0-Z**
...	...	(0.448)	M_{2N}	Nm	2.1	3.15	4.1	6.5	6.9	8.8	8.1	10	13.2	12.7	17.6	21	26.5	35.5	18	■■■ + ■■■ + . . .
1.15	3.56		$M_{2.0}$	Nm	3.4	4.55	5.7	8	9.1	11.4	10.2	13.6	17	18.2	22.5	28	36	40	18	
			M_{2max}	Nm	10.6	14.2	17.7	24.5	28	24	31.5	42	52	56	70	64	70	64	29	
1.11	3.55	0.368	n_{2N}	r/min	750	750	600	375	375	300	300	250	200	200	150	125	100	75	60	**1FT2104-4AK..-2..0-Z**
...	...	(0.448)	M_{2N}	Nm	3.05	3.3	4.3	7	7.2	9.1	8.7	10.3	13.7	13.2	18.3	21.5	27.5	37	18	■■■ + ■■■ + . . .
1.14	3.65		$M_{2.0}$	Nm	3.35	4.5	5.6	7.9	9.1	11.4	10.1	13.5	16.9	18	22.5	28	36	40	18	
			M_{2max}	Nm	10.9	14.6	18.2	25.5	29	24	32.5	43	54	57	70	64	70	64	29	
2.18	7	0.578	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	100	75	–	**1FT2104-5AF..-2..0-Z**
...	...	(0.668)	M_{2N}	Nm	4.8	6.2	7.6	10.3	13	15	15	18.8	25.5	25.5	30.5	38.5	35	40	–	■■■ + ■■■ + . . .
2.23	7.18		$M_{2.0}$	Nm	6.6	8.8	11.1	15.5	17.8	15	19.8	26	33	35	44	40	44	40	–	
			M_{2max}	Nm	21.5	28.5	35.5	40	29	24	63	70	70	70	70	64	70	64	–	
2.16	7.09	0.578	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	100	75	–	**1FT2104-5AK..-2..0-Z**
...	...	(0.668)	M_{2N}	Nm	4.75	6.1	7.5	10.2	12.9	15	14.8	18.6	25	25	30	38	35	40	–	■■■ + ■■■ + . . .
2.21	7.28		$M_{2.0}$	Nm	6.6	8.8	11	15.4	17.6	15	19.7	26	32.5	35	43.5	40	44	40	–	
			M_{2max}	Nm	21.5	29	36	40	29	24	64	70	70	70	70	64	70	64	–	
2.89	9.35	0.778	n_{2N}	r/min	750	600	500	375	300	300	250	200	150	150	125	100	100	75	–	**1FT2104-6AF..-2..0-Z**
...	...	(0.858)	M_{2N}	Nm	5.6	7.3	8.9	12	15.2	14.2	17.4	21.5	29.5	29	35	40	39	40	–	■■■ + ■■■ + . . .
2.96	9.6		$M_{2.0}$	Nm	8.8	11.8	14.7	20.5	18	15	26	35	43.5	44	44	40	44	40	–	
			M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	

Planetary gearbox data																
Gearbox type:			**NRBW060, 1-stage**						**NRBW060, 2-stage**							
1. Order code			**A26**						**A27**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80
	$J_{1,G}$	kg cm²	0.357	0.248	0.236	0.225	0.223	0.221	0.35	0.346	0.232	0.241	0.231	0.231	0.222	0.222	0.222
	$\varphi_{2,G}$	'	16						18								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW060 1 and 2-stage																			
0.489	1.68	0.2	n_{2N}	r/min	750	600	500	375	300	250	250	200	150	150	125	100	75	60	50	1FT2203-2AK..-2..0-Z
...	...	(0.22)	M_{2N}	Nm	0.89	1.19	1.47	2	2.55	3.1	2.95	3.8	5.2	5.2	6.4	8	10.7	13.5	15.1	■■■ + ■■■ + . . .
0.5	1.72		$M_{2,0}$	Nm	1.46	1.97	2.45	3.45	3.95	4.95	4.45	5.9	7.4	7.9	9.9	12.4	15.9	19.8	18	
			M_{2max}	Nm	5.1	6.8	8.6	12	13.7	17.2	15.3	20	25.5	27	34	42.5	54	64	29	
1.08	3.46	0.35	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	125	100	75	60	50	1FT2203-4AK..-2..0-Z
...	...	(0.37)	M_{2N}	Nm	2.1	3.35	3.35	5.8	6	7.2	7.1	8.9	12.2	12.3	14.9	18.6	25	31.5	18	■■■ + ■■■ + . . .
1.1	3.56		$M_{2,0}$	Nm	3.25	4.35	5.5	7.7	8.8	11	9.8	13.1	16.4	17.5	21.5	27	34.5	40	18	
			M_{2max}	Nm	10.6	14.2	17.7	24.5	28	24	31.5	42	52	56	70	64	70	64	29	
2.14	6.62	1.248	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	125	100	75	75	–	1FT2204-5AF..-2..0-Z
...	...	(1.328)	M_{2N}	Nm	4.4	6.9	6.9	11.9	12	14.4	14	17.3	23.5	23.5	28	35	44	40	–	■■■ + ■■■ + . . .
2.19	6.8		$M_{2,0}$	Nm	6.5	8.7	10.9	15.3	17.4	15	19.5	25.5	32	34.5	43	40	44	40	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	60	70	70	70	70	64	70	64	–	
2.15	6.62	1.248	n_{2N}	r/min	750	500	500	300	300	250	250	200	150	150	125	100	75	75	–	1FT2204-5AK..-2..0-Z
...	...	(1.328)	M_{2N}	Nm	4.5	7	7	12.1	12.2	14.6	14.2	17.6	24	24	28.5	35.5	44	40	–	■■■ + ■■■ + . . .
2.2	6.8		$M_{2,0}$	Nm	6.5	8.7	10.9	15.3	17.5	15	19.6	26	32.5	34.5	43.5	40	44	40	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	60	70	70	70	70	64	70	64	–	
2.88	8.88	1.628	n_{2N}	r/min	600	500	375	300	250	250	250	150	150	125	100	100	100	75	–	1FT2204-6AF..-2..0-Z
...	...	(1.708)	M_{2N}	Nm	7	8.8	11.7	15	17.8	15	17.2	28	29	34.5	43.5	40	33	40	–	■■■ + ■■■ + . . .
2.95	9.12		$M_{2,0}$	Nm	8.8	11.7	14.7	20.5	18	15	26	35	43.5	44	44	40	44	40	–	
			M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	

Planetary gearbox data																	
Gearbox type:			NRBW060, 1-stage						NRBW060, 2-stage								
1. Order code			A26						A27								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18
	$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80
	$J_{1,G}$	kg cm²	0.357	0.248	0.236	0.225	0.223	0.221	0.35	0.346	0.232	0.241	0.231	0.231	0.222	0.222	0.222
	$\varphi_{2,G}$	'	16						18								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRBW060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW060 3-stage												
0.498 ... 0.51	1.77 ... 1.82	0.093 (0.112)	n_{2N} r/min	50	37.5	30	30	20	20	15	12.5	1FT2103-2AH..-2..0-Z
			M_{2N} Nm	20	26.5	33	34	44	40	44	39.5	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	30	40	44	44	44	40	44	40	
			M_{2max} Nm	70	70	70	70	70	64	70	64	
0.983 ... 0.993	3.74 ... 3.85	0.139 (0.158)	n_{2N} r/min	50	37.5	37.5	30	25	20	15	12.5	1FT2103-4AH..-2..0-Z
			M_{2N} Nm	36	44	39	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	44	40	44	40	
			M_{2max} Nm	70	70	70	70	70	64	70	64	
1.12 ... 1.15	3.46 ... 3.56	0.368 (0.448)	n_{2N} r/min	50	37.5	30	25	20	15	12.5	10	1FT2104-4AF..-2..0-Z
			M_{2N} Nm	44	44	44	44	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	44	40	44	40	
			M_{2max} Nm	70	70	70	70	70	64	70	64	
1.11 ... 1.14	3.55 ... 3.65	0.368 (0.448)	n_{2N} r/min	60	50	37.5	37.5	25	20	15	12.5	1FT2104-4AK..-2..0-Z
			M_{2N} Nm	41	42	44	43	44	40	44	40	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	44	40	44	40	
			M_{2max} Nm	70	70	70	70	70	64	70	64	
2.18 ... 2.23	7 ... 7.18	0.578 (0.668)	n_{2N} r/min	50	37.5	30	25	–	–	–	–	1FT2104-5AF..-2..0-Z
			M_{2N} Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	–	–	–	–	
			M_{2max} Nm	70	70	70	70	–	–	–	–	
2.16 ... 2.21	7.09 ... 7.28	0.578 (0.668)	n_{2N} r/min	60	50	37.5	30	–	–	–	–	1FT2104-5AK..-2..0-Z
			M_{2N} Nm	44	42	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	–	–	–	–	
			M_{2max} Nm	70	70	70	70	–	–	–	–	
2.89 ... 2.96	9.35 ... 9.6	0.778 (0.858)	n_{2N} r/min	50	37.5	30	–	–	–	–	–	1FT2104-6AF..-2..0-Z
			M_{2N} Nm	44	44	44	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	–	–	–	–	–	
			M_{2max} Nm	70	70	70	–	–	–	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW060 3-stage												
0.489 ... 0.5	1.68 ... 1.72	0.2 (0.22)	n_{2N} r/min	50	30	25	20	20	15	12.5	12.5	1FT2203-2AK..-2..0-Z
			M_{2N} Nm	15.8	26.5	32	40.5	38.5	40	44	33	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	29.5	39	44	44	44	40	44	40	
			M_{2max} Nm	70	70	70	70	70	64	70	64	
1.08 ... 1.1	3.46 ... 3.56	0.35 (0.37)	n_{2N} r/min	50	37.5	30	30	20	15	15	12.5	1FT2203-4AK..-2..0-Z
			M_{2N} Nm	33.5	43.5	44	39	44	40	44	38	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	44	40	44	40	
			M_{2max} Nm	70	70	70	70	70	64	70	64	
2.14 ... 2.19	6.62 ... 6.8	1.248 (1.328)	n_{2N} r/min	50	37.5	30	25	–	–	–	–	1FT2204-5AF..-2..0-Z
			M_{2N} Nm	44	44	44	44	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	44	44	44	44	–	–	–	–	
			M_{2max} Nm	70	70	70	70	–	–	–	–	

➥ Continued on the next page

Planetary gearbox data									
Gearbox type:		NRBW060, 3-stage							
1. Order code		A28							
i		60	80	100	120	160	200	256	320
2. Order code		R60	R80	R01	R21	R61	R02	R52	R23
$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
$J_{1,G}$	kg cm²	0.232	0.231	0.231	0.222	0.222	0.222	0.222	0.222
$\varphi_{2,G}$	'	21							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox								Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)									
Nm	Nm	kg cm²									
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW060 3-stage (continued)											
2.15	6.62	1.248	n_{2N} r/min	50	37.5	37.5	30	–	–	–	–	**1FT2204-5AK..-2..0-Z**
...	...	(1.328)	M_{2N} Nm	44	44	43.5	44	–	–	–	–	■■■ + ■■■ + . . .
2.2	6.8		$M_{2,0}$ Nm	44	44	44	44	–	–	–	–	
			M_{2max} Nm	70	70	70	70	–	–	–	–	
2.88	8.88	1.628	n_{2N} r/min	50	37.5	30	–	–	–	–	–	**1FT2204-6AF..-2..0-Z**
...	...	(1.708)	M_{2N} Nm	44	44	44	–	–	–	–	–	■■■ + ■■■ + . . .
2.95	9.12		$M_{2,0}$ Nm	44	44	44	–	–	–	–	–	
			M_{2max} Nm	70	70	70	–	–	–	–	–	

Planetary gearbox data									
Gearbox type:		**NRBW060, 3-stage**							
1. Order code		**A28**							
i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code		**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$	Nm	44	44	44	44	44	40	44	40
$M_{2max,G}$	Nm	70	70	70	70	70	64	70	64
$M_{2Em.Off}$	Nm	88	88	88	88	88	80	88	80
$J_{1,G}$	kg cm²	0.232	0.231	0.231	0.222	0.222	0.222	0.222	0.222
$\varphi_{2,G}$	'	21							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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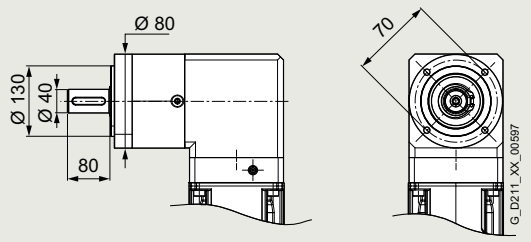
Gearbox type NRBW080

Selection and ordering data

NRBW080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	750 N
Average axial force for 20000 h	$F_{A,eq}$	1000 N
Average radial force for 30000 h	$F_{R,eq}$	650 N
Average axial force for 30000 h	$F_{A,eq}$	900 N
Maximum radial force	$F_{R,max}$	1250 N
Maximum axial force	$F_{A,max}$	1600 N

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 1 and 2-stage																			
0.422	1.71	0.093	n_{2N}	r/min	750	500	500	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.66	1.07	1.15	1.7	2.15	2.7	2.45	3.15	4.25	4.25	5.4	6.8	9.4	11.8	19.1	■■■ + ■■■ + . . .
0.45	1.75		M_{2_0}	Nm	1.26	1.72	2.15	3.05	3.55	4.45	3.95	5.3	6.6	7.1	8.9	11.2	14.3	17.9	28.5	
			M_{2max}	Nm	5.2	6.9	8.7	12.2	14	17.5	15.6	20.5	26	27.5	34.5	43	55	69	80	
0.983	3.68	0.139	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	2.1	2.7	3.65	5	5	6	6.1	7.5	10.4	10.1	12.5	15.7	22	27.5	44.5	■■■ + ■■■ + . . .
1.01	3.78		M_{2_0}	Nm	2.9	3.95	4.95	7	8	10	9	12	15	16	20	25	32	40	50	
			M_{2max}	Nm	11.3	15	18.8	26	30	37.5	33.5	44.5	56	59	74	93	119	149	80	
1.06	3.4	0.35	n_{2N}	r/min	750	600	500	375	300	250	300	200	150	150	125	100	75	75	50	**1FT2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.45	3.2	4.05	5.7	7	8.6	6.9	10.3	13.3	13.7	17.1	21.5	28.5	29	39.5	■■■ + ■■■ + . . .
1.08	3.49		M_{2_0}	Nm	3.15	4.25	5.3	7.5	8.6	10.8	9.6	12.8	16.1	17.2	21.5	26.5	34	43	50	
			M_{2max}	Nm	10.4	13.9	17.4	24	27.5	34.5	31	41	51	55	69	86	110	137	80	
1.05	3.49	0.35	n_{2N}	r/min	750	600	500	375	300	250	300	200	150	150	125	100	75	60	50	**1FT2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.65	3.4	4.3	6.1	7.6	9.5	7.2	11.2	14.5	15	18.8	23.5	31	39	41.5	■■■ + ■■■ + . . .
1.08	3.59		M_{2_0}	Nm	3.15	4.2	5.3	7.5	8.5	10.7	9.5	12.8	16	17	21	26.5	34	42.5	50	
			M_{2max}	Nm	10.7	14.3	17.8	25	28.5	35.5	31.5	42.5	53	56	70	88	113	141	80	
2.11	6.91	0.56	n_{2N}	r/min	600	500	375	300	250	200	250	200	150	125	100	75	75	50	50	**1FT2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.7	7	9.6	12.6	15.2	19.2	14.7	17.9	24.5	29.5	37.5	49.5	51	77	49.5	■■■ + ■■■ + . . .
2.16	7.11		M_{2_0}	Nm	6.4	8.5	10.7	15.1	17.2	21.5	19.2	25.5	32	34	42.5	53	68	85	50	
			M_{2max}	Nm	21	28	35.5	49.5	56	61	63	84	105	112	140	175	192	176	80	
2.09	7	0.56	n_{2N}	r/min	600	500	375	300	250	200	250	150	150	125	100	75	75	50	50	**1FT2104-5AK..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.6	6.8	9.5	12.4	14.9	18.9	14.5	24	24	29	37	49	50	75	49.5	■■■ + ■■■ + . . .
2.15	7.2		M_{2_0}	Nm	6.3	8.5	10.6	14.9	17.1	21	19.1	25.5	31.5	34	42.5	53	68	84	50	
			M_{2max}	Nm	21.5	28.5	35.5	50	57	61	64	85	106	113	142	176	192	176	80	
2.82	9.25	0.76	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	60	50	50	**1FT2104-6AF..-2..0-Z**
...	...	(0.84)	M_{2N}	Nm	6.8	8.3	11.5	15	18.1	22.5	21.5	29	35	35	44.5	58	75	90	50	■■■ + ■■■ + . . .
2.89	9.53		M_{2_0}	Nm	8.6	11.5	14.4	20	23	28.5	25.5	34	43	45.5	57	71	91	110	50	
			M_{2max}	Nm	28.5	38	47.5	66	76	61	84	113	141	150	188	176	192	176	80	

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Planetary gearbox data																
Gearbox type:			NRBW080, 1-stage						NRBW080, 2-stage							
1. Order code			A36						A37							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50
	$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80
	$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190
	$J_{1.G}$	kg cm²	1.273	1.004	0.973	0.929	0.92	0.91	1.232	1.209	1.205	0.996	0.955	0.954	0.917	0.916	0.917
	$\varphi_{2,G}$	'	13						15								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 1 and 2-stage (continued)																			
4.47 ... 4.59	14 ... 14.4	1.71 (2.55)	n_{2N}	r/min	600	500	375	250	250	200	200	150	125	100	100	75	60	60	50	**1FT2105-4AF..-0..0-Z**
			M_{2N}	Nm	10.4	12.1	17.2	26.5	26	33	32	42.5	51	62	63	84	107	94	48.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.7	18.3	22.5	32	36.5	38	40.5	54	68	72	90	110	120	110	50	
			M_{2max}	Nm	43	57	71	100	80	61	127	170	176	192	192	176	192	176	80	
4.5 ... 4.62	14 ... 14.4	1.71 (2.55)	n_{2N}	r/min	500	375	375	250	200	200	200	150	100	100	75	75	50	50	37.5	**1FT2105-4AH..-0..0-Z**
			M_{2N}	Nm	11.3	15.2	15.4	24	30	29.5	29	38.5	57	58	76	76	117	110	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.8	18.4	23	32	36.5	38	41	54	68	73	91	110	120	110	50	
			M_{2max}	Nm	43	57	71	100	80	61	127	170	176	192	192	176	192	176	80	
7.27 ... 7.4	22.4 ... 23.1	2.65 (3.5)	n_{2N}	r/min	500	375	300	250	200	200	150	125	100	100	75	75	60	60	–	**1FT2105-6AF..-0..0-Z**
			M_{2N}	Nm	15.6	20.5	26.5	32	40.5	37.5	51	61	76	76	101	97	119	96	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	29.5	36.5	51	50	38	66	88	110	117	120	110	120	110	–	
			M_{2max}	Nm	64	85	107	104	80	61	205	192	176	192	192	176	192	176	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 1 and 2-stage																			
0.409 ... 0.437	1.62 ... 1.66	0.2 (0.22)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	30	**1FT2203-2AK..-0..0-Z**
			M_{2N}	Nm	0.9	1.26	1.37	2.2	2.25	2.9	2.75	3.7	4.5	4.5	5.8	7.8	10.2	12.3	20.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.22	1.67	2.1	3	3.45	4.3	3.85	5.1	6.4	6.9	8.6	10.8	13.9	17.4	27.5	
			M_{2max}	Nm	4.9	6.5	8.2	11.5	13.2	16.5	14.7	19.7	24.5	26	32.5	41	52	65	80	
1.02 ... 1.04	3.4 ... 3.49	0.35 (0.37)	n_{2N}	r/min	600	500	375	300	250	200	250	200	150	125	100	100	75	60	37.5	**1FT2203-4AK..-0..0-Z**
			M_{2N}	Nm	2.35	2.95	4	5.4	6.4	8.1	6.5	7.8	11.1	12.8	16.2	16.2	23.5	29.5	47.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	3	4.05	5.1	7.2	8.2	10.3	9.2	12.3	15.4	16.4	20.5	25.5	33	41	50	
			M_{2max}	Nm	10.4	13.9	17.4	24	27.5	34.5	31	41	51	55	69	86	110	137	80	
2.07 ... 2.12	6.53 ... 6.72	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	250	200	250	150	125	125	100	75	60	50	50	**1FT2204-5AF..-2..0-Z**
			M_{2N}	Nm	5.4	6.5	9.1	11.8	14.4	18.2	13.7	22.5	27.5	28	36	46.5	59	73	39	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.4	10.5	14.8	16.9	21	18.9	25	31.5	33.5	42	52	67	83	50	
			M_{2max}	Nm	20	26.5	33.5	47	53	61	59	79	99	106	132	165	192	176	80	
2.08 ... 2.13	6.53 ... 6.72	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	60	50	50	**1FT2204-5AK..-2..0-Z**
			M_{2N}	Nm	5.5	6.7	9.3	12.1	14.7	18.5	17.6	23	28.5	28.5	36.5	48	61	74	39.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.3	8.4	10.6	14.9	17	21	19	25	31.5	33.5	42	52	67	84	50	
			M_{2max}	Nm	20	26.5	33.5	47	53	61	59	79	99	106	132	165	192	176	80	
2.81 ... 2.88	8.78 ... 9.04	1.61 (1.69)	n_{2N}	r/min	600	500	375	250	250	200	200	150	125	125	100	75	60	50	50	**1FT2204-6AF..-2..0-Z**
			M_{2N}	Nm	7.1	8.5	11.9	18.4	18.7	23.5	22.5	30	36.5	36	45.5	61	77	93	44.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34	42.5	45.5	57	71	91	110	50	
			M_{2max}	Nm	27	36	45	63	72	61	80	107	134	142	178	176	192	176	80	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	600	375	375	250	250	200	200	150	125	100	100	75	60	50	37.5	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	5.8	9.2	9.8	15.5	15.1	19.2	19.3	25.5	30.5	36.5	37.5	51	65	77	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.6	14.5	20	23	29	26	34.5	43.5	46	58	72	92	110	49.5	
			M_{2max}	Nm	30.5	41	51	72	80	61	91	122	152	162	192	176	192	176	80	
2.91 ... 2.96	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2205-2AF..-0..0-Z**
			M_{2N}	Nm	7	8.5	11.8	15.2	18.6	23	21.5	28.5	35.5	36	45.5	59	76	92	50	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.8	11.7	14.7	20.5	23.5	29.5	26.5	35	44	47	58	73	94	110	50	
			M_{2max}	Nm	30.5	41	51	72	80	61	91	122	152	162	192	176	192	176	80	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:		NRBW080, 1-stage						NRBW080, 2-stage								
1. Order code		A36						A37								
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190
$J_{1,G}$	kg cm²	1.273	1.004	0.973	0.929	0.92	0.91	1.232	1.209	1.205	0.996	0.955	0.954	0.917	0.916	0.917
$\varphi_{2,G}$	'	13						15								

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

3
4

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Gearbox type NRBW080

Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)
4.95 ... 5.04	16.8 ... 17.3	5.1 (6)

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 1 and 2-stage (continued)

n_{2N}	r/min	600	500	375	250	250	200	200	150	125	100	100	75	60	50	37.5	**1FT2205-2AH..-0..0-Z**	
M_{2N}	Nm	6.3	7.4	10.6	16.3	16.4	20.5	20.5	27	32.5	37.5	40.5	55	70	83	50	■■■ + ■■■ + . . .	
$M_{2,0}$	Nm	8.7	11.6	14.5	20	23	29	26	34.5	43.5	46	57	72	92	110	49.5		
M_{2max}	Nm	30.5	41	51	72	80	61	91	122	152	162	192	176	192	176	80		
n_{2N}	r/min	500	375	300	250	200	200	200	125	100	100	75	60	50	50	37.5	**1FT2205-4AF..-0..0-Z**	
M_{2N}	Nm	11.2	15.1	19.2	23.5	29.5	28.5	28.5	45.5	57	57	76	94	116	108	50	■■■ + ■■■ + . . .	
$M_{2,0}$	Nm	15.1	20	25	35	40	38	45	60	75	80	100	110	120	110	50		
M_{2max}	Nm	51	69	86	104	80	61	153	192	176	192	192	176	192	176	80		

Planetary gearbox data

Gearbox type:		**NRBW080, 1-stage**						**NRBW080, 2-stage**								
1. Order code		**A36**						**A37**								
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190
$J_{1,G}$	kg cm²	1.273	1.004	0.973	0.929	0.92	0.91	1.232	1.209	1.205	0.996	0.955	0.954	0.917	0.916	0.917
$\varphi_{2,G}$	'	13						15								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
$M_{0,M}$	M_{maxM}	J_M ($J_{M,Br}$)										
Nm	Nm	kg cm²										
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW080 3-stage												
0.422	1.71	0.093 (0.112)	n_{2N}	r/min	37.5	30	25	20	15	15	10	7.5	6	**1FT2103-2AH..-0..0-Z**
...	...		M_{2N}	Nm	17.7	23	28	33.5	48	49.5	73	96	49.5	■■■ + ■■■ + . . .
0.45	1.75		$M_{2,0}$	Nm	26.5	35.5	44.5	53	71	89	114	110	49.5	
			M_{2max}	Nm	103	137	171	176	192	176	192	176	80	
0.983	3.68	0.139 (0.158)	n_{2N}	r/min	37.5	30	25	20	15	15	12.5	10	6	**1FT2103-4AH..-0..0-Z**
...	...		M_{2N}	Nm	42	55	65	80	112	98	104	110	50	■■■ + ■■■ + . . .
1.01	3.78		$M_{2,0}$	Nm	60	80	100	110	120	110	120	110	50	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
1.06	3.4	0.35 (0.43)	n_{2N}	r/min	37.5	37.5	25	20	20	15	12.5	10	6	**1FT2104-4AF..-2..0-Z**
...	...		M_{2N}	Nm	53	56	85	103	103	110	120	110	49.5	■■■ + ■■■ + . . .
1.08	3.49		$M_{2,0}$	Nm	64	85	106	110	120	110	120	110	49.5	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
1.05	3.49	0.35 (0.43)	n_{2N}	r/min	37.5	30	25	20	20	15	12.5	10	7.5	**1FT2104-4AK..-2..0-Z**
...	...		M_{2N}	Nm	58	76	93	110	108	110	120	110	50	■■■ + ■■■ + . . .
1.08	3.59		$M_{2,0}$	Nm	63	84	105	110	120	110	120	110	49.5	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	80	
2.11	6.91	0.56 (0.65)	n_{2N}	r/min	37.5	30	25	25	20	15	12.5	10	–	**1FT2104-5AF..-2..0-Z**
...	...		M_{2N}	Nm	98	119	120	107	120	110	120	110	–	■■■ + ■■■ + . . .
2.16	7.11		$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.09	7	0.56 (0.65)	n_{2N}	r/min	37.5	30	25	25	20	15	12.5	10	–	**1FT2104-5AK..-2..0-Z**
...	...		M_{2N}	Nm	97	119	120	107	120	110	120	110	–	■■■ + ■■■ + . . .
2.15	7.2		$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
2.82	9.25	0.76 (0.84)	n_{2N}	r/min	37.5	30	30	25	20	15	12.5	10	–	**1FT2104-6AF..-2..0-Z**
...	...		M_{2N}	Nm	110	120	108	110	120	110	120	110	–	■■■ + ■■■ + . . .
2.89	9.53		$M_{2,0}$	Nm	110	120	120	110	120	110	120	110	–	
			M_{2max}	Nm	176	192	192	176	192	176	192	176	–	
4.47	14	1.71 (2.55)	n_{2N}	r/min	37.5	30	30	25	20	–	–	–	–	**1FT2105-4AF..-0..0-Z**
...	...		M_{2N}	Nm	110	120	106	110	119	–	–	–	–	■■■ + ■■■ + . . .
4.59	14.4		$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
4.5	14	1.71 (2.55)	n_{2N}	r/min	37.5	30	25	20	15	–	–	–	–	**1FT2105-4AH..-0..0-Z**
...	...		M_{2N}	Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
4.62	14.4		$M_{2,0}$	Nm	110	120	120	110	120	–	–	–	–	
			M_{2max}	Nm	176	192	192	176	192	–	–	–	–	
7.27	22.4	2.65 (3.5)	n_{2N}	r/min	37.5	30	25	–	–	–	–	–	–	**1FT2105-6AF..-0..0-Z**
...	...		M_{2N}	Nm	110	120	120	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.4	23.1		$M_{2,0}$	Nm	110	120	120	–	–	–	–	–	–	
			M_{2max}	Nm	176	192	192	–	–	–	–	–	–	

Planetary gearbox data										
Gearbox type:			**NRBW080, 3-stage**							
1. Order code			**A38**							
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**	**512**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**	**R51**
$M_{2N,G}$	Nm		110	120	120	110	120	110	120	110	50
$M_{2max,G}$	Nm		176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$	Nm		220	240	240	220	240	220	240	220	190
$J_{1,G}$	kg cm²		1.203	0.955	0.954	1.209	0.916	0.916	0.917	0.917	0.917
$\varphi_{2,G}$	'		17							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRBW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW080 3-stage													
0.409 ... 0.437	1.62 ... 1.66	0.2 (0.22)	n_{2N} r/min	30	25	20	15	12.5	10	7.5	7.5	6	1FT2203-2AK..-0..0-Z
			M_{2N} Nm	19.5	24	30.5	39	50	63	83	83	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	25.5	34.5	43	51	69	86	110	110	49.5	
			M_{2max} Nm	97	130	162	176	192	176	192	176	80	
1.02 ... 1.04	3.4 ... 3.49	0.35 (0.37)	n_{2N} r/min	37.5	30	25	20	15	12.5	10	10	6	1FT2203-4AK..-0..0-Z
			M_{2N} Nm	45	58	68	85	119	110	120	100	50	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	61	81	102	110	120	110	120	110	50	
			M_{2max} Nm	176	192	192	176	192	176	192	176	80	
2.07 ... 2.12	6.53 ... 6.72	1.23 (1.31)	n_{2N} r/min	37.5	30	25	20	20	15	12.5	10	–	1FT2204-5AF..-2..0-Z
			M_{2N} Nm	92	114	120	110	106	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	110	120	110	–	
			M_{2max} Nm	176	192	192	176	192	176	192	176	–	
2.08 ... 2.13	6.53 ... 6.72	1.23 (1.31)	n_{2N} r/min	37.5	30	25	25	20	15	12.5	10	–	1FT2204-5AK..-2..0-Z
			M_{2N} Nm	94	116	120	88	107	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	110	120	110	–	
			M_{2max} Nm	176	192	192	176	192	176	192	176	–	
2.81 ... 2.88	8.78 ... 9.04	1.61 (1.69)	n_{2N} r/min	37.5	30	25	25	20	15	12.5	10	–	1FT2204-6AF..-2..0-Z
			M_{2N} Nm	110	120	120	100	117	110	120	110	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	110	120	110	–	
			M_{2max} Nm	176	192	192	176	192	176	192	176	–	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N} r/min	37.5	25	20	20	12.5	10	10	–	–	1FT2205-2AC..-0..0-Z
			M_{2N} Nm	89	120	120	110	120	110	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	110	120	–	–	
			M_{2max} Nm	176	192	192	176	192	176	192	–	–	
2.91 ... 2.96	10 ... 10.3	3.15 (4.05)	n_{2N} r/min	37.5	30	25	25	20	15	12.5	–	–	1FT2205-2AF..-0..0-Z
			M_{2N} Nm	109	120	120	89	100	110	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	110	119	–	–	
			M_{2max} Nm	176	192	192	176	192	176	192	–	–	
2.87 ... 2.92	10 ... 10.3	3.15 (4.05)	n_{2N} r/min	37.5	30	25	20	15	15	10	–	–	1FT2205-2AH..-0..0-Z
			M_{2N} Nm	98	116	120	110	120	109	120	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	119	110	120	109	119	–	–	
			M_{2max} Nm	176	192	192	176	192	176	192	–	–	
4.95 ... 5.04	16.8 ... 17.3	5.1 (6)	n_{2N} r/min	37.5	30	25	20	15	–	–	–	–	1FT2205-4AF..-0..0-Z
			M_{2N} Nm	110	120	120	110	120	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	110	120	120	110	120	–	–	–	–	
			M_{2max} Nm	176	192	192	176	192	–	–	–	–	

Planetary gearbox data										
Gearbox type:		NRBW080, 3-stage								
1. Order code		A38								
i		60	80	100	120	160	200	256	320	512
2. Order code		R60	R80	R01	R21	R61	R02	R52	R23	R51
$M_{2N,G}$	Nm	110	120	120	110	120	110	120	110	50
$M_{2max,G}$	Nm	176	192	192	176	192	176	192	176	80
$M_{2Em.Off}$	Nm	220	240	240	220	240	220	240	220	190
$J_{1,G}$	kg cm²	1.203	0.955	0.954	1.209	0.916	0.916	0.917	0.917	0.917
$\varphi_{2,G}$	'	17								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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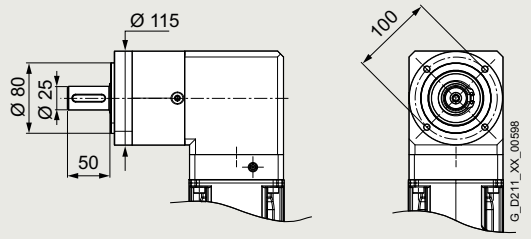
Selection and ordering data

NRBW120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1750 N
Average axial force for 20000 h	$F_{A,eq}$	2500 N
Average radial force for 30000 h	$F_{R,eq}$	1500 N
Average axial force for 30000 h	$F_{A,eq}$	2100 N
Maximum radial force	$F_{R,max}$	2000 N
Maximum axial force	$F_{A,max}$	3800 N

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 1 and 2-stage																				
0.31	1.62	0.093	n_{2N}	r/min	375	375	300	250	200	200	150	125	100	100	100	75	60	50	30	**1FT2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.56	0.69	1.07	1.55	2	2.1	2.1	2.75	3.55	3.7	4.1	5.7	8	9.7	16.4	■■■ + ■■■ + . . .
0.379	1.67		M_{2_0}	Nm	0.92	1.31	1.7	2.45	2.85	3.65	3.2	4.35	5.5	5.9	7.4	9.3	12	15.1	24	
			M_{2max}	Nm	4.85	6.5	8.2	11.6	13.3	16.7	14.8	19.9	24.5	26.5	33	41.5	53	66	106	
0.92	3.61	0.139	n_{2N}	r/min	600	500	375	300	300	200	250	150	150	125	125	100	75	60	37.5	**1FT2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.61	2.1	3.1	4.4	4.4	6.7	4.65	7.8	8.3	10	10.8	13.8	20	25	40.5	■■■ + ■■■ + . . .
0.978	3.7		M_{2_0}	Nm	2.75	3.75	4.75	6.7	7.7	9.7	8.6	11.6	14.5	15.5	19.4	24	31	39	62	
			M_{2max}	Nm	10.9	14.6	18.3	25.5	29.5	36.5	32.5	43.5	54	58	73	91	117	146	192	
0.948	3.33	0.35	n_{2N}	r/min	600	500	375	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2104-4AF..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.1	2.85	4	4.7	6	7.5	6.3	8.1	10.9	11.3	14.7	18.5	25.5	32.5	52	■■■ + ■■■ + . . .
1.01	3.41		M_{2_0}	Nm	2.8	3.85	4.85	6.9	7.9	10	8.9	11.9	14.9	15.9	20	25	32	40	64	
			M_{2max}	Nm	10	13.5	16.9	23.5	27	34	30	40.5	50	54	67	84	108	135	192	
0.941	3.42	0.35	n_{2N}	r/min	600	500	500	375	300	250	250	200	150	150	125	100	75	60	37.5	**1FT2104-4AK..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.25	3.1	3.1	5	6.7	8.4	7.1	9.2	12	12.7	16.5	20.5	27.5	34.5	55	■■■ + ■■■ + . . .
0.999	3.5		M_{2_0}	Nm	2.8	3.8	4.85	6.8	7.9	9.9	8.8	11.8	14.8	15.8	19.8	24.5	31.5	39.5	63	
			M_{2max}	Nm	10.3	13.9	17.4	24	27.5	35	31	41.5	52	55	69	86	111	138	192	
2.03	6.84	0.56	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	100	75	60	37.5	**1FT2104-5AF..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.2	6.5	9.5	13.1	15.5	19.5	17	22.5	28	30	38	36.5	56	70	112	■■■ + ■■■ + . . .
2.08	7.02		M_{2_0}	Nm	6	8.1	10.2	14.4	16.5	20.5	18.5	24.5	30.5	33	41	51	66	82	120	
			M_{2max}	Nm	20.5	28	35	49	56	70	62	83	104	111	138	173	220	275	192	
2.02	6.93	0.56	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	100	75	60	37.5	**1FT2104-5AK..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	5.1	6.4	9.4	12.9	15.4	19.4	16.8	22.5	28	30	38	36	55	68	110	■■■ + ■■■ + . . .
2.07	7.12		M_{2_0}	Nm	6	8.1	10.2	14.3	16.4	20.5	18.3	24.5	30.5	32.5	41	51	65	82	120	
			M_{2max}	Nm	21	28	35.5	49.5	56	71	63	84	105	112	140	175	225	280	192	
2.75	9.18	0.76	n_{2N}	r/min	500	500	375	300	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2104-6AF..-0..0-Z**
...	...	(0.84)	M_{2N}	Nm	7.8	7.9	12	15.9	19.6	25	23	30.5	37	37.5	49	65	85	103	120	■■■ + ■■■ + . . .
2.81	9.44		M_{2_0}	Nm	8.3	11.1	13.9	19.6	22	28	25	33	41.5	44.5	55	69	89	111	120	
			M_{2max}	Nm	28	37.5	47	65	75	94	84	112	140	149	186	230	295	368	192	

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Planetary gearbox data																
Gearbox type:			NRBW120, 1-stage						NRBW120, 2-stage							
1. Order code			A46						A47							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 1 and 2-stage (continued)																			
4.4 ... 4.51	13.9 ... 14.3	1.71 (2.55)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	60	50	37.5	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	10.2	12.1	18.5	23.5	29.5	38	34	45.5	56	55	72	95	123	151	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.4	17.9	22	31.5	36	45	40	53	67	71	89	111	142	178	120	
			M_{2max}	Nm	42.5	57	71	99	114	142	127	169	210	225	280	350	416	368	192	
4.43 ... 4.54	13.9 ... 14.3	1.71 (2.55)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	11.3	15.4	16.8	26	26.5	34.5	32	43	51	50	66	90	117	139	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.5	18	22.5	31.5	36	45	40	53	67	71	89	112	143	179	120	
			M_{2max}	Nm	42.5	57	71	99	114	142	127	169	210	225	280	350	416	368	192	
7.22 ... 7.41	22.3 ... 23	2.65 (3.5)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	50	37.5	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	17	23	30	37.5	48	63	43	72	90	90	122	152	188	179	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	29.5	36.5	51	59	74	66	88	110	117	146	183	230	230	120	
			M_{2max}	Nm	68	91	114	160	183	152	200	270	340	360	416	368	416	368	192	
7.66 ... 7.8	24.2 ... 24.9	4.6 (6.3)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	60	50	50	37.5	1FT2106-3AF..-0..0-Z
			M_{2N}	Nm	17.6	24	31	39	49.5	63	44.5	74	93	93	125	156	194	184	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	38.5	54	62	78	69	93	116	124	154	193	245	230	120	
			M_{2max}	Nm	74	99	124	174	192	152	220	295	368	390	416	368	416	368	192	
9.97 ... 10.1	30.8 ... 31.7	6 (7.6)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	50	37.5	1FT2106-4AF..-0..0-Z
			M_{2N}	Nm	20.5	28.5	37	55	57	78	70	86	107	106	146	182	220	196	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40.5	50	70	81	95	90	121	151	161	200	230	260	230	120	
			M_{2max}	Nm	95	126	158	216	192	152	280	375	368	416	416	368	416	368	192	
14.1 ... 14.4	42.5 ... 43.8	8.7 (10.4)	n_{2N}	r/min	375	300	250	200	200	150	150	100	75	75	60	60	50	50	–	1FT2106-6AF..-0..0-Z
			M_{2N}	Nm	34.5	44	54	70	69	94	87	129	170	171	215	210	255	220	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	43	57	71	100	115	95	128	171	210	225	260	230	260	230	–	
			M_{2max}	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 1 and 2-stage																			
0.297 ... 0.367	1.52 ... 1.58	0.2 (0.22)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	75	60	50	30	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	0.52	0.66	1.06	1.45	1.95	2.6	2	2.6	3.35	3.55	5	5.2	7.5	9	15.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.88	1.26	1.64	2.35	2.75	3.5	3.1	4.2	5.3	5.7	7.1	9	11.6	14.5	23	
			M_{2max}	Nm	4.55	6.1	7.7	10.9	12.5	15.7	14	18.7	23	25	31	39	50	62	100	
0.903 ... 0.961	3.33 ... 3.41	0.35 (0.37)	n_{2N}	r/min	600	500	375	300	250	200	200	150	150	125	100	100	75	60	37.5	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	1.85	2.4	3.5	4.95	5.9	7.6	6.6	8.9	9.3	11.4	15	14.9	22	27.5	44.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.7	3.65	4.65	6.6	7.6	9.5	8.5	11.4	14.3	15.2	19.1	23.5	30.5	38	61	
			M_{2max}	Nm	10	13.5	16.9	23.5	27	34	30	40.5	50	54	67	84	108	135	192	
1.99 ... 2.04	6.47 ... 6.64	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	37.5	1FT2204-5AF..-0..0-Z
			M_{2N}	Nm	5	6.1	9	12.3	14.6	18.5	16.4	22	27	28	36	46.5	52	65	105	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.9	8	10	14.2	16.2	20	18.1	24	30	32	40	50	64	81	120	
			M_{2max}	Nm	19.8	26	33	46	53	66	59	78	98	105	131	164	210	260	192	
2 ... 2.05	6.47 ... 6.64	1.23 (1.31)	n_{2N}	r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	37.5	1FT2204-5AK..-0..0-Z
			M_{2N}	Nm	5.1	6.2	9.3	12.6	15.2	19.1	16.6	22	27.5	29.5	37.5	47	53	66	107	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6	8	10.1	14.3	16.3	20.5	18.2	24	30.5	32.5	40.5	50	65	81	120	
			M_{2max}	Nm	19.8	26	33	46	53	66	59	78	98	105	131	164	210	260	192	

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Planetary gearbox data																
Gearbox type:			NRBW120, 1-stage						NRBW120, 2-stage							
1. Order code			A46						A47							
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 1 and 2-stage (continued)																				
2.74 ... 2.8	8.71 ... 8.95	1.61 (1.69)	n_{2N} r/min	600	500	375	300	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2204-6AF..-0..0-Z**
			M_{2N} Nm	6.8	8.2	12.6	16.5	20.5	26	23	31	38.5	39	51	65	84	105	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.2	11	13.8	19.5	22	27.5	24.5	33	41.5	44	55	69	88	111	120	
			M_{2max} Nm	26.5	35.5	44.5	62	71	89	79	106	132	141	177	220	280	350	192	
2.99 ... 3.03	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2205-2AC..-0..0-Z**
			M_{2N} Nm	6.7	9.1	10.5	15.9	17.1	22	19.7	26	32.5	32.5	43	55	72	88	105	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.9	12	15	21	24	30	27	36	45	48	60	75	96	120	120	
			M_{2max} Nm	30.5	40.5	50	71	81	102	91	121	151	161	200	250	320	368	192	
3.02 ... 3.06	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	600	500	375	300	250	200	200	150	125	125	100	75	75	60	37.5	**1FT2205-2AF..-0..0-Z**
			M_{2N} Nm	6.6	8.1	11.6	15.9	18.8	23.5	21	28	34.5	36.5	46.5	59	65	81	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	9	12.1	15.2	21	24	30.5	27	36.5	45.5	48.5	61	76	97	122	120	
			M_{2max} Nm	30.5	40.5	50	71	81	102	91	121	151	161	200	250	320	368	192	
2.96 ... 3	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	600	375	375	300	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	5.9	9.3	11	14.2	17.9	22.5	20	26.5	33	34.5	44	56	73	90	114	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	8.8	11.8	14.9	20.5	23.5	30	26.5	35.5	44.5	47.5	59	74	95	119	120	
			M_{2max} Nm	30.5	40.5	50	71	81	102	91	121	151	161	200	250	320	368	192	
5.14 ... 5.23	16.7 ... 17.2	5.1 (6)	n_{2N} r/min	500	375	300	250	200	200	200	150	100	100	100	75	60	50	37.5	**1FT2205-4AF..-0..0-Z**
			M_{2N} Nm	11.9	16.5	21	27	33.5	33.5	31.5	42.5	63	65	64	88	115	135	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	15.5	20.5	26	36.5	41.5	52	46.5	62	78	83	103	129	166	205	120	
			M_{2max} Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
5.15 ... 5.27	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	30	**1FT2206-2AC..-0..0-Z**
			M_{2N} Nm	10.7	15	19.8	30.5	31	42.5	39.5	48	60	60	83	104	127	170	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	15.7	20.5	26	36.5	42	52	47	62	78	83	104	130	167	205	119	
			M_{2max} Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
5.29 ... 5.39	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	600	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	**1FT2206-2AF..-0..0-Z**
			M_{2N} Nm	10.4	16.9	18.9	29	30	38.5	35.5	47.5	57	55	72	99	128	152	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	16	21	26.5	37.5	43	53	48	64	80	85	107	133	171	210	120	
			M_{2max} Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
5.13 ... 5.23	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	500	375	300	250	200	150	200	125	100	100	75	75	50	50	37.5	**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	11.8	16.5	20.5	26.5	33.5	42.5	30.5	50	62	65	84	85	133	129	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	15.5	20.5	26	36.5	41.5	52	46.5	62	77	83	103	129	166	205	120	
			M_{2max} Nm	51	68	85	120	137	152	153	200	250	270	335	368	416	368	192	
7.8 ... 7.95	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	25	**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	16	22	28.5	44	45	61	56	68	85	85	117	145	179	230	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	23.5	31.5	39.5	55	63	79	71	94	118	126	157	197	250	230	120	
			M_{2max} Nm	77	103	129	180	192	152	230	305	368	405	416	368	416	368	192	
7.68 ... 7.82	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	37.5	37.5	**1FT2206-3AF..-0..0-Z**
			M_{2N} Nm	15.1	21	27.5	42.5	43	58	54	65	82	81	112	140	171	225	120	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	23	31	38.5	54	62	78	70	93	116	124	155	193	245	230	120	
			M_{2max} Nm	77	103	129	180	192	152	230	305	368	405	416	368	416	368	192	

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Planetary gearbox data																
Gearbox type:			**NRBW120, 1-stage**						**NRBW120, 2-stage**							
1. Order code			**A46**						**A47**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NRBW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 1 and 2-stage (continued)																			
10.6 ... 10.8	35.5 ... 36.5	15.1 (16.8)	n_{2N}	r/min	375	250	200	150	150	125	125	100	75	75	60	50	37.5	37.5	30	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	20.5	31.5	40	54	55	67	64	80	107	107	135	160	215	199	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	32	43	54	75	86	95	96	128	160	171	210	230	260	230	120	
			M_{2max}	Nm	109	145	182	216	192	152	325	416	368	416	416	368	416	368	192	
10.4 ... 10.6	33.6 ... 34.6	15.1 (16.8)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	60	50	50	37.5	**1FT2206-4AF..-0..0-Z**
			M_{2N}	Nm	21	29	37.5	58	58	79	73	87	109	107	148	184	225	199	120	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31.5	42	52	74	84	95	94	126	158	168	210	230	260	230	120	
			M_{2max}	Nm	103	138	172	216	192	152	305	405	368	416	416	368	416	368	192	
9.93 ... 10.1	33.6 ... 34.6	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	150	100	75	75	60	50	37.5	37.5	37.5	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	23.5	30	37.5	48	63	65	61	92	120	122	154	185	245	230	113	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30	40	50	70	80	95	90	120	150	160	200	230	260	230	119	
			M_{2max}	Nm	103	138	172	216	192	152	305	405	368	416	416	368	416	368	192	

Planetary gearbox data																
Gearbox type:			**NRBW120, 1-stage**						**NRBW120, 2-stage**							
1. Order code			**A46**						**A47**							
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380
	$J_{1,G}$	kg cm²	2.846	2.276	2.074	1.905	1.873	1.82	2.773	2.708	2.687	2.188	2.015	2.007	1.861	1.858	1.855
	$\varphi_{2,G}$	'	11						13								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)										
Nm	Nm	kg cm²										
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 3-stage												
0.31	1.62	0.093	n_{2N}	r/min	30	25	20	15	12.5	10	7.5	6	**1FT2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	12.9	17.9	22.5	26.5	40.5	50	67	84	■■■ + ■■■ + . . .
0.379	1.67		$M_{2,0}$	Nm	22.5	30	37.5	45	60	75	96	120	
			M_{2max}	Nm	99	131	164	197	260	325	416	368	
0.92	3.61	0.139	n_{2N}	r/min	37.5	30	25	20	15	12.5	10	7.5	**1FT2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	34.5	48	58	66	102	124	157	205	■■■ + ■■■ + . . .
0.978	3.7		$M_{2,0}$	Nm	58	77	96	116	155	193	245	230	
			M_{2max}	Nm	215	285	360	368	416	368	416	368	
0.948	3.33	0.35	n_{2N}	r/min	37.5	30	25	20	15	15	10	10	**1FT2104-4AF..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	45	62	75	86	131	139	200	178	■■■ + ■■■ + . . .
1.01	3.41		$M_{2,0}$	Nm	59	79	99	119	159	198	250	230	
			M_{2max}	Nm	200	265	330	368	416	368	416	368	
0.941	3.42	0.35	n_{2N}	r/min	37.5	30	25	20	15	15	10	10	**1FT2104-4AK..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	48	66	82	96	137	149	215	188	■■■ + ■■■ + . . .
0.999	3.5		$M_{2,0}$	Nm	59	79	98	118	158	197	250	230	
			M_{2max}	Nm	205	270	340	368	416	368	416	368	
2.03	6.84	0.56	n_{2N}	r/min	37.5	30	25	20	15	15	10	10	**1FT2104-5AF..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	100	131	152	176	260	210	260	230	■■■ + ■■■ + . . .
2.08	7.02		$M_{2,0}$	Nm	122	163	200	230	260	230	260	230	
			M_{2max}	Nm	410	416	416	368	416	368	416	368	
2.02	6.93	0.56	n_{2N}	r/min	37.5	30	20	20	15	15	10	10	**1FT2104-5AK..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	98	129	188	174	260	210	260	230	■■■ + ■■■ + . . .
2.07	7.12		$M_{2,0}$	Nm	122	162	200	230	260	230	260	230	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
2.75	9.18	0.76	n_{2N}	r/min	30	25	20	20	15	15	12.5	10	**1FT2104-6AF..-0..0-Z**
...	...	(0.84)	M_{2N}	Nm	155	198	245	205	260	230	230	230	■■■ + ■■■ + . . .
2.81	9.44		$M_{2,0}$	Nm	165	220	260	230	260	230	260	230	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
4.4	13.9	1.71	n_{2N}	r/min	30	25	25	20	15	15	12.5	10	**1FT2105-4AF..-0..0-Z**
...	...	(2.55)	M_{2N}	Nm	225	260	225	230	260	230	210	230	■■■ + ■■■ + . . .
4.51	14.3		$M_{2,0}$	Nm	260	260	260	230	260	230	260	230	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
4.43	13.9	1.71	n_{2N}	r/min	30	25	20	20	15	12.5	10	7.5	**1FT2105-4AH..-0..0-Z**
...	...	(2.55)	M_{2N}	Nm	215	255	260	220	260	230	260	230	■■■ + ■■■ + . . .
4.54	14.3		$M_{2,0}$	Nm	260	260	260	230	260	230	260	225	
			M_{2max}	Nm	416	416	416	368	416	368	416	368	
7.22	22.3	2.65	n_{2N}	r/min	30	25	25	20	15	15	10	–	**1FT2105-6AF..-0..0-Z**
...	...	(3.5)	M_{2N}	Nm	260	260	230	230	260	210	260	–	■■■ + ■■■ + . . .
7.41	23		$M_{2,0}$	Nm	260	260	260	230	260	230	260	–	
			M_{2max}	Nm	416	416	416	368	416	368	416	–	

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Planetary gearbox data									
Gearbox type:			**NRBW120, 3-stage**						
1. Order code			**A48**						
i			**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code			**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$		Nm	260	260	260	230	260	230	260	230
$M_{2max,G}$		Nm	416	416	416	368	416	368	416	368
$M_{2Em.Off}$		Nm	520	520	520	500	520	500	520	500
$J_{1,G}$		kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
$\varphi_{2,G}$		'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRBW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRBW120 3-stage (continued)												
7.66 ... 7.8	24.2 ... 24.9	4.6 (6.3)	n_{2N} r/min	30	30	25	20	15	15	–	–	1FT2106-3AF..-0..0-Z
			M_{2N} Nm	260	215	235	230	260	215	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	230	–	–	
			M_{2max} Nm	416	416	416	368	416	368	–	–	
9.97 ... 10.1	30.8 ... 31.7	6 (7.6)	n_{2N} r/min	30	25	25	20	15	–	–	–	1FT2106-4AF..-0..0-Z
			M_{2N} Nm	260	260	210	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	–	–	–	
			M_{2max} Nm	416	416	416	368	416	–	–	–	
14.1 ... 14.4	42.5 ... 43.8	8.7 (10.4)	n_{2N} r/min	30	30	20	–	–	–	–	–	1FT2106-6AF..-0..0-Z
			M_{2N} Nm	260	225	260	–	–	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	–	–	–	–	–	
			M_{2max} Nm	416	416	416	–	–	–	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRBW120 3-stage												
0.297 ... 0.367	1.52 ... 1.58	0.2 (0.22)	n_{2N} r/min	30	25	20	15	12.5	10	7.5	6	1FT2203-2AK..-0..0-Z
			M_{2N} Nm	12.1	16.3	20.5	25	38	47.5	64	80	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	21.5	29	36	43.5	58	72	93	116	
			M_{2max} Nm	93	124	155	186	245	310	395	368	
0.903 ... 0.961	3.33 ... 3.41	0.35 (0.37)	n_{2N} r/min	37.5	30	25	20	15	12.5	10	7.5	1FT2203-4AK..-0..0-Z
			M_{2N} Nm	39	53	63	73	113	136	170	225	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	57	76	95	114	152	190	240	230	
			M_{2max} Nm	200	265	330	368	416	368	416	368	
1.99 ... 2.04	6.47 ... 6.64	1.23 (1.31)	n_{2N} r/min	37.5	30	20	15	15	12.5	10	10	1FT2204-5AF..-0..0-Z
			M_{2N} Nm	93	122	181	220	260	230	260	194	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	120	160	200	230	260	230	260	230	
			M_{2max} Nm	385	416	416	368	416	368	416	368	
2 ... 2.05	6.47 ... 6.64	1.23 (1.31)	n_{2N} r/min	37.5	30	20	15	15	12.5	10	10	1FT2204-5AK..-0..0-Z
			M_{2N} Nm	95	125	186	220	260	230	260	197	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	121	161	200	230	260	230	260	230	
			M_{2max} Nm	385	416	416	368	416	368	416	368	
2.74 ... 2.8	8.71 ... 8.95	1.61 (1.69)	n_{2N} r/min	30	25	20	20	15	15	10	10	1FT2204-6AF..-0..0-Z
			M_{2N} Nm	154	205	255	205	260	215	260	220	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	165	215	260	230	260	230	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
2.99 ... 3.03	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	30	25	20	15	12.5	10	10	7.5	1FT2205-2AC..-0..0-Z
			M_{2N} Nm	132	173	215	230	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	180	240	260	230	260	230	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
3.02 ... 3.06	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	37.5	25	20	20	15	15	10	10	1FT2205-2AF..-0..0-Z
			M_{2N} Nm	117	185	230	200	255	197	260	190	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	182	240	260	230	255	230	255	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	

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Planetary gearbox data									
Gearbox type:			NRBW120, 3-stage						
1. Order code			A48						
	i		60	80	100	120	160	200	256	320
2. Order code			R60	R80	R01	R21	R61	R02	R52	R23
	$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230
	$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368
	$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500
	$J_{1,G}$	kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
	$\varphi_{2,G}$	'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox									Servomotors with planetary gearbox
Servomotoren SIMOTICS S-1FK2 and S-1FT2 Compact mit planetary gearbox NRBW120 3-stage (continued)												
2.96 ... 3	9.93 ... 10.2	3.15 (4.05)	n_{2N} r/min	30	25	20	15	15	12.5	10	7.5	**1FT2205-2AH..-0..0-Z**
			M_{2N} Nm	135	176	220	230	260	225	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	178	235	260	230	260	225	260	225	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.14 ... 5.23	16.7 ... 17.2	5.1 (6)	n_{2N} r/min	30	25	20	20	15	12.5	10	7.5	**1FT2205-4AF..-0..0-Z**
			M_{2N} Nm	210	250	260	210	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	230	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.15 ... 5.27	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	25	25	20	15	12.5	10	10	7.5	**1FT2206-2AC..-0..0-Z**
			M_{2N} Nm	240	205	255	230	260	230	250	225	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	225	255	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.29 ... 5.39	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	30	25	20	20	15	12.5	10	7.5	**1FT2206-2AF..-0..0-Z**
			M_{2N} Nm	235	260	260	225	260	230	260	230	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	255	230	255	225	260	230	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
5.13 ... 5.23	16.7 ... 17.2	7.8 (9.4)	n_{2N} r/min	30	25	20	20	15	12.5	10	7.5	**1FT2206-2AH..-0..0-Z**
			M_{2N} Nm	205	240	255	175	260	230	255	225	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	255	255	230	260	230	260	225	
			M_{2max} Nm	416	416	416	368	416	368	416	368	
7.8 ... 7.95	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	25	20	15	12.5	10	7.5	–	–	**1FT2206-3AB..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	255	230	–	–	
			M_{2max} Nm	416	416	416	368	416	368	–	–	
7.68 ... 7.82	25.1 ... 25.9	11.5 (13.1)	n_{2N} r/min	30	25	20	20	15	12.5	–	–	**1FT2206-3AF..-0..0-Z**
			M_{2N} Nm	245	260	260	187	260	230	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	230	–	–	
			M_{2max} Nm	416	416	416	368	416	368	–	–	
10.6 ... 10.8	35.5 ... 36.5	15.1 (16.8)	n_{2N} r/min	25	20	15	15	12.5	–	–	–	**1FT2206-4AC..-0..0-Z**
			M_{2N} Nm	260	260	260	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	–	–	–	
			M_{2max} Nm	416	416	416	368	416	–	–	–	
10.4 ... 10.6	33.6 ... 34.6	15.1 (16.8)	n_{2N} r/min	30	25	25	20	15	–	–	–	**1FT2206-4AF..-0..0-Z**
			M_{2N} Nm	260	260	215	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	260	–	–	–	
			M_{2max} Nm	416	416	416	368	416	–	–	–	
9.93 ... 10.1	33.6 ... 34.6	15.1 (16.8)	n_{2N} r/min	30	25	20	15	15	–	–	–	**1FT2206-4AH..-0..0-Z**
			M_{2N} Nm	250	260	260	230	260	–	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$ Nm	260	260	260	230	255	–	–	–	
			M_{2max} Nm	416	416	416	368	416	–	–	–	

Planetary gearbox data								
Gearbox type:		**NRBW120, 3-stage**						
1. Order code		**A48**						
i		**60**	**80**	**100**	**120**	**160**	**200**	**256**	**320**
2. Order code		**R60**	**R80**	**R01**	**R21**	**R61**	**R02**	**R52**	**R23**
$M_{2N,G}$	Nm	260	260	260	230	260	230	260	230
$M_{2max,G}$	Nm	416	416	416	368	416	368	416	368
$M_{2Em.Off}$	Nm	520	520	520	500	520	500	520	500
$J_{1,G}$	kg cm²	2.681	2.011	2.005	2.663	1.857	1.857	1.855	1.855
$\varphi_{2,G}$	'	15							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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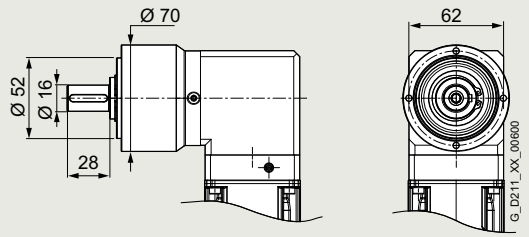
Gearbox type NRKW070

Selection and ordering data

NRKW070



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1050 N
Average axial force for 20000 h	$F_{A,eq}$	1350 N
Average radial force for 30000 h	$F_{R,eq}$	900 N
Average axial force for 30000 h	$F_{A,eq}$	1000 N
Maximum radial force	$F_{R,max}$	1650 N
Maximum axial force	$F_{A,max}$	2100 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW070 1 and 2-stage																					
0.461 ... 0.508	1.78 ... 1.81	0.093 (0.112)	n_{2N}	r/min	600	500	500	375	300	250	300	250	200	200	150	125	100	75	50	37.5	**1FT2103-2AH..-2..0-Z**
			M_{2N}	Nm	0.91	1.28	1.43	2.15	2.7	3.4	2.8	3.35	4.65	4.35	6.4	7.8	9.9	13.2	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.38	1.89	2.4	3.4	3.95	4.95	4.45	5.9	7.5	8	10	12.6	16.1	20	18	15	
			M_{2max}	Nm	5.3	7.1	8.9	12.6	14.4	18	16.1	21.5	26.5	28.5	35.5	44.5	53	48	29	24	
0.948 ... 0.989	3.79 ... 3.83	0.139 (0.158)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	60	37.5	**1FT2103-4AH..-2..0-Z**
			M_{2N}	Nm	1.92	2.6	3.65	5	5.2	6.4	6.2	8.1	11.1	11.2	13.8	17.4	23	29	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.8	3.8	4.8	6.8	7.8	9.8	8.8	11.7	14.7	15.7	19.7	24.5	31.5	30	18	15	
			M_{2max}	Nm	11.4	15.2	19.1	26.5	29	24	34	45.5	53	53	53	48	53	48	29	24	
1.1 ... 1.14	3.5 ... 3.54	0.368 (0.448)	n_{2N}	r/min	750	600	500	375	375	300	300	250	200	200	150	125	100	75	50	30	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.25	3.25	4.2	6.1	5.9	7.8	7.6	9.1	12.2	11.7	16.6	19.9	25	30	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.3	4.45	5.6	7.9	9	11.3	10.1	13.5	16.9	18	22.5	28	33	30	18	15	
			M_{2max}	Nm	10.5	14.1	17.6	24.5	28	24	31.5	42	52	53	53	48	53	48	29	24	
1.1 ... 1.13	3.6 ... 3.64	0.368 (0.448)	n_{2N}	r/min	600	600	500	375	300	250	300	200	200	150	150	100	100	75	60	37.5	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	2.95	3.4	4.4	6.3	8	10	7.9	12	12.7	16.2	17.3	25	26	30	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.25	4.4	5.5	7.8	9	11.3	10	13.4	16.8	17.9	22.5	28	33	30	18	15	
			M_{2max}	Nm	10.8	14.4	18.1	25	29	24	32	43	53	53	53	48	53	48	29	24	
2.19 ... 2.22	7.07 ... 7.16	0.578 (0.668)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	125	100	75	50	–	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	4.85	6.3	8.8	11.7	12	14.7	14	17.7	24.5	24	29.5	26.5	32.5	30	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.5	8.7	11	15.4	17.6	15	19.7	26	32.5	33	33	30	33	30	18	–	
			M_{2max}	Nm	21	28.5	35.5	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.17 ... 2.2	7.16 ... 7.26	0.578 (0.668)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	125	100	75	60	–	**1FT2104-5AK..-2..0-Z**
			M_{2N}	Nm	4.75	6.2	8.6	11.5	11.7	14.5	13.8	17.5	24	24	29	26.5	32.5	30	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.5	8.7	10.9	15.3	17.5	15	19.6	26	32.5	33	33	30	33	30	18	–	
			M_{2max}	Nm	21.5	28.5	36	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.92 ... 2.95	9.45 ... 9.57	0.778 (0.858)	n_{2N}	r/min	600	500	375	300	300	300	250	200	150	150	125	125	100	75	–	–	**1FT2104-6AF..-2..0-Z**
			M_{2N}	Nm	5.8	7.5	10.4	13.8	13.9	12.5	16.2	20.5	28	28	32.5	29.5	33	30	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.7	11.7	14.6	20.5	18	15	26	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	–	–	

Planetary gearbox data																		
Gearbox type:			**NRKW070, 1-stage**						**NRKW070, 2-stage**									
1. Order code			**B26**						**B27**									
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	14	19	24	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.329	0.23	0.224	0.22	0.219	0.218	0.326	0.326	0.224	0.228	0.223	0.223	0.219	0.219	0.219	0.218
	$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW070 1 and 2-stage																				
0.452	1.68	0.2 (0.22)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	50	37.5	**1FT2203-2AK..-2..0-Z**
...	...		M_{2N}	Nm	0.8	1.12	1.6	2.2	2.25	2.8	2.7	3.55	4.95	4.95	6.1	7.7	10.4	13.1	14.6	13.7	■■■ + ■■■ + . . .
0.495	1.71		$M_{2,0}$	Nm	1.35	1.85	2.35	3.35	3.85	4.85	4.3	5.8	7.3	7.8	9.8	12.3	15.7	19.7	18	15	
			M_{2max}	Nm	5	6.7	8.4	11.9	13.6	17.1	15.2	20	25	27	33.5	42.5	53	48	29	24	
1.06	3.5	0.35 (0.37)	n_{2N}	r/min	600	500	375	300	250	200	250	200	150	150	125	100	75	60	50	37.5	**1FT2203-4AK..-2..0-Z**
...	...		M_{2N}	Nm	2.05	2.75	3.95	5.3	6.5	8.3	6.5	8.2	11.7	11.5	13.9	17.7	24	29.5	18	15	■■■ + ■■■ + . . .
1.09	3.54		$M_{2,0}$	Nm	3.15	4.25	5.3	7.6	8.7	10.9	9.7	13	16.3	17.3	21.5	27	33	30	18	15	
			M_{2max}	Nm	10.5	14.1	17.6	24.5	28	24	31.5	42	52	53	53	48	53	48	29	24	
2.15	6.69	1.248 (1.328)	n_{2N}	r/min	600	500	375	300	250	250	250	200	150	125	100	100	100	75	50	–	**1FT2204-5AF..-2..0-Z**
...	...		M_{2N}	Nm	4.55	5.9	8.3	10.9	13.3	13.2	12.9	16.2	22.5	27	33	30	26.5	30	18	–	■■■ + ■■■ + . . .
2.18	6.77		$M_{2,0}$	Nm	6.4	8.6	10.8	15.1	17.3	15	19.3	25.5	32	33	33	30	33	30	18	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.16	6.69	1.248 (1.328)	n_{2N}	r/min	600	500	375	300	250	250	250	150	150	125	100	100	100	75	60	–	**1FT2204-5AK..-2..0-Z**
...	...		M_{2N}	Nm	4.65	6	8.4	11.1	13.5	13.4	13.1	21.5	23	27	33	30	26.5	30	18	–	■■■ + ■■■ + . . .
2.19	6.77		$M_{2,0}$	Nm	6.4	8.6	10.8	15.2	17.4	15	19.5	26	32.5	33	33	30	33	30	18	–	
			M_{2max}	Nm	20	27	33.5	40	29	24	53	53	53	53	53	48	53	48	29	–	
2.91	8.98	1.628 (1.708)	n_{2N}	r/min	600	500	375	300	250	250	200	150	150	125	125	125	100	75	–	–	**1FT2204-6AF..-2..0-Z**
...	...		M_{2N}	Nm	5.8	7.4	10.6	13.8	16.8	15	20	27	27.5	33	32	24.5	30	30	–	–	■■■ + ■■■ + . . .
2.93	9.09		$M_{2,0}$	Nm	8.7	11.6	14.6	20.5	18	15	26	33	33	33	33	30	33	30	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	–	–	

Planetary gearbox data																		
Gearbox type:			**NRKW070, 1-stage**						**NRKW070, 2-stage**									
1. Order code			**B26**						**B27**									
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	14	19	24	25	18	15	33	33	33	33	33	30	33	30	18	15
	$M_{2max,G}$	Nm	22	30	38	40	29	24	53	53	53	53	53	48	53	48	29	24
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
	$J_{1,G}$	kg cm²	0.329	0.23	0.224	0.22	0.219	0.218	0.326	0.326	0.224	0.228	0.223	0.223	0.219	0.219	0.219	0.218
	$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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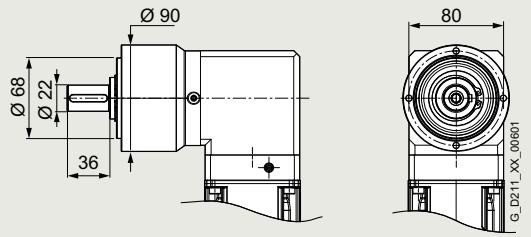
Gearbox type NRKW090

Selection and ordering data

NRKW090



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1900 N
Average axial force for 20000 h	$F_{A,eq}$	2000 N
Average radial force for 30000 h	$F_{R,eq}$	1700 N
Average axial force for 30000 h	$F_{A,eq}$	1500 N
Maximum radial force	$F_{R,max}$	3100 N
Maximum axial force	$F_{A,max}$	3800 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW090 1 and 2-stage																				
0.379 ... 0.449	1.69 ... 1.74	0.093 (0.112)	n_{2N}	r/min	500	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	25	**1FT2103-2AH..-0..0-Z**
			M_{2N}	Nm	0.66	0.79	1.24	1.8	1.85	2.3	2.15	2.85	3.95	4.05	5.1	6.5	9	11.4	18.5	28	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	1.13	1.59	2.05	2.95	3.4	4.3	3.85	5.2	6.5	7	8.8	11	14.2	17.8	28.5	38	
			M_{2max}	Nm	5	6.8	8.5	12.1	13.8	17.4	15.5	20.5	25.5	27.5	34.5	43	55	69	80	61	
0.938 ... 1	3.72 ... 3.77	0.139 (0.158)	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	100	75	60	37.5	30	**1FT2103-4AH..-0..0-Z**
			M_{2N}	Nm	1.97	2.8	3.2	4.35	5.5	7.1	6.5	8.8	9.4	11.4	14.6	14.5	20.5	26	42	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.8	3.8	4.8	6.8	7.8	9.9	8.8	11.8	14.9	15.9	19.9	24.5	31.5	39.5	50	38	
			M_{2max}	Nm	11.1	14.9	18.7	26	30	37.5	33.5	44.5	55	59	74	93	119	131	80	61	
1.02 ... 1.07	3.43 ... 3.48	0.35 (0.43)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	30	**1FT2104-4AF..-2..0-Z**
			M_{2N}	Nm	2.35	3.2	4.3	6	6.5	8.1	7.5	9.8	12.9	13.4	16.8	21	28	35	50	37.5	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3.05	4.1	5.2	7.4	8.5	10.7	9.5	12.7	16	17	21	26.5	34	42.5	50	38	
			M_{2max}	Nm	10.3	13.7	17.2	24	27.5	34.5	31	41	51	55	68	86	110	131	80	61	
1.01 ... 1.07	3.53 ... 3.57	0.35 (0.43)	n_{2N}	r/min	600	500	375	300	300	250	250	200	150	150	125	100	75	60	37.5	30	**1FT2104-4AK..-2..0-Z**
			M_{2N}	Nm	2.6	3.45	4.75	6.6	6.9	8.5	8.2	10.6	14.1	14.7	18.2	23	30.5	38	50	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	3	4.1	5.2	7.3	8.4	10.6	9.4	12.6	15.8	16.9	21	26.5	34	42.5	50	38	
			M_{2max}	Nm	10.5	14.1	17.7	24.5	28.5	35.5	31.5	42.5	53	56	70	88	113	131	80	61	
2.1 ... 2.15	7 ... 7.09	0.56 (0.65)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	50	30	**1FT2104-5AF..-2..0-Z**
			M_{2N}	Nm	5.5	7.8	8.4	13.4	13.8	17.8	17	23	28	28	36	47.5	61	73	46	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.3	8.4	10.6	14.9	17.1	21	19.1	25.5	32	34	42.5	53	68	82	50	38	
			M_{2max}	Nm	21	28	35	49.5	56	61	63	84	105	112	140	131	144	131	80	61	
2.08 ... 2.13	7.09 ... 7.19	0.56 (0.65)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	50	30	**1FT2104-5AK..-2..0-Z**
			M_{2N}	Nm	5.4	7.7	8.3	13.2	13.6	17.5	16.7	22.5	27.5	27.5	35.5	47	60	72	46	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.2	8.4	10.5	14.8	17	21	19	25	31.5	33.5	42	52	67	82	50	38	
			M_{2max}	Nm	21	28.5	35.5	50	57	61	64	85	106	113	142	131	144	131	80	61	
2.84 ... 2.88	9.37 ... 9.5	0.76 (0.84)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	60	50	30	**1FT2104-6AF..-2..0-Z**
			M_{2N}	Nm	6.7	9.5	10.1	16.1	16.5	21	20	27	33	33	42.5	56	72	69	49	38	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34	42.5	45.5	57	71	90	82	50	38	
			M_{2max}	Nm	28	37.5	47	66	76	61	84	112	131	144	144	131	144	131	80	61	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NRKW090, 1-stage						NRKW090, 2-stage								
1. Order code			B36						B37								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	40	53	67	65	50	38	97	90	82	90	90	82	90	82	50	38
	$M_{2max,G}$	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	80	61
	$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	170
	$J_{1.G}$	kg cm²	1.408	1.107	1.026	0.96	0.944	0.925	1.245	1.22	1.211	1.002	0.96	0.956	0.918	0.917	0.917	0.907
	$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW090 1 and 2-stage (continued)																				
4.52 ... 4.57	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	60	50	–	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	10.6	15	19.4	24	30.5	30.5	29.5	39.5	47.5	60	59	80	90	82	40	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.6	18.1	22.5	31.5	36.5	38	40.5	54	67	72	90	82	90	82	50	–	
			M_{2max}	Nm	42.5	57	71	100	80	61	127	144	131	144	144	131	144	131	80	–	
4.56 ... 4.61	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	75	60	60	37.5	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	9.6	13.7	17.9	22	28	37.5	26.5	44	55	55	74	72	89	72	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.7	18.3	22.5	32	36.5	38	41	54	68	73	90	82	90	82	50	–	
			M_{2max}	Nm	42.5	57	71	100	80	61	127	144	131	144	144	131	144	131	80	–	
7.31 ... 7.38	22.7 ... 23	2.65 (3.5)	n_{2N}	r/min	375	375	300	200	200	200	150	125	100	100	75	75	60	60	–	–	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	17.7	18.7	24	37.5	37.5	34.5	48	58	72	72	90	82	90	82	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	29	36.5	51	50	38	66	87	82	90	90	82	90	82	–	–	
			M_{2max}	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW090 1 and 2-stage																				
0.366 ... 0.436	1.59 ... 1.64	0.2 (0.22)	n_{2N}	r/min	375	375	300	250	200	200	200	150	125	125	100	75	60	50	30	20	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	0.82	0.99	1.39	1.9	2.4	2.55	2.4	3.35	4.15	4.2	5.5	7.5	9.7	11.8	19.9	30	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.09	1.54	1.98	2.85	3.3	4.2	3.7	5	6.3	6.8	8.5	10.7	13.8	17.3	27.5	38	
			M_{2max}	Nm	4.75	6.4	8.1	11.4	13.1	16.4	14.6	19.5	24.5	26	32.5	40.5	52	65	80	61	
0.974 ... 1.03	3.43 ... 3.48	0.35 (0.37)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	75	60	37.5	30	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	2.2	3.15	3.55	5.6	6	7.7	7.1	9.7	12	12.5	15.9	20.5	21.5	27	44.5	33.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.9	3.95	5	7.1	8.1	10.2	9.1	12.2	15.3	16.3	20	25.5	32.5	41	50	38	
			M_{2max}	Nm	10.3	13.7	17.2	24	27.5	34.5	31	41	51	55	68	86	110	131	80	61	
2.06 ... 2.11	6.62 ... 6.71	1.23 (1.31)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	30	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	5.2	7.4	7.9	12.8	13	16.7	16.2	22	26.5	26.5	34	45.5	58	70	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.1	8.3	10.4	14.6	16.8	21	18.7	25	31	33	41.5	52	67	82	50	38	
			M_{2max}	Nm	20	26.5	33	46.5	53	61	59	79	99	106	132	131	144	131	80	61	
2.07 ... 2.12	6.62 ... 6.71	1.23 (1.31)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	30	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	5.4	7.7	8.1	13.1	13.2	17.1	16.5	22	27	27	34.5	46.5	59	71	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6.2	8.3	10.4	14.7	16.9	21	18.9	25	31.5	33.5	42	52	67	82	50	38	
			M_{2max}	Nm	20	26.5	33	46.5	53	61	59	79	99	106	132	131	144	131	80	61	
2.82 ... 2.87	8.9 ... 9.02	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	37.5	30	1FT2204-6AF..-2..0-Z
			M_{2N}	Nm	7	10	13	16.8	21	21.5	21	28	34	42	43.5	58	74	82	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.4	11.3	14.2	20	22.5	28.5	25.5	34	42.5	45	56	71	90	82	50	38	
			M_{2max}	Nm	27	36	45	63	72	61	80	107	131	142	144	131	144	131	80	61	

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Planetary gearbox data																	
Gearbox type:		NRKW090, 1-stage						NRKW090, 2-stage									
1. Order code		B36						B37									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	40	53	67	65	50	38	97	90	82	90	90	82	90	82	50	38
$M_{2max,G}$	Nm	64	85	107	104	80	61	155	144	131	144	144	131	144	131	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	170
$J_{1,G}$	kg cm²	1.408	1.107	1.026	0.96	0.944	0.925	1.245	1.22	1.211	1.002	0.96	0.956	0.918	0.917	0.917	0.907
$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRKW090

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW090 1 and 2-stage (continued)																				
2.85 ... 2.9	10.1 ... 10.3	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	150	100	100	100	75	60	50	37.5	–	**1FT2205-2AC..-0..0-Z**
			M_{2N}	Nm	5.8	8.5	11.1	13.9	17.9	23	17.4	23.5	34.5	36	35	48.5	61	72	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34.5	43	46	57	72	90	82	49.5	–	
			M_{2max}	Nm	30.5	41	51	71	80	61	91	122	131	144	144	131	144	131	80	–	
2.89 ... 2.94	10.1 ... 10.3	3.15 (4.05)	n_{2N}	r/min	500	375	375	250	250	200	200	150	125	125	100	75	60	50	37.5	–	**1FT2205-2AF..-0..0-Z**
			M_{2N}	Nm	7	9.6	10.4	16.6	16.8	21.5	21	28	34	34	43	58	74	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.5	20.5	23	29	26	35	43.5	46.5	58	73	90	82	50	–	
			M_{2max}	Nm	30.5	41	51	71	80	61	91	122	131	144	144	131	144	131	80	–	
2.85 ... 2.9	10.1 ... 10.3	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	37.5	–	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.4	9.1	11.7	15.1	18.8	18.8	18.8	25.5	30.5	37.5	38	52	66	78	49.5	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.4	14.3	20	23	28.5	25.5	34.5	43	46	57	72	90	82	49.5	–	
			M_{2max}	Nm	30.5	41	51	71	80	61	91	122	131	144	144	131	144	131	80	–	
4.98 ... 5.02	17 ... 17.2	5.1 (6)	n_{2N}	r/min	500	375	300	200	200	150	150	125	100	100	75	75	60	50	37.5	–	**1FT2205-4AF..-0..0-Z**
			M_{2N}	Nm	9.3	13.4	17.4	27	27.5	37	35	43	54	54	72	70	88	82	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.9	19.9	25	35	40	38	44.5	59	74	79	90	82	90	82	50	–	
			M_{2max}	Nm	51	68	86	104	80	61	153	144	131	144	144	131	144	131	80	–	

Planetary gearbox data																	
Gearbox type:			**NRKW090, 1-stage**						**NRKW090, 2-stage**								
1. Order code			**B36**						**B37**								
i			**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
$M_{2N,G}$	Nm		40	53	67	65	50	38	97	90	82	90	90	82	90	82	50	38
$M_{2max,G}$	Nm		64	85	107	104	80	61	155	144	131	144	144	131	144	131	80	61
$M_{2Em.Off}$	Nm		180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	170
$J_{1,G}$	kg cm²		1.408	1.107	1.026	0.96	0.944	0.925	1.245	1.22	1.211	1.002	0.96	0.956	0.918	0.917	0.917	0.907
$\varphi_{2,G}$	'		13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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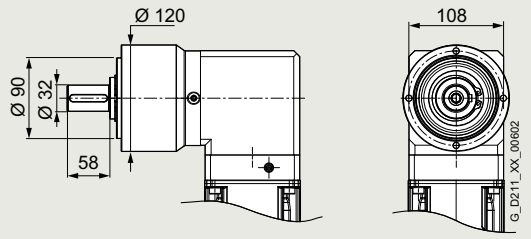
Selection and ordering data

NRKW120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	2500 N
Average axial force for 20000 h	$F_{A,eq}$	4000 N
Average radial force for 30000 h	$F_{R,eq}$	2150 N
Average axial force for 30000 h	$F_{A,eq}$	3000 N
Maximum radial force	$F_{R,max}$	4000 N
Maximum axial force	$F_{A,max}$	5900 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW120 1 and 2-stage																					
0.249	1.56	0.093	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	60	50	30	20	**1FT2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	0.38	0.68	0.88	1.44	1.54	2.25	1.88	2.4	3.2	3.3	4.9	6.3	7	8.5	14.7	22.5	■■■ + ■■■ + . . .
0.379	1.67		$M_{2.0}$	Nm	0.74	1.13	1.52	2.3	2.65	3.45	3.05	4.2	5.3	5.7	7.2	9.1	11.8	14.9	24	37.5	
			M_{2max}	Nm	4.65	6.3	8	11.4	13.1	16.5	14.7	19.7	24.5	26	33	41	53	66	106	152	
0.86	3.59	0.139	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	75	60	50	30	20	**1FT2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.7	2.15	3	4.25	4.25	5.9	5.2	7.3	9.1	9.4	12.4	16.3	21.5	26	43.5	67	■■■ + ■■■ + . . .
0.978	3.68		$M_{2.0}$	Nm	2.55	3.55	4.55	6.5	7.5	9.5	8.4	11.4	14.3	15.3	19.2	24	31	38.5	62	95	
			M_{2max}	Nm	10.7	14.4	18.2	25.5	29	36.5	32.5	43.5	54	58	73	91	117	146	192	152	
0.888	3.3	0.35	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	100	75	60	37.5	25	**1FT2104-4AF..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.89	2.85	3.4	4.95	6	7.8	6.8	9.4	10.1	12.2	16	16.2	24	30	48.5	75	■■■ + ■■■ + . . .
1.01	3.39		$M_{2.0}$	Nm	2.65	3.65	4.7	6.7	7.7	9.8	8.7	11.7	14.7	15.7	19.8	24.5	31.5	39.5	64	95	
			M_{2max}	Nm	9.9	13.3	16.7	23.5	27	33.5	30	40	50	53	67	84	107	134	192	152	
0.881	3.4	0.35	n_{2N}	r/min	500	375	375	300	250	200	200	150	150	125	100	100	75	60	37.5	25	**1FT2104-4AK..-0..0-Z**
...	...	(0.43)	M_{2N}	Nm	2.05	3	3.85	5.4	6.6	8.5	7.2	9.8	11	13.2	17	17.1	26.5	33.5	54	84	■■■ + ■■■ + . . .
0.998	3.49		$M_{2.0}$	Nm	2.6	3.65	4.65	6.7	7.7	9.7	8.6	11.6	14.6	15.6	19.6	24.5	31.5	39.5	63	95	
			M_{2max}	Nm	10.2	13.7	17.2	24	27.5	34.5	31	41	51	55	69	86	110	138	192	152	
1.97	6.93	0.56	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	100	100	75	60	50	30	25	**1FT2104-5AF..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	4.6	7.1	9.4	12.8	12.6	16.7	15.7	21.5	26	30.5	34.5	47	61	74	120	95	■■■ + ■■■ + . . .
2.07	7.01		$M_{2.0}$	Nm	5.9	8	10.1	14.3	16.4	20.5	18.3	24.5	30.5	32.5	41	51	65	82	120	95	
			M_{2max}	Nm	20.5	27.5	34.5	48.5	55	70	62	83	104	111	138	173	220	275	192	152	
1.96	7.03	0.56	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	100	100	75	60	50	30	25	**1FT2104-5AK..-0..0-Z**
...	...	(0.65)	M_{2N}	Nm	4.5	7	9.3	12.6	12.4	16.4	15.4	21	25.5	30	34	46.5	60	72	120	95	■■■ + ■■■ + . . .
2.05	7.1		$M_{2.0}$	Nm	5.8	7.9	10	14.2	16.2	20	18.2	24	30.5	32.5	40.5	51	65	81	120	95	
			M_{2max}	Nm	21	28	35	49.5	56	71	63	84	105	112	140	175	225	275	192	152	
2.71	9.3	0.76	n_{2N}	r/min	500	375	300	250	200	200	200	125	100	100	100	75	60	50	37.5	25	**1FT2104-6AF..-0..0-Z**
...	...	(0.84)	M_{2N}	Nm	5.7	8.8	12	15.6	20	20	19	31.5	39.5	40.5	41	56	73	88	105	95	■■■ + ■■■ + . . .
2.8	9.42		$M_{2.0}$	Nm	8.1	10.9	13.7	19.4	22	27.5	24.5	33	41.5	44	55	69	89	111	120	95	
			M_{2max}	Nm	28	37	46.5	65	75	94	83	111	139	149	186	230	295	275	192	152	

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Planetary gearbox data																	
Gearbox type:		**NRKW120, 1-stage**						**NRKW120, 2-stage**									
1. Order code		**B46**						**B47**									
	i	**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$ Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$ Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$ Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1.G}$ kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
	$\varphi_{2,G}$ '	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRKW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NRKW120 1 and 2-stage (continued)																				
4.41 ... 4.49	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	500	375	300	250	200	150	200	150	100	100	75	75	60	50	37.5	25	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	9.5	14.4	19.4	24	31	40	28.5	39	59	61	79	83	107	126	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.2	17.7	22	31	35.5	44.5	40	53	66	71	89	111	142	172	120	95	
			M_{2max}	Nm	42.5	56	71	99	113	142	127	169	210	225	280	275	312	275	192	152	
4.44 ... 4.52	14.1 ... 14.2	1.71 (2.55)	n_{2N}	r/min	375	375	300	250	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	11.6	13.1	17.9	21.5	29	38.5	34.5	45	56	58	76	95	120	154	110	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	13.3	17.8	22	31.5	36	45	40	53	67	71	89	112	143	172	120	95	
			M_{2max}	Nm	42.5	56	71	99	113	142	127	169	210	225	280	275	312	275	192	152	
7.32 ... 7.39	22.6 ... 22.9	2.65 (3.5)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	50	37.5	25	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	18	24	30	40	40	55	51	62	78	77	107	133	163	144	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21.5	29	36.5	51	59	73	65	87	109	117	146	172	195	172	120	95	
			M_{2max}	Nm	68	91	114	160	183	152	200	270	275	312	312	275	312	275	192	152	
7.64 ... 7.72	24.5 ... 24.8	4.6 (6.3)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	50	37.5	–	1FT2106-3AF..-0..0-Z
			M_{2N}	Nm	18.7	24.5	31	41.5	41.5	57	53	64	81	80	111	139	169	149	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	61	77	69	92	115	122	153	172	195	172	120	–	
			M_{2max}	Nm	74	99	124	173	192	152	220	295	275	312	312	275	312	275	192	–	
9.94 ... 10	31.1 ... 31.6	6 (7.6)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	60	60	50	50	37.5	–	1FT2106-4AF..-0..0-Z
			M_{2N}	Nm	23	30	37.5	49	64	67	62	94	92	125	158	157	189	152	116	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	50	70	80	95	89	119	149	159	195	172	195	172	120	–	
			M_{2max}	Nm	94	126	157	216	192	152	251	312	275	312	312	275	312	275	192	–	
14.1 ... 14.2	43 ... 43.7	8.7 (10.4)	n_{2N}	r/min	375	300	250	200	150	150	125	100	75	75	60	60	50	50	–	–	1FT2106-6AF..-0..0-Z
			M_{2N}	Nm	28.5	37	46	58	80	80	90	114	151	152	190	172	195	171	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	42.5	56	71	99	113	95	127	169	172	195	195	172	195	172	–	–	
			M_{2max}	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW120 1 and 2-stage																				
0.236 ... 0.366	1.46 ... 1.57	0.2 (0.22)	n_{2N}	r/min	300	250	250	200	150	150	150	125	100	100	75	60	50	37.5	25	15	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	0.34	0.63	0.87	1.39	1.89	2.15	1.87	2.3	3.1	3.1	4.8	6.2	8	10.8	16.8	27.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.7	1.08	1.46	2.2	2.55	3.3	2.9	4.05	5.1	5.5	7	8.8	11.4	14.4	23	36.5	
			M_{2max}	Nm	4.35	5.9	7.5	10.7	12.3	15.5	13.8	18.5	23	24.5	31	39	50	62	100	152	
0.843 ... 0.961	3.3 ... 3.39	0.35 (0.37)	n_{2N}	r/min	375	375	300	250	200	200	200	150	125	125	100	75	60	50	30	20	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	2	2.5	3.5	4.85	6	6.7	6	8.3	10.3	10.6	13.9	18.4	24	29.5	49	75	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.5	3.5	4.45	6.4	7.4	9.3	8.3	11.2	14.1	15	18.9	23.5	30.5	38	61	95	
			M_{2max}	Nm	9.9	13.3	16.7	23.5	27	33.5	30	40	50	53	67	84	107	134	192	152	
1.93 ... 2.03	6.55 ... 6.62	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	30	25	1FT2204-5AF..-0..0-Z
			M_{2N}	Nm	4.35	6.8	9	12.2	14.9	15.6	14.9	20.5	24.5	29.5	32.5	44.5	58	69	116	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.7	7.8	9.9	14	16	20	17.9	24	30	32	40	50	64	80	120	95	
			M_{2max}	Nm	19.6	26	32.5	46	52	66	59	78	98	104	131	163	205	260	192	152	
1.94 ... 2.04	6.55 ... 6.62	1.23 (1.31)	n_{2N}	r/min	500	375	300	250	200	200	200	150	125	100	100	75	60	50	30	25	1FT2204-5AK..-0..0-Z
			M_{2N}	Nm	4.5	7	9.2	12.5	15.1	16	15.3	21	25.5	30	33	46	59	71	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.8	7.9	9.9	14.1	16.1	20	18.1	24	30	32	40.5	50	65	81	120	95	
			M_{2max}	Nm	19.6	26	32.5	46	52	66	59	78	98	104	131	163	205	260	192	152	

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Planetary gearbox data																	
Gearbox type:		NRKW120, 1-stage						NRKW120, 2-stage									
1. Order code		B46						B47									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
$J_{1,G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW120 1 and 2-stage (continued)																					
2.69 ... 2.78	8.83 ... 8.94	1.61 (1.69)	n_{2N}	r/min	500	375	300	250	200	200	200	150	100	100	100	75	60	50	37.5	25	1FT2204-6AF..-0..0-Z
			M_{2N}	Nm	6.1	9.4	12.9	16.5	21	20.5	19.9	27	39	41.5	42.5	59	76	91	102	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8	10.8	13.7	19.3	22	27.5	24.5	33	41	44	55	69	88	110	120	95	
			M_{2max}	Nm	26.5	35.5	44.5	62	71	89	79	106	132	141	176	220	280	275	192	152	
2.89 ... 2.98	10.1 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	200	150	200	125	100	100	75	75	60	50	30	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	6.7	7.8	10.9	13.3	17.8	23	16	27	34	35.5	46	48.5	63	74	119	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.6	11.6	14.6	20.5	23.5	29.5	26.5	35.5	44.5	47.5	59	74	95	119	120	95	
			M_{2max}	Nm	30	40.5	50	71	81	101	90	121	151	161	200	250	312	275	192	152	
2.92 ... 3.01	10.1 ... 10.2	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	250	200	200	150	125	125	100	75	60	50	37.5	25	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	6.1	9	11.6	16	15.4	20.5	19.8	27	32.5	31.5	42	57	74	90	99	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.7	11.8	14.8	20.5	23.5	30	26.5	35.5	45	48	60	75	96	120	120	95	
			M_{2max}	Nm	30	40.5	50	71	81	101	90	121	151	161	200	250	312	275	192	152	
2.86 ... 2.95	10.1 ... 10.2	3.15 (4.05)	n_{2N}	r/min	500	375	300	250	200	150	200	150	125	100	100	75	60	50	30	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.3	8.4	11.2	14.5	18.3	23.5	17.5	24	28.5	36.5	36.5	52	67	79	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.5	11.5	14.5	20.5	23.5	29.5	26	35	44	47	58	73	94	117	119	94	
			M_{2max}	Nm	30	40.5	50	71	81	101	90	121	151	161	200	250	312	275	192	152	
5.08 ... 5.16	16.9 ... 17.1	5.1 (6)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2205-4AF..-0..0-Z
			M_{2N}	Nm	12.3	16.6	21	28	28.5	39.5	37	45	57	56	78	98	120	160	102	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	36	41	51	46	61	77	82	102	128	164	172	120	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
5.18 ... 5.26	16.9 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	150	125	150	100	100	75	75	50	37.5	37.5	30	20	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	11.7	15.6	19.7	25.5	35	43	34	52	51	69	70	107	143	146	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.5	20.5	26	36.5	41.5	52	46.5	62	78	83	104	130	166	172	120	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
5.25 ... 5.33	16.9 ... 17.1	7.8 (9.4)	n_{2N}	r/min	500	375	300	250	200	150	200	125	100	100	75	75	50	37.5	37.5	25	1FT2206-2AF..-0..0-Z
			M_{2N}	Nm	10	15.2	20.5	24.5	32.5	42.5	29	49.5	62	64	84	84	132	170	114	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.7	21	26	37	42.5	53	47.5	63	79	84	105	132	169	172	120	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
5.09 ... 5.17	16.9 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	200	150	150	125	100	100	75	60	50	37.5	30	25	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	12.5	16.7	21	28	28	39	37	44.5	56	55	78	97	119	159	119	91	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.2	20	25.5	36	41	51	46	61	77	82	102	128	164	172	119	95	
			M_{2max}	Nm	51	68	85	119	136	152	152	200	250	270	312	275	312	275	192	152	
7.78 ... 7.85	25.4 ... 25.8	11.5 (13.1)	n_{2N}	r/min	375	300	250	200	150	150	150	100	100	75	75	60	50	37.5	25	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	17.2	22.5	28.5	37.5	50	52	49	73	73	98	101	126	153	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	23	31	39	54	62	78	70	93	117	124	155	172	195	172	120	–	
			M_{2max}	Nm	77	103	128	180	192	152	230	305	275	312	312	275	312	275	192	–	
7.65 ... 7.72	25.4 ... 25.8	11.5 (13.1)	n_{2N}	r/min	375	300	250	200	150	125	150	100	75	75	60	50	37.5	37.5	30	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	16.5	21.5	27.5	35.5	48.5	59	47	71	93	95	120	145	193	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38	53	61	77	69	92	115	122	153	172	195	172	120	–	
			M_{2max}	Nm	77	103	128	180	192	152	230	305	275	312	312	275	312	275	192	–	

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Planetary gearbox data																	
Gearbox type:		NRKW120, 1-stage						NRKW120, 2-stage									
1. Order code		B46						B47									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
$J_{1,G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NRKW120

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NRKW120 1 and 2-stage (continued)																				
10.7 ... 10.8	35.9 ... 36.5	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	125	100	100	75	75	60	50	50	37.5	37.5	25	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	21	26	34	46.5	56	72	68	91	92	115	141	134	185	153	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	32	43	53	75	86	95	96	128	160	171	195	172	195	172	120	–	
			M_{2max}	Nm	109	145	182	216	192	152	251	312	275	312	312	275	312	275	192	–	
10.4 ... 10.5	34 ... 34.5	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	150	100	75	75	60	60	50	50	37.5	–	**1FT2206-4AF..-0..0-Z**
			M_{2N}	Nm	23	30.5	38	49.5	66	68	63	95	126	127	161	160	191	158	118	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	41.5	52	73	83	95	93	125	156	166	195	172	195	172	120	–	
			M_{2max}	Nm	103	138	172	216	192	152	251	312	275	312	312	275	312	275	192	–	
9.93 ... 10	34 ... 34.5	15.1 (16.8)	n_{2N}	r/min	375	250	250	150	150	125	125	100	75	75	60	50	50	37.5	30	–	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	19.1	30	31	53	55	67	64	80	107	107	136	163	152	172	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	70	80	95	89	119	149	159	195	172	195	172	120	–	
			M_{2max}	Nm	103	138	172	216	192	152	251	312	275	312	312	275	312	275	192	–	

Planetary gearbox data																	
Gearbox type:			**NRKW120, 1-stage**						**NRKW120, 2-stage**								
1. Order code			**B46**						**B47**								
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	80	105	130	135	120	95	157	195	172	195	195	172	195	172	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	251	312	275	312	312	275	312	275	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	3.248	2.492	2.209	1.989	1.936	1.861	2.818	2.733	2.702	2.201	2.023	2.012	1.864	1.86	1.856	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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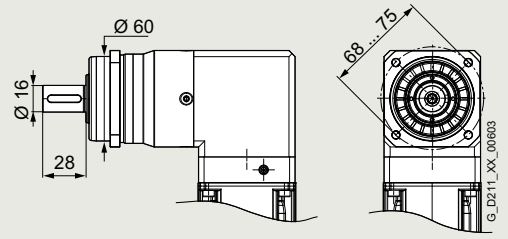
Selection and ordering data

NLCW060



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	3200 N
Average axial force for 20000 h	$F_{A,eq}$	4400 N
Average radial force for 30000 h	$F_{R,eq}$	3200 N
Average axial force for 30000 h	$F_{A,eq}$	3900 N
Maximum radial force	$F_{R,max}$	3200 N
Maximum axial force	$F_{A,max}$	4400 N

Servomotor data			Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																		
Nm	Nm	kg cm²																		
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW060 1 and 2-stage																				
0.309 ... 0.489	1.63 ... 1.81	0.093 (0.112)	n_{2N}	r/min	375	300	300	250	250	200	150	150	125	125	100	75	75	60	37.5	30	1FT2103-2AH..-2..0-Z
			M_{2N}	Nm	0.455	0.91	1.2	1.94	2.05	3	2.75	3.25	4.5	4.45	6.1	8.5	8.9	11.7	18	14.9	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	0.92	1.43	1.95	2.95	3.45	4.5	3.85	5.3	6.8	7.3	9.3	11.7	15.2	19.2	18	15	
			M_{2max}	Nm	4.85	6.6	8.5	12.1	13.9	17.6	15.8	21	26.5	28.5	35.5	44.5	57	64	29	24	
0.795 ... 0.962	3.66 ... 3.83	0.139 (0.158)	n_{2N}	r/min	300	300	250	250	200	200	150	125	125	100	100	75	60	50	50	30	1FT2103-4AH..-2..0-Z
			M_{2N}	Nm	1.77	2.3	3.25	4.05	5.4	5.9	5.7	7.7	8.5	10.6	11.4	15.9	20.5	25.5	17.3	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.35	3.35	4.35	6.3	7.3	9.3	8.1	11	13.9	14.9	18.7	23.5	30	38	18	15	
			M_{2max}	Nm	10.9	14.8	18.6	26	29	24	34	45.5	57	60	70	64	70	64	29	24	
0.952 ... 1.14	3.37 ... 3.54	0.368 (0.448)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	100	75	60	50	30	1FT2104-4AF..-2..0-Z
			M_{2N}	Nm	2.3	2.95	4.25	6.1	6.7	8.9	6.8	10.1	13.3	13.4	17.7	17.8	25.5	33	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.85	4	5.1	7.4	8.6	10.9	9.7	13.2	16.7	17.8	22	28	36	40	18	15	
			M_{2max}	Nm	10.1	13.6	17.2	24	27.5	24	31	42	52	56	70	64	70	64	29	24	
0.945 ... 1.14	3.46 ... 3.64	0.368 (0.448)	n_{2N}	r/min	375	375	300	250	250	200	200	150	125	125	100	75	75	60	50	37.5	1FT2104-4AK..-2..0-Z
			M_{2N}	Nm	2.5	3.1	4.6	6.6	7	9.6	7.1	10.6	13.9	14	18.5	25	26.5	34.5	18	15	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	2.8	3.95	5.1	7.4	8.5	10.8	9.7	13.1	16.6	17.7	22	28	36	40	18	15	
			M_{2max}	Nm	10.3	14	17.6	24.5	28.5	24	32	43	54	57	70	64	70	64	29	24	
2.03 ... 2.22	7 ... 7.15	0.578 (0.668)	n_{2N}	r/min	375	300	300	250	200	200	150	150	125	125	100	75	75	60	50	–	1FT2104-5AF..-2..0-Z
			M_{2N}	Nm	4.45	6.6	7.5	10.5	13.6	14.6	14.9	16.3	21	20.5	27.5	38	38	40	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6.1	8.3	10.5	15	17.2	15	19.4	26	32.5	35	43.5	40	44	40	18	–	
			M_{2max}	Nm	20.5	28	35	40	29	24	63	70	70	70	70	64	70	64	29	–	
2.02 ... 2.2	7.09 ... 7.24	0.578 (0.668)	n_{2N}	r/min	375	300	300	250	200	200	150	150	125	125	100	75	75	60	50	–	1FT2104-5AK..-2..0-Z
			M_{2N}	Nm	4.35	6.5	7.4	10.3	13.4	14.5	14.6	16.1	21	20.5	27	37.5	37.5	40	18	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	6	8.2	10.4	14.9	17.1	15	19.3	25.5	32.5	34.5	43.5	40	44	40	18	–	
			M_{2max}	Nm	21	28.5	35.5	40	29	24	64	70	70	70	70	64	70	64	29	–	
2.77 ... 2.94	9.42 ... 9.55	0.778 (0.858)	n_{2N}	r/min	375	300	300	250	200	200	150	150	125	100	100	75	75	75	–	–	1FT2104-6AF..-2..0-Z
			M_{2N}	Nm	5.5	8.1	9.1	12.5	16.3	15	17.9	19.4	25	31	32.5	40	43.5	33.5	–	–	■■■ + ■■■ + . . .
			$M_{2.0}$	Nm	8.3	11.2	14.2	20	18	15	26	34.5	43.5	44	44	40	44	40	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	–	

Planetary gearbox data																		
Gearbox type:			NLCW060, 1-stage						NLCW060, 2-stage									
1. Order code			C26						C27									
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18	15
	$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29	24
	$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
	$J_{1.G}$	kg cm²	0.406	0.275	0.253	0.234	0.23	0.225	0.355	0.35	0.234	0.242	0.233	0.231	0.223	0.222	0.222	0.22
	$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NLCW060

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW060 1 and 2-stage																				
0.301 ... 0.497	1.53 ... 1.72	0.2 (0.22)	n_{2N}	r/min	300	300	250	250	200	200	150	150	125	125	100	75	60	50	37.5	30	1FT2203-2AK..-2..0-Z
			M_{2N}	Nm	0.55	0.83	1.27	1.67	2.25	2.55	2.6	3	4.05	4.05	5.4	7.6	10	12.3	17.1	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	0.9	1.4	1.91	2.9	3.4	4.4	3.9	5.4	6.9	7.4	9.4	11.9	15.5	19.5	18	15	
			M_{2max}	Nm	4.55	6.3	8	11.4	13.2	16.6	14.9	20	25	27	33.5	42.5	54	64	29	24	
0.907 ... 1.1	3.37 ... 3.54	0.35 (0.37)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	75	60	50	37.5	30	1FT2203-4AK..-2..0-Z
			M_{2N}	Nm	2.1	2.65	3.75	5.5	5.9	8.3	6.4	8.4	11.4	11.5	15.9	16.6	21.5	26.5	18	15	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.7	3.8	4.9	7.1	8.2	10.4	9.3	12.6	16	17.1	21.5	27	34.5	40	18	15	
			M_{2max}	Nm	10.1	13.6	17.2	24	27.5	24	31	42	52	56	70	64	70	64	29	24	
1.99 ... 2.18	6.61 ... 6.76	1.248 (1.328)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	100	75	60	60	50	–	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	4.25	6.4	7.1	9.8	12.9	13.6	14.3	18.5	24	24.5	25	35.5	44	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.9	8.1	10.3	14.7	16.9	15	19.1	25.5	32	34	43	40	44	40	18	–	
			M_{2max}	Nm	19.8	26.5	33	40	29	24	60	70	70	70	70	64	70	64	29	–	
2.01 ... 2.19	6.61 ... 6.76	1.248 (1.328)	n_{2N}	r/min	375	300	300	250	200	200	150	125	125	100	100	75	60	60	50	–	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	4.35	6.5	7.3	10	13.2	13.9	14.5	18.8	20	25	25.5	36	44	40	18	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	6	8.2	10.4	14.8	17	15	19.2	25.5	32	34.5	43	40	44	40	18	–	
			M_{2max}	Nm	19.8	26.5	33	40	29	24	60	70	70	70	70	64	70	64	29	–	
2.76 ... 2.93	8.93 ... 9.07	1.628 (1.708)	n_{2N}	r/min	375	300	250	200	200	200	150	125	100	100	75	75	75	60	–	–	1FT2204-6AF..-2..0-Z
			M_{2N}	Nm	5.7	8.5	11.2	15.8	16.7	15	18.5	23.5	31.5	31.5	43	40	40	40	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8.2	11.2	14.1	20	18	15	25.5	34.5	43.5	44	44	40	44	40	–	–	
			M_{2max}	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	–	–	

Planetary gearbox data																	
Gearbox type:		NLCW060, 1-stage						NLCW060, 2-stage									
1. Order code		C26						C27									
i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	14	19	24	25	18	15	44	44	44	44	44	40	44	40	18	15
$M_{2max,G}$	Nm	22	30	38	40	29	24	70	70	70	70	70	64	70	64	29	24
$M_{2Em.Off}$	Nm	66	86	80	80	80	70	88	88	88	88	88	80	88	80	80	80
$J_{1,G}$	kg cm²	0.406	0.275	0.253	0.234	0.23	0.225	0.355	0.35	0.234	0.242	0.233	0.231	0.223	0.222	0.222	0.22
$\varphi_{2,G}$	'	16						18									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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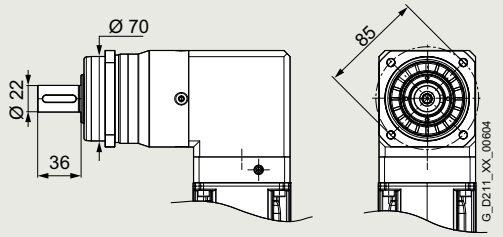
Selection and ordering data

NLCW080



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	5500 N
Average axial force for 20000 h	$F_{A,eq}$	6400 N
Average radial force for 30000 h	$F_{R,eq}$	4800 N
Average axial force for 30000 h	$F_{A,eq}$	5700 N
Maximum radial force	$F_{R,max}$	5500 N
Maximum axial force	$F_{A,max}$	6400 N

Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW080 1 and 2-stage																					
0.223	1.53	0.093	n_{2N}	r/min	–	200	200	200	200	150	150	125	100	100	75	75	60	50	30	20	**1FT2103-2AH..-0..0-Z**
...	...	(0.112)	M_{2N}	Nm	–	0.495	0.8	1.3	1.49	2.35	1.83	2.65	3.65	3.8	5.4	6.1	8.4	10.5	18.2	28.5	■■■ + ■■■ + . . .
0.447	1.75		$M_{2.0}$	Nm	–	0.89	1.35	2.25	2.7	3.6	3.15	4.55	5.9	6.3	8.2	10.4	13.7	17.3	28	38	
			M_{2max}	Nm	–	6.1	7.8	11.4	13.1	16.7	14.9	20	25	27	34	43	55	69	80	61	
0.695	3.49	0.139	n_{2N}	r/min	300	250	250	200	200	150	150	100	100	100	75	60	50	37.5	30	25	**1FT2103-4AH..-0..0-Z**
...	...	(0.158)	M_{2N}	Nm	1.27	2.1	2.55	4.15	4.3	6.6	5.1	8.4	9.2	9.2	13.5	17.6	22.5	30	40	37	■■■ + ■■■ + . . .
0.975	3.76		$M_{2.0}$	Nm	2.05	3.05	4.05	6.1	7.1	9.1	7.9	10.9	13.8	14.8	18.7	23.5	30.5	38	50	38	
			M_{2max}	Nm	10.4	14.2	18	25.5	29	36.5	33	44.5	55	59	74	93	120	150	80	61	
0.782	3.2	0.35	n_{2N}	r/min	375	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	25	**1FT2104-4AF..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.62	2.7	3.25	4.9	6.4	7.1	7.4	8.4	10.8	13.6	14.8	21	27.5	34.5	44.5	37.5	■■■ + ■■■ + . . .
1.08	3.48		$M_{2.0}$	Nm	2.3	3.4	4.5	6.7	7.8	9.9	8.9	12.1	15.4	16.5	20.5	26	34	42.5	50	38	
			M_{2max}	Nm	9.5	13	16.5	23.5	27	34	30.5	41	51	54	68	86	110	138	80	61	
0.776	3.3	0.35	n_{2N}	r/min	375	300	250	250	200	200	150	125	100	100	100	75	60	50	37.5	30	**1FT2104-4AK..-2..0-Z**
...	...	(0.43)	M_{2N}	Nm	1.77	3.05	4.15	5.1	7.1	7.5	8.2	11	14.2	14.9	15.6	22.5	30	37	46.5	32.5	■■■ + ■■■ + . . .
1.07	3.57		$M_{2.0}$	Nm	2.3	3.4	4.45	6.6	7.7	9.9	8.8	12	15.3	16.4	20.5	26	33.5	42	50	38	
			M_{2max}	Nm	9.8	13.4	17	24	27.5	35	31	42	52	56	70	88	113	142	80	61	
1.87	6.83	0.56	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	50	37.5	30	**1FT2104-5AF..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	4.9	7	8.1	12	12.5	18	14.8	19.1	25	25	35	45	57	57	50	35.5	■■■ + ■■■ + . . .
2.16	7.08		$M_{2.0}$	Nm	5.5	7.7	9.9	14.2	16.4	20.5	18.6	25	31.5	33.5	42	53	68	85	50	38	
			M_{2max}	Nm	20	27.5	34.5	48.5	56	61	63	84	105	112	141	176	192	176	80	61	
1.85	6.93	0.56	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	60	50	37.5	30	**1FT2104-5AK..-2..0-Z**
...	...	(0.65)	M_{2N}	Nm	4.8	6.9	7.9	11.7	12.3	17.7	14.5	18.7	24.5	24.5	34.5	44.5	47	56	50	35.5	■■■ + ■■■ + . . .
2.14	7.17		$M_{2.0}$	Nm	5.5	7.7	9.8	14.1	16.3	20.5	18.4	24.5	31	33.5	42	52	67	85	50	38	
			M_{2max}	Nm	20.5	27.5	35	49.5	56	61	64	85	107	114	143	176	192	176	80	61	
2.6	9.25	0.76	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	37.5	30	**1FT2104-6AF..-2..0-Z**
...	...	(0.84)	M_{2N}	Nm	6.2	8.8	10	14.6	15.2	21.5	18	23	30	30.5	42.5	54	68	91	50	37.5	■■■ + ■■■ + . . .
2.88	9.48		$M_{2.0}$	Nm	7.8	10.7	13.6	19.4	22	28	25	33.5	42.5	45	57	71	91	110	50	38	
			M_{2max}	Nm	27.5	37	46.5	65	75	61	84	113	141	151	189	176	192	176	80	61	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NLCW080, 1-stage						NLCW080, 2-stage									
1. Order code		C36						C37									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50	38
	$M_{2max,G}$ Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80	61
	$M_{2Em.Off}$ Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	200
	$J_{1.G}$ kg cm²	1.394	1.089	1.016	0.951	0.937	0.921	1.246	1.218	1.21	1.001	0.959	0.956	0.918	0.917	0.917	0.906
	$\varphi_{2,G}$ '	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type NLCW080

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW080 1 and 2-stage (continued)																				
4.3 ... 4.57	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	300	250	250	200	150	150	150	100	100	75	75	60	50	50	37.5	–	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	10.9	15	16.4	23	31.5	34	28.5	44.5	46	61	65	83	104	94	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.9	17.5	22	31	35.5	38	40	54	67	72	90	110	120	110	50	–	
			M_{2max}	Nm	42	56	70	99	80	61	128	171	176	192	192	176	192	176	80	–	
4.33 ... 4.6	14.1 ... 14.3	1.71 (2.55)	n_{2N}	r/min	300	250	200	200	150	125	125	100	75	75	60	50	50	37.5	37.5	–	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10.2	14	18.9	20.5	29.5	37	31.5	41.5	56	57	73	90	92	110	50	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.9	17.6	22	31	36	38	40.5	54	68	73	91	110	120	110	50	–	
			M_{2max}	Nm	42	56	70	99	80	61	128	171	176	192	192	176	192	176	80	–	
7.09 ... 7.28	22.8 ... 23	2.65 (3.5)	n_{2N}	r/min	300	250	200	150	150	150	125	100	75	75	60	60	50	50	–	–	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	14.7	19.9	26.5	39	41	38	44	57	77	78	101	100	120	101	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21	28.5	35.5	50	50	38	64	86	108	115	120	110	120	110	–	–	
			M_{2max}	Nm	64	85	107	104	80	61	205	192	176	192	192	176	192	176	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW080 1 and 2-stage																				
0.209 ... 0.434	1.44 ... 1.65	0.2 (0.22)	n_{2N}	r/min	–	200	150	150	150	125	125	100	100	75	75	60	50	37.5	25	20	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	–	0.52	1.04	1.61	1.83	2.55	2	3	3.25	4.45	5	6.7	8.7	12	19.1	24	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	0.83	1.28	2.15	2.6	3.5	3.05	4.35	5.7	6.1	7.9	10.1	13.2	16.8	27	38	
			M_{2max}	Nm	–	5.7	7.4	10.7	12.4	15.7	14	19	24	25.5	32	40.5	52	65	80	61	
0.738 ... 1.04	3.2 ... 3.48	0.35 (0.37)	n_{2N}	r/min	300	250	250	200	200	150	150	100	100	100	75	60	50	37.5	30	25	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	1.65	2.55	3.05	4.8	4.85	7.5	5.9	9.5	10.5	10.3	15.4	19.8	25	33	43	30.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	2.2	3.25	4.3	6.4	7.4	9.5	8.5	11.6	14.7	15.8	20	25	32.5	40.5	50	38	
			M_{2max}	Nm	9.5	13	16.5	23.5	27	34	30.5	41	51	54	68	86	110	138	80	61	
1.83 ... 2.11	6.44 ... 6.69	1.23 (1.31)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2204-5AF..-2..0-Z
			M_{2N}	Nm	4.75	6.8	7.8	11.4	11.8	17.3	14.1	18.1	23.5	23.5	33.5	43	54	73	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.4	7.6	9.7	14	16.1	20	18.2	24.5	30.5	33	41.5	52	67	84	50	38	
			M_{2max}	Nm	19.3	26	32.5	46	52	61	59	79	99	106	133	166	192	176	80	61	
1.84 ... 2.13	6.44 ... 6.69	1.23 (1.31)	n_{2N}	r/min	300	250	250	200	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2204-5AK..-2..0-Z
			M_{2N}	Nm	4.9	7	8	11.7	12.1	17.6	14.5	18.5	24	24	34.5	44	55	74	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5.5	7.6	9.7	14	16.2	20	18.3	24.5	31	33	41.5	52	67	84	50	38	
			M_{2max}	Nm	19.3	26	32.5	46	52	61	59	79	99	106	133	166	192	176	80	61	
2.59 ... 2.87	8.77 ... 9	1.61 (1.69)	n_{2N}	r/min	300	250	250	200	150	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2204-6AF..-2..0-Z
			M_{2N}	Nm	6.7	9.4	10.6	15.3	20.5	22.5	18.9	23.5	31	31	44.5	56	71	95	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.7	10.6	13.5	19.3	22	27.5	25	33.5	42	45	56	71	91	110	50	38	
			M_{2max}	Nm	26	35	44	62	71	61	80	107	134	143	179	176	192	176	80	61	
2.6 ... 2.85	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	300	250	200	150	150	150	125	100	75	75	60	50	50	37.5	30	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.8	8.2	11	16	18	19	19.2	25.5	34.5	35.5	45.5	56	58	80	50	38	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.4	22	28	24.5	33	42	44.5	56	70	90	110	50	38	
			M_{2max}	Nm	30	40	50	71	80	61	91	122	153	163	192	176	192	176	80	61	
2.64 ... 2.89	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	300	300	250	200	200	150	150	125	100	100	75	60	50	37.5	37.5	25	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	6.5	7.9	10.9	15.6	15.9	23	19.3	24	31.5	31.5	45	57	72	95	50	37.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	10.8	13.8	19.7	22.5	28.5	25	33.5	42.5	45.5	57	71	92	110	50	38	
			M_{2max}	Nm	30	40	50	71	80	61	91	122	153	163	192	176	192	176	80	61	

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Planetary gearbox data																	
Gearbox type:		NLCW080, 1-stage						NLCW080, 2-stage									
1. Order code		C36						C37									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50	38
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	1.394	1.089	1.016	0.951	0.937	0.921	1.246	1.218	1.21	1.001	0.959	0.956	0.918	0.917	0.917	0.906
$\varphi_{2,G}$	'	13						15									

Color legend:

	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)
Nm	Nm	kg cm²

Selection data servomotors with planetary gearbox

Servomotors with planetary gearbox

SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW080 1 and 2-stage (continued)

$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
2.61 ... 2.86	10 ... 10.3	3.15 (4.05)	n_{2N}	r/min	300	250	250	200	150	150	125	100	100	75	75	60	50	37.5	37.5	25	**1FT2205-2AH..-0..0-Z**
			M_{2N}	Nm	6.2	8.7	9.6	13.9	18.6	20.5	20.5	27	28	37.5	40	51	64	87	44	37.5	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.7	13.6	19.4	22	28	24.5	33.5	42	45	56	70	90	110	50	37.5	
			M_{2max}	Nm	30	40	50	71	80	61	91	122	153	163	192	176	192	176	80	61	
4.73 ... 4.94	17 ... 17.2	5.1 (6)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	50	37.5	37.5	–	**1FT2205-4AF..-0..0-Z**
			M_{2N}	Nm	9.9	13.6	18.5	27	29	36.5	30.5	40.5	55	56	72	88	90	110	47	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.1	19.2	24	34	39	38	43.5	58	73	78	98	110	120	110	50	–	
			M_{2max}	Nm	50	68	85	104	80	61	154	192	176	192	192	176	192	176	80	–	

Planetary gearbox data

Gearbox type:		**NLCW080, 1-stage**						**NLCW080, 2-stage**									
1. Order code		**C36**						**C37**									
i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code		**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
$M_{2N,G}$	Nm	40	53	67	65	50	38	130	120	110	120	120	110	120	110	50	38
$M_{2max,G}$	Nm	64	85	107	104	80	61	208	192	176	192	192	176	192	176	80	61
$M_{2Em.Off}$	Nm	180	240	220	178	190	170	260	240	220	240	240	220	240	220	190	200
$J_{1,G}$	kg cm²	1.394	1.089	1.016	0.951	0.937	0.921	1.246	1.218	1.21	1.001	0.959	0.956	0.918	0.917	0.917	0.906
$\varphi_{2,G}$	'	13						15									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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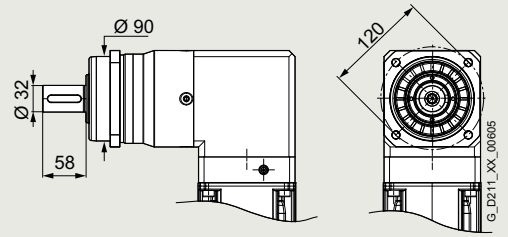
Gearbox type NLCW120

Selection and ordering data

NLCW120



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	6000 N
Average axial force for 20000 h	$F_{A,eq}$	8000 N
Average radial force for 30000 h	$F_{R,eq}$	5400 N
Average axial force for 30000 h	$F_{A,eq}$	7000 N
Maximum radial force	$F_{R,max}$	6000 N
Maximum axial force	$F_{A,max}$	8000 N

3 4

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW120 1 and 2-stage																					
0.132 ... 0.375	1.44 ... 1.68	0.093 (0.112)	n_{2N}	r/min	–	–	150	150	150	150	100	100	75	75	75	60	50	37.5	30	20	1FT2103-2AH..-0..0-Z
			M_{2N}	Nm	–	–	0.255	0.85	1.12	1.54	1.35	1.77	2.85	3	3.6	4.95	7	9.8	13.2	21	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	–	0.65	1.43	1.82	2.6	2.2	3.35	4.5	4.9	6.4	8.4	11.1	14.2	23.5	37	
			M_{2max}	Nm	–	–	7.1	10.5	12.2	15.6	13.9	19	24	25.5	32.5	40.5	52	66	106	152	
0.569 ... 0.981	3.3 ... 3.69	0.139 (0.158)	n_{2N}	r/min	300	300	300	250	250	200	150	125	100	100	75	75	60	50	30	20	1FT2103-4AH..-0..0-Z
			M_{2N}	Nm	0.98	1.56	2.1	3.45	3.75	5.4	4.9	6.6	8.8	9.3	13	14.6	20	25	42	66	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.7	2.7	3.7	5.6	6.6	8.6	7.6	10.6	13.6	14.6	18.6	23.5	30.5	38.5	62	95	
			M_{2max}	Nm	9.9	13.6	17.3	24.5	28	35.5	32	43	54	58	73	91	117	147	192	152	
0.597 ... 1.01	3.01 ... 3.41	0.35 (0.43)	n_{2N}	r/min	375	375	300	300	250	200	150	150	125	125	100	75	75	60	37.5	25	1FT2104-4AF..-0..0-Z
			M_{2N}	Nm	1.27	1.87	2.95	4.05	5.2	7.1	6.5	7.7	9.9	10.1	14.2	19.2	21	27.5	47	73	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.79	2.8	3.8	5.8	6.9	8.9	7.9	11	14	15	19.1	24	31	39.5	64	95	
			M_{2max}	Nm	9	12.4	15.8	22.5	26	33	29.5	39.5	50	53	67	84	108	135	192	152	
0.59 ... 1	3.11 ... 3.5	0.35 (0.43)	n_{2N}	r/min	375	375	375	300	250	200	200	150	125	125	100	75	75	60	37.5	25	1FT2104-4AK..-0..0-Z
			M_{2N}	Nm	1.31	2.1	2.5	4.6	5.8	7.6	5.2	8.7	11.1	10.9	16	20.5	22	29.5	51	77	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.77	2.75	3.8	5.8	6.8	8.8	7.8	10.9	13.9	14.9	19	24	31	39	63	95	
			M_{2max}	Nm	9.3	12.8	16.3	23	26.5	33.5	30	41	51	55	69	86	111	139	192	152	
1.68 ... 2.08	6.64 ... 7.01	0.56 (0.65)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	100	75	60	50	30	25	1FT2104-5AF..-0..0-Z
			M_{2N}	Nm	4.55	5.6	8.5	12.4	12.5	17.7	16.4	21.5	28	29	28.5	42	57	69	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	5	7.1	9.2	13.4	15.5	19.7	17.6	23.5	30	32	40.5	51	65	82	120	95	
			M_{2max}	Nm	19.9	26.5	33.5	48	55	69	62	83	104	111	139	174	220	275	192	152	
1.67 ... 2.07	6.74 ... 7.1	0.56 (0.65)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	75	75	60	50	30	25	1FT2104-5AK..-0..0-Z
			M_{2N}	Nm	4.5	5.4	8.4	12.2	12.3	17.3	16.2	21	27.5	28.5	37.5	41	56	68	118	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	4.95	7	9.1	13.3	15.4	19.6	17.5	23.5	29.5	32	40	50	65	82	120	95	
			M_{2max}	Nm	20	27	34	48.5	55	70	63	84	105	112	141	176	225	280	192	152	
2.42 ... 2.81	9.06 ... 9.41	0.76 (0.84)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	60	50	37.5	25	1FT2104-6AF..-0..0-Z
			M_{2N}	Nm	6.5	9.5	11	15.5	20	21.5	21	26.5	35	35.5	51	64	69	83	98	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.2	10	12.9	18.5	21	27	24	32.5	41	44	55	69	89	111	120	95	
			M_{2max}	Nm	27	36.5	46	64	74	93	83	112	140	149	187	230	300	368	192	152	

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Planetary gearbox data																	
Gearbox type:		NLCW120, 1-stage						NLCW120, 2-stage									
1. Order code		C46						C47									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$ Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$ Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$ Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$ kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
	$\varphi_{2,G}$ '	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic servomotors with planetary gearbox NLCW120 1 and 2-stage (continued)																					
4.11 ... 4.5	13.9 ... 14.2	1.71 (2.55)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	50	50	37.5	25	1FT2105-4AF..-0..0-Z
			M_{2N}	Nm	11	15.2	18.4	24.5	31	32.5	34.5	43	56	56	78	99	126	123	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.3	16.8	21	30	34.5	44	39.5	53	66	71	89	111	143	179	120	95	
			M_{2max}	Nm	41.5	55	70	98	112	141	127	169	210	225	280	350	416	368	192	152	
4.15 ... 4.53	13.9 ... 14.2	1.71 (2.55)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	50	37.5	37.5	25	1FT2105-4AH..-0..0-Z
			M_{2N}	Nm	10.5	14.6	16.9	22	29.5	29	32	39.5	51	51	75	94	120	154	97	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	12.4	17	21.5	30.5	35	44	39.5	53	67	71	89	112	144	180	120	95	
			M_{2max}	Nm	41.5	55	70	98	112	141	127	169	210	225	280	350	416	368	192	152	
7.03 ... 7.39	22.6 ... 22.9	2.65 (3.5)	n_{2N}	r/min	375	300	250	200	200	150	125	100	100	75	75	60	50	37.5	37.5	25	1FT2105-6AF..-0..0-Z
			M_{2N}	Nm	16	22.5	30	42	42.5	61	54	71	71	98	103	131	164	220	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	21	28.5	35.5	50	58	73	65	87	110	117	147	184	235	230	120	95	
			M_{2max}	Nm	67	90	113	159	182	152	205	270	340	365	416	368	416	368	192	152	
7.48 ... 7.75	24.6 ... 24.8	4.6 (6.3)	n_{2N}	r/min	375	300	250	200	200	150	150	100	100	75	75	60	50	37.5	37.5	–	1FT2106-3AF..-0..0-Z
			M_{2N}	Nm	16.8	23.5	30.5	43	44	62	47	74	74	101	107	136	171	230	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	30	38	53	61	77	68	91	114	122	153	192	245	230	120	–	
			M_{2max}	Nm	73	98	123	172	192	152	220	295	368	395	416	368	416	368	192	–	
9.85 ... 10.1	31.3 ... 31.5	6 (7.6)	n_{2N}	r/min	375	300	250	200	200	150	125	100	75	75	60	50	50	37.5	37.5	–	1FT2106-4AF..-0..0-Z
			M_{2N}	Nm	20.5	29	37.5	52	51	74	69	89	120	123	158	193	194	230	105	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29.5	39.5	49.5	70	80	95	89	119	149	159	199	230	260	230	120	–	
			M_{2max}	Nm	93	125	157	216	192	152	280	375	368	416	416	368	416	368	192	–	
14.1 ... 14.4	43.4 ... 43.6	8.7 (10.4)	n_{2N}	r/min	300	250	250	200	150	150	125	100	75	75	60	50	50	50	–	–	1FT2106-6AF..-0..0-Z
			M_{2N}	Nm	33.5	44.5	46.5	63	88	90	85	109	148	151	195	225	225	177	–	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	42	56	71	100	114	95	127	169	210	225	260	230	260	230	–	–	
			M_{2max}	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	–	–	
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW120 1 and 2-stage																					
0.192 ... 0.362	1.42 ... 1.58	0.2 (0.22)	n_{2N}	r/min	–	–	–	150	150	150	125	100	75	75	60	50	50	37.5	25	15	1FT2203-2AK..-0..0-Z
			M_{2N}	Nm	–	–	–	0.76	1.02	1.47	1.01	1.73	2.7	2.95	4.3	5.6	6.6	9.5	15.2	27	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	–	–	–	1.34	1.72	2.45	2.05	3.2	4.3	4.7	6.2	8	10.7	13.7	22.5	36	
			M_{2max}	Nm	–	–	–	9.9	11.5	14.7	13.1	17.8	22.5	24	30.5	38.5	49.5	62	100	152	
0.552 ... 0.964	3.01 ... 3.41	0.35 (0.37)	n_{2N}	r/min	375	300	300	250	250	200	150	125	100	100	75	75	60	50	30	20	1FT2203-4AK..-0..0-Z
			M_{2N}	Nm	1.07	1.99	2.55	4.1	4.45	6.2	5.7	7.7	10.2	10.7	15	16.5	22.5	28	47.5	74	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	1.65	2.6	3.6	5.5	6.5	8.5	7.5	10.4	13.3	14.3	18.2	23	30	37.5	61	95	
			M_{2max}	Nm	9	12.4	15.8	22.5L	26	33	29.5	39.5	50	53	67	84	108	135	192	152	
1.64 ... 2.04	6.26 ... 6.62	1.23 (1.31)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	75	75	60	50	30	25	1FT2204-5AF..-0..0-Z
			M_{2N}	Nm	4.4	5.2	8.1	11.7	11.6	16.6	15.7	20.5	26.5	27.5	37	39.5	54	65	114	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	4.9	6.9	L9	13.1	15.2	19.3	17.2	23	29.5	31.5	39.5	50	64	80	120	95	
			M_{2max}	Nm	18.7	25	32	45	52	65	58	78	98	105	131	164	210	260	192	152	
1.65 ... 2.06	6.26 ... 6.62	1.23 (1.31)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	75	75	60	50	30	25	1FT2204-5AK..-0..0-Z
			M_{2N}	Nm	4.45	5.4	8.3	12.1	12	17	16	21	27.5	28.5	37.5	40.5	55	66	116	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	4.95	7	9.1	13.2	15.3	19.4	17.4	23.5	29.5	31.5	40	50	65	81	120	95	
			M_{2max}	Nm	18.7	25	32	45	52	65	58	78	98	105	131	164	210	260	192	152	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:		NLCW120, 1-stage						NLCW120, 2-stage									
1. Order code		C46						C47									
	i	3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code		R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Gearbox type NLCW120

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																	Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW120 1 and 2-stage (continued)																				
2.4 ... 2.8	8.58 ... 8.93	1.61 (1.69)	n_{2N}	r/min	375	375	300	250	200	200	150	125	100	100	75	75	60	50	30	25	1FT2204-6AF..-0..0-Z
			M_{2N}	Nm	6.7	7.6	11.9	16.4	20	22.5	22.5	28.5	37.5	37.5	52	52	72	86	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.2	10	12.8	18.4	21	26.5	24	32.5	40.5	43.5	55	69	88	111	120	95	
			M_{2max}	Nm	25.5	34.5	43.5	61	70	88	79	106	133	142	177	220	285	355	192	152	
2.66 ... 2.99	9.84 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	50	37.5	30	20	1FT2205-2AC..-0..0-Z
			M_{2N}	Nm	5.6	8.1	9.9	13.4	17.3	17.9	19.2	23.5	31.5	31	44.5	56	72	93	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.9	11	14.1	20	23	29.5	25.5	34.5	43.5	46.5	58	73	95	119	120	95	
			M_{2max}	Nm	29.5	39.5	49.5	70	80	101	90	121	151	162	200	250	325	368	192	152	
2.69 ... 3.03	9.84 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	375	300	250	250	200	150	125	100	100	75	75	60	50	30	25	1FT2205-2AF..-0..0-Z
			M_{2N}	Nm	6	7.6	10.7	15.3	15.7	22	20	27	34.5	36	47.5	52	71	85	119	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	8	11.1	14.2	20.5	23.5	29.5	26	35	44	47	59	74	96	120	120	95	
			M_{2max}	Nm	29.5	39.5	49.5	70	80	101	90	121	151	162	200	250	325	368	192	152	
2.63 ... 2.97	9.84 ... 10.2	3.15 (4.05)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	60	50	30	25	1FT2205-2AH..-0..0-Z
			M_{2N}	Nm	5.8	8.3	10.3	14.3	17.7	19.4	19.8	25.5	33	33.5	45.5	57	62	74	120	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	7.8	10.9	13.9	20	23	29	25.5	34.5	43.5	46.5	58	73	94	118	120	94	
			M_{2max}	Nm	29.5	39.5	49.5	70	80	101	90	121	151	162	200	250	325	368	192	152	
4.88 ... 5.17	16.8 ... 17.1	5.1 (6)	n_{2N}	r/min	375	300	250	200	200	150	150	100	100	75	75	60	50	37.5	30	25	1FT2205-4AF..-0..0-Z
			M_{2N}	Nm	10.7	15.6	20	29	30	41.5	31.5	49.5	50	68	73	93	118	159	120	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.6	19.9	25	35.5	41	51	45.5	61	76	81	102	128	164	205	120	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
4.89 ... 5.27	16.8 ... 17.1	7.8 (9.4)	n_{2N}	r/min	300	300	250	200	150	150	125	100	75	75	60	50	37.5	37.5	30	20	1FT2206-2AC..-0..0-Z
			M_{2N}	Nm	12.7	14.5	19.5	27	35.5	39.5	36	46.5	64	65	85	103	142	143	119	95	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.6	19.9	25	35.5	41	51	46	62	78	83	104	130	168	210	120	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
5.04 ... 5.33	16.8 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	300	250	200	200	150	125	100	100	75	60	50	37.5	37.5	25	1FT2206-2AF..-0..0-Z
			M_{2N}	Nm	11.8	16.3	19.5	25	32.5	32.5	37	45.5	59	59	83	104	133	170	105	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	15.1	20.5	25.5	36.5	42	53	47	63	79	84	105	132	170	210	120	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
4.87 ... 5.17	16.8 ... 17.1	7.8 (9.4)	n_{2N}	r/min	375	300	250	200	200	150	150	100	100	75	75	60	50	37.5	30	20	1FT2206-2AH..-0..0-Z
			M_{2N}	Nm	10.9	15.7	20	28.5	29.5	41	31.5	50	49.5	67	72	93	116	158	119	94	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	14.6	19.8	25	35.5	40.5	51	45.5	61	76	81	102	128	165	205	119	95	
			M_{2max}	Nm	50	67	84	118	136	152	153	200	255	270	340	368	416	368	192	152	
7.62 ... 7.89	25.5 ... 25.8	11.5 (13.1)	n_{2N}	r/min	375	300	250	200	200	150	125	100	75	75	60	50	50	37.5	25	–	1FT2206-3AB..-0..0-Z
			M_{2N}	Nm	15.2	21.5	28.5	40	40	57	52	68	92	94	122	148	154	205	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22.5	30.5	38.5	54	62	78	69	93	116	124	156	195	250	230	120	–	
			M_{2max}	Nm	76	102	128	179	192	152	230	305	368	410	416	368	416	368	192	–	
7.49 ... 7.76	25.5 ... 25.8	11.5 (13.1)	n_{2N}	r/min	300	300	250	200	150	150	125	100	75	75	60	50	37.5	37.5	30	–	1FT2206-3AF..-0..0-Z
			M_{2N}	Nm	18.4	20.5	27.5	38	50	55	50	65	88	90	117	143	196	198	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	22	30	38	53	61	77	68	91	114	122	153	192	245	230	120	–	
			M_{2max}	Nm	76	102	128	179	192	152	230	305	368	410	416	368	416	368	192	–	

➥ Continued on the next page

Planetary gearbox data																	
Gearbox type:			NLCW120, 1-stage						NLCW120, 2-stage								
1. Order code			C46						C47								
	i		3	4	5	7	8	10	9	12	15	16	20	25	32	40	64	100
2. Order code			R03	R04	R05	R07	R08	R10	R09	R12	R15	R16	R20	R25	R32	R40	R64	R00
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																		Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																			
Nm	Nm	kg cm²																			
SIMOTICS S-1FT2 Compact servomotors with planetary gearbox NLCW120 1 and 2-stage (continued)																					
10.5 ... 10.8	36.2 ... 36.3	15.1 (16.8)	n_{2N}	r/min	250	200	200	150	125	100	100	75	60	60	50	37.5	30	30	25	–	**1FT2206-4AC..-0..0-Z**
			M_{2N}	Nm	24	33	35.5	51	63	81	63	86	110	111	138	185	235	225	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	31	42	53	74	85	95	96	128	161	172	215	230	260	230	120	–	
			M_{2max}	Nm	108	144	181	216	192	152	325	416	368	416	416	368	416	368	192	–	
10.3 ... 10.6	34.2 ... 34.4	15.1 (16.8)	n_{2N}	r/min	375	300	250	200	150	150	125	100	75	75	60	50	50	37.5	37.5	–	**1FT2206-4AF..-0..0-Z**
			M_{2N}	Nm	21	29.5	38.5	52	70	75	70	91	122	125	161	196	199	230	109	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	30.5	41.5	52	73	84	95	93	124	156	166	205	230	260	230	120	–	
			M_{2max}	Nm	102	137	171	216	192	152	305	410	368	416	416	368	416	368	192	–	
9.81 ... 10.1	34.2 ... 34.4	15.1 (16.8)	n_{2N}	r/min	300	250	200	150	150	125	125	100	75	75	60	50	37.5	37.5	30	–	**1FT2206-4AH..-0..0-Z**
			M_{2N}	Nm	22.5	30	40	57	60	75	58	74	102	103	134	161	220	215	120	–	■■■ + ■■■ + . . .
			$M_{2,0}$	Nm	29	39.5	49.5	70	80	95	89	119	149	159	199	230	260	230	120	–	
			M_{2max}	Nm	102	137	171	216	192	152	305	410	368	416	416	368	416	368	192	–	

Planetary gearbox data																		
Gearbox type:			**NLCW120, 1-stage**						**NLCW120, 2-stage**									
1. Order code			**C46**						**C47**									
	i		**3**	**4**	**5**	**7**	**8**	**10**	**9**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R08**	**R10**	**R09**	**R12**	**R15**	**R16**	**R20**	**R25**	**R32**	**R40**	**R64**	**R00**
	$M_{2N,G}$	Nm	80	105	130	135	120	95	210	260	230	260	260	230	260	230	120	95
	$M_{2max,G}$	Nm	128	168	208	216	192	152	336	416	368	416	416	368	416	368	192	152
	$M_{2Em.Off}$	Nm	360	474	500	340	380	430	500	520	500	520	520	500	520	500	380	430
	$J_{1,G}$	kg cm²	2.97	2.346	2.118	1.928	1.876	1.832	2.787	2.716	2.692	2.192	2.017	2.009	1.862	1.859	1.855	1.818
	$\varphi_{2,G}$	'	11						13									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, check acceleration and inertias, perform service life calculation if necessary**

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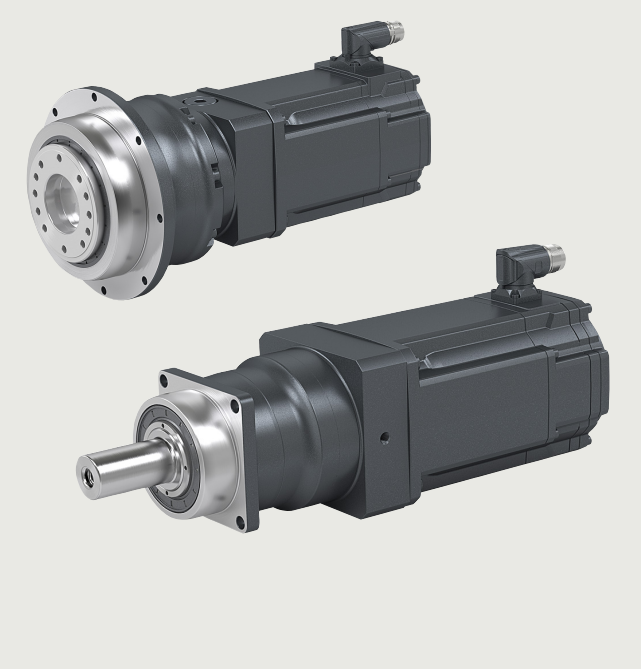
Selection and ordering data



SIMOTICS S-1FT2 precision geared motors SP+ and TP+

The following pages show the permissible combinations of **servo motors for 400 V 3AC** converters

and the precision planetary gearboxes **SP+ and TP+.**

They show the most important component data of the motor and gearbox as well as the rating of the system geared motor.

The rated operating points of the geared motors are adapted to the converter supply voltage.

More information on selection is provided in the section "Information on Selection".

SP+

The low backlash, coaxial SP+ precision gearbox sets itself apart as a result of the high positioning precision and is suitable for high dynamic cyclic operation. Thanks to the preloaded tapered roller bearing, it is suitable for high radial and axial loads.

The IP65 seal provides protection against dust and water.

TP+

The coaxial TP+ gearbox sets itself apart as a result of its extremely compact design with output flange. It offers a low torsional backlash with the highest torsional rigidity and is designed to address demanding applications with high torques and large external loads.

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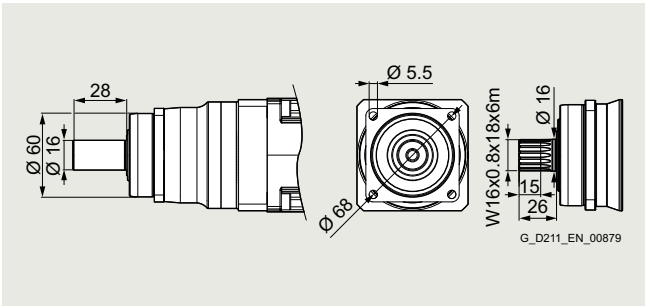
Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	1700 N
Average axial force for 20000 h	$F_{A,eq}$	2400 N
Average radial force for 30000 h	$F_{R,eq}$	1500 N
Average axial force for 30000 h	$F_{A,eq}$	2100 N
Maximum radial force	$F_{R,max}$	2800 N
Maximum axial force	$F_{A,max}$	2400 N

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2, SH 30, High Dynamic with planetary gearbox SP060 1- and 2-stage																			
0.355	1.22	0.036	n_{2N}	r/min	600	500	375	300	250	150	150	125	125	100	75	60	50	30	1FT2103-2AH..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	1.06	1.25	1.81	2.5	3.45	6.2	7.3	9.2	9.6	12.1	15.1	18.2	20.5	30	■■■ + ■■■ + . . .
0.53	1.86		$M_{2.0}$	Nm	1.56	2	2.45	3.45	5	8.4	10.6	13.1	14.6	17.9	20	23.5	29	35	NEW
			M_{2max}	Nm	5.5	7.3	9.1	12.8	18.3	29.5	37	45.5	50	61	57	67	56	48	
0.673	2.42	0.036	n_{2N}	r/min	600	500	375	300	250	150	150	125	100	100	75	60	37.5	30	1FT2103-4AH..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2	2.4	3.45	4.6	6.1	11.6	12.5	15.8	19.8	19.3	25.5	29.5	43.5	38	■■■ + ■■■ + . . .
1.01	3.9		$M_{2.0}$	Nm	2.95	3.9	4.85	6.8	9.7	16.1	20	24.5	27.5	33.5	37.5	44.5	50	38	NEW
			M_{2max}	Nm	11.6	15.6	19.4	27	38.5	57	57	67	57	67	57	67	56	48	
SIMOTICS S-1FT2, SH 30, Compact with planetary gearbox SP060 1- and 2-stage																			
0.357	1.16	0.036	n_{2N}	r/min	600	500	375	300	250	150	125	100	100	75	75	60	37.5	25	1FT2203-2AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	0.97	1.14	1.65	2.2	2.95	5.5	7.1	9.3	9.6	12.6	12.6	14.9	22.5	30	■■■ + ■■■ + . . .
0.535	1.76		$M_{2.0}$	Nm	1.57	2	2.5	3.5	5	8.5	10.7	13.3	14.7	18	20	23.5	29	35.5	NEW
			M_{2max}	Nm	5.2	7	8.6	12.1	17.3	28	35	43	48	58	57	67	56	48	
0.76	2.26	0.036	n_{2N}	r/min	500	375	375	250	200	150	125	100	100	75	60	50	37.5	30	1FT2203-4AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.6	3.45	3.65	5.7	7.9	11.8	15.1	19.5	19.3	25.5	30.5	34.5	41.5	36.5	■■■ + ■■■ + . . .
1.14	3.62		$M_{2.0}$	Nm	3.35	4.45	5.5	7.7	11.1	18.2	22.5	28	31	38	42.5	50	50	38	NEW
			M_{2max}	Nm	10.8	14.4	17.9	25	35.5	57	57	67	57	67	57	67	56	48	

Planetary gearbox data																
Gearbox type:			SP060, 1-stage					SP060, 2-stage								
1. Order code			J21					J22								
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	29	38	48	50	38	50	50	50	50	50	50	50	50	38
	$M_{2max,G}$	Nm	29	38	48	60	51	57	57	67	57	67	57	67	56	48
	$M_{2Em.Off}$	Nm	40	50	50	67	95	109	109	109	109	109	109	109	109	100
	$J_{1,G}$	kg cm²	0.21	0.15	0.12	0.1	0.09	0.08	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
	$\varphi_{2,G}$	'	4					6								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type SP060

Servomotor data $M_{0,M}$ Nm	M_{maxM} Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 40, High Dynamic with planetary gearbox SP060 1- and 2-stage																	
1.06	3.14	0.036	n_{2N}	r/min	750	500	500	375	300	200	150	125	100	100	75	60	1FT2104-4AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.45	3.8	4.15	6	8.2	13.6	19	23.5	27.5	30	37.5	45	■■■ + ■■■ + . . .
1.19	3.61		$M_{2.0}$	Nm	3.45	4.55	5.7	8	11.5	18.9	23.5	29	32	39.5	44	50	NEW
			M_{2max}	Nm	10.7	14.3	17.9	25	35.5	57	57	67	57	67	57	67	
1.05	3.22	0.036	n_{2N}	r/min	750	500	500	375	250	200	150	125	100	100	75	60	1FT2104-4AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.55	4.1	4.35	6.2	10.4	14.2	20	25.5	29.5	31.5	40	46.5	■■■ + ■■■ + . . .
1.18	3.7		$M_{2.0}$	Nm	3.45	4.55	5.7	8	11.5	18.8	23.5	29	32	39	44	50	NEW
			M_{2max}	Nm	11	14.7	18.4	25.5	36.5	57	57	67	57	67	57	67	
2.11	6.5	0.036	n_{2N}	r/min	600	500	375	300	250	150	150	100	100	–	75	–	1FT2104-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	5.3	6.6	9.2	12.1	15.7	27.5	28.5	42.5	43	–	50	–	■■■ + ■■■ + . . .
2.27	7.26		$M_{2.0}$	Nm	6.7	8.9	11.2	15.6	22	36	45	50	50	–	50	–	NEW
			M_{2max}	Nm	21.5	29	36	50	51	57	57	67	57	–	57	–	
2.09	6.58	0.036	n_{2N}	r/min	600	500	375	300	250	150	125	125	100	–	75	–	1FT2104-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	5.2	6.5	9	12	15.5	27	33.5	34	42.5	–	50	–	■■■ + ■■■ + . . .
2.26	7.36		$M_{2.0}$	Nm	6.7	8.9	11.1	15.5	22	36	44.5	50	50	–	50	–	NEW
			M_{2max}	Nm	22	29	36.5	51	51	57	57	67	57	–	57	–	
2.78	8.55	0.036	n_{2N}	r/min	600	500	375	300	250	150	125	–	–	–	75	–	1FT2104-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.5	8.1	11.2	14.6	18.5	32	39.5	–	–	–	50	–	■■■ + ■■■ + . . .
3.01	9.72		$M_{2.0}$	Nm	8.9	11.9	14.9	20.5	29.5	48	50	–	–	–	50	–	NEW
			M_{2max}	Nm	29	38.5	48.5	67	51	57	57	–	–	–	57	–	
SIMOTICS S-1FT2, SH 40, Compact with planetary gearbox SP060 1- and 2-stage																	
2.07	6.18	0.036	n_{2N}	r/min	600	500	375	300	250	150	125	100	100	–	75	–	1FT2204-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	5	6.1	8.6	11.2	14	25	31	39	38.5	–	46	–	■■■ + ■■■ + . . .
2.23	6.88		$M_{2.0}$	Nm	6.6	8.7	11	15.4	22	35.5	44	50	50	–	50	–	NEW
			M_{2max}	Nm	20.5	27	34	47.5	51	57	57	67	57	–	57	–	
2.08	6.18	0.036	n_{2N}	r/min	600	500	375	300	250	150	125	100	100	–	75	–	1FT2204-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	5.1	6.2	8.8	11.5	14.3	25.5	31.5	39.5	39	–	46	–	■■■ + ■■■ + . . .
2.24	6.88		$M_{2.0}$	Nm	6.6	8.8	11	15.4	22	35.5	44.5	50	50	–	50	–	NEW
			M_{2max}	Nm	20.5	27	34	47.5	51	57	57	67	57	–	57	–	
2.78	8.15	0.036	n_{2N}	r/min	600	500	375	300	200	150	125	–	–	–	75	–	1FT2204-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.6	8.1	11.4	14.6	22.5	31.5	38.5	–	–	–	50	–	■■■ + ■■■ + . . .
2.99	9.22		$M_{2.0}$	Nm	8.9	11.8	14.8	20.5	29.5	47.5	50	–	–	–	50	–	NEW

Planetary gearbox data													
Gearbox type:		SP060, 1-stage					SP060, 2-stage						
1. Order code		J21					J22						
i		3	4	5	7	10	16	20	25	28	35	40	50
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50
$M_{2N,G}$	Nm	36	50	50	50	38	50	50	50	50	50	50	50
$M_{2max,G}$	Nm	48	67	67	67	51	57	57	67	57	67	57	67
$M_{2Em.Off}$	Nm	96	109	109	109	100	109	109	109	109	109	109	109
$J_{1,G}$	kg cm²	0.28	0.22	0.2	0.18	0.16	0.17	0.16	0.16	0.16	0.16	0.15	0.15
$\varphi_{2,G}$	'	4					6						

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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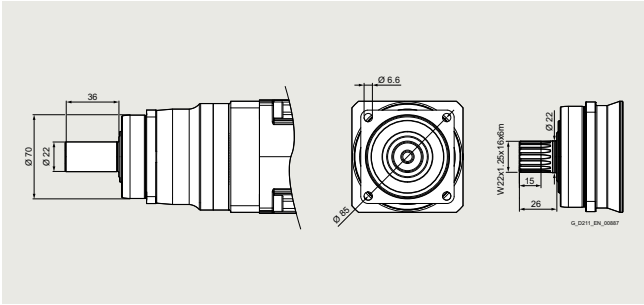
Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	2400 N
Average axial force for 20000 h	$F_{A,eq}$	3350 N
Average radial force for 30000 h	$F_{R,eq}$	2100 N
Average axial force for 30000 h	$F_{A,eq}$	3000 N
Maximum radial force	$F_{R,max}$	4200 N
Maximum axial force	$F_{A,max}$	3350 N

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2, SH 20, 30, 40, High Dynamic with planetary gearbox SP075 1- and 2-stage																			
0.328	1.63	0.036	n_{2N}	r/min	375	375	375	300	250	200	150	125	125	100	75	75	60	37.5	1FT2103-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	0.54	0.98	1.38	2.4	3.6	5	7.5	9.9	10.8	14.3	17.6	20	22.5	33	■■■ + ■■■ + . . .
0.522	1.8		$M_{2.0}$	Nm	0.98	1.49	2.05	3.15	4.45	8.1	10.2	12.7	14.3	18	20.5	25.5	35.5	47.5	NEW
			M_{2max}	Nm	4.85	6.6	8.4	12	17.2	28.5	35.5	44	49.5	62	70	87	113	105	
0.837	3.39	0.036	n_{2N}	r/min	375	375	300	300	250	150	150	125	125	100	75	75	50	30	1FT2103-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.57	2.25	3.7	4.95	7.1	12.9	14.9	19.7	20.5	27	33	37.5	47.5	70	■■■ + ■■■ + . . .
1.02	3.79		$M_{2.0}$	Nm	2.5	3.45	4.5	6.6	9.4	16.3	20	25	28	35.5	40.5	50	69	93	NEW
			M_{2max}	Nm	11	14.7	18.5	26	37	60	74	92	103	129	126	158	113	105	
0.96	3.14	0.036	n_{2N}	r/min	375	375	375	375	300	200	150	125	100	100	75	60	50	30	1FT2104-4AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.45	3.5	4.55	5.8	9	14.6	19.8	25	29.5	35	42	52	65	94	■■■ + ■■■ + . . .
1.14	3.51		$M_{2.0}$	Nm	2.85	3.95	5.1	7.4	10.6	18.2	22.5	28	31.5	39.5	45	56	77	104	NEW
			M_{2max}	Nm	10.1	13.5	17	24	34	56	69	85	96	119	126	158	113	105	
0.953	3.22	0.036	n_{2N}	r/min	375	375	375	375	300	200	150	125	100	100	75	60	50	30	1FT2104-4AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.7	3.85	4.9	6	9.4	15.9	21	27	31.5	37.5	45	56	70	102	■■■ + ■■■ + . . .
1.13	3.6		$M_{2.0}$	Nm	2.85	3.95	5.1	7.4	10.5	18.1	22	27.5	31	39	45	55	76	103	NEW
			M_{2max}	Nm	10.4	13.9	17.5	24.5	35	57	71	88	98	122	126	158	113	105	
2.04	6.54	0.036	n_{2N}	r/min	375	375	375	300	250	150	150	125	100	100	75	60	50	–	1FT2104-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	5	6.6	8.2	12.7	17.3	32	35	45	54	58	73	90	93	–	■■■ + ■■■ + . . .
2.2	7.09		$M_{2.0}$	Nm	6.1	8.2	10.4	14.9	21	35	43.5	54	60	75	86	107	113	–	NEW
			M_{2max}	Nm	21	28	35	49.5	70	112	126	158	126	158	126	158	113	–	
2.02	6.63	0.036	n_{2N}	r/min	375	375	375	300	250	150	150	125	100	100	75	60	50	–	1FT2104-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	4.9	6.5	8	12.5	17.1	31.5	34.5	44.5	54	57	73	89	92	–	■■■ + ■■■ + . . .
2.18	7.17		$M_{2.0}$	Nm	6	8.1	10.3	14.8	21	34.5	43	53	60	75	85	106	113	–	NEW
			M_{2max}	Nm	21	28.5	35.5	50	71	114	126	158	126	158	126	158	113	–	
2.77	8.63	0.036	n_{2N}	r/min	375	375	375	300	250	150	150	125	100	100	75	60	50	–	1FT2104-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.2	8.2	10	15.5	20.5	38	41	52	63	66	84	102	103	–	■■■ + ■■■ + . . .
2.92	9.51		$M_{2.0}$	Nm	8.3	11.1	14	20	28.5	46.5	57	71	80	99	113	132	113	–	NEW
			M_{2max}	Nm	28	37.5	47	66	94	126	126	158	126	158	126	158	113	–	

Planetary gearbox data																
Gearbox type:		SP075, 1-stage					SP075, 2-stage									
1. Order code		J31					J32									
	i	3	4	5	7	10	16	20	25	28	35	40	50	70	100	
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00	
	$M_{2N,G}$	Nm	96	113	132	132	114	126	126	132	126	132	126	132	113	105
	$M_{2max,G}$	Nm	96	113	144	176	152	126	126	158	126	158	126	158	113	105
	$M_{2Em.Off}$	Nm	100	125	160	213	213	250	250	250	250	250	250	250	250	250
	$J_{1,G}$	kg cm²	0.86	0.61	0.51	0.42	0.38	0.16	0.13	0.13	0.1	0.1	0.09	0.09	0.09	0.09
	$\varphi_{2,G}$	'	4					6								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type SP075

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 20, 30, 40 Compact with planetary gearbox SP075 1- and 2-stage																			
0.315	1.53	0.036	n_{2N}	r/min	300	300	300	300	250	150	150	125	100	100	75	60	37.5	30	1FT2203-2AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	0.66	1.12	1.57	2.1	3.1	5.7	6.3	8.4	10.8	11.8	16	20	27.5	33	■■■ + ■■■ + . . .
0.508	1.71		$M_{2.0}$	Nm	0.94	1.44	1.99	3.05	4.3	7.9	9.9	12.4	14	17.6	20	25	34.5	46.5	NEW
			M_{2max}	Nm	4.55	6.2	7.9	11.4	16.2	27	33.5	41.5	47	58	67	83	113	105	
0.913	3.14	0.036	n_{2N}	r/min	300	300	300	300	250	150	150	125	125	100	75	75	37.5	25	1FT2203-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	2.3	3.25	4.15	5.2	7.2	13.7	14.7	19.4	19.5	25.5	33.5	34	59	83	■■■ + ■■■ + . . .
1.09	3.51		$M_{2.0}$	Nm	2.7	3.8	4.9	7.1	10.1	17.5	21.5	27	30	38	43.5	54	74	100	NEW
			M_{2max}	Nm	10.1	13.5	17	24	34	56	69	85	96	119	126	158	113	105	
2	6.2	0.036	n_{2N}	r/min	375	375	375	300	250	150	125	125	100	100	75	60	37.5	–	1FT2204-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	4.8	6.3	7.6	11.8	15.7	29.5	37.5	40	50	50	67	82	113	–	■■■ + ■■■ + . . .
2.16	6.7		$M_{2.0}$	Nm	5.9	8	10.2	14.6	20.5	34.5	42.5	53	59	74	84	105	113	–	NEW
			M_{2max}	Nm	19.9	26.5	33	46.5	66	106	126	158	126	158	126	158	113	–	
2.01	6.2	0.036	n_{2N}	r/min	375	375	375	300	250	150	125	125	100	100	75	60	37.5	–	1FT2204-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	4.9	6.4	7.8	12.1	16	30.5	38.5	41	51	51	69	84	113	–	■■■ + ■■■ + . . .
2.17	6.7		$M_{2.0}$	Nm	6	8.1	10.3	14.7	20.5	34.5	43	53	59	74	85	105	113	–	NEW
			M_{2max}	Nm	19.9	26.5	33	46.5	66	106	126	158	126	158	126	158	113	–	
2.76	8.21	0.036	n_{2N}	r/min	375	375	375	300	250	150	125	125	100	75	75	60	50	–	1FT2204-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.6	8.6	10.2	15.8	20	38.5	48.5	50	63	82	82	99	91	–	■■■ + ■■■ + . . .
2.91	9.03		$M_{2.0}$	Nm	8.2	11.1	14	19.9	28	46.5	57	71	79	99	113	132	113	–	NEW
			M_{2max}	Nm	26.5	35.5	44.5	63	89	126	126	158	126	158	126	158	113	–	

Planetary gearbox data																
Gearbox type:			**SP075, 1-stage**					**SP075, 2-stage**								
1. Order code			**J31**					**J32**								
	i		**3**	**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R03**	**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	96	113	132	132	114	126	126	132	126	132	126	132	113	105
	$M_{2max,G}$	Nm	96	113	144	176	152	126	126	158	126	158	126	158	113	105
	$M_{2Em.Off}$	Nm	100	125	160	213	213	250	250	250	250	250	250	250	250	250
	$J_{1,G}$	kg cm²	0.86	0.61	0.51	0.42	0.38	0.16	0.13	0.13	0.1	0.1	0.09	0.09	0.09	0.09
	$\varphi_{2,G}$	'	4					6								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2, SH 48, 52, High Dynamic with planetary gearbox SP075 1- and 2-stage																		
4.31	12.7	0.036	n_{2N}	r/min	375	375	375	300	250	150	125	100	100	75	–	60	50	1FT2105-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12	15.4	18.3	27	33.5	60	73	91	90	113	–	130	113	■■■ + ■■■ + . . .
4.58	14.4		$M_{2.0}$	Nm	13.4	17.7	22.5	31.5	45	73	90	112	125	132	–	132	113	NEW
			M_{2max}	Nm	43	57	71	100	142	126	126	158	126	158	–	158	113	
4.34	12.7	0.036	n_{2N}	r/min	375	375	375	300	200	150	125	100	100	75	–	60	50	1FT2105-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	11.1	13.8	16	23.5	36.5	53	65	82	79	102	–	115	96	■■■ + ■■■ + . . .
4.62	14.4		$M_{2.0}$	Nm	13.4	17.9	22.5	32	45.5	73	91	112	126	132	–	132	113	NEW
			M_{2max}	Nm	43	57	71	100	142	126	126	158	126	158	–	158	113	
6.97	20.3	0.036	n_{2N}	r/min	375	375	375	300	200	125	125	100	–	75	–	–	–	1FT2105-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	16.2	20	23	33.5	49	84	83	101	–	120	–	–	–	■■■ + ■■■ + . . .
7.29	23.2		$M_{2.0}$	Nm	21.5	28.5	36	50	72	116	126	132	–	132	–	–	–	NEW
			M_{2max}	Nm	69	92	115	161	152	126	126	158	–	158	–	–	–	
SIMOTICS S-1FT2, SH 48, 52, Compact with planetary gearbox SP075 1- and 2-stage																		
2.7	9.29	0.036	n_{2N}	r/min	375	300	300	250	200	125	100	100	75	60	50	50	30	1FT2205-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.4	8.7	10.5	15.1	20	37	46.5	50	64	79	92	94	113	■■■ + ■■■ + . . .
2.88	10.3		$M_{2.0}$	Nm	8	10.7	13.7	19.5	27.5	45.5	56	70	78	98	112	132	113	NEW
			M_{2max}	Nm	30.5	40.5	51	72	101	126	126	158	126	158	126	158	113	
2.74	9.29	0.036	n_{2N}	r/min	375	375	375	300	250	150	125	100	100	75	75	60	37.5	1FT2205-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	6.8	8.8	10.4	15.9	20	38	47.5	61	61	80	78	95	113	■■■ + ■■■ + . . .
2.91	10.3		$M_{2.0}$	Nm	8.2	10.9	13.9	19.8	28	46.5	57	71	80	99	113	132	113	NEW
			M_{2max}	Nm	30.5	40.5	51	72	101	126	126	158	126	158	126	158	113	
2.7	9.29	0.036	n_{2N}	r/min	375	375	300	250	200	150	125	100	100	75	60	50	37.5	1FT2205-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	6.1	7.6	11.5	16.4	22	32.5	41	53	52	70	85	100	113	■■■ + ■■■ + . . .
2.88	10.3		$M_{2.0}$	Nm	8.1	10.8	13.8	19.6	28	46	57	70	79	98	112	132	113	NEW
			M_{2max}	Nm	30.5	40.5	51	72	101	126	126	158	126	158	126	158	113	
4.63	14.9	0.036	n_{2N}	r/min	375	375	300	250	200	125	100	100	75	60	60	50	37.5	1FT2205-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	9.5	11.7	17.4	24.5	31	56	70	70	91	109	106	122	113	■■■ + ■■■ + . . .
4.94	17.3		$M_{2.0}$	Nm	14.4	19.1	24	34	48.5	78	97	120	126	132	126	132	113	NEW
			M_{2max}	Nm	51	68	86	121	152	126	126	158	126	158	126	158	113	

Planetary gearbox data															
Gearbox type:			SP075, 1-stage					SP075, 2-stage							
1. Order code			J31					J32							
	i		3	4	5	7	10	16	20	25	28	35	40	50	70
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70
	$M_{2N,G}$	Nm	102	132	132	132	114	126	126	132	126	132	126	132	113
	$M_{2max,G}$	Nm	136	176	176	176	152	126	126	158	126	158	126	158	113
	$M_{2Em.Off}$	Nm	139	185	250	250	250	250	250	250	250	250	250	250	250
	$J_{1,G}$	kg cm²	1.03	0.78	0.68	0.59	0.54	0.55	0.53	0.52	0.5	0.5	0.49	0.49	0.49
	$\varphi_{2,G}$	'	4					6							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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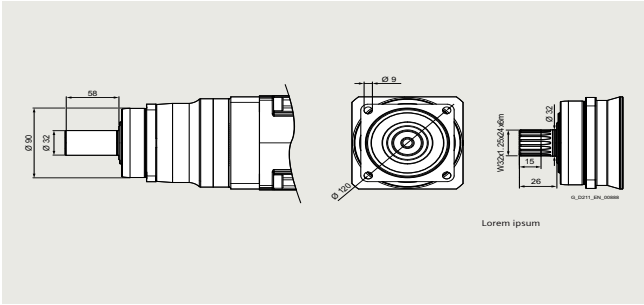
Gearbox type SP100

Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	3800 N
Average axial force for 20000 h	$F_{A,eq}$	5650 N
Average radial force for 30000 h	$F_{R,eq}$	3400 N
Average axial force for 30000 h	$F_{A,eq}$	5000 N
Maximum radial force	$F_{R,max}$	6300 N
Maximum axial force	$F_{A,max}$	5650 N

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2, SH 30, 40, 48, 52, High Dynamic with planetary gearbox SP100 1- and 2-stage																			
0.342	1.64	0.036	n_{2N}	r/min	300	300	250	250	250	150	150	100	100	75	75	60	60	37.5	1FT2103-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	0.75	0.76	1.33	2.2	3.85	7.2	9.5	13.2	15.1	19	21.5	26.5	31	36.5	■■■ + ■■■ + . . .
0.557	1.84		$M_{2.0}$	Nm	1.35	1.36	1.8	2.8	4.3	8.5	11	13.7	15.5	18.7	21.5	26	36.5	47	NEW
			M_{2max}	Nm	5.3	6.7	8.3	11.7	16.9	29	36.5	45	51	63	72	89	123	164	
0.96	3.42	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	60	37.5	1FT2103-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.59	2.4	3	5.1	8.4	14.6	18.5	25	28	36	40	49.5	58	75	■■■ + ■■■ + . . .
1.15	3.87		$M_{2.0}$	Nm	3.2	3.8	4.8	6.9	10.1	18.1	23	28	32	39	45	55	77	101	NEW
			M_{2max}	Nm	11.5	14.9	18.6	25.5	36.5	61	76	94	105	131	149	187	181	193	
0.99	3.12	0.036	n_{2N}	r/min	500	375	375	375	250	150	150	100	100	75	75	60	50	30	1FT2104-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	2.15	3.15	4	5.5	10.5	17.5	22.5	29	32.5	41	47	58	79	105	■■■ + ■■■ + . . .
1.16	3.57		$M_{2.0}$	Nm	3.25	3.95	4.95	7.1	10.3	18.5	23	28.5	32	39.5	45.5	57	78	102	NEW
			M_{2max}	Nm	10.6	13.8	17.1	23.5	33.5	56	70	87	97	121	138	173	235	259	
0.982	3.21	0.036	n_{2N}	r/min	500	500	375	375	250	150	150	100	100	75	75	60	50	30	1FT2104-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	2.25	2.45	4.2	6.2	10.4	17.4	22	28.5	32.5	41	46.5	58	79	106	■■■ + ■■■ + . . .
1.16	3.67		$M_{2.0}$	Nm	3.25	3.9	4.95	7.1	10.3	18.3	23	28.5	32	39.5	45	56	77	102	NEW
			M_{2max}	Nm	10.9	14.1	17.6	24.5	34.5	57	72	89	100	124	142	177	240	259	
1.98	6.13	0.036	n_{2N}	r/min	500	375	375	375	250	150	150	100	100	75	75	60	50	30	1FT2104-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.5	7.6	9.7	11.6	21	35	44	56	63	79	90	111	148	200	■■■ + ■■■ + . . .
2.22	7.27		$M_{2.0}$	Nm	6.5	8.3	10.4	14.6	20.5	35	44	55	61	76	87	109	150	197	NEW
			M_{2max}	Nm	21.5	28.5	35.5	49	69	113	140	174	194	240	275	347	347	259	
1.96	6.21	0.036	n_{2N}	r/min	500	375	375	375	250	150	150	100	100	75	75	60	50	30	1FT2104-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.5	7.5	9.6	11.4	21	34.5	44	55	62	78	89	111	152	205	■■■ + ■■■ + . . .
2.2	7.37		$M_{2.0}$	Nm	6.5	8.3	10.3	14.5	20.5	35	44	54	61	76	86	108	148	196	NEW
			M_{2max}	Nm	22	29	36	49.5	70	114	142	176	197	245	280	347	347	259	
2.61	8.03	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	1FT2104-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	7.6	10.6	12.6	19.5	28.5	46.5	59	74	83	104	119	148	199	250	■■■ + ■■■ + . . .
2.95	9.73		$M_{2.0}$	Nm	8.8	11.3	14.1	19.7	28	46.5	58	72	81	101	115	144	198	255	NEW
			M_{2max}	Nm	29	38.5	47.5	66	94	151	187	230	255	320	347	347	347	259	

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Planetary gearbox data																
Gearbox type:			SP100, 1-stage					SP100, 2-stage								
1. Order code			J41					J42								
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	139	185	232	292	282	347	347	347	347	347	347	347	347	259
	$M_{2max,G}$	Nm	139	185	232	292	376	347	347	347	347	347	347	347	347	259
	$M_{2Em.Off}$	Nm	250	313	313	324	463	625	625	625	625	625	625	625	625	625
	$J_{1,G}$	kg cm²	3.29	2.35	1.92	1.6	1.38	0.81	0.7	0.68	0.6	0.59	0.55	0.54	0.54	0.54
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 30, 40, 48, 52, High Dynamic with planetary gearbox SP100 1- and 2-stage (continued)																		
4.06	11.6	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2105-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	11.9	16.3	19.6	28	40.5	67	80	108	118	149	162	197	240	255	■■■ + ■■■ + . . .
4.67	14.7		$M_{2.0}$	Nm	14	18.3	22.5	31.5	44.5	73	91	113	127	158	180	225	305	255	NEW
			M_{2max}	Nm	44	58	72	100	142	225	280	347	347	347	347	347	347	259	
4.08	11.6	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	60	37.5	**1FT2105-4AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	11.3	15.5	18.5	26.5	38	63	76	102	112	141	154	188	199	210	■■■ + ■■■ + . . .
4.7	14.7		$M_{2.0}$	Nm	14.1	18.4	22.5	31.5	45	74	92	114	127	159	182	225	310	255	NEW
			M_{2max}	Nm	44	58	72	100	142	225	280	347	347	347	347	347	347	259	
7.28	21.2	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	–	–	**1FT2105-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	18.2	25	27.5	41.5	58	97	112	153	165	205	220	265	–	–	■■■ + ■■■ + . . .
7.67	23.6		$M_{2.0}$	Nm	22.5	30	37.5	52	73	119	148	183	205	255	290	345	–	–	NEW
			M_{2max}	Nm	70	93	116	161	225	347	347	347	347	347	347	347	–	–	
SIMOTICS S-1FT2, SH 30, 40, 48, 52, Compact with planetary gearbox SP100 1- and 2-stage																		
0.328	1.56	0.036	n_{2N}	r/min	300	300	300	250	250	150	150	100	100	75	75	60	50	30	**1FT2203-2AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	0.71	0.74	1.08	2.2	3.65	7.1	9.2	12.9	14.8	18.6	21	26	31	39.5	■■■ + ■■■ + . . .
0.543	1.74		$M_{2.0}$	Nm	1.31	1.31	1.74	2.7	4.15	8.3	10.8	13.4	15.2	18.2	21	25.5	35.5	46	NEW
			M_{2max}	Nm	5	6.3	7.8	11.1	15.9	27.5	34.5	43	48	59	68	85	117	155	
0.945	3.17	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	60	37.5	**1FT2203-4AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	1.88	2.8	3.45	5.7	9.2	16	19.5	27.5	30	39	42.5	52	54	71	■■■ + ■■■ + . . .
1.14	3.57		$M_{2.0}$	Nm	3.15	3.75	4.75	6.8	9.9	17.8	22.5	28	31.5	38.5	44.5	55	76	100	NEW
			M_{2max}	Nm	10.6	13.8	17.1	23.5	33.5	56	70	87	98	121	138	173	181	193	
1.94	5.82	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2204-5AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.3	7.4	9	13.5	20	34	41.5	54	61	77	86	106	135	185	■■■ + ■■■ + . . .
2.18	6.87		$M_{2.0}$	Nm	6.4	8.2	10.2	14.3	20.5	34.5	43.5	54	60	75	85	107	147	194	NEW
			M_{2max}	Nm	20.5	27	33.5	46.5	66	107	133	165	184	225	260	325	347	259	
1.95	5.82	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2204-5AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.4	7.5	9.4	14	21	34	43	55	62	77	88	109	139	191	■■■ + ■■■ + . . .
2.19	6.87		$M_{2.0}$	Nm	6.5	8.2	10.2	14.4	20.5	35	43.5	54	60	75	86	107	148	195	NEW
			M_{2max}	Nm	20.5	27	33.5	46.5	66	107	133	165	184	225	260	325	347	259	
2.6	7.66	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2204-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	7.7	10.5	13.3	19.3	28.5	46	58	74	83	103	118	145	182	250	■■■ + ■■■ + . . .
2.93	9.23		$M_{2.0}$	Nm	8.7	11.3	14	19.6	27.5	46.5	58	72	80	100	115	143	197	255	NEW
			M_{2max}	Nm	27.5	36.5	45	62	89	143	178	220	245	305	347	347	347	259	
2.72	8.62	0.036	n_{2N}	r/min	500	375	375	300	200	125	100	100	75	60	50	50	30	20	**1FT2205-2AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	6.5	9	10.9	15.9	25.5	41.5	53	62	75	93	108	122	178	235	■■■ + ■■■ + . . .
3.13	10.5		$M_{2.0}$	Nm	9.3	12	15	20.5	29.5	49	61	75	84	105	120	150	205	255	NEW
			M_{2max}	Nm	31.5	41.5	51	71	101	163	200	250	280	347	347	347	347	259	

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Planetary gearbox data															
Gearbox type:		SP100, 1-stage					SP100, 2-stage								
1. Order code		J41					J42								
	i	3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$ Nm	139	185	232	292	282	347	347	347	347	347	347	347	347	259
	$M_{2max,G}$ Nm	139	185	232	292	376	347	347	347	347	347	347	347	347	259
	$M_{2Em.Off}$ Nm	250	313	313	324	463	625	625	625	625	625	625	625	625	625
	$J_{1,G}$ kg cm²	3.29	2.35	1.92	1.6	1.38	0.81	0.7	0.68	0.6	0.59	0.55	0.54	0.54	0.54
	$\varphi_{2,G}$ '	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type SP100

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 30, 40, 48, 52, Compact with planetary gearbox SP100 1- and 2-stage (continued)																			
2.76	8.62	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2205-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	6.9	9.6	11.8	17.4	26	43	52	70	77	97	108	132	163	230	■■■ + ■■■ + . . .
3.16	10.5		$M_{2.0}$	Nm	9.4	12.2	15.1	21	30	49.5	61	76	85	106	122	152	205	255	NEW
			M_{2max}	Nm	31.5	41.5	51	71	101	163	200	250	280	347	347	347	347	259	
2.71	8.62	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2205-2AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	6.7	9.2	11.2	16.4	24	40	48	65	71	91	100	122	147	215	■■■ + ■■■ + . . .
3.1	10.5		$M_{2.0}$	Nm	9.3	11.9	14.8	20.5	29.5	48.5	60	75	84	105	120	150	205	255	NEW
			M_{2max}	Nm	31.5	41.5	51	71	101	163	200	250	280	347	347	347	347	259	
4.55	13.6	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	**1FT2205-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	11.9	16.9	18.4	28	40.5	66	77	106	114	146	156	191	210	255	■■■ + ■■■ + . . .
5.37	17.6		$M_{2.0}$	Nm	16	21	26	36	51	83	103	128	143	178	200	250	345	255	NEW
			M_{2max}	Nm	52	70	87	120	171	270	347	347	347	347	347	347	347	259	

Planetary gearbox data																
Gearbox type:		**SP100, 1-stage**					**SP100, 2-stage**									
1. Order code		**J41**					**J42**									
i		**3**	**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**	
2. Order code		**R03**	**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**	
$M_{2N,G}$	Nm	139	185	232	292	282	347	347	347	347	347	347	347	347	259	
$M_{2max,G}$	Nm	139	185	232	292	376	347	347	347	347	347	347	347	347	259	
$M_{2Em.Off}$	Nm	250	313	313	324	463	625	625	625	625	625	625	625	625	625	
$J_{1,G}$	kg cm²	3.29	2.35	1.92	1.6	1.38	0.81	0.7	0.68	0.6	0.59	0.55	0.54	0.54	0.54	
$\varphi_{2,G}$	'	3					5									

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FT2, SH 30, High Dynamic with planetary gearbox SP100 2-stage													
0.472	1.64	0.036	n_{2N}	r/min	150	150	100	100	75	75	60	60	37.5	**1FT2103-2AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	7.2	9.5	13.2	15.1	19	21.5	26.5	31	36.5	■■■ + ■■■ + . . .
0.557	1.84		$M_{2.0}$	Nm	8.5	11	13.7	15.5	18.7	21.5	26	36.5	47	NEW
			M_{2max}	Nm	29	36.5	45	51	63	72	89	123	164	
1.02	3.42	0.036	n_{2N}	r/min	150	150	100	100	75	75	60	60	37.5	**1FT2103-4AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	14.6	18.5	25	28	36	40	49.5	58	75	■■■ + ■■■ + . . .
1.15	3.83		$M_{2.0}$	Nm	18.1	23	28	32	39	45	55	77	101	NEW
			M_{2max}	Nm	61	76	94	105	131	149	187	181	193	
SIMOTICS S-1FT2, SH 30, Compact with planetary gearbox SP100 2-stage													
0.461	1.56	0.036	n_{2N}	r/min	150	150	100	100	75	75	60	50	30	**1FT2203-2AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	7.1	9.2	12.9	14.8	18.6	21	26	31	39.5	■■■ + ■■■ + . . .
0.543	1.74		$M_{2.0}$	Nm	8.3	10.8	13.4	15.2	18.2	21	25.5	35.5	46	NEW
			M_{2max}	Nm	27.5	34.5	43	48	59	68	85	117	155	
1	3.17	0.036	n_{2N}	r/min	150	150	100	100	75	75	60	60	37.5	**1FT2203-4AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	16	19.5	27.5	30	39	42.5	52	54	71	■■■ + ■■■ + . . .
1.14	3.54		$M_{2.0}$	Nm	17.8	22.5	28	31.5	38.5	44.5	55	76	100	NEW
			M_{2max}	Nm	56	70	87	98	121	138	173	181	193	

Planetary gearbox data										
Gearbox type:			**SP100, 2-stage**							
1. Order code			**J32**							
	i		**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	232	232	290	232	290	232	290	181	193
	$M_{2max,G}$	Nm	232	232	290	232	290	232	290	181	193
	$M_{2Em.Off}$	Nm	512	599	599	599	625	625	625	625	625
	$J_{1,G}$	kg cm²	0.64	0.54	0.52	0.43	0.43	0.38	0.38	0.37	0.37
	$\varphi_{2,G}$	'	5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type SP100

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2, SH 63, High Dynamic with planetary gearbox SP100 1- and 2-stage																			
7.56	23	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	–	–	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	18.6	25.5	30	43	61	101	118	159	173	215	235	280	–	–	■■■ + ■■■ + . . .
7.83	25.3		$M_{2.0}$	Nm	23	30.5	38	53	76	124	153	191	210	265	300	345	–	–	NEW
			M_{2max}	Nm	75	100	125	174	245	347	347	347	347	347	347	347	–	–	
9.75	29	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	–	–	–	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	23	31.5	36	51	70	117	130	183	193	245	250	–	–	–	■■■ + ■■■ + . . .
10.2	32.2		$M_{2.0}$	Nm	30.5	40	50	70	100	160	198	245	275	340	345	–	–	–	NEW
			M_{2max}	Nm	96	128	159	220	315	347	347	347	347	347	347	–	–	–	
13.8	41.1	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	–	100	–	–	–	–	–	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	30.5	44.5	46.5	66	90	159	170	–	250	–	–	–	–	–	■■■ + ■■■ + . . .
14.5	44.7		$M_{2.0}$	Nm	43	57	71	99	141	225	275	–	345	–	–	–	–	–	NEW
			M_{2max}	Nm	133	177	220	305	376	347	347	–	347	–	–	–	–	–	
SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox SP100 1- and 2-stage																			
4.7	13.6	0.036	n_{2N}	r/min	500	375	300	250	200	125	100	100	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	10.4	16	22	30.5	44	72	91	106	127	158	181	205	295	255	■■■ + ■■■ + . . .
5.36	17.4		$M_{2.0}$	Nm	16	20.5	26	36.5	52	85	106	132	147	184	210	260	345	255	NEW
			M_{2max}	Nm	52	69	86	120	171	270	347	347	347	347	347	347	347	259	
4.75	13.6	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12.5	17.2	20.5	29	41	68	78	109	117	149	159	193	225	255	■■■ + ■■■ + . . .
5.42	17.4		$M_{2.0}$	Nm	16.2	21	26	37	53	86	107	133	149	186	210	265	345	255	NEW
			M_{2max}	Nm	52	69	86	120	171	270	347	347	347	347	347	347	347	259	
4.61	13.6	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	60	50	30	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	11.8	16.7	18.7	28	41	68	80	108	118	149	162	199	215	255	■■■ + ■■■ + . . .
5.26	17.4		$M_{2.0}$	Nm	15.7	20	25.5	35.5	51	84	104	129	145	180	205	255	345	255	NEW
			M_{2max}	Nm	52	69	86	120	171	270	347	347	347	347	347	347	347	259	
6.78	18.9	0.036	n_{2N}	r/min	500	375	300	250	150	100	75	60	60	50	37.5	30	–	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	16.9	24.5	32	43.5	67	107	137	171	186	225	265	330	–	255	■■■ + ■■■ + . . .
7.97	26.3		$M_{2.0}$	Nm	23.5	31	39	54	78	126	156	194	215	270	305	345	–	255	NEW
			M_{2max}	Nm	78	104	130	181	255	347	347	347	347	347	347	347	–	259	
6.68	18.9	0.036	n_{2N}	r/min	500	375	300	300	250	150	150	100	100	75	75	60	–	30	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	15.8	23.5	31	37	54	95	110	150	162	205	215	255	–	255	■■■ + ■■■ + . . .
7.83	26.3		$M_{2.0}$	Nm	23	30.5	38	53	76	123	153	191	210	265	300	345	–	255	NEW
			M_{2max}	Nm	78	104	130	181	255	347	347	347	347	347	347	347	–	259	
10.5	32.6	0.036	n_{2N}	r/min	375	300	250	200	150	125	100	75	75	60	50	37.5	–	–	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	23.5	29.5	38.5	53	78	109	145	189	192	225	255	310	–	–	■■■ + ■■■ + . . .
11	37		$M_{2.0}$	Nm	32.5	43	54	75	107	172	210	265	295	345	345	345	–	–	NEW
			M_{2max}	Nm	111	147	184	255	360	347	347	347	347	347	347	347	–	–	
10.2	31.5	0.036	n_{2N}	r/min	500	375	375	300	250	150	150	100	100	75	75	–	–	–	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	23.5	34	36.5	52	73	129	144	200	210	265	270	–	–	–	■■■ + ■■■ + . . .
10.7	35.3		$M_{2.0}$	Nm	31.5	42	52	73	104	167	205	255	285	345	345	–	–	–	NEW
			M_{2max}	Nm	105	139	174	240	340	347	347	347	347	347	347	–	–	–	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:			SP100, 1-stage					SP100, 2-stage								
1. Order code			J31					J32								
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	282	378	378	378	282	347	347	347	347	347	347	347	347	259
	$M_{2max,G}$	Nm	376	495	495	428	376	347	347	347	347	347	347	347	347	259
	$M_{2Em.Off}$	Nm	500	625	625	625	625	625	625	625	625	625	625	625	625	625
	$J_{1,G}$	kg cm²	3.99	3.04	2.61	2.29	2.07	2.18	2.07	2.05	1.97	1.96	1.92	1.91	1.91	1.91
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox SP100 1- and 2-stage (continued)

Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
9.7	31	0.036	n_{2N}	r/min	375	375	300	250	200	150	125	100	100	75	75	60	–	–	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25.5	27	38	52	75	117	149	186	195	240	230	250	–	–	■■■ + ■■■ + . . .
10.2	35.3		$M_{2.0}$	Nm	30.5	40	50	69	99	160	198	245	270	340	345	345	–	–	NEW
			M_{2max}	Nm	105	139	174	240	340	347	347	347	347	347	347	347	–	–	

Planetary gearbox data																
Gearbox type:			SP100, 1-stage					SP100, 2-stage								
1. Order code			J31					J32								
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	282	378	378	378	282	347	347	347	347	347	347	347	347	259
	$M_{2max,G}$	Nm	376	495	495	428	376	347	347	347	347	347	347	347	347	259
	$M_{2Em.Off}$	Nm	500	625	625	625	625	625	625	625	625	625	625	625	625	625
	$J_{1,G}$	kg cm²	3.99	3.04	2.61	2.29	2.07	2.18	2.07	2.05	1.97	1.96	1.92	1.91	1.91	1.91
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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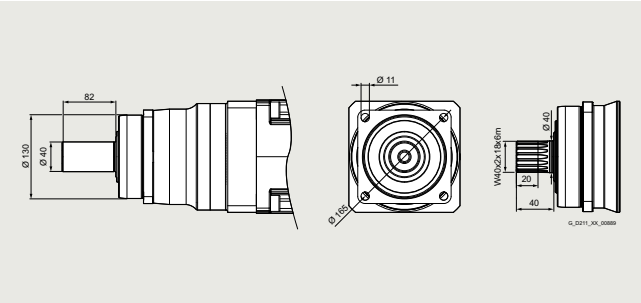
Gearbox type SP140

Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	6300 N
Average axial force for 20000 h	$F_{A,eq}$	9870 N
Average radial force for 30000 h	$F_{R,eq}$	5500 N
Average axial force for 30000 h	$F_{A,eq}$	8700 N
Maximum radial force	$F_{R,max}$	9600 N
Maximum axial force	$F_{A,max}$	9870 N

3
4

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2, SH 40, 48, 52, High Dynamic with planetary gearbox SP140 1- and 2-stage																			
0.73	3.08	0.036	n_{2N}	r/min	300	300	300	300	250	150	125	100	100	75	60	60	37.5	30	1FT2104-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.04	2.2	3.4	4.85	9.3	13.6	18.7	25	29.5	39	45.5	56	78	99	■■■ + ■■■ + . . .
1.19	3.58		$M_{2.0}$	Nm	2.15	3.05	4.4	6.2	9.1	17	21	26.5	31.5	41	47.5	58	80	98	NEW
			M_{2max}	Nm	9.4	12.5	16.1	22.5	32.5	55	68	86	97	123	142	176	240	305	
0.727	3.16	0.036	n_{2N}	r/min	300	375	375	300	250	150	125	100	100	75	60	60	37.5	30	1FT2104-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.02	1.94	3	5.2	9.3	13.7	18.5	25	29	38.5	45.5	55	78	99	■■■ + ■■■ + . . .
1.19	3.68		$M_{2.0}$	Nm	2.15	3	4.35	6.2	9.1	16.9	21	26.5	31.5	41	47	58	79	97	NEW
			M_{2max}	Nm	9.7	12.9	16.5	23	33	56	70	88	100	126	146	180	250	315	
1.81	6.16	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	1FT2104-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	3.7	5.6	8.9	12.5	20	31	40	52	60	77	89	110	154	205	■■■ + ■■■ + . . .
2.26	7.12		$M_{2.0}$	Nm	5.4	7.2	9.6	13.4	19.5	34	42.5	53	61	78	90	111	153	192	NEW
			M_{2max}	Nm	20	27	34	47.5	68	112	140	175	197	245	285	350	367	376	
1.79	6.24	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	1FT2104-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	3.6	5.5	8.8	12.3	20	31	40	52	59	76	88	109	153	200	■■■ + ■■■ + . . .
2.24	7.22		$M_{2.0}$	Nm	5.3	7.2	9.5	13.3	19.4	33.5	42	52	60	77	89	110	152	191	NEW
			M_{2max}	Nm	20.5	27	34.5	48	69	114	142	177	199	250	285	355	367	376	
2.54	8.16	0.036	n_{2N}	r/min	300	300	300	300	250	150	125	100	100	75	60	60	37.5	30	1FT2104-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	6.5	9.5	12.6	15.7	27.5	43	55	70	80	103	119	147	205	270	■■■ + ■■■ + . . .
2.98	9.5		$M_{2.0}$	Nm	7.6	10.1	13.1	18.4	26.5	45.5	57	71	81	103	119	147	200	255	NEW
			M_{2max}	Nm	27.5	36.5	46	64	92	151	188	230	260	325	380	465	367	376	
4.02	12	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	1FT2105-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	10.2	13.6	20	25.5	40	61	79	104	116	155	184	210	305	355	■■■ + ■■■ + . . .
4.65	14.2		$M_{2.0}$	Nm	12.7	16.9	21.5	30	43	72	90	113	128	161	186	225	315	375	NEW
			M_{2max}	Nm	42	56	70	98	140	225	280	350	395	490	536	670	367	376	
4.05	12	0.036	n_{2N}	r/min	375	300	300	250	250	150	125	100	100	75	60	60	37.5	30	1FT2105-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	9.3	15.3	19.2	27	38	57	74	98	110	147	175	200	290	330	■■■ + ■■■ + . . .
4.68	14.2		$M_{2.0}$	Nm	12.8	17	21.5	30	43.5	73	91	113	128	162	187	230	320	375	NEW
			M_{2max}	Nm	42	56	70	98	140	225	280	350	395	490	536	670	367	376	

➥ Continued on the next page

Planetary gearbox data															
Gearbox type:		SP140, 1-stage					SP140, 2-stage								
1. Order code		J51					J52								
i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	454	605	681	792	636	536	536	670	536	670	536	670	367	376
$M_{2max,G}$	Nm	454	605	681	825	720	536	536	670	536	670	536	670	367	376
$M_{2Em.Off}$	Nm	500	625	756	1059	1250	741	926	1158	1297	1350	1350	1350	1350	1250
$J_{1,G}$	kg cm²	10.7	7.82	6.79	5.84	5.28	2.5	2.01	1.97	1.65	1.63	1.4	1.39	1.38	1.38
$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 40, 48, 52, High Dynamic with planetary gearbox SP140 1- and 2-stage (continued)																			
6.48	18.6	0.036	n_{2N}	r/min	300	300	300	250	250	150	125	100	100	75	60	60	37.5	30	**1FT2105-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	18.9	25	31	43.5	59	85	116	150	166	220	260	295	365	375	■■■ + ■■■ + . . .
7.52	23		$M_{2.0}$	Nm	21.5	28.5	36	50	72	118	148	184	205	260	300	370	365	375	NEW
			M_{2max}	Nm	69	91	114	159	225	360	450	560	536	670	536	670	367	376	
SIMOTICS S-1FT2, SH 40, 48, 52, Compact with planetary gearbox SP140 1- and 2-stage																			
1.77	5.83	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	**1FT2204-5AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	3.5	5.3	8.6	11.6	19.6	29.5	39	50	58	75	87	107	150	190	■■■ + ■■■ + . . .
2.22	6.75		$M_{2.0}$	Nm	5.3	7.1	9.4	13.2	19.1	33.5	41.5	52	60	76	88	109	150	189	NEW
			M_{2max}	Nm	19.2	25	32	44.5	64	106	132	165	186	230	270	330	367	376	
1.78	5.83	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	**1FT2204-5AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	3.65	5.5	8.7	12	19.8	30.5	39.5	51	58	75	87	108	151	197	■■■ + ■■■ + . . .
2.23	6.75		$M_{2.0}$	Nm	5.3	7.1	9.4	13.2	19.2	33.5	42	52	60	77	89	110	151	190	NEW
			M_{2max}	Nm	19.2	25	32	44.5	64	106	132	165	186	230	270	330	367	376	
2.52	7.76	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	**1FT2204-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.6	8	12.5	16.5	27	42.5	54	70	79	102	118	146	200	265	■■■ + ■■■ + . . .
2.98	9.02		$M_{2.0}$	Nm	7.5	10.1	13.1	18.3	26.5	45.5	56	71	81	102	118	146	200	255	NEW
			M_{2max}	Nm	26	34.5	43.5	60	87	143	178	220	250	310	360	445	367	376	
2.81	8.79	0.036	n_{2N}	r/min	300	300	300	250	200	125	100	100	75	60	50	50	30	20	**1FT2205-2AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.9	8.5	11	16.1	25	38.5	50	59	76	98	116	133	195	250	■■■ + ■■■ + . . .
3.25	10.3		$M_{2.0}$	Nm	8.4	11.2	14.5	20	29	50	62	78	89	112	130	160	220	280	NEW
			M_{2max}	Nm	30	39.5	50	69	99	163	200	250	280	355	410	500	367	376	
2.83	8.79	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	**1FT2205-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.3	8	11.7	15.7	25	38	50	66	75	100	119	141	200	240	■■■ + ■■■ + . . .
3.28	10.3		$M_{2.0}$	Nm	8.6	11.4	14.7	20.5	29.5	50	63	78	89	113	131	162	220	280	NEW
			M_{2max}	Nm	30	39.5	50	69	99	163	200	250	280	355	410	500	367	376	
2.77	8.79	0.036	n_{2N}	r/min	375	300	300	300	250	150	125	100	100	75	60	60	37.5	30	**1FT2205-2AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	4.95	8.6	11.2	13.7	23.5	35.5	46.5	62	70	93	111	130	187	220	■■■ + ■■■ + . . .
3.22	10.3		$M_{2.0}$	Nm	8.4	11.1	14.4	20	29	49.5	61	77	87	111	128	158	215	275	NEW
			M_{2max}	Nm	30	39.5	50	69	99	163	200	250	280	355	410	500	367	376	
4.7	14.3	0.036	n_{2N}	r/min	300	300	300	250	250	150	125	100	100	75	60	60	37.5	25	**1FT2205-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	12.2	16.6	20.5	29.5	40	60	79	104	115	153	183	205	300	375	■■■ + ■■■ + . . .
5.45	17.1		$M_{2.0}$	Nm	15.2	20	25.5	35.5	51	85	106	132	149	188	215	265	365	375	NEW
			M_{2max}	Nm	51	67	85	118	169	270	335	420	470	590	536	670	367	376	

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Planetary gearbox data															
Gearbox type:		SP140, 1-stage					SP140, 2-stage								
1. Order code		J51					J52								
i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	454	605	681	792	636	536	536	670	536	670	536	670	367	376
$M_{2max,G}$	Nm	454	605	681	825	720	536	536	670	536	670	536	670	367	376
$M_{2Em.Off}$	Nm	500	625	756	1059	1250	741	926	1158	1297	1350	1350	1350	1350	1250
$J_{1,G}$	kg cm²	10.7	7.82	6.79	5.84	5.28	2.5	2.01	1.97	1.65	1.63	1.4	1.39	1.38	1.38
$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type SP140

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 63, High Dynamic with planetary gearbox SP140 1- and 2-stage																			
0.73	3.08	0.036	n_{2N}	r/min	375	300	300	250	250	150	125	100	100	75	60	60	37.5	25	1FT2104-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	15.6	25.5	31.5	44.5	60	87	119	155	172	225	270	310	450	490	■■■ + ■■■ + . . .
1.19	3.58		$M_{2.0}$	Nm	23	30.5	38.5	53	77	126	157	196	220	275	315	395	530	580	NEW
			M_{2max}	Nm	74	99	124	172	245	390	490	610	680	670	726	670	726	583	
0.727	3.16	0.036	n_{2N}	r/min	375	300	300	250	250	125	125	100	100	75	60	60	37.5	–	1FT2104-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	20	32	39.5	54	68	120	134	180	195	260	320	350	520	–	■■■ + ■■■ + . . .
1.19	3.68		$M_{2.0}$	Nm	30.5	40	50	70	101	164	200	255	285	355	410	510	680	–	NEW
			M_{2max}	Nm	95	126	158	220	310	500	620	670	726	670	726	670	726	–	
1.81	6.16	0.036	n_{2N}	r/min	300	300	300	250	200	125	100	100	100	75	60	60	–	–	1FT2104-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	35.5	46.5	55	74	109	160	210	240	260	350	430	455	–	–	■■■ + ■■■ + . . .
2.26	7.12		$M_{2.0}$	Nm	43.5	57	72	100	144	230	285	360	400	500	570	670	–	–	NEW
			M_{2max}	Nm	132	175	215	305	430	690	726	670	726	670	726	670	–	–	
SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox SP140 1- and 2-stage																			
4.6	13.9	0.036	n_{2N}	r/min	300	300	300	250	200	125	100	100	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12.7	16.6	19.4	26.5	44	68	87	103	128	166	194	225	325	415	■■■ + ■■■ + . . .
5.38	17.1		$M_{2.0}$	Nm	15	19.9	25	35	50	84	105	131	148	187	210	265	360	455	NEW
			M_{2max}	Nm	51	67	85	118	169	270	335	420	470	590	670	670	726	583	
4.76	13.9	0.036	n_{2N}	r/min	375	375	300	300	250	150	125	100	100	75	60	60	37.5	30	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	11.1	14.5	21	25.5	40	62	79	104	114	154	185	205	305	335	■■■ + ■■■ + . . .
5.58	17.1		$M_{2.0}$	Nm	15.7	20.5	26	36.5	53	87	109	136	153	194	220	275	370	475	NEW
			M_{2max}	Nm	51	67	85	118	169	270	335	420	470	590	670	670	726	583	
4.62	13.9	0.036	n_{2N}	r/min	300	300	300	250	250	150	125	100	100	75	60	60	37.5	25	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12	16.5	20.5	29	37.5	56	79	104	116	154	183	210	305	375	■■■ + ■■■ + . . .
5.4	17.1		$M_{2.0}$	Nm	15.2	20	25.5	35.5	51	84	105	132	148	188	215	265	360	460	NEW
			M_{2max}	Nm	51	67	85	118	169	270	335	420	470	590	670	670	726	583	
6.9	20	0.036	n_{2N}	r/min	300	300	300	250	150	100	75	60	60	50	37.5	30	25	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	19.1	25	30.5	42.5	68	104	135	173	191	240	290	355	475	580	■■■ + ■■■ + . . .
8.1	26		$M_{2.0}$	Nm	23.5	31	39.5	55	78	128	160	200	220	280	320	400	540	580	NEW
			M_{2max}	Nm	77	103	128	179	255	410	500	630	726	670	726	670	726	583	
6.8	20	0.036	n_{2N}	r/min	300	300	300	250	200	125	100	100	100	75	60	60	37.5	25	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	18.6	24.5	29	40	63	96	123	147	163	215	255	295	430	430	■■■ + ■■■ + . . .
7.98	26		$M_{2.0}$	Nm	23	30.5	38.5	54	77	126	157	197	220	275	315	395	530	580	NEW
			M_{2max}	Nm	77	103	128	179	255	410	500	630	726	670	726	670	726	583	

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Planetary gearbox data															
Gearbox type:		SP140, 1-stage					SP140, 2-stage								
1. Order code		J51					J52								
i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	454	605	681	792	636	726	726	670	726	670	726	670	726	583
$M_{2max,G}$	Nm	454	605	681	825	720	726	726	670	726	670	726	670	726	583
$M_{2Em.Off}$	Nm	500	625	756	1059	1250	1350	1350	1350	1350	1350	1350	1350	1350	1250
$J_{1,G}$	kg cm²	10.7	7.82	6.79	5.84	5.28	3.19	2.71	2.67	2.34	2.32	2.1	2.08	2.08	2.07
$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox SP140 1- and 2-stage (continued)																			
9.12	26.5	0.036	n_{2N}	r/min	250	250	250	200	150	100	75	75	75	60	50	37.5	30	15	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	26	31.5	35.5	49	78	117	165	181	197	270	325	415	520	570	■■■ + ■■■ + . . .
10.8	36.7		$M_{2.0}$	Nm	32	42	53	74	106	172	215	265	300	375	430	530	720	580	NEW
			M_{2max}	Nm	110	146	182	250	360	570	726	670	726	670	726	670	726	583	
10.3	31.9	0.036	n_{2N}	r/min	300	300	300	250	200	125	100	100	100	75	60	60	37.5	–	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	26.5	35	42.5	58	86	131	169	198	215	285	345	380	560	–	■■■ + ■■■ + . . .
10.7	35		$M_{2.0}$	Nm	31.5	42	53	73	105	171	210	265	295	370	425	530	720	–	NEW
			M_{2max}	Nm	104	138	173	240	340	540	670	670	726	670	726	670	726	–	
8.66	25.4	0.036	n_{2N}	r/min	300	300	250	200	200	100	100	100	100	75	60	60	37.5	20	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	23.5	29	42	58	73	132	149	165	185	270	320	360	530	530	■■■ + ■■■ + . . .
10.2	35		$M_{2.0}$	Nm	30	40	50	70	100	163	200	250	280	355	405	500	680	580	NEW
			M_{2max}	Nm	104	138	173	240	340	540	670	670	726	670	726	670	726	583	

Planetary gearbox data																
Gearbox type:			SP140, 1-stage					SP140, 2-stage								
1. Order code			J51					J52								
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	454	605	681	792	636	726	726	670	726	670	726	670	726	583
	$M_{2max,G}$	Nm	454	605	681	825	720	726	726	670	726	670	726	670	726	583
	$M_{2Em.Off}$	Nm	500	625	756	1059	1250	1350	1350	1350	1350	1350	1350	1350	1350	1250
	$J_{1,G}$	kg cm²	10.7	7.82	6.79	5.84	5.28	3.19	2.71	2.67	2.34	2.32	2.1	2.08	2.08	2.07
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type SP140

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 80, High Dynamic with planetary gearbox SP140 1- and 2-stage																		
21	80	0.036	n_{2N}	r/min	300	250	250	200	150	100	75	75	75	60	50	–	–	1FT2108-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	48	68	79	106	157	220	305	335	375	520	650	–	–	■■■ + ■■■ + . . .
21.4	85		$M_{2.0}$	Nm	64	84	105	148	210	340	420	520	580	670	720	–	–	NEW
			M_{2max}	Nm	255	335	420	580	720	726	726	670	726	670	726	–	–	
25.8	96.1	0.036	n_{2N}	r/min	300	300	250	200	150	100	75	60	60	–	–	–	–	1FT2108-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	59	69	96	129	187	260	350	460	510	–	–	–	–	■■■ + ■■■ + . . .
26.4	103		$M_{2.0}$	Nm	79	104	130	182	260	415	510	640	720	–	–	–	–	NEW
			M_{2max}	Nm	305	405	510	710	720	726	726	670	726	–	–	–	–	
25.5	96.1	0.036	n_{2N}	r/min	300	250	250	200	150	100	75	75	75	–	–	–	–	1FT2108-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	54	76	87	116	170	235	325	350	390	–	–	–	–	■■■ + ■■■ + . . .
26.1	103		$M_{2.0}$	Nm	78	103	129	180	255	410	510	630	710	–	–	–	–	NEW
			M_{2max}	Nm	305	405	510	710	720	726	726	670	726	–	–	–	–	
32.3	127	0.036	n_{2N}	r/min	300	250	250	200	150	100	75	60	60	–	–	–	–	1FT2108-7AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	69	96	110	145	200	275	375	495	550	–	–	–	–	■■■ + ■■■ + . . .
33.3	137		$M_{2.0}$	Nm	99	131	165	230	325	520	650	670	720	–	–	–	–	NEW
			M_{2max}	Nm	410	540	680	825	720	726	726	670	726	–	–	–	–	
31.8	127	0.036	n_{2N}	r/min	300	250	250	200	150	75	75	60	60	–	–	–	–	1FT2108-7AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	67	93	105	137	194	350	360	480	520	–	–	–	–	■■■ + ■■■ + . . .
32.8	137		$M_{2.0}$	Nm	98	129	162	225	320	510	640	670	720	–	–	–	–	NEW
			M_{2max}	Nm	410	540	680	825	720	726	726	670	726	–	–	–	–	
31.5	127	0.036	n_{2N}	r/min	250	250	200	150	150	75	75	60	60	–	–	–	–	1FT2108-7AE..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	76	86	120	165	176	330	335	445	485	–	–	–	–	■■■ + ■■■ + . . .
32.5	137		$M_{2.0}$	Nm	97	128	160	220	320	510	630	670	720	–	–	–	–	NEW
			M_{2max}	Nm	410	540	680	825	720	726	726	670	726	–	–	–	–	
SIMOTICS S-1FT2, SH 80, Compact with planetary gearbox SP140 1- and 2-stage																		
10.1	33.6	0.036	n_{2N}	r/min	300	300	300	250	200	125	100	100	100	75	60	60	37.5	1FT2208-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	24.5	32.5	39	52	76	119	152	174	187	250	305	330	500	■■■ + ■■■ + . . .
10.6	36.7		$M_{2.0}$	Nm	31	40.5	51	72	103	168	210	260	290	365	420	520	710	NEW
			M_{2max}	Nm	110	145	182	250	360	570	726	670	726	670	726	670	726	
15.9	47.2	0.036	n_{2N}	r/min	250	250	250	200	150	100	75	60	60	50	37.5	30	–	1FT2208-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	41	48.5	56	77	118	175	240	320	360	455	540	670	–	■■■ + ■■■ + . . .
16.2	49.7		$M_{2.0}$	Nm	48.5	63	80	112	160	255	320	400	445	560	640	670	–	NEW
			M_{2max}	Nm	148	196	245	340	485	726	726	670	726	670	726	670	–	
15.4	47.2	0.036	n_{2N}	r/min	300	300	300	200	200	100	100	75	75	60	50	50	–	1FT2208-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	38	47.5	54	87	105	192	205	290	315	405	480	510	–	■■■ + ■■■ + . . .
15.7	49.7		$M_{2.0}$	Nm	46.5	61	77	108	154	250	310	385	430	540	620	670	–	NEW
			M_{2max}	Nm	148	196	245	340	485	726	726	670	726	670	726	670	–	

➥ Continued on the next page

Planetary gearbox data														
Gearbox type:		SP140, 1-stage					SP140, 2-stage							
1. Order code		J51					J52							
i		3	4	5	7	10	16	20	25	28	35	40	50	70
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70
$M_{2N,G}$	Nm	468	792	792	792	636	726	726	670	726	670	726	670	726
$M_{2max,G}$	Nm	624	1056	1056	825	720	726	726	670	726	670	726	670	726
$M_{2Em.Off}$	Nm	1250	1350	1350	1350	1250	1350	1350	1350	1350	1350	1350	1350	1350
$J_{1,G}$	kg cm²	13.8	11	9.95	9.01	8.44	10.2	9.77	9.73	9.41	9.39	9.16	9.15	9.14
$\varphi_{2,G}$	'	3					5							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2, SH 80, Compact with planetary gearbox SP140 1- and 2-stage (continued)																		
15.2	47.2	0.036	n_{2N}	r/min	300	300	250	200	200	100	100	75	75	75	60	50	–	1FT2208-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	37.5	45	63	86	98	192	197	295	320	350	440	520	–	■■■ + ■■■ + . . .
15.4	49.7		$M_{2.0}$	Nm	46	60	76	106	152	245	305	380	425	530	610	670	–	NEW
			M_{2max}	Nm	148	196	245	340	485	726	726	670	726	670	726	670	–	
19.3	60.8	0.036	n_{2N}	r/min	250	200	200	150	125	75	75	60	60	50	37.5	30	–	1FT2208-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	43	60	68	97	128	215	220	305	335	445	590	670	–	■■■ + ■■■ + . . .
19.8	64.3		$M_{2.0}$	Nm	59	77	97	136	195	310	390	485	540	670	720	670	–	NEW
			M_{2max}	Nm	193	255	315	445	630	726	726	670	726	670	726	670	–	
19.1	60.8	0.036	n_{2N}	r/min	300	300	250	200	150	100	75	75	75	60	50	50	–	1FT2208-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	47	54	76	103	148	215	290	325	350	450	540	540	–	■■■ + ■■■ + . . .
19.5	64.3		$M_{2.0}$	Nm	58	76	96	134	192	310	385	480	530	670	720	670	–	NEW
			M_{2max}	Nm	193	255	315	445	630	726	726	670	726	670	726	670	–	
18.2	60.8	0.036	n_{2N}	r/min	300	300	300	200	200	100	100	75	75	60	60	50	–	1FT2208-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	43.5	54	60	94	111	200	215	295	315	405	415	485	–	■■■ + ■■■ + . . .
18.5	64.3		$M_{2.0}$	Nm	55	73	91	128	183	295	365	455	510	640	720	670	–	NEW
			M_{2max}	Nm	193	255	315	445	630	726	726	670	726	670	726	670	–	
23.1	73.9	0.036	n_{2N}	r/min	300	250	250	200	150	100	75	60	60	50	37.5	–	–	1FT2208-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	52	73	84	113	166	230	320	420	460	580	710	–	–	■■■ + ■■■ + . . .
23.6	78.3		$M_{2.0}$	Nm	70	93	116	163	230	375	465	580	640	670	720	–	–	NEW
			M_{2max}	Nm	230	310	385	540	720	726	726	670	726	670	726	–	–	
22.9	73.9	0.036	n_{2N}	r/min	300	250	250	200	150	100	75	60	60	60	50	–	–	1FT2208-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	52	73	84	111	161	225	310	415	450	495	590	–	–	■■■ + ■■■ + . . .
23.4	78.3		$M_{2.0}$	Nm	70	92	115	162	230	370	460	570	640	670	720	–	–	NEW
			M_{2max}	Nm	230	310	385	540	720	726	726	670	726	670	726	–	–	

Planetary gearbox data															
Gearbox type:			SP140, 1-stage					SP140, 2-stage							
1. Order code			J51					J52							
	i		3	4	5	7	10	16	20	25	28	35	40	50	70
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70
	$M_{2N,G}$	Nm	468	792	792	792	636	726	726	670	726	670	726	670	726
	$M_{2max,G}$	Nm	624	1056	1056	825	720	726	726	670	726	670	726	670	726
	$M_{2Em.Off}$	Nm	1250	1350	1350	1350	1250	1350	1350	1350	1350	1350	1350	1350	1350
	$J_{1,G}$	kg cm²	13.8	11	9.95	9.01	8.44	10.2	9.77	9.73	9.41	9.39	9.16	9.15	9.14
	$\varphi_{2,G}$	'	3					5							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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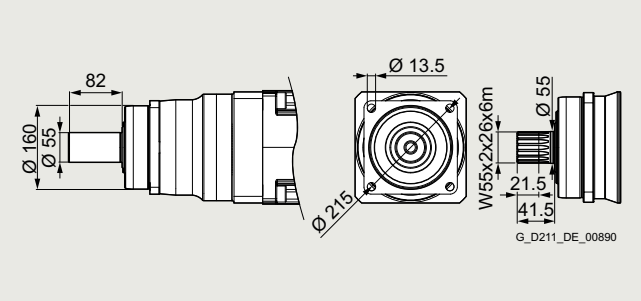
Gearbox type SP180

Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	11300 N
Average axial force for 20000 h	$F_{A,eq}$	15570 N
Average radial force for 30000 h	$F_{R,eq}$	10000 N
Average axial force for 30000 h	$F_{A,eq}$	13800 N
Maximum radial force	$F_{R,max}$	15000 N
Maximum axial force	$F_{A,max}$	15570 N

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2 High Dynamic with planetary gearbox SP180 1- and 2-stage																			
0.815	2.91	0.036	n_{2N}	r/min	–	–	–	–	–	100	100	100	75	75	60	50	37.5	30	1FT2104-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	7.7	12.7	19.2	25	33.5	40.5	51	68	74	■■■ + ■■■ + . . .
1.12	3.49		$M_{2.0}$	Nm	–	–	–	–	–	13.9	19.9	27	30.5	39	44.5	53	69	81	NEW
			M_{2max}	Nm	–	–	–	–	–	52	67	86	97	122	139	172	230	290	
0.81	2.99	0.036	n_{2N}	r/min	–	–	–	–	–	100	125	100	75	75	60	50	37.5	30	1FT2104-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	7.6	10.7	19	25	33.5	40.5	51	67	75	■■■ + ■■■ + . . .
1.12	3.6		$M_{2.0}$	Nm	–	–	–	–	–	13.8	19.8	26.5	30.5	39	44	53	69	80	NEW
			M_{2max}	Nm	–	–	–	–	–	54	69	89	100	125	143	176	235	295	
1.76	6	0.036	n_{2N}	r/min	–	–	–	–	–	125	125	100	75	75	60	50	37.5	30	1FT2104-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	22.5	29.5	46.5	55	72	84	106	143	182	■■■ + ■■■ + . . .
2.19	7.07		$M_{2.0}$	Nm	–	–	–	–	–	31	41	53	60	76	87	106	141	175	NEW
			M_{2max}	Nm	–	–	–	–	–	110	139	176	197	245	280	345	470	590	
1.74	6.08	0.036	n_{2N}	r/min	–	–	–	–	–	125	125	100	75	75	60	50	37.5	30	1FT2104-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	22	28.5	46	55	71	84	105	142	181	■■■ + ■■■ + . . .
2.17	7.16		$M_{2.0}$	Nm	–	–	–	–	–	30.5	41	53	60	76	86	106	140	174	NEW
			M_{2max}	Nm	–	–	–	–	–	112	141	178	200	250	285	350	475	600	
2.39	8.02	0.036	n_{2N}	r/min	–	–	–	–	–	125	100	100	75	75	60	50	37.5	30	1FT2104-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	30	49.5	65	76	98	114	143	195	235	■■■ + ■■■ + . . .
2.91	9.44		$M_{2.0}$	Nm	–	–	–	–	–	42.5	56	71	81	101	116	142	190	235	NEW
			M_{2max}	Nm	–	–	–	–	–	149	187	235	260	330	375	465	630	800	
3.85	12	0.036	n_{2N}	r/min	–	–	–	–	–	125	100	100	75	75	60	50	37.5	30	1FT2105-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	54	81	101	124	157	182	225	305	315	■■■ + ■■■ + . . .
4.58	14.2		$M_{2.0}$	Nm	–	–	–	–	–	70	89	113	128	160	182	225	300	385	NEW
			M_{2max}	Nm	–	–	–	–	–	225	280	355	395	495	560	700	940	1238	
3.88	12	0.036	n_{2N}	r/min	–	–	–	–	–	100	100	100	75	75	60	50	37.5	25	1FT2105-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	61	76	96	121	149	179	220	290	360	■■■ + ■■■ + . . .
4.61	14.2		$M_{2.0}$	Nm	–	–	–	–	–	70	90	114	128	161	183	225	305	385	NEW
			M_{2max}	Nm	–	–	–	–	–	225	280	355	395	495	560	700	940	1238	

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Planetary gearbox data															
Gearbox type:		SP180, 1-stage					SP180, 2-stage								
1. Order code		J61					J62								
	i	3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	1164	1452	1452	1452	1164	1452	1452	1452	1452	1452	1452	1452	1356	1164
	$M_{2max,G}$	Nm	1552	1936	1936	1936	1552	1485	1485	1857	1485	1857	1485	1857	1356	1238
	$M_{2Em.Off}$	Nm	2400	2750	2750	2750	2750	2420	2750	2750	2750	2750	2750	2750	2750	2750
	$J_{1,G}$	kg cm²	50.8	33.9	27.9	22.2	19.2	9.27	7.72	7.48	6.32	6.2	5.51	5.45	5.39	5.36
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic with planetary gearbox SP180 1- and 2-stage (continued)																			
6.33	18.8	0.036	n_{2N}	r/min	–	–	–	–	–	100	100	100	75	75	60	50	37.5	25	1FT2105-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	101	124	151	189	225	270	335	435	500	■■■ + ■■■ + . . .
7.46	22.8		$M_{2.0}$	Nm	–	–	–	–	–	116	147	185	205	260	295	365	495	630	NEW
			M_{2max}	Nm	–	–	–	–	–	365	455	560	630	790	900	1120	1356	1238	
7.03	20.3	0.036	n_{2N}	r/min	375	375	300	250	200	100	100	100	75	75	60	50	37.5	25	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	19.9	21	30.5	39	52	102	127	156	193	230	275	340	450	510	■■■ + ■■■ + . . .
8.53	25.5		$M_{2.0}$	Nm	25.5	33.5	42	59	84	130	164	205	230	285	325	405	550	700	NEW
			M_{2max}	Nm	76	101	126	177	250	395	490	610	690	850	970	1210	1356	1238	
9.12	25.3	0.036	n_{2N}	r/min	375	300	300	250	150	100	100	100	75	75	60	50	37.5	20	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25.5	33.5	38.5	48	85	128	155	184	235	275	330	405	520	700	■■■ + ■■■ + . . .
11.1	32.4		$M_{2.0}$	Nm	33	43.5	54	77	109	170	210	265	300	375	425	530	710	910	NEW
			M_{2max}	Nm	97	128	161	225	320	500	620	780	870	1090	1240	1530	1356	1238	
12.6	33.7	0.036	n_{2N}	r/min	375	300	300	200	150	100	100	100	75	75	60	50	37.5	20	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	37	48.5	54	85	121	183	215	250	320	370	450	540	680	790	■■■ + ■■■ + . . .
15.4	44.7		$M_{2.0}$	Nm	46	60	76	107	151	235	295	370	415	520	590	730	990	1160	NEW
			M_{2max}	Nm	134	178	220	310	440	690	860	1080	1200	1500	1485	1857	1356	1238	
SIMOTICS S-1FT2 Compact with planetary gearbox SP180 1- and 2-stage																			
1.72	5.67	0.036	n_{2N}	r/min	–	–	–	–	–	125	100	100	75	75	60	50	37.5	30	1FT2204-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	21	33.5	45	54	70	82	103	139	169	■■■ + ■■■ + . . .
2.15	6.69		$M_{2.0}$	Nm	–	–	–	–	–	30.5	40.5	52	59	75	85	104	139	172	NEW
			M_{2max}	Nm	–	–	–	–	–	104	132	166	187	230	265	330	445	560	
1.73	5.67	0.036	n_{2N}	r/min	–	–	–	–	–	125	125	100	75	75	60	50	37.5	30	1FT2204-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	21.5	27	45.5	54	70	83	104	140	177	■■■ + ■■■ + . . .
2.16	6.69		$M_{2.0}$	Nm	–	–	–	–	–	30.5	40.5	53	60	75	86	105	139	173	NEW
			M_{2max}	Nm	–	–	–	–	–	104	132	166	187	230	265	330	445	560	
2.38	7.62	0.036	n_{2N}	r/min	–	–	–	–	–	125	100	100	75	75	60	50	37.5	30	1FT2204-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	32.5	49	64	76	97	113	142	193	240	■■■ + ■■■ + . . .
2.9	8.97		$M_{2.0}$	Nm	–	–	–	–	–	42.5	55	71	80	101	115	142	189	235	NEW
			M_{2max}	Nm	–	–	–	–	–	141	178	220	250	310	355	440	590	760	
2.63	8.66	0.036	n_{2N}	r/min	–	–	–	–	–	100	100	100	75	60	50	50	30	20	1FT2205-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	34	44.5	54	74	99	118	136	193	240	■■■ + ■■■ + . . .
3.18	10.2		$M_{2.0}$	Nm	–	–	–	–	–	47	61	78	88	111	127	156	205	260	NEW
			M_{2max}	Nm	–	–	–	–	–	161	200	255	285	355	405	500	680	860	
2.74	8.66	0.036	n_{2N}	r/min	–	–	–	–	–	125	100	100	75	75	60	50	37.5	30	1FT2205-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	30	47.5	61	79	99	119	149	196	220	■■■ + ■■■ + . . .
3.31	10.2		$M_{2.0}$	Nm	–	–	–	–	–	49	63	81	92	115	131	162	215	270	NEW
			M_{2max}	Nm	–	–	–	–	–	161	200	255	285	355	405	500	680	860	

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Planetary gearbox data															
Gearbox type:		SP180, 1-stage					SP180, 2-stage								
1. Order code		J61					J62								
i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	1164	1452	1452	1452	1164	1452	1452	1452	1452	1452	1452	1452	1356	1164
$M_{2max,G}$	Nm	1552	1936	1936	1936	1552	1485	1485	1857	1485	1857	1485	1857	1356	1238
$M_{2Em.Off}$	Nm	2400	2750	2750	2750	2750	2420	2750	2750	2750	2750	2750	2750	2750	2750
$J_{1,G}$	kg cm²	50.8	33.9	27.9	22.2	19.2	9.27	7.72	7.48	6.32	6.2	5.51	5.45	5.39	5.36
$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type SP180

Servomotor data			Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																	
Nm	Nm	kg cm²																	
SIMOTICS S-1FT2 Compact with planetary gearbox SP180 1- and 2-stage (continued)																			
2.68	8.66	0.036	n_{2N}	r/min	–	–	–	–	–	100	100	100	75	75	60	50	37.5	30	1FT2205-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	34	45	57	74	92	111	139	182	199	■■■ + ■■■ + . . .
3.23	10.2		$M_{2.0}$	Nm	–	–	–	–	–	48	62	80	90	113	128	158	210	265	NEW
			M_{2max}	Nm	–	–	–	–	–	161	200	255	285	355	405	500	680	860	
4.68	14.3	0.036	n_{2N}	r/min	–	–	–	–	–	100	100	100	75	75	60	50	37.5	25	1FT2205-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	–	66	83	102	128	155	186	230	300	385	■■■ + ■■■ + . . .
5.54	17.1		$M_{2.0}$	Nm	–	–	–	–	–	85	108	137	154	193	220	270	365	465	NEW
			M_{2max}	Nm	–	–	–	–	–	270	340	425	475	590	670	840	1130	1238	
4.51	14.3	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	100	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	13.4	17.7	22.5	31.5	46.5	68	85	98	132	172	200	235	330	430	■■■ + ■■■ + . . .
5.47	17.6		$M_{2.0}$	Nm	16.4	21.5	26.5	38	53	82	105	132	149	186	210	260	350	450	NEW
			M_{2max}	Nm	52	69	87	122	174	270	340	425	475	590	670	840	1130	1238	
4.86	14.3	0.036	n_{2N}	r/min	375	375	300	250	200	125	100	100	75	75	60	50	37.5	25	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	13	14.8	19.5	26.5	37	54	83	101	129	155	188	230	300	380	■■■ + ■■■ + . . .
5.9	17.6		$M_{2.0}$	Nm	17.7	23	29	41	58	88	113	143	160	200	225	280	380	485	NEW
			M_{2max}	Nm	52	69	87	122	174	270	340	425	475	590	670	840	1130	1238	
4.71	14.3	0.036	n_{2N}	r/min	375	300	300	200	150	100	100	100	75	75	60	50	37.5	25	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12.6	16.7	19	30	44	65	82	102	128	156	187	230	305	365	■■■ + ■■■ + . . .
5.73	17.6		$M_{2.0}$	Nm	17.1	22.5	28	39.5	56	86	109	138	155	194	220	270	370	470	NEW
			M_{2max}	Nm	52	69	87	122	174	270	340	425	475	590	670	840	1130	1238	
7.03	21	0.036	n_{2N}	r/min	375	300	300	200	150	100	75	60	60	50	37.5	30	25	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	20	26	28	46.5	67	100	138	181	199	250	300	370	480	640	■■■ + ■■■ + . . .
8.5	26.5		$M_{2.0}$	Nm	25.5	33.5	42	59	84	130	164	205	230	285	330	405	550	700	NEW
			M_{2max}	Nm	79	105	131	184	260	410	510	640	710	890	1010	1250	1356	1238	
6.94	21	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	100	75	75	60	50	37.5	20	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	19.6	25.5	32.5	46	66	99	123	150	187	225	270	330	430	570	■■■ + ■■■ + . . .
8.4	26.5		$M_{2.0}$	Nm	25	33	41	58	82	128	162	200	225	285	325	400	540	690	NEW
			M_{2max}	Nm	79	105	131	184	260	410	510	640	710	890	1010	1250	1356	1238	
9.18	28.8	0.036	n_{2N}	r/min	375	250	250	200	125	75	75	75	75	60	50	37.5	30	15	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25	38.5	40	54	96	150	181	210	220	295	350	450	510	680	■■■ + ■■■ + . . .
11.1	37.3		$M_{2.0}$	Nm	33	44	55	77	110	171	215	270	300	375	430	530	720	910	NEW
			M_{2max}	Nm	112	148	185	260	370	580	720	900	1000	1250	1420	1760	1356	1238	
9.48	27.4	0.036	n_{2N}	r/min	375	300	300	200	150	100	100	100	75	75	60	50	37.5	20	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	27.5	36.5	40.5	64	93	140	170	200	255	300	360	440	560	700	■■■ + ■■■ + . . .
11.5	35.3		$M_{2.0}$	Nm	34.5	45.5	56	80	113	177	220	275	310	390	445	550	740	940	NEW
			M_{2max}	Nm	106	140	175	245	350	550	680	850	950	1180	1350	1670	1356	1238	
9.05	27.4	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	100	75	75	60	50	37.5	20	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25.5	34	43	60	86	127	146	164	235	280	335	410	510	610	■■■ + ■■■ + . . .
11	35.3		$M_{2.0}$	Nm	33	43.5	54	76	108	168	210	265	295	370	420	520	710	900	NEW
			M_{2max}	Nm	106	140	175	245	350	550	680	850	950	1180	1350	1670	1356	1238	

➥ Continued on the next page

Planetary gearbox data																
Gearbox type:			SP180, 1-stage					SP180, 2-stage								
1. Order code			J61					J62								
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	1164	1452	1452	1452	1164	1452	1452	1452	1452	1452	1452	1452	1356	1164
	$M_{2max,G}$	Nm	1552	1936	1936	1936	1552	1485	1485	1857	1485	1857	1485	1857	1356	1238
	$M_{2Em.Off}$	Nm	2400	2750	2750	2750	2750	2420	2750	2750	2750	2750	2750	2750	2750	2750
	$J_{1,G}$	kg cm²	50.8	33.9	27.9	22.2	19.2	9.27	7.72	7.48	6.32	6.2	5.51	5.45	5.39	5.36
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox SP180 1- and 2-stage (continued)																			
9.23	28.8	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	100	75	75	60	50	37.5	20	1FT2208-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25	33.5	42	58	83	126	151	174	225	260	315	385	495	640	■■■ + ■■■ + . . .
11.2	37.3		$M_{2.0}$	Nm	33.5	44	55	78	110	172	215	270	300	380	430	530	720	920	NEW
			M_{2max}	Nm	112	148	185	260	370	580	720	900	1000	1250	1420	1760	1356	1238	
13.6	37.2	0.036	n_{2N}	r/min	375	250	250	200	125	75	75	60	60	50	37.5	30	25	15	1FT2208-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	37.5	58	60	81	143	225	270	350	385	485	570	700	820	850	■■■ + ■■■ + . . .
16.7	50.3		$M_{2.0}$	Nm	50	66	82	116	165	255	320	400	450	560	640	790	1070	1160	NEW
			M_{2max}	Nm	150	199	245	345	495	780	970	1210	1350	1680	1485	1857	1356	1238	
13.7	37.2	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	75	75	60	50	50	30	20	1FT2208-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	39.5	52	65	89	127	193	215	310	330	425	500	540	790	730	■■■ + ■■■ + . . .
16.8	50.3		$M_{2.0}$	Nm	50	66	83	117	166	260	325	405	455	560	640	800	1080	1160	NEW
			M_{2max}	Nm	150	199	245	345	495	780	970	1210	1350	1680	1485	1857	1356	1238	
13.4	37.2	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	75	75	75	60	50	30	20	1FT2208-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	39	51	64	89	127	184	200	310	335	365	455	550	760	690	■■■ + ■■■ + . . .
16.4	50.3		$M_{2.0}$	Nm	49	65	81	114	162	250	315	395	445	550	630	780	1050	1160	NEW
			M_{2max}	Nm	150	199	245	345	495	780	970	1210	1350	1680	1485	1857	1356	1238	
16.4	45.9	0.036	n_{2N}	r/min	300	250	200	150	125	75	75	60	60	50	37.5	30	25	15	1FT2208-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	51	62	81	117	145	240	270	385	415	520	630	770	760	760	■■■ + ■■■ + . . .
20.2	65		$M_{2.0}$	Nm	60	80	100	141	200	310	390	490	540	680	780	960	1300	1160	NEW
			M_{2max}	Nm	195	255	320	450	640	1010	1250	1560	1485	1857	1485	1857	1356	1238	
16.8	45.9	0.036	n_{2N}	r/min	375	300	250	200	150	100	75	75	75	60	50	50	30	15	1FT2208-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	48	63	78	107	152	215	310	360	380	485	570	590	800	980	■■■ + ■■■ + . . .
20.8	65		$M_{2.0}$	Nm	62	82	103	144	205	320	400	500	560	700	800	990	1330	1160	NEW
			M_{2max}	Nm	195	255	320	450	640	1010	1250	1560	1485	1857	1485	1857	1356	1238	
15.8	45.9	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	75	75	60	60	50	30	15	1FT2208-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	43.5	57	70	96	136	200	225	315	330	425	440	510	780	980	■■■ + ■■■ + . . .
19.6	65		$M_{2.0}$	Nm	58	77	97	136	193	300	375	470	530	660	750	930	1250	1160	NEW
			M_{2max}	Nm	195	255	320	450	640	1010	1250	1560	1485	1857	1485	1857	1356	1238	
19.9	53.2	0.036	n_{2N}	r/min	375	300	250	200	150	100	75	60	60	50	37.5	30	25	15	1FT2208-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	56	72	91	121	172	240	355	460	495	610	740	910	1000	990	■■■ + ■■■ + . . .
25	79		$M_{2.0}$	Nm	75	99	124	174	245	385	485	600	670	840	960	1180	1350	1160	NEW
			M_{2max}	Nm	235	310	390	550	780	1220	1485	1857	1485	1857	1485	1857	1356	1238	
19.8	53.2	0.036	n_{2N}	r/min	375	300	250	200	150	100	75	75	75	60	50	37.5	25	15	1FT2208-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	56	72	91	120	167	225	355	400	415	530	640	810	970	970	■■■ + ■■■ + . . .
24.9	79		$M_{2.0}$	Nm	74	98	123	173	245	385	480	600	670	830	950	1180	1350	1160	NEW
			M_{2max}	Nm	235	310	390	550	780	1220	1485	1857	1485	1857	1485	1857	1356	1238	
16	42.5	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	100	75	60	50	50	30	15	1FT2210-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	45.5	59	74	101	144	215	245	265	370	475	560	580	850	1060	■■■ + ■■■ + . . .
19.7	59		$M_{2.0}$	Nm	59	78	97	137	194	305	380	475	530	660	760	940	1260	1160	NEW
			M_{2max}	Nm	177	235	290	410	580	920	1140	1420	1485	1857	1485	1857	1356	1238	

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Planetary gearbox data															
Gearbox type:			SP180, 1-stage					SP180, 2-stage							
1. Order code			J61					J62							
	i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	1164	1452	1452	1452	1164	1452	1452	1452	1452	1452	1452	1452	1356	1164
	$M_{2max,G}$	Nm	1552	1936	1936	1936	1552	1485	1485	1857	1485	1857	1485	1857	1356	1238
	$M_{2Em.Off}$	Nm	2400	2750	2750	2750	2750	2420	2750	2750	2750	2750	2750	2750	2750	2750
	$J_{1,G}$	kg cm²	50.8	33.9	27.9	22.2	19.2	9.27	7.72	7.48	6.32	6.2	5.51	5.45	5.39	5.36
	$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type SP180

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox																Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox SP180 1- and 2-stage (continued)																			
15.7	42.5	0.036	n_{2N}	r/min	375	300	250	200	150	100	100	75	75	75	60	50	30	15	1FT2210-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	46	60	75	103	146	220	245	350	375	410	510	610	850	1020	■■■ + ■■■ + . . .
19.4	59		$M_{2.0}$	Nm	58	76	96	135	191	300	375	470	520	650	740	920	1250	1160	NEW
			M_{2max}	Nm	177	235	290	410	580	920	1140	1420	1485	1857	1485	1857	1356	1238	
22.8	57.8	0.036	n_{2N}	r/min	375	300	250	200	125	100	75	60	60	50	37.5	30	25	12.5	1FT2210-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	74	93	117	153	255	320	485	620	650	780	990	1200	1130	1160	■■■ + ■■■ + . . .
28.9	88.7		$M_{2.0}$	Nm	86	114	143	200	285	445	560	700	780	970	1100	1370	1350	1160	NEW
			M_{2max}	Nm	265	350	440	610	880	1380	1485	1857	1485	1857	1485	1857	1356	1238	
22.8	57.8	0.036	n_{2N}	r/min	375	300	250	200	150	100	75	75	75	60	50	37.5	30	12.5	1FT2210-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	74	93	116	152	210	320	480	560	570	750	880	1060	950	1160	■■■ + ■■■ + . . .
28.9	88.7		$M_{2.0}$	Nm	86	114	143	200	285	445	560	690	780	970	1100	1370	1350	1160	NEW
			M_{2max}	Nm	265	350	440	610	880	1380	1485	1857	1485	1857	1485	1857	1356	1238	
22.4	57.8	0.036	n_{2N}	r/min	375	300	250	200	125	100	75	75	75	60	60	37.5	25	15	1FT2210-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	66	84	105	134	220	270	415	470	490	620	620	940	1040	1020	■■■ + ■■■ + . . .
28.4	88.7		$M_{2.0}$	Nm	85	112	141	198	280	440	550	680	760	950	1090	1350	1350	1160	NEW
			M_{2max}	Nm	265	350	440	610	880	1380	1485	1857	1485	1857	1485	1857	1356	1238	
29.7	69	0.036	n_{2N}	r/min	375	250	250	150	125	75	75	60	60	50	37.5	30	25	6	1FT2210-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	86	130	133	225	300	495	550	730	770	930	1170	1300	1130	1160	■■■ + ■■■ + . . .
38.7	119		$M_{2.0}$	Nm	116	154	192	270	380	600	750	930	1040	1300	1450	1450	1350	1160	NEW
			M_{2max}	Nm	355	470	590	820	1170	1485	1485	1857	1485	1857	1485	1857	1356	1238	
29.5	69	0.036	n_{2N}	r/min	375	250	250	150	125	75	75	60	60	50	50	37.5	25	6	1FT2210-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	85	128	131	225	295	485	550	720	770	930	910	1070	1130	1160	■■■ + ■■■ + . . .
38.3	119		$M_{2.0}$	Nm	115	152	190	265	380	590	740	920	1030	1280	1450	1450	1350	1160	NEW
			M_{2max}	Nm	355	470	590	820	1170	1485	1485	1857	1485	1857	1485	1857	1356	1238	
28.9	69	0.036	n_{2N}	r/min	375	250	250	150	125	75	75	60	60	50	50	37.5	25	15	1FT2210-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	82	122	126	210	285	465	530	690	740	900	870	1030	1080	1040	■■■ + ■■■ + . . .
37.7	119		$M_{2.0}$	Nm	112	149	186	260	370	580	730	900	1010	1260	1430	1450	1350	1160	NEW
			M_{2max}	Nm	355	470	590	820	1170	1485	1485	1857	1485	1857	1485	1857	1356	1238	
34.4	76.1	0.036	n_{2N}	r/min	375	300	250	200	125	75	75	60	60	50	37.5	30	25	5	1FT2210-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	102	130	162	205	335	540	620	790	850	1030	1260	1420	1220	1160	■■■ + ■■■ + . . .
45.7	148		$M_{2.0}$	Nm	137	181	225	315	450	710	880	1100	1230	1450	1450	1450	1350	1160	NEW
			M_{2max}	Nm	440	590	730	1030	1460	1485	1485	1857	1485	1857	1485	1857	1356	1238	
35.4	76.1	0.036	n_{2N}	r/min	375	250	200	150	125	75	75	60	60	50	37.5	30	25	3.75	1FT2210-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	93	148	187	260	315	540	570	770	780	940	1200	1310	1090	1160	■■■ + ■■■ + . . .
47.3	148		$M_{2.0}$	Nm	141	188	235	325	465	730	910	1140	1270	1450	1450	1450	1350	1160	NEW
			M_{2max}	Nm	440	590	730	1030	1460	1485	1485	1857	1485	1857	1485	1857	1356	1238	

Planetary gearbox data															
Gearbox type:		SP180, 1-stage					SP180, 2-stage								
1. Order code		J61					J62								
i		3	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R03	R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	1164	1452	1452	1452	1164	1452	1452	1452	1452	1452	1452	1452	1356	1164
$M_{2max,G}$	Nm	1552	1936	1936	1936	1552	1485	1485	1857	1485	1857	1485	1857	1356	1238
$M_{2Em.Off}$	Nm	2400	2750	2750	2750	2750	2420	2750	2750	2750	2750	2750	2750	2750	2750
$J_{1,G}$	kg cm²	50.8	33.9	27.9	22.2	19.2	9.27	7.72	7.48	6.32	6.2	5.51	5.45	5.39	5.36
$\varphi_{2,G}$	'	3					5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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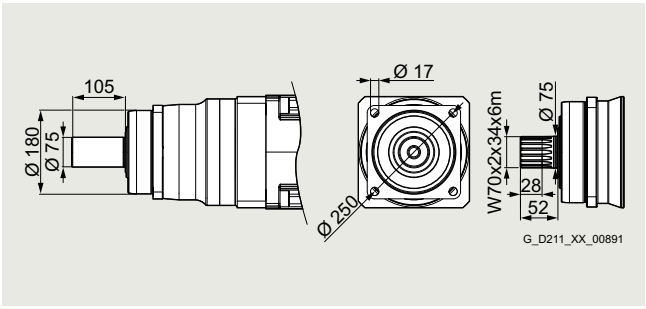
Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	20700 N
Average axial force for 20000 h	$F_{A,eq}$	30000 N
Average radial force for 30000 h	$F_{R,eq}$	18400 N
Average axial force for 30000 h	$F_{A,eq}$	26600 N
Maximum radial force	$F_{R,max}$	21000 N
Maximum axial force	$F_{A,max}$	30000 N

Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2 High Dynamic with planetary gearbox SP210 1- and 2-stage																		
7.05	20.9	0.036	n_{2N}	r/min	–	–	–	100	100	100	75	60	60	50	37.5	20	30	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	87	107	152	187	250	270	340	440	590	74	■■■ + ■■■ + . . .
8.28	24.6		$M_{2.0}$	Nm	–	–	–	127	161	205	225	285	325	405	550	700	81	NEW
			M_{2max}	Nm	–	–	–	390	490	610	680	850	970	1210	1640	2043	290	
9.38	26.4	0.036	n_{2N}	r/min	–	–	–	100	100	100	75	60	60	50	37.5	20	30	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	108	127	181	230	305	325	410	510	680	75	■■■ + ■■■ + . . .
11	31.3		$M_{2.0}$	Nm	–	–	–	171	215	270	300	380	435	540	730	930	80	NEW
			M_{2max}	Nm	–	–	–	500	620	780	870	1090	1240	1540	2050	2043	295	
12.7	35.8	0.036	n_{2N}	r/min	–	–	–	75	75	100	75	60	60	50	37.5	15	30	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	194	240	250	315	420	445	550	690	1080	182	■■■ + ■■■ + . . .
14.9	43.2		$M_{2.0}$	Nm	–	–	–	230	290	370	410	510	590	730	990	1270	175	NEW
			M_{2max}	Nm	–	–	–	690	860	1070	1200	1500	1710	2100	2457	2043	590	
19	64.6	0.036	n_{2N}	r/min	200	150	125	100	75	75	75	60	60	50	37.5	25	15	1FT2108-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	71	90	126	183	275	315	415	500	600	660	880	1030	1060	■■■ + ■■■ + . . .
22.3	83.4		$M_{2.0}$	Nm	84	105	149	215	350	440	550	620	770	880	1100	1480	1890	NEW
			M_{2max}	Nm	330	410	580	830	1320	1650	2050	2300	2850	2880	3600	2457	2043	
23.2	75.8	0.036	n_{2N}	r/min	200	150	125	125	75	75	60	60	50	37.5	30	25	15	1FT2108-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	87	110	153	179	330	385	540	570	730	860	1080	1180	1190	■■■ + ■■■ + . . .
27.4	101		$M_{2.0}$	Nm	104	130	185	265	435	540	680	760	950	1080	1350	1820	2000	NEW
			M_{2max}	Nm	400	500	700	1000	1600	1990	2450	2750	3400	2880	3600	2457	2043	
23	75.8	0.036	n_{2N}	r/min	200	150	125	100	75	60	75	60	60	50	37.5	25	15	1FT2108-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	84	109	149	220	305	440	450	550	640	700	940	1090	1100	■■■ + ■■■ + . . .
27.1	101		$M_{2.0}$	Nm	103	129	183	260	430	540	670	750	940	1070	1330	1800	2000	NEW
			M_{2max}	Nm	400	500	700	1000	1600	1990	2450	2750	3400	2880	3600	2457	2043	
28.9	95.4	0.036	n_{2N}	r/min	200	150	125	100	75	75	60	60	50	37.5	30	25	15	1FT2108-7AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	105	135	186	265	375	425	620	650	820	990	1230	1230	1220	■■■ + ■■■ + . . .
34.4	135		$M_{2.0}$	Nm	132	166	230	335	550	680	850	960	1190	1360	1690	2250	2000	NEW
			M_{2max}	Nm	530	670	940	1340	2100	2650	3300	3159	3840	2880	3600	2457	2043	

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Planetary gearbox data														
Gearbox type:			SP210, 1-stage				SP210, 2-stage							
1. Order code			J71				J72							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	3000	3000	2880	2280	2880	3000	3000	2880	2880	2840	2880	2457	2043
	$M_{2max,G}$	Nm	4000	4000	3840	2800	3159	3159	3949	3159	3840	2880	3600	2457	2043
	$M_{2Em.Off}$	Nm	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900
	$J_{1,G}$	kg cm²	94.3	76.9	61.5	53.1	34.5	31.5	30.8	30	29.7	28.5	28.3	28.1	28
	$\varphi_{2,G}$	'	3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type SP210

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic with planetary gearbox SP210 1- and 2-stage (continued)																		
28.5	95.4	0.036	n_{2N}	r/min	200	150	125	100	75	75	75	60	60	50	37.5	25	12.5	1FT2108-7AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	103	132	180	255	360	405	510	620	670	780	1040	1180	1400	■■■ + ■■■ + . . .
33.9	135		$M_{2.0}$	Nm	130	163	230	330	540	670	840	940	1170	1340	1660	2200	2000	NEW
			M_{2max}	Nm	530	670	940	1340	2100	2650	3300	3159	3840	2880	3600	2457	2043	
28.2	95.4	0.036	n_{2N}	r/min	200	150	125	100	60	60	60	50	50	37.5	37.5	25	12.5	1FT2108-7AE..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	98	128	173	255	430	495	610	700	800	950	950	1080	1320	■■■ + ■■■ + . . .
33.5	135		$M_{2.0}$	Nm	129	161	225	325	530	660	830	930	1160	1330	1650	2200	2000	NEW
			M_{2max}	Nm	530	670	940	1340	2100	2650	3300	3159	3840	2880	3600	2457	2043	
SIMOTICS S-1FT2 Compact with planetary gearbox SP210 1- and 2-stage																		
4.46	14.6	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	70	90	119	128	173	200	235	330	375	■■■ + ■■■ + . . .
5.29	17		$M_{2.0}$	Nm	–	–	–	–	79	102	132	145	184	205	260	350	445	NEW
			M_{2max}	Nm	–	–	–	–	265	335	425	470	590	670	840	1130	1450	
4.91	14.6	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	20	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	57	73	97	124	168	182	225	290	395	■■■ + ■■■ + . . .
5.8	17		$M_{2.0}$	Nm	–	–	–	–	88	112	145	160	200	225	285	385	490	NEW
			M_{2max}	Nm	–	–	–	–	265	335	425	470	590	670	840	1130	1450	
4.76	14.6	0.036	n_{2N}	r/min	–	–	–	–	100	75	100	75	60	60	50	37.5	20	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	50	85	96	123	166	183	230	295	395	■■■ + ■■■ + . . .
5.64	17		$M_{2.0}$	Nm	–	–	–	–	85	108	140	155	196	220	275	370	475	NEW
			M_{2max}	Nm	–	–	–	–	265	335	425	470	590	670	840	1130	1450	
7.02	21.7	0.036	n_{2N}	r/min	–	–	–	–	75	75	60	60	50	37.5	30	25	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	105	132	183	196	250	300	375	480	640	■■■ + ■■■ + . . .
8.24	25.6		$M_{2.0}$	Nm	–	–	–	–	127	161	205	225	285	325	405	540	700	NEW
			M_{2max}	Nm	–	–	–	–	405	500	630	710	890	1010	1260	1700	2043	
6.93	21.7	0.036	n_{2N}	r/min	–	–	–	–	75	75	100	75	60	60	50	37.5	20	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	103	131	131	183	245	265	335	430	520	■■■ + ■■■ + . . .
8.12	25.6		$M_{2.0}$	Nm	–	–	–	–	125	159	200	225	280	320	400	540	690	NEW
			M_{2max}	Nm	–	–	–	–	405	500	630	710	890	1010	1260	1700	2043	
9.22	30.2	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	60	60	50	37.5	25	15	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	138	162	210	260	305	355	465	620	700	■■■ + ■■■ + . . .
10.8	36.1		$M_{2.0}$	Nm	–	–	–	–	168	210	265	295	375	425	530	710	920	NEW
			M_{2max}	Nm	–	–	–	–	570	720	900	1000	1250	1430	1770	2457	2043	
9.53	28.7	0.036	n_{2N}	r/min	–	–	–	–	100	75	100	75	60	60	50	37.5	20	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	110	183	188	250	330	355	445	570	690	■■■ + ■■■ + . . .
11.1	34.1		$M_{2.0}$	Nm	–	–	–	–	174	215	275	305	385	440	540	740	950	NEW
			M_{2max}	Nm	–	–	–	–	540	680	850	950	1180	1350	1680	2250	2043	
9.29	28.7	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	60	50	37.5	15	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	136	171	215	230	305	335	420	470	800	■■■ + ■■■ + . . .
10.8	34.1		$M_{2.0}$	Nm	–	–	–	–	169	210	270	300	375	430	530	720	920	NEW
			M_{2max}	Nm	–	–	–	–	540	680	850	950	1180	1350	1680	2250	2043	

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Planetary gearbox data														
Gearbox type:		SP210, 1-stage				SP210, 2-stage								
1. Order code		J71				J72								
	i	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$ Nm	3000	3000	2880	2280	2880	3000	3000	2880	2880	2840	2880	2457	2043
	$M_{2max,G}$ Nm	4000	4000	3840	2800	3159	3159	3949	3159	3840	2880	3600	2457	2043
	$M_{2Em.Off}$ Nm	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900
	$J_{1,G}$ kg cm²	94.3	76.9	61.5	53.1	34.5	31.5	30.8	30	29.7	28.5	28.3	28.1	28
	$\varphi_{2,G}$ '	3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox SP210 1- and 2-stage (continued)																	
9.43	30.2	0.036	n_{2N}	r/min	250	200	150	125	75	75	75	75	60	60	50	37.5	15	**1FT2208-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	29	35	52	77	133	165	205	220	290	310	390	460	790	■■■ + ■■■ + . . .
11	36.1		$M_{2.0}$	Nm	40	50	71	103	172	215	275	305	380	435	540	730	940	NEW
			M_{2max}	Nm	140	176	245	355	570	720	900	1000	1250	1430	1770	2457	2043	
13.8	39.9	0.036	n_{2N}	r/min	200	150	125	100	75	75	60	60	50	37.5	30	25	15	**1FT2208-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	54	68	95	139	200	235	360	385	495	580	720	840	880	■■■ + ■■■ + . . .
16.1	48.6		$M_{2.0}$	Nm	60	76	107	156	255	315	400	445	560	640	790	1070	1380	NEW
			M_{2max}	Nm	191	235	335	480	770	960	1200	1350	1680	1910	2350	2457	2043	
14.2	39.9	0.036	n_{2N}	r/min	250	200	150	125	75	75	75	75	60	50	50	30	15	**1FT2208-3AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	42.5	49.5	82	120	205	250	310	330	435	500	560	790	1020	■■■ + ■■■ + . . .
16.6	48.6		$M_{2.0}$	Nm	61	77	109	158	260	325	415	460	570	660	820	1110	1420	NEW
			M_{2max}	Nm	191	235	335	480	770	960	1200	1350	1680	1910	2350	2457	2043	
13.8	39.9	0.036	n_{2N}	r/min	250	150	150	125	75	75	75	75	60	60	50	30	15	**1FT2208-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	40.5	63	78	115	205	250	315	315	435	450	550	750	970	■■■ + ■■■ + . . .
16.2	48.6		$M_{2.0}$	Nm	60	75	106	154	255	320	400	450	560	640	790	1070	1380	NEW
			M_{2max}	Nm	191	235	335	480	770	960	1200	1350	1680	1910	2350	2457	2043	
16.7	50.5	0.036	n_{2N}	r/min	200	150	125	100	60	60	60	50	50	37.5	30	25	12.5	**1FT2208-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	57	76	101	154	260	305	390	445	520	630	790	770	970	■■■ + ■■■ + . . .
19.6	63.1		$M_{2.0}$	Nm	74	93	132	190	310	385	485	540	680	770	960	1300	1670	NEW
			M_{2max}	Nm	245	310	435	620	1000	1250	1560	1740	2150	2450	3050	2457	2043	
17.5	50.5	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	50	50	25	15	**1FT2208-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	63	80	96	141	250	300	365	355	500	570	590	1010	1060	■■■ + ■■■ + . . .
20.6	63.1		$M_{2.0}$	Nm	77	96	137	197	325	405	510	570	710	810	1010	1370	1750	NEW
			M_{2max}	Nm	245	310	435	620	1000	1250	1560	1740	2150	2450	3050	2457	2043	
16.4	50.5	0.036	n_{2N}	r/min	250	200	150	125	75	75	75	75	60	60	50	30	15	**1FT2208-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	49.5	57	93	132	225	265	320	325	435	435	530	800	1060	■■■ + ■■■ + . . .
19.2	63.1		$M_{2.0}$	Nm	72	90	128	185	300	380	480	530	670	760	940	1280	1640	NEW
			M_{2max}	Nm	245	310	435	620	1000	1250	1560	1740	2150	2450	3050	2457	2043	
20.9	60	0.036	n_{2N}	r/min	200	150	125	125	75	75	60	60	50	37.5	30	25	15	**1FT2208-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	75	95	132	155	290	335	470	495	630	750	940	1070	1090	■■■ + ■■■ + . . .
24.6	76.6		$M_{2.0}$	Nm	93	117	165	235	390	490	610	680	850	970	1210	1640	2000	NEW
			M_{2max}	Nm	300	375	530	760	1220	1520	1890	2100	2600	2880	3600	2457	2043	
20.9	60	0.036	n_{2N}	r/min	200	150	125	125	75	75	75	60	60	50	37.5	25	15	**1FT2208-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	75	96	133	154	290	330	410	495	550	640	840	1030	1070	■■■ + ■■■ + . . .
24.6	76.6		$M_{2.0}$	Nm	93	116	165	235	390	485	610	680	850	970	1210	1630	2000	NEW
			M_{2max}	Nm	300	375	530	760	1220	1520	1890	2100	2600	2880	3600	2457	2043	
16.6	46.3	0.036	n_{2N}	r/min	250	200	150	125	75	75	75	75	60	50	50	30	15	**1FT2210-2AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	55	67	98	140	235	285	345	355	480	550	590	870	1120	■■■ + ■■■ + . . .
19.4	57.2		$M_{2.0}$	Nm	73	91	129	187	305	385	480	540	670	770	950	1290	1650	NEW
			M_{2max}	Nm	225	280	395	570	910	1130	1420	1580	1970	2250	2750	2457	2043	

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Planetary gearbox data														
Gearbox type:			**SP210, 1-stage**				**SP210, 2-stage**							
1. Order code			**J71**				**J72**							
	i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	3000	3000	2880	2280	2880	3000	3000	2880	2880	2840	2880	2457	2043
	$M_{2max,G}$	Nm	4000	4000	3840	2800	3159	3159	3949	3159	3840	2880	3600	2457	2043
	$M_{2Em.Off}$	Nm	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900
	$J_{1,G}$	kg cm²	94.3	76.9	61.5	53.1	34.5	31.5	30.8	30	29.7	28.5	28.3	28.1	28
	$\varphi_{2,G}$	'	3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type SP210

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox SP210 1- and 2-stage (continued)																	
16.3	46.3	0.036	n_{2N}	r/min	250	200	150	125	75	75	75	75	60	60	50	25	15	1FT2210-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	55	64	100	143	240	290	355	355	490	485	600	990	1050	■■■ + ■■■ + . . .
19.1	57.2		$M_{2.0}$	Nm	72	90	127	184	300	375	475	530	660	750	940	1270	1630	NEW
			M_{2max}	Nm	225	280	395	570	910	1130	1420	1580	1970	2250	2750	2457	2043	
23.7	66.5	0.036	n_{2N}	r/min	200	150	125	125	75	75	60	60	50	37.5	30	25	15	1FT2210-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	101	128	178	210	370	415	630	630	790	990	1230	1180	1210	■■■ + ■■■ + . . .
27.9	86.3		$M_{2.0}$	Nm	108	135	191	275	445	550	690	780	970	1110	1370	1850	2000	NEW
			M_{2max}	Nm	340	425	600	860	1370	1710	2100	2350	2950	2880	3600	2457	2043	
23.6	66.5	0.036	n_{2N}	r/min	200	150	125	125	75	75	75	60	60	50	37.5	25	15	1FT2210-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	100	127	176	210	365	415	520	640	720	780	1050	1200	1210	■■■ + ■■■ + . . .
27.9	86.3		$M_{2.0}$	Nm	108	135	191	275	445	550	690	770	970	1110	1370	1850	2000	NEW
			M_{2max}	Nm	340	425	600	860	1370	1710	2100	2350	2950	2880	3600	2457	2043	
23.2	66.5	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	60	60	50	37.5	20	12.5	1FT2210-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	90	114	135	191	335	360	435	560	600	670	930	1340	1330	■■■ + ■■■ + . . .
27.4	86.3		$M_{2.0}$	Nm	106	132	187	270	435	540	680	760	950	1090	1350	1820	2000	NEW
			M_{2max}	Nm	340	425	600	860	1370	1710	2100	2350	2950	2880	3600	2457	2043	
31.3	84.6	0.036	n_{2N}	r/min	200	150	125	100	60	60	60	50	50	–	30	20	12.5	1FT2210-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	126	160	220	315	520	590	730	820	900	–	1330	1510	1450	■■■ + ■■■ + . . .
37.5	115		$M_{2.0}$	Nm	146	183	255	370	590	740	930	1040	1300	–	1840	2450	2000	NEW
			M_{2max}	Nm	455	570	800	1150	1830	2250	2800	3159	3840	–	3600	2457	2043	
31	84.6	0.036	n_{2N}	r/min	200	150	125	100	75	60	60	50	50	–	37.5	20	12.5	1FT2210-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	124	157	215	310	410	590	720	810	910	–	1060	1500	1450	■■■ + ■■■ + . . .
37.1	115		$M_{2.0}$	Nm	144	181	255	365	590	740	920	1030	1290	–	1820	2450	2000	NEW
			M_{2max}	Nm	455	570	800	1150	1830	2250	2800	3159	3840	–	3600	2457	2043	
30.7	84.6	0.036	n_{2N}	r/min	200	150	125	100	75	60	60	50	50	37.5	30	20	12.5	1FT2210-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	119	150	205	295	390	570	690	790	870	1050	1280	1450	1390	■■■ + ■■■ + . . .
36.7	115		$M_{2.0}$	Nm	142	178	250	360	580	730	910	1020	1270	1450	1800	2400	2000	NEW
			M_{2max}	Nm	455	570	800	1150	1830	2250	2800	3159	3840	2880	3600	2457	2043	
37.1	101	0.036	n_{2N}	r/min	200	150	125	125	75	60	60	60	50	–	30	25	12.5	1FT2210-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	140	177	240	280	485	670	810	790	1060	–	1490	1320	1530	■■■ + ■■■ + . . .
44.9	145		$M_{2.0}$	Nm	174	215	305	440	710	890	1110	1250	1550	–	2200	2450	2000	NEW
			M_{2max}	Nm	570	720	1010	1440	2250	2800	3500	3159	3840	–	3600	2457	2043	
38.5	101	0.036	n_{2N}	r/min	200	150	125	100	60	60	60	50	50	–	30	20	10	1FT2210-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	141	183	245	360	570	630	750	850	920	–	1350	1510	1740	■■■ + ■■■ + . . .
46.7	145		$M_{2.0}$	Nm	181	225	315	455	740	930	1160	1300	1620	–	2250	2450	2000	NEW
			M_{2max}	Nm	570	720	1010	1440	2250	2800	3500	3159	3840	–	3600	2457	2043	

Planetary gearbox data														
Gearbox type:			SP210, 1-stage				SP210, 2-stage							
1. Order code			J71				J72							
i			4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm		3000	3000	2880	2280	2880	3000	3000	2880	2880	2840	2880	2457	2043
$M_{2max,G}$	Nm		4000	4000	3840	2800	3159	3159	3949	3159	3840	2880	3600	2457	2043
$M_{2Em.Off}$	Nm		5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900
$J_{1,G}$	kg cm²		94.3	76.9	61.5	53.1	34.5	31.5	30.8	30	29.7	28.5	28.3	28.1	28
$\varphi_{2,G}$	'		3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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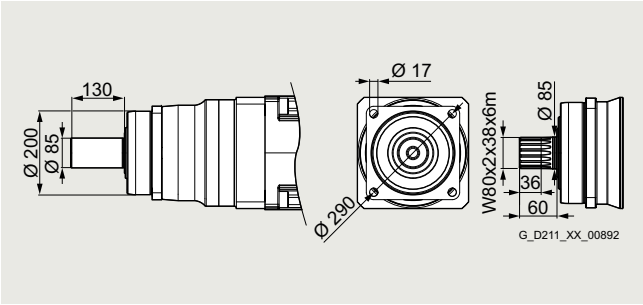
Selection and ordering data



Permissible output shaft loads		
Average radial force for 20000 h	$F_{R,eq}$	22100 N
Average axial force for 20000 h	$F_{A,eq}$	33000 N
Average radial force for 30000 h	$F_{R,eq}$	19600 N
Average axial force for 30000 h	$F_{A,eq}$	29200 N
Maximum radial force	$F_{R,max}$	30000 N
Maximum axial force	$F_{A,max}$	33000 N

Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2 High Dynamic with planetary gearbox SP240 1- and 2-stage																		
6.9	21.2	0.036	n_{2N}	r/min	–	–	–	–	100	75	100	75	60	60	50	37.5	15	**1FT2106-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	86	128	138	182	245	265	330	415	600	■■■ + ■■■ + . . .
8.36	24.7		$M_{2.0}$	Nm	–	–	–	–	129	161	205	225	285	325	400	540	690	NEW
			M_{2max}	Nm	–	–	–	–	390	490	610	680	850	970	1210	1640	2100	
9.35	26.9	0.036	n_{2N}	r/min	–	–	–	–	100	75	100	75	60	60	50	37.5	15	**1FT2106-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	109	163	160	220	300	320	400	485	750	■■■ + ■■■ + . . .
11.1	31.4		$M_{2.0}$	Nm	–	–	–	–	174	215	275	305	380	435	540	720	930	NEW
			M_{2max}	Nm	–	–	–	–	500	620	780	870	1090	1240	1540	2050	2650	
12.7	36.9	0.036	n_{2N}	r/min	–	–	–	–	100	75	75	75	60	60	50	37.5	15	**1FT2106-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	148	235	295	310	420	440	540	630	1030	■■■ + ■■■ + . . .
15	43.3		$M_{2.0}$	Nm	–	–	–	–	235	290	370	410	510	590	730	980	1270	NEW
			M_{2max}	Nm	–	–	–	–	690	860	1080	1200	1500	1710	2100	2850	3642	
19.3	68.8	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	50	50	25	12.5	**1FT2108-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	290	335	445	410	610	710	700	1120	1300	■■■ + ■■■ + . . .
22.6	83.1		$M_{2.0}$	Nm	–	–	–	–	355	445	560	620	780	890	1100	1490	1930	NEW
			M_{2max}	Nm	–	–	–	–	1320	1650	2050	2300	2850	3250	4050	5700	3642	
23.7	81.9	0.036	n_{2N}	r/min	–	–	–	–	75	75	60	60	50	37.5	30	25	12.5	**1FT2108-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	345	405	550	580	740	880	1090	1290	1460	■■■ + ■■■ + . . .
27.7	100		$M_{2.0}$	Nm	–	–	–	–	440	540	690	760	960	1090	1360	1840	2350	NEW
			M_{2max}	Nm	–	–	–	–	1600	1990	2450	2750	3450	3900	4850	5700	3642	
23.5	81.9	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	60	60	50	37.5	25	12.5	**1FT2108-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	345	370	500	590	700	800	1040	1190	1360	■■■ + ■■■ + . . .
27.4	100		$M_{2.0}$	Nm	–	–	–	–	435	540	680	760	950	1080	1340	1820	2300	NEW
			M_{2max}	Nm	–	–	–	–	1600	1990	2450	2750	3450	3900	4850	5700	3642	
29.8	106	0.036	n_{2N}	r/min	–	–	–	–	75	75	60	60	50	37.5	30	25	12.5	**1FT2108-7AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	415	460	640	660	840	1010	1260	1370	1540	■■■ + ■■■ + . . .
34.8	134		$M_{2.0}$	Nm	–	–	–	–	550	690	860	960	1200	1370	1710	2300	2950	NEW
			M_{2max}	Nm	–	–	–	–	2100	2650	3300	3700	4600	5200	5700	5700	3642	

➥ Continued on the next page

Planetary gearbox data														
Gearbox type:			SP240, 1-stage				SP240, 2-stage							
1. Order code			J81				J82							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	5400	5400	5160	4000	5400	5400	5400	5400	5400	4400	5160	4730	3642
	$M_{2max,G}$	Nm	5700	5700	5700	4000	5446	5446	5700	5446	5700	5446	5700	5700	3642
	$M_{2Em.Off}$	Nm	8500	8500	8500	6850	8500	8500	8500	8500	8500	8500	8500	8500	6850
	$J_{1,G}$	kg cm²	198	163	138	125	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
	$\varphi_{2,G}$	'	3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type SP240

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic with planetary gearbox SP240 1- and 2-stage (continued)																		
29.3	106	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	60	60	50	37.5	25	12.5	1FT2108-7AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	395	440	520	630	680	800	1060	1310	1480	■■■ + ■■■ + . . .
34.2	134		$M_{2.0}$	Nm	–	–	–	–	540	680	850	950	1180	1350	1680	2250	2900	NEW
			M_{2max}	Nm	–	–	–	–	2100	2650	3300	3700	4600	5200	5700	5700	3642	
29	106	0.036	n_{2N}	r/min	–	–	–	–	75	60	75	60	60	50	37.5	20	10	1FT2108-7AE..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	390	520	530	650	730	830	1100	1540	1750	■■■ + ■■■ + . . .
33.8	134		$M_{2.0}$	Nm	–	–	–	–	540	670	840	940	1170	1340	1660	2250	2900	NEW
			M_{2max}	Nm	–	–	–	–	2100	2650	3300	3700	4600	5200	5700	5700	3642	
SIMOTICS S-1FT2 Compact with planetary gearbox SP240 1- and 2-stage																		
4.27	14.6	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	50	50	30	15	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	69	85	115	122	169	195	225	310	405	■■■ + ■■■ + . . .
5.4	17.1		$M_{2.0}$	Nm	–	–	–	–	81	101	134	144	183	205	255	335	425	NEW
			M_{2max}	Nm	–	–	–	–	270	335	425	470	590	670	830	1130	1450	
4.77	14.6	0.036	n_{2N}	r/min	–	–	–	–	100	75	100	75	60	60	50	37.5	20	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	53	82	89	117	163	175	215	260	295	■■■ + ■■■ + . . .
5.92	17.1		$M_{2.0}$	Nm	–	–	–	–	90	112	148	159	200	230	280	375	475	NEW
			M_{2max}	Nm	–	–	–	–	270	335	425	470	590	670	830	1130	1450	
4.61	14.6	0.036	n_{2N}	r/min	–	–	–	–	100	75	75	75	60	60	50	37.5	15	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	48.5	80	110	117	161	176	220	270	380	■■■ + ■■■ + . . .
5.76	17.1		$M_{2.0}$	Nm	–	–	–	–	88	109	144	154	196	220	270	365	460	NEW
			M_{2max}	Nm	–	–	–	–	270	335	425	470	590	670	830	1130	1450	
6.88	22	0.036	n_{2N}	r/min	–	–	–	–	75	75	60	60	50	37.5	30	25	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	104	128	182	192	250	300	370	465	590	■■■ + ■■■ + . . .
8.32	25.6		$M_{2.0}$	Nm	–	–	–	–	129	160	205	225	285	325	400	530	680	NEW
			M_{2max}	Nm	–	–	–	–	405	500	640	710	890	1010	1260	1700	2200	
6.79	22	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	60	50	37.5	15	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	102	126	167	178	240	260	325	375	590	■■■ + ■■■ + . . .
8.24	25.6		$M_{2.0}$	Nm	–	–	–	–	127	158	205	220	280	320	395	530	670	NEW
			M_{2max}	Nm	–	–	–	–	405	500	640	710	890	1010	1260	1700	2200	
9.12	30.9	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	60	60	50	37.5	25	12.5	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	146	168	220	255	305	355	460	620	810	■■■ + ■■■ + . . .
10.9	36.1		$M_{2.0}$	Nm	–	–	–	–	170	210	270	295	375	425	520	710	910	NEW
			M_{2max}	Nm	–	–	–	–	570	710	900	1000	1250	1430	1770	2400	3050	
9.45	29.3	0.036	n_{2N}	r/min	–	–	–	–	100	75	75	75	60	60	50	37.5	15	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	112	178	230	245	325	350	435	500	820	■■■ + ■■■ + . . .
11.2	34.2		$M_{2.0}$	Nm	–	–	–	–	176	215	280	305	385	440	540	730	940	NEW
			M_{2max}	Nm	–	–	–	–	540	680	850	950	1180	1350	1680	2250	2900	
9.19	29.3	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	60	50	30	15	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	136	166	215	230	305	330	410	570	730	■■■ + ■■■ + . . .
10.9	34.2		$M_{2.0}$	Nm	–	–	–	–	171	210	270	295	375	430	530	710	910	NEW
			M_{2max}	Nm	–	–	–	–	540	680	850	950	1180	1350	1680	2250	2900	

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Planetary gearbox data														
Gearbox type:		SP240, 1-stage				SP240, 2-stage								
1. Order code		J81				J82								
	i	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$ Nm	5400	5400	5160	4000	5400	5400	5400	5400	5400	4400	5160	4730	3642
	$M_{2max,G}$ Nm	5700	5700	5700	4000	5446	5446	5700	5446	5700	5446	5700	5700	3642
	$M_{2Em.Off}$ Nm	8500	8500	8500	6850	8500	8500	8500	8500	8500	8500	8500	8500	6850
	$J_{1,G}$ kg cm²	198	163	138	125	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
	$\varphi_{2,G}$ '	3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox SP240 1- and 2-stage (continued)																		
9.39	30.9	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	60	50	30	15	**1FT2208-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	133	160	205	215	290	305	380	530	740	■■■ + ■■■ + . . .
11.2	36.1		$M_{2.0}$	Nm	–	–	–	–	175	215	275	305	385	435	540	730	930	NEW
			M_{2max}	Nm	–	–	–	–	570	710	900	1000	1250	1430	1770	2400	3050	
13.8	41.3	0.036	n_{2N}	r/min	–	–	–	–	75	75	60	60	50	37.5	30	25	12.5	**1FT2208-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	220	245	360	390	500	580	730	890	1050	■■■ + ■■■ + . . .
16.2	48.6		$M_{2.0}$	Nm	–	–	–	–	255	315	405	445	560	640	790	1070	1380	NEW
			M_{2max}	Nm	–	–	–	–	770	960	1210	1350	1680	1920	2350	3200	3642	
14.3	41.3	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	50	50	30	12.5	**1FT2208-3AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	205	250	310	325	435	500	550	790	1180	■■■ + ■■■ + . . .
16.8	48.6		$M_{2.0}$	Nm	–	–	–	–	265	330	420	460	580	660	820	1110	1430	NEW
			M_{2max}	Nm	–	–	–	–	770	960	1210	1350	1680	1920	2350	3200	3642	
13.9	41.3	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	60	50	30	12.5	**1FT2208-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	205	250	315	330	435	450	550	750	1130	■■■ + ■■■ + . . .
16.4	48.6		$M_{2.0}$	Nm	–	–	–	–	255	320	405	450	560	640	800	1080	1390	NEW
			M_{2max}	Nm	–	–	–	–	770	960	1210	1350	1680	1920	2350	3200	3642	
16.8	52.9	0.036	n_{2N}	r/min	–	–	–	–	75	60	60	60	50	37.5	30	20	10	**1FT2208-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	230	325	405	415	550	650	810	1060	1270	■■■ + ■■■ + . . .
19.6	63.1		$M_{2.0}$	Nm	–	–	–	–	310	385	490	540	680	770	960	1300	1680	NEW
			M_{2max}	Nm	–	–	–	–	1000	1250	1560	1740	2150	2450	3050	4150	3642	
17.7	52.9	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	50	50	25	12.5	**1FT2208-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	255	300	365	375	500	580	610	1020	1290	■■■ + ■■■ + . . .
20.6	63.1		$M_{2.0}$	Nm	–	–	–	–	325	405	510	570	710	810	1010	1370	1760	NEW
			M_{2max}	Nm	–	–	–	–	1000	1250	1560	1740	2150	2450	3050	4150	3642	
16.6	52.9	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	75	60	60	50	30	12.5	**1FT2208-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	225	265	320	325	435	430	520	790	1280	■■■ + ■■■ + . . .
19.4	63.1		$M_{2.0}$	Nm	–	–	–	–	305	380	485	530	670	760	950	1280	1660	NEW
			M_{2max}	Nm	–	–	–	–	1000	1250	1560	1740	2150	2450	3050	4150	3642	
21.3	63.6	0.036	n_{2N}	r/min	–	–	–	–	75	75	60	60	50	37.5	30	25	12.5	**1FT2208-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	295	350	475	500	640	760	950	1160	1350	■■■ + ■■■ + . . .
24.9	76.2		$M_{2.0}$	Nm	–	–	–	–	395	490	620	690	860	980	1220	1650	2100	NEW
			M_{2max}	Nm	–	–	–	–	1220	1510	1890	2100	2600	3000	3700	5000	3642	
21.3	63.6	0.036	n_{2N}	r/min	–	–	–	–	75	75	75	60	60	50	37.5	25	12.5	**1FT2208-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	300	345	415	500	560	650	850	1120	1340	■■■ + ■■■ + . . .
24.8	76.2		$M_{2.0}$	Nm	–	–	–	–	395	490	620	680	860	980	1220	1650	2100	NEW
			M_{2max}	Nm	–	–	–	–	1220	1510	1890	2100	2600	3000	3700	5000	3642	
16.8	48.3	0.036	n_{2N}	r/min	200	200	150	125	75	75	75	75	60	50	50	30	12.5	**1FT2210-2AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	59	66	96	130	240	280	350	355	485	560	580	860	1340	■■■ + ■■■ + . . .
19.7	58		$M_{2.0}$	Nm	76	97	137	196	310	385	490	540	680	770	960	1300	1680	NEW
			M_{2max}	Nm	225	285	405	580	910	1130	1420	1580	1980	2250	2800	3750	3642	

➥ Continued on the next page

Planetary gearbox data														
Gearbox type:			**SP240, 1-stage**				**SP240, 2-stage**							
1. Order code			**J81**				**J82**							
	i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	5400	5400	5160	4000	5400	5400	5400	5400	5400	4400	5160	4730	3642
	$M_{2max,G}$	Nm	5700	5700	5700	4000	5446	5446	5700	5446	5700	5446	5700	5700	3642
	$M_{2Em.Off}$	Nm	8500	8500	8500	6850	8500	8500	8500	8500	8500	8500	8500	8500	6850
	$J_{1,G}$	kg cm²	198	163	138	125	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
	$\varphi_{2,G}$	'	3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type SP240

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox SP240 1- and 2-stage (continued)																	
16.5	48.3	0.036	n_{2N}	r/min	200	200	150	100	75	75	75	75	60	60	50	30	12.5	**1FT2210-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	60	66	98	154	245	290	355	365	495	500	610	820	1300	■■■ + ■■■ + . . .
19.4	58		$M_{2.0}$	Nm	75	95	135	193	305	380	480	530	670	760	940	1280	1650	NEW
			M_{2max}	Nm	225	285	405	580	910	1130	1420	1580	1980	2250	2800	3750	3642	
24	71	0.036	n_{2N}	r/min	200	150	150	100	75	75	60	60	50	37.5	30	20	12.5	**1FT2210-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	101	131	154	255	400	445	640	650	810	1020	1270	1640	1530	■■■ + ■■■ + . . .
28.2	87.4		$M_{2.0}$	Nm	110	139	197	280	445	550	700	770	970	1110	1370	1860	2400	NEW
			M_{2max}	Nm	345	435	610	870	1370	1710	2100	2350	2950	3350	4150	5700	3642	
24	71	0.036	n_{2N}	r/min	200	150	150	100	75	75	75	60	60	50	37.5	25	12.5	**1FT2210-3AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	100	130	154	250	400	445	580	670	780	900	1160	1330	1530	■■■ + ■■■ + . . .
28.2	87.4		$M_{2.0}$	Nm	110	139	197	280	445	550	700	770	970	1110	1370	1860	2400	NEW
			M_{2max}	Nm	345	435	610	870	1370	1710	2100	2350	2950	3350	4150	5700	3642	
23.6	71	0.036	n_{2N}	r/min	200	150	150	100	75	75	75	60	60	50	37.5	25	10	**1FT2210-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	89	116	142	220	350	395	480	570	640	750	980	1180	1780	■■■ + ■■■ + . . .
27.7	87.4		$M_{2.0}$	Nm	108	137	193	275	435	540	680	760	950	1090	1350	1830	2350	NEW
			M_{2max}	Nm	345	435	610	870	1370	1710	2100	2350	2950	3350	4150	5700	3642	
32.1	92.6	0.036	n_{2N}	r/min	200	150	125	100	75	60	60	60	50	37.5	30	20	10	**1FT2210-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	126	165	225	315	480	630	770	770	990	1220	1500	1750	1950	■■■ + ■■■ + . . .
38	117		$M_{2.0}$	Nm	149	188	265	375	600	740	930	1040	1300	1480	1840	2500	3200	NEW
			M_{2max}	Nm	460	580	810	1160	1830	2250	2800	3150	3950	4500	5700	5700	3642	
31.8	92.6	0.036	n_{2N}	r/min	200	150	125	100	75	60	75	60	50	50	37.5	20	10	**1FT2210-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	124	162	220	310	475	620	610	770	1000	920	1240	1740	1940	■■■ + ■■■ + . . .
37.6	117		$M_{2.0}$	Nm	147	186	260	375	590	730	920	1030	1290	1470	1820	2450	3150	NEW
			M_{2max}	Nm	460	580	810	1160	1830	2250	2800	3150	3950	4500	5700	5700	3642	
31.4	92.6	0.036	n_{2N}	r/min	200	150	125	100	75	60	75	60	50	50	37.5	20	10	**1FT2210-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	118	153	210	295	455	590	580	740	960	870	1190	1690	1910	■■■ + ■■■ + . . .
37.1	117		$M_{2.0}$	Nm	145	184	255	370	580	730	910	1020	1270	1450	1800	2400	3100	NEW
			M_{2max}	Nm	460	580	810	1160	1830	2250	2800	3150	3950	4500	5700	5700	3642	
38.5	113	0.036	n_{2N}	r/min	200	150	150	100	75	75	60	60	50	37.5	30	20	10	**1FT2210-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	139	182	210	345	530	570	830	860	1090	1310	1620	1930	2050	■■■ + ■■■ + . . .
45.9	146		$M_{2.0}$	Nm	180	225	320	455	720	900	1120	1250	1570	1790	2200	3000	3600	NEW
			M_{2max}	Nm	580	720	1020	1460	2250	2850	3500	3950	4900	5446	5700	5700	3642	
39.7	113	0.036	n_{2N}	r/min	200	150	125	100	75	60	60	50	50	37.5	30	20	10	**1FT2210-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	146	191	260	360	510	700	850	970	1090	1330	1590	1780	1980	■■■ + ■■■ + . . .
47.3	146		$M_{2.0}$	Nm	186	235	330	470	740	930	1160	1290	1620	1840	2250	3100	3600	NEW
			M_{2max}	Nm	580	720	1020	1460	2250	2850	3500	3950	4900	5446	5700	5700	3642	

Planetary gearbox data														
Gearbox type:			**SP240, 1-stage**				**SP240, 2-stage**							
1. Order code			**J81**				**J82**							
i			**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
$M_{2N,G}$	Nm		5400	5400	5160	4000	5400	5400	5400	5400	5400	4400	5160	4730	3642
$M_{2max,G}$	Nm		5700	5700	5700	4000	5446	5446	5700	5446	5700	5446	5700	5700	3642
$M_{2Em.Off}$	Nm		8500	8500	8500	6850	8500	8500	8500	8500	8500	8500	8500	8500	6850
$J_{1,G}$	kg cm²		198	163	138	125	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
$\varphi_{2,G}$	'		3				5								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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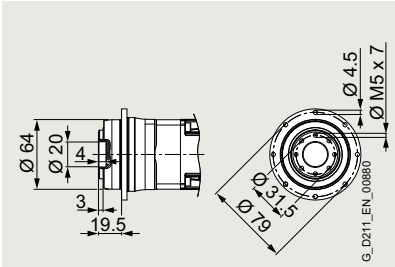
Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	1630 N
Average axial force for 30000 h	$F_{A,eq}$	1400 N
Maximum axial force	$F_{A,max}$	1630 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2, SH 30, High Dynamic with planetary gearbox TP004 1- and 2-stage																		
0.349	1.11	0.036	n_{2N}	r/min	500	375	375	300	200	200	150	125	100	100	75	60	37.5	1FT2103-2AH..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	1.26	1.79	2.05	3.25	5.7	6.5	9.3	11	13.9	14.7	18.7	23.5	34	■■■ + ■■■ + . . .
0.525	1.82		$M_{2.0}$	Nm	1.81	2.25	3.2	4.75	8.3	10.5	13.1	14.6	17.9	20	23.5	29	34.5	NEW
			M_{2max}	Nm	7	8.8	12.3	17.7	29	36	44.5	49.5	60	57	72	56	48	
0.94	3.26	0.036	n_{2N}	r/min	500	375	300	250	200	150	150	125	100	100	75	–	–	1FT2103-4AH..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.55	3.75	5.2	7.4	11	15.8	17	21	26	25.5	32.5	–	–	■■■ + ■■■ + . . .
1.05	3.84		$M_{2.0}$	Nm	3.95	4.95	6.9	10.1	16.8	20.5	25.5	29	35	39.5	46.5	–	–	NEW
			M_{2max}	Nm	15.2	19	26.5	38	57	57	72	57	72	57	72	–	–	
SIMOTICS S-1FT2, SH 30, Compact with planetary gearbox TP004 1- and 2-stage																		
0.34	1.06	0.036	n_{2N}	r/min	500	375	300	250	150	150	125	100	100	75	60	50	30	1FT2203-2AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	1.11	1.68	2.35	3.4	6.2	7.1	9	11.3	11.4	15.4	18.6	21.5	33	■■■ + ■■■ + . . .
0.515	1.73		$M_{2.0}$	Nm	1.76	2.2	3.1	4.6	8.1	10.2	12.7	14.3	17.4	19.6	23	28.5	34	NEW
			M_{2max}	Nm	6.6	8.3	11.6	16.8	27.5	34	42	47	57	57	72	56	48	
0.992	3.04	0.036	n_{2N}	r/min	375	375	300	250	150	150	125	125	100	75	60	–	–	1FT2203-4AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	3.65	4.15	5.6	7.6	14.2	15.8	19.7	19.9	25	32	39	–	–	■■■ + ■■■ + . . .
1.11	3.56		$M_{2.0}$	Nm	4.15	5.2	7.3	10.6	17.7	22	27	30.5	37	42	49.5	–	–	NEW
			M_{2max}	Nm	14	17.6	24.5	35	56	57	72	57	72	57	72	–	–	

Planetary gearbox data														
Gearbox type:			TP004, 1-stage				TP004, 2-stage							
1. Order code			H21				H22							
i			4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$		Nm	38	48	60	42	57	57	66	57	66	57	66	56	42
$M_{2max,G}$		Nm	38	48	60	56	57	57	72	57	72	57	72	56	48
$M_{2Em.Off}$		Nm	50	50	67	95	100	100	100	100	100	100	100	100	100
$J_{1,G}$		kg cm²	0.172	0.139	0.11	0.095	0.078	0.07	0.068	0.062	0.061	0.057	0.057	0.056	0.056
$\varphi_{2,G}$		'	4				4								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Getriebetyp TP004

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 40, High Dynamic with planetary gearbox TP004 1- and 2-stage														
1.06	3.25	0.036	n_{2N}	r/min	600	500	375	300	200	150	125	100	100	75	1FT2104-4AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	3.3	4.55	6.6	9.5	15.3	20	25.5	29.5	34	40.5	■■■ + ■■■ + . . .
1.16	3.56		$M_{2.0}$	Nm	4.2	5.3	7.5	11	18.4	23	28.5	31.5	38.5	43.5	NEW
			M_{2max}	Nm	13.9	17.4	24	35	56	57	72	57	72	57	
1.05	3.35	0.036	n_{2N}	r/min	600	500	375	300	200	150	125	100	–	75	1FT2104-4AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	3.45	4.8	7.2	10.3	16.6	22	27.5	31.5	–	43.5	■■■ + ■■■ + . . .
1.15	3.65		$M_{2.0}$	Nm	4.2	5.3	7.5	11	18.3	22.5	28	31.5	–	43	NEW
			M_{2max}	Nm	14.2	17.9	25	36	57	57	72	57	–	57	
2.14	7.05	0.036	n_{2N}	r/min	500	500	375	250	200	150	–	–	–	–	1FT2104-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	7	7.6	11.1	18.5	25.5	36	–	–	–	–	■■■ + ■■■ + . . .
2.23	7.14		$M_{2.0}$	Nm	8.5	10.7	15.1	21.5	35.5	44	–	–	–	–	NEW
			M_{2max}	Nm	28.5	35.5	49.5	56	57	57	–	–	–	–	
2.06	6.4	0.036	n_{2N}	r/min	500	500	375	250	200	150	–	–	–	75	1FT2104-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.9	7.5	11	18.2	25	35.5	–	–	–	57	■■■ + ■■■ + . . .
2.21	7.25		$M_{2.0}$	Nm	8.4	10.6	15	21.5	35	44	–	–	–	57	NEW
			M_{2max}	Nm	28.5	36	50	56	57	57	–	–	–	57	
2.88	9.52	0.036	n_{2N}	r/min	500	500	375	250	–	–	–	–	–	–	1FT2104-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	8.6	9.2	13.3	21.5	–	–	–	–	–	–	■■■ + ■■■ + . . .
2.92	9.58		$M_{2.0}$	Nm	11.5	14.4	20	29	–	–	–	–	–	–	NEW
			M_{2max}	Nm	38	47.5	66	56	–	–	–	–	–	–	
SIMOTICS S-1FT2, SH 40, Compact with planetary gearbox TP004 1- and 2-stage														
2.04	6	0.036	n_{2N}	r/min	500	375	300	250	150	150	–	–	–	–	1FT2204-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.5	9.4	12.8	16.9	30.5	32.5	–	–	–	–	■■■ + ■■■ + . . .
2.19	6.76		$M_{2.0}$	Nm	8.3	10.5	14.8	21	35	43.5	–	–	–	–	NEW
			M_{2max}	Nm	26.5	33.5	47	56	57	57	–	–	–	–	
2.05	6	0.036	n_{2N}	r/min	500	375	300	250	150	150	–	–	–	75	1FT2204-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.7	9.6	13	17.3	31.5	33	–	–	–	57	■■■ + ■■■ + . . .
2.2	6.76		$M_{2.0}$	Nm	8.4	10.6	14.9	21.5	35	43.5	–	–	–	57	NEW
			M_{2max}	Nm	26.5	33.5	47	56	57	57	–	–	–	57	
2.88	9.04	0.036	n_{2N}	r/min	500	375	300	250	–	–	–	–	–	–	1FT2204-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	8.8	12.6	16.9	22	–	–	–	–	–	–	■■■ + ■■■ + . . .
2.9	9.1		$M_{2.0}$	Nm	11.4	14.3	20	29	–	–	–	–	–	–	NEW
			M_{2max}	Nm	36	45	63	56	–	–	–	–	–	–	

Planetary gearbox data												
Gearbox type:			TP004, 1-stage				TP004, 2-stage					
1. Order code			H21				H22					
	i		4	5	7	10	16	20	25	28	35	40
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40
	$M_{2N,G}$	Nm	66	66	66	42	57	57	66	57	66	57
	$M_{2max,G}$	Nm	83	83	83	56	57	57	72	57	72	57
	$M_{2Em.Off}$	Nm	100	100	100	100	100	100	100	100	100	100
	$J_{1,G}$	kg cm²	0.245	0.213	0.184	0.168	0.174	0.165	0.164	0.157	0.157	0.153
	$\varphi_{2,G}$	'	4				4					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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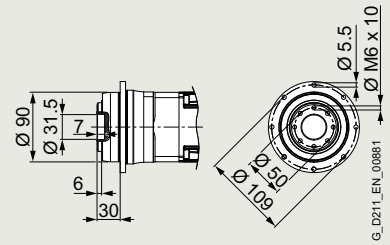
Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	2795 N
Average axial force for 30000 h	$F_{A,eq}$	2500 N
Maximum axial force	$F_{A,max}$	2795 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M.Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2, SH 20, 30, 40, High Dynamic with planetary gearbox TP010 1- and 2-stage																		
0.169	1.4	0.036	n_{2N}	r/min	–	–	250	250	200	150	125	125	100	75	75	60	37.5	1FT2103-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	1.23	2.2	4.15	6.9	9.7	11	15.2	18.8	22.5	28.5	42.5	■■■ + ■■■ + . . .
0.476	1.72		$M_{2.0}$	Nm	–	–	1.17	2.3	6	8.1	10.4	12	15.8	18.6	23.5	32.5	45	NEW
			M_{2max}	Nm	–	–	9.8	14.9	26	33.5	42	47	59	68	85	117	105	
0.53	3.2	0.036	n_{2N}	r/min	300	300	250	250	200	150	125	125	100	75	75	60	37.5	1FT2103-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.43	2.3	4.55	6.5	10.9	15.7	20.5	22.5	30	36.5	43	55	81	■■■ + ■■■ + . . .
1.06	3.64		$M_{2.0}$	Nm	2.1	3.15	5.1	8.1	15.5	19.9	25	28.5	36	42	52	72	98	NEW
			M_{2max}	Nm	12.8	16.4	23.5	34.5	58	72	90	101	127	145	158	157	105	
0.555	2.92	0.036	n_{2N}	r/min	300	300	300	300	200	150	125	100	100	75	60	50	30	1FT2104-4AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.2	3.35	5.4	7.7	14.1	19.9	26	30	37.5	44	55	75	105	■■■ + ■■■ + . . .
1.08	3.38		$M_{2.0}$	Nm	2.2	3.25	5.3	8.4	16	20.5	25.5	29	37	43	54	74	101	NEW
			M_{2max}	Nm	11.6	15	21.5	32	53	67	83	94	117	134	158	157	105	
0.55	3.02	0.036	n_{2N}	r/min	300	300	300	300	200	150	125	100	100	75	60	50	30	1FT2104-4AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	2.3	3.5	5.8	8.2	15.6	20	26	29.5	37.5	43.5	55	75	105	■■■ + ■■■ + . . .
1.08	3.46		$M_{2.0}$	Nm	2.15	3.2	5.2	8.3	15.8	20	25.5	29	37	42.5	53	73	100	NEW
			M_{2max}	Nm	12	15.4	22	32.5	55	69	86	96	121	138	158	157	105	
1.61	6.36	0.036	n_{2N}	r/min	300	300	300	250	200	150	125	100	100	75	60	50	–	1FT2104-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.5	8.5	11.8	18.1	29.5	41	52	60	72	86	107	140	–	■■■ + ■■■ + . . .
2.11	6.88		$M_{2.0}$	Nm	6.4	8.5	12.5	18.9	32.5	41	51	58	73	84	105	143	–	NEW
			M_{2max}	Nm	26	32.5	46.5	67	109	126	158	157	158	154	158	157	–	
1.6	6.43	0.036	n_{2N}	r/min	300	300	300	250	200	150	125	100	100	75	60	50	–	1FT2104-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.3	8.3	11.5	17.8	29	42	53	59	74	85	107	146	–	■■■ + ■■■ + . . .
2.09	6.95		$M_{2.0}$	Nm	6.3	8.4	12.4	18.8	32.5	41	51	58	73	83	104	142	–	NEW
			M_{2max}	Nm	26.5	33	47	68	111	126	158	157	158	154	158	157	–	
2.33	8.91	0.036	n_{2N}	r/min	300	300	250	250	200	150	125	100	100	–	–	–	–	1FT2104-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	8.3	10.8	17.7	22	35	53	69	80	91	–	–	–	–	■■■ + ■■■ + . . .
2.8	9.19		$M_{2.0}$	Nm	9.3	12	17.6	26	44	55	69	78	98	–	–	–	–	NEW
			M_{2max}	Nm	35.5	45	63	91	147	126	158	157	158	–	–	–	–	

Planetary gearbox data															
Gearbox type:			TP010, 1-stage				TP010, 2-stage								
1. Order code			H31				H32								
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	115	144	172	126	157	126	158	157	158	154	158	157	105
	$M_{2max,G}$	Nm	115	144	210	168	157	126	158	157	158	154	158	157	105
	$M_{2Em.Off}$	Nm	128	160	224	251	251	251	251	251	251	251	251	251	251
	$J_{1,G}$	kg cm²	0.779	0.622	0.478	0.402	0.167	0.136	0.13	0.108	0.104	0.093	0.091	0.09	0.089
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type TP010

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 20, 30, 40, Compact with planetary gearbox TP010 1- and 2-stage																		
0.156	1.31	0.036	n_{2N}	r/min	–	–	200	200	150	150	125	125	100	75	75	50	37.5	1FT2203-2AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	1.43	2.4	4.85	6	8.7	9.3	13.6	18.1	20	28.5	36.5	■■■ + ■■■ + . . .
0.462	1.63		$M_{2.0}$	Nm	–	–	1.09	2.2	5.8	7.8	10.1	11.6	15.3	18	23	32	44	NEW
			M_{2max}	Nm	–	–	9.1	14	24.5	31.5	39.5	44.5	56	65	81	111	105	
0.512	2.92	0.036	n_{2N}	r/min	300	300	250	250	200	150	125	125	100	75	75	60	37.5	1FT2203-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.9	2.85	5.2	7.1	10.9	16.4	21.5	22.5	30	38.5	43	51	80	■■■ + ■■■ + . . .
1.04	3.38		$M_{2.0}$	Nm	2.05	3.05	5	8	15.3	19.6	24.5	28	35.5	41	52	71	97	NEW
			M_{2max}	Nm	11.6	15	21.5	32	53	67	83	94	117	134	158	157	105	
1.57	6.03	0.036	n_{2N}	r/min	300	300	250	250	200	150	125	100	100	75	60	50	–	1FT2204-5AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.2	8.1	13.1	16.6	26	37.5	48	56	65	80	100	128	–	■■■ + ■■■ + . . .
2.07	6.5		$M_{2.0}$	Nm	6.2	8.3	12.3	18.5	32	40.5	50	57	72	82	103	140	–	NEW
			M_{2max}	Nm	24.5	31	44	64	103	126	158	157	158	154	158	157	–	
1.58	6.03	0.036	n_{2N}	r/min	300	300	300	250	200	150	125	100	100	75	60	50	–	1FT2204-5AK..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	6.4	8.3	11.2	17	26.5	39	49.5	58	68	82	103	133	–	■■■ + ■■■ + . . .
2.08	6.5		$M_{2.0}$	Nm	6.3	8.3	12.4	18.7	32	40.5	51	57	72	83	103	141	–	NEW
			M_{2max}	Nm	24.5	31	44	64	103	126	158	157	158	154	158	157	–	
2.32	8.48	0.036	n_{2N}	r/min	300	300	250	250	200	150	125	100	100	–	–	–	–	1FT2204-6AF..-2..0-Z
...	...	(0.04)	M_{2N}	Nm	9.1	11.5	18.6	22	34.5	53	67	78	89	–	–	–	–	■■■ + ■■■ + . . .
2.79	8.75		$M_{2.0}$	Nm	9.2	12	17.5	26	44	55	69	77	97	–	–	–	–	NEW
			M_{2max}	Nm	33.5	42.5	60	86	139	126	158	157	158	–	–	–	–	

Planetary gearbox data														
Gearbox type:		TP010, 1-stage				TP010, 2-stage								
1. Order code		H31				H32								
i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	115	144	172	126	157	126	158	157	158	154	158	157	105
$M_{2max,G}$	Nm	115	144	210	168	157	126	158	157	158	154	158	157	105
$M_{2Em.Off}$	Nm	128	160	224	251	251	251	251	251	251	251	251	251	251
$J_{1,G}$	kg cm²	0.779	0.622	0.478	0.402	0.167	0.136	0.13	0.108	0.104	0.093	0.091	0.09	0.089
$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)															
Nm	Nm	kg cm²															
SIMOTICS S-1FT2, SH 48, ,52, High Dynamic with planetary gearbox TP010 1- and 2-stage																	
3.9	13.5	0.036	n_{2N}	r/min	300	300	300	250	200	150	125	–	–	–	–	–	1FT2105-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	15.4	19.7	25.5	35.5	51	74	92	–	–	–	–	–	■■■ + ■■■ + . . .
4.42	13.9		$M_{2.0}$	Nm	15.6	20	29	42.5	70	88	109	–	–	–	–	–	NEW
			M_{2max}	Nm	54	68	97	139	157	126	158	–	–	–	–	–	
3.92	13.5	0.036	n_{2N}	r/min	300	300	300	250	150	150	125	–	–	–	–	–	1FT2105-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	14.6	18.4	22.5	31	61	71	88	–	–	–	–	–	■■■ + ■■■ + . . .
4.45	13.9		$M_{2.0}$	Nm	15.7	20	29	43	71	88	110	–	–	–	–	–	NEW
			M_{2max}	Nm	54	68	97	139	157	126	158	–	–	–	–	–	
6.78	22.2	0.036	n_{2N}	r/min	300	300	250	200	150	–	–	–	–	–	–	–	1FT2105-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	21.5	27	41	56	92	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
7.25	22.6		$M_{2.0}$	Nm	27	34.5	49	71	115	–	–	–	–	–	–	–	NEW
			M_{2max}	Nm	89	112	158	168	157	–	–	–	–	–	–	–	
SIMOTICS S-1FT2, SH 48, 52, Compact with planetary gearbox TP010 1- and 2-stage																	
2.48	8.93	0.036	n_{2N}	r/min	300	300	250	200	125	100	100	75	60	50	50	30	1FT2205-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	7.3	9.4	15.6	23	39.5	50	58	70	88	103	117	157	■■■ + ■■■ + . . .
3	9.94		$M_{2.0}$	Nm	9.9	13.1	19.2	28.5	47.5	59	74	83	105	120	149	157	NEW
			M_{2max}	Nm	38	48.5	68	99	157	126	158	157	158	154	158	157	
2.52	9.36	0.036	n_{2N}	r/min	300	300	300	250	200	150	125	100	100	–	60	–	1FT2205-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	8.5	11.2	15	21.5	31.5	48.5	61	71	80	–	125	–	■■■ + ■■■ + . . .
3.03	9.94		$M_{2.0}$	Nm	10	13.2	19.4	28.5	48	60	75	84	106	–	150	–	NEW
			M_{2max}	Nm	38	48.5	68	99	157	126	158	157	158	–	158	–	
2.45	8.93	0.036	n_{2N}	r/min	300	300	250	200	150	150	125	125	100	75	75	50	1FT2205-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	8	10.2	16.2	23.5	38	44.5	56	57	72	93	97	139	■■■ + ■■■ + . . .
2.98	9.94		$M_{2.0}$	Nm	9.7	12.9	19	28	47	59	73	82	104	118	147	157	NEW
			M_{2max}	Nm	38	48.5	68	99	157	126	158	157	158	154	158	157	
4.65	16.1	0.036	n_{2N}	r/min	300	250	250	200	150	125	100	–	–	–	–	–	1FT2205-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	13.2	19.9	26	37	62	79	100	–	–	–	–	–	■■■ + ■■■ + . . .
5.1	16.9		$M_{2.0}$	Nm	18.5	23.5	34	50	81	101	126	–	–	–	–	–	NEW
			M_{2max}	Nm	66	83	117	168	157	126	158	–	–	–	–	–	

Planetary gearbox data														
Gearbox type:			TP010, 1-stage				TP010, 2-stage							
1. Order code			H31				H32							
	i		4	5	7	10	16	20	25	28	35	40	50	70
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70
	$M_{2N,G}$	Nm	172	172	172	126	157	126	158	157	158	154	158	157
	$M_{2max,G}$	Nm	185	210	210	168	157	126	158	157	158	154	158	157
	$M_{2Em.Off}$	Nm	250	250	251	251	251	251	251	251	251	251	251	251
	$J_{1,G}$	kg cm²	0.945	0.788	0.645	0.568	0.564	0.533	0.527	0.506	0.502	0.491	0.489	0.488
	$\varphi_{2,G}$	'	3				3							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

3
4

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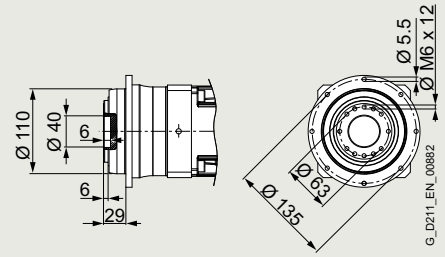
SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type TP025

Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	4800 N
Average axial force for 30000 h	$F_{A,eq}$	4300 N
Maximum axial force	$F_{A,max}$	4800 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 30, 40, 48, 52, High Dynamic with planetary gearbox TP025 1- and 2-stage																		
0.137	1.42	0.036	n_{2N}	r/min	–	–	200	200	150	125	100	100	75	60	60	50	37.5	1FT2103-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	0.6	2.3	5.5	8.3	11.2	13.1	16.9	19.7	24.5	33.5	39.5	■■■ + ■■■ + . . .
0.48	1.75		$M_{2.0}$	Nm	–	–	0.95	2.25	6.6	9	11.4	13.1	16.1	18.9	24	33	43	NEW
			M_{2max}	Nm	–	–	9.9	14.8	27	34.5	43	48.5	60	69	87	120	159	
0.49	3.28	0.036	n_{2N}	r/min	200	250	250	250	150	125	100	100	75	60	60	50	37.5	1FT2103-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.31	1.82	3.5	6.3	13.1	18.3	24	27	35	41.5	50	65	80	■■■ + ■■■ + . . .
1.07	3.7		$M_{2.0}$	Nm	1.96	2.95	5	8	16.1	20.5	26	29.5	36.5	42.5	53	74	97	NEW
			M_{2max}	Nm	13.1	16.7	24	34.5	59	73	92	103	128	147	184	250	352	
0.517	2.98	0.036	n_{2N}	r/min	250	250	250	250	150	125	100	100	75	60	60	50	30	1FT2104-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.6	2.65	4.75	8.1	15.8	21	27	30.5	39	45	56	77	105	■■■ + ■■■ + . . .
1.1	3.42		$M_{2.0}$	Nm	2.05	3.1	5.2	8.3	16.6	21	26.5	30	37.5	43.5	54	75	99	NEW
			M_{2max}	Nm	11.9	15.2	22	31.5	54	68	85	95	119	136	170	235	305	
0.512	3.08	0.036	n_{2N}	r/min	300	300	300	250	150	125	100	100	75	60	60	50	30	1FT2104-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.48	2.5	4.1	8.5	15.7	20.5	27	30.5	38.5	44.5	56	77	104	■■■ + ■■■ + . . .
1.09	3.52		$M_{2.0}$	Nm	2	3.05	5.2	8.2	16.5	21	26.5	30	37.5	43	54	75	99	NEW
			M_{2max}	Nm	12.3	15.7	22.5	32.5	55	70	87	97	122	140	175	240	315	
1.62	6.13	0.036	n_{2N}	r/min	300	250	250	250	150	125	100	100	75	60	60	50	30	1FT2104-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.5	8.1	12.5	18.4	33	42.5	54	61	77	88	110	151	205	■■■ + ■■■ + . . .
2.14	6.95		$M_{2.0}$	Nm	6.4	8.5	12.7	18.8	33.5	42	52	59	74	85	107	147	194	NEW
			M_{2max}	Nm	26.5	33.5	47	67	111	138	172	192	240	270	340	352	352	
1.6	6.21	0.036	n_{2N}	r/min	300	250	250	250	150	125	100	100	75	60	60	50	30	1FT2104-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.3	8	12.3	18.1	32.5	42.5	53	60	76	87	109	150	205	■■■ + ■■■ + . . .
2.12	7.06		$M_{2.0}$	Nm	6.4	8.4	12.6	18.6	33	42	52	59	73	84	106	146	193	NEW
			M_{2max}	Nm	27	34	48	68	112	140	174	195	240	275	345	352	352	
2.37	8.06	0.036	n_{2N}	r/min	250	250	250	250	150	125	100	100	75	60	60	50	30	1FT2104-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	9	11.7	16	22.5	45	57	72	82	102	117	146	200	265	■■■ + ■■■ + . . .
2.85	9.31		$M_{2.0}$	Nm	9.4	12.2	17.8	26	45	56	70	79	99	113	142	196	255	NEW
			M_{2max}	Nm	36.5	45.5	64	91	149	185	230	255	320	352	380	352	352	

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Planetary gearbox data														
Gearbox type:			TP025, 1-stage				TP025, 2-stage							
1. Order code			H41				H42							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	185	232	292	318	352	352	380	352	380	352	380	352	292
	$M_{2max,G}$	Nm	185	232	292	352	352	352	380	352	380	352	380	352	352
	$M_{2Em.Off}$	Nm	313	313	324	424	625	625	625	625	625	625	625	625	625
	$J_{1.G}$	kg cm²	2.59	2.11	1.69	1.45	0.828	0.714	0.695	0.607	0.597	0.549	0.545	0.54	0.538
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 30, 40, 48, 52, High Dynamic with planetary gearbox TP025 1- and 2-stage (continued)																		
4.04	11.7	0.036	n_{2N}	r/min	300	250	250	250	150	125	100	100	75	60	60	50	30	1FT2105-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	14.2	19.7	27	34	67	86	109	120	153	179	205	255	290	■■■ + ■■■ + . . .
4.49	14.1		$M_{2.0}$	Nm	16.4	20.5	29.5	42.5	71	89	111	124	156	178	220	305	290	NEW
			M_{2max}	Nm	56	70	98	140	220	275	345	352	380	352	380	352	352	
4.06	11.7	0.036	n_{2N}	r/min	300	250	250	200	150	125	100	100	75	60	60	50	37.5	1FT2105-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12.9	18.8	24	39	63	81	104	114	146	170	197	245	235	■■■ + ■■■ + . . .
4.51	14.1		$M_{2.0}$	Nm	16.5	21	29.5	43	72	90	112	125	157	179	220	305	290	NEW
			M_{2max}	Nm	56	70	98	140	220	275	345	352	380	352	380	352	352	
7.08	21.4	0.036	n_{2N}	r/min	250	250	200	200	150	125	100	100	75	60	60	–	–	1FT2105-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25	29.5	45	59	97	124	156	169	215	250	280	–	–	■■■ + ■■■ + . . .
7.31	23		$M_{2.0}$	Nm	28	35.5	50	71	117	146	181	200	250	285	360	–	–	NEW
			M_{2max}	Nm	92	114	160	225	352	352	380	352	380	352	380	–	–	
SIMOTICS S-1FT2, SH 30, 40, 48, 52, Compact with planetary gearbox TP025 1- and 2-stage																		
0.125	1.32	0.036	n_{2N}	r/min	–	–	200	200	150	125	100	100	75	60	60	50	30	1FT2203-2AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	0.52	2.1	5.2	8	10.9	12.7	16.5	19.2	24	32	42.5	■■■ + ■■■ + . . .
0.468	1.65		$M_{2.0}$	Nm	–	–	0.87	2.15	6.4	8.8	11	12.7	15.7	18.3	23	32	41.5	NEW
			M_{2max}	Nm	–	–	9.2	13.9	25.5	32.5	40.5	45.5	57	65	82	114	150	
0.475	2.98	0.036	n_{2N}	r/min	250	250	250	250	150	125	100	100	75	60	60	50	37.5	1FT2203-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.42	2.35	4.2	7	14.6	20	26	29.5	37.5	43	53	68	79	■■■ + ■■■ + . . .
1.05	3.42		$M_{2.0}$	Nm	1.89	2.85	4.95	7.9	15.9	20.5	25.5	29	36	41.5	52	72	95	NEW
			M_{2max}	Nm	11.9	15.2	22	31.5	54	68	85	95	119	136	170	235	305	
1.58	5.81	0.036	n_{2N}	r/min	300	250	250	250	150	125	100	100	75	60	60	50	30	1FT2204-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.2	7.9	12	16.9	32	41.5	52	59	75	86	107	142	196	■■■ + ■■■ + . . .
2.1	6.56		$M_{2.0}$	Nm	6.3	8.3	12.4	18.4	32.5	41.5	51	58	72	83	105	144	191	NEW
			M_{2max}	Nm	25	31.5	44.5	63	105	131	162	182	225	260	320	352	352	
1.59	5.81	0.036	n_{2N}	r/min	300	250	250	250	150	125	100	100	75	60	60	50	30	1FT2204-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	5.4	7.9	12.2	17.3	32.5	41.5	53	60	75	86	107	147	200	■■■ + ■■■ + . . .
2.12	6.56		$M_{2.0}$	Nm	6.3	8.4	12.5	18.5	33	41.5	52	58	73	84	105	145	192	NEW
			M_{2max}	Nm	25	31.5	44.5	63	105	131	162	182	225	260	320	352	352	
2.36	7.68	0.036	n_{2N}	r/min	300	250	250	250	150	125	100	100	75	60	60	50	30	1FT2204-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	8.1	11.8	17.1	23	44.5	57	72	81	101	116	144	190	265	■■■ + ■■■ + . . .
2.84	8.88		$M_{2.0}$	Nm	9.4	12.1	17.7	25.5	44.5	56	70	78	98	113	141	195	255	NEW
			M_{2max}	Nm	34.5	43	61	87	141	176	215	240	300	352	380	352	352	
2.65	8.67	0.036	n_{2N}	r/min	250	250	250	200	125	100	100	75	60	50	50	30	20	1FT2205-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	8	10.3	13.5	23.5	41	53	62	76	96	112	128	187	250	■■■ + ■■■ + . . .
3.12	10.1		$M_{2.0}$	Nm	10.6	13.6	19.7	28.5	49	62	77	86	108	124	155	210	280	NEW
			M_{2max}	Nm	39.5	49.5	69	99	161	200	245	275	345	352	380	352	352	

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Planetary gearbox data														
Gearbox type:		TP025, 1-stage				TP025, 2-stage								
1. Order code		H41				H42								
i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	185	232	292	318	352	352	380	352	380	352	380	352	292
$M_{2max,G}$	Nm	185	232	292	352	352	352	380	352	380	352	380	352	352
$M_{2Em.Off}$	Nm	313	313	324	424	625	625	625	625	625	625	625	625	625
$J_{1,G}$	kg cm²	2.59	2.11	1.69	1.45	0.828	0.714	0.695	0.607	0.597	0.549	0.545	0.54	0.538
$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type TP025

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 30, 40, 48, 52, Compact with planetary gearbox TP025 1- and 2-stage (continued)																		
2.75	8.67	0.036	n_{2N}	r/min	300	300	250	250	150	125	100	100	75	60	60	50	30	**1FT2205-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	7.8	9.3	16	22	41.5	54	70	78	99	115	137	172	240	■■■ + ■■■ + . . .
3.14	10.1		$M_{2.0}$	Nm	10.9	14.1	20	29.5	49.5	62	78	87	109	125	157	215	285	NEW
			M_{2max}	Nm	39.5	49.5	69	99	161	200	245	275	345	352	380	352	352	
2.68	8.67	0.036	n_{2N}	r/min	300	250	250	200	150	125	100	100	75	60	60	50	30	**1FT2205-2AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	7	10.6	14.6	24	39	51	65	72	92	108	127	156	225	■■■ + ■■■ + . . .
3.08	10.1		$M_{2.0}$	Nm	10.6	13.7	19.8	28.5	48.5	61	76	85	107	122	153	210	275	NEW
			M_{2max}	Nm	39.5	49.5	69	99	161	200	245	275	345	352	380	352	352	
4.71	13.8	0.036	n_{2N}	r/min	250	250	200	200	150	125	100	100	75	60	60	50	30	**1FT2205-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	16.3	19.2	30	40.5	66	84	107	117	150	176	199	225	290	■■■ + ■■■ + . . .
5.27	17.1		$M_{2.0}$	Nm	20	25	35.5	51	84	105	130	146	183	205	260	350	290	NEW
			M_{2max}	Nm	68	85	119	168	270	330	380	352	380	352	380	352	352	

Planetary gearbox data														
Gearbox type:			**TP025, 1-stage**				**TP025, 2-stage**							
1. Order code			**H41**				**H42**							
	i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	185	232	292	318	352	352	380	352	380	352	380	352	292
	$M_{2max,G}$	Nm	185	232	292	352	352	352	380	352	380	352	380	352	352
	$M_{2Em.Off}$	Nm	313	313	324	424	625	625	625	625	625	625	625	625	625
	$J_{1,G}$	kg cm²	2.59	2.11	1.69	1.45	0.828	0.714	0.695	0.607	0.597	0.549	0.545	0.54	0.538
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FT2, SH 30, High Dynamic with planetary gearbox TP025 2-stage													
0.414	1.59	0.036	n_{2N}	r/min	150	125	100	100	75	60	60	50	37.5	**1FT2103-2AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.5	8.3	11.2	13.1	16.9	19.7	24.5	33.5	39.5	■■■ + ■■■ + . . .
0.48	1.75		$M_{2.0}$	Nm	6.6	9	11.4	13.1	16.1	18.9	24	33	43	NEW
			M_{2max}	Nm	27	34.5	43	48.5	60	69	87	120	159	
0.974	3.35	0.036	n_{2N}	r/min	150	125	100	100	75	60	60	50	37.5	**1FT2103-4AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	13.1	18.3	24	27	35	41.5	50	65	80	■■■ + ■■■ + . . .
1.07	3.7		$M_{2.0}$	Nm	16.1	20.5	26	29.5	36.5	42.5	53	74	97	NEW
			M_{2max}	Nm	59	73	92	103	128	147	184	250	352	
SIMOTICS S-1FT2, SH 30, Compact with planetary gearbox TP025 2-stage													
0.401	1.51	0.036	n_{2N}	r/min	150	125	100	100	75	60	60	50	30	**1FT2203-2AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	5.2	8	10.9	12.7	16.5	19.2	24	32	42.5	■■■ + ■■■ + . . .
0.468	1.65		$M_{2.0}$	Nm	6.4	8.8	11	12.7	15.7	18.3	23	32	41.5	NEW
			M_{2max}	Nm	25.5	32.5	40.5	45.5	57	65	82	114	150	
0.959	3.1	0.036	n_{2N}	r/min	150	125	100	100	75	60	60	50	37.5	**1FT2203-4AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	14.6	20	26	29.5	37.5	43	53	68	79	■■■ + ■■■ + . . .
1.05	3.42		$M_{2.0}$	Nm	15.9	20.5	25.5	29	36	41.5	52	72	95	NEW
			M_{2max}	Nm	54	68	85	95	119	136	170	235	305	

Planetary gearbox data										
Gearbox type:			**TP025, 2-stage**							
1. Order code			**J32**							
	i		**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	352	352	380	352	380	352	380	352	292
	$M_{2max,G}$	Nm	352	352	380	352	380	352	380	352	352
	$M_{2Em.Off}$	Nm	512	625	625	625	625	625	625	625	625
	$J_{1,G}$	kg cm²	0.661	0.548	0.529	0.44	0.431	0.383	0.378	0.374	0.372
	$\varphi_{2,G}$	'	3							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type TP025

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 63, High Dynamic with planetary gearbox TP025 1- and 2-stage																		
7.58	23.3	0.036	n_{2N}	r/min	300	250	250	200	150	125	100	100	75	60	–	–	–	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	21	30.5	37.5	61	101	128	162	177	220	260	–	–	–	■■■ + ■■■ + . . .
7.94	24.7		$M_{2.0}$	Nm	30	38	54	78	127	158	196	215	270	310	–	–	–	NEW
			M_{2max}	Nm	98	123	173	245	352	352	380	352	380	352	–	–	–	
10.1	29.2	0.036	n_{2N}	r/min	250	250	200	200	150	125	100	100	75	60	–	–	–	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	32.5	39	57	72	118	149	188	200	255	300	–	–	–	■■■ + ■■■ + . . .
10.3	31.6		$M_{2.0}$	Nm	40	50	71	102	165	205	250	280	350	350	–	–	–	NEW
			M_{2max}	Nm	126	157	220	310	352	352	380	352	380	352	–	–	–	
14.4	42.2	0.036	n_{2N}	r/min	250	250	200	200	150	125	–	–	–	–	–	–	–	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	45	51	78	91	150	198	–	–	–	–	–	–	–	■■■ + ■■■ + . . .
14.6	43.8		$M_{2.0}$	Nm	57	72	102	145	230	285	–	–	–	–	–	–	–	NEW
			M_{2max}	Nm	175	215	305	352	352	352	–	–	–	–	–	–	–	
SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox TP025 1- and 2-stage																		
4.68	13.8	0.036	n_{2N}	r/min	250	200	200	150	125	100	100	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	15.3	22	28.5	46.5	73	94	110	132	165	190	215	315	290	■■■ + ■■■ + . . .
5.25	17		$M_{2.0}$	Nm	19	24	34.5	50	83	104	130	145	182	205	260	350	290	NEW
			M_{2max}	Nm	67	84	118	168	270	330	380	352	380	352	380	352	352	
4.91	13.8	0.036	n_{2N}	r/min	300	300	250	200	150	125	100	100	75	60	60	50	30	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	15.5	17.4	28	42.5	68	87	110	119	154	181	200	245	290	■■■ + ■■■ + . . .
5.5	17		$M_{2.0}$	Nm	20	25.5	36.5	53	87	109	136	152	190	215	270	350	290	NEW
			M_{2max}	Nm	67	84	118	168	270	330	380	352	380	352	380	352	352	
4.76	13.8	0.036	n_{2N}	r/min	250	250	200	200	150	125	100	100	75	60	60	37.5	30	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	16.1	19.3	30	39	68	87	110	121	154	180	205	290	280	■■■ + ■■■ + . . .
5.33	17		$M_{2.0}$	Nm	19.4	24.5	35.5	51	85	106	132	148	185	210	260	350	290	NEW
			M_{2max}	Nm	67	84	118	168	270	330	380	352	380	352	380	352	352	
7.72	23.8	0.036	n_{2N}	r/min	250	250	200	150	100	75	60	60	50	37.5	30	–	–	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	23.5	27.5	43.5	67	109	141	176	193	235	280	340	–	–	■■■ + ■■■ + . . .
8.12	25.8		$M_{2.0}$	Nm	30.5	39	55	79	129	161	200	220	275	315	380	–	–	NEW
			M_{2max}	Nm	102	128	179	255	352	352	380	352	380	352	380	–	–	
7.6	23.8	0.036	n_{2N}	r/min	250	250	200	200	150	125	100	100	75	60	60	–	–	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	23	26	41.5	51	90	122	155	169	215	250	250	–	–	■■■ + ■■■ + . . .
8	25.8		$M_{2.0}$	Nm	30	38	54	78	127	158	197	220	275	310	380	–	–	NEW
			M_{2max}	Nm	102	128	179	255	352	352	380	352	380	352	380	–	–	
10.4	32.8	0.036	n_{2N}	r/min	200	200	150	125	100	75	75	60	50	50	37.5	–	–	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	30.5	34	54	75	119	164	171	210	250	245	305	–	–	■■■ + ■■■ + . . .
10.7	36.5		$M_{2.0}$	Nm	41.5	52	73	105	170	210	260	290	365	350	380	–	–	NEW
			M_{2max}	Nm	145	182	250	352	352	352	380	352	380	352	380	–	–	
10.5	31.8	0.036	n_{2N}	r/min	250	250	200	200	150	125	100	100	–	60	–	–	–	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	34	39.5	60	73	121	161	205	210	–	320	–	–	–	■■■ + ■■■ + . . .
10.8	34.6		$M_{2.0}$	Nm	42	52	74	106	172	210	265	295	–	350	–	–	–	NEW
			M_{2max}	Nm	138	172	240	340	352	352	380	352	–	352	–	–	–	

➥ Continued on the next page

Planetary gearbox data														
Gearbox type:		TP025, 1-stage				TP025, 2-stage								
1. Order code		H41				H42								
i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	352	380	352	318	352	352	380	352	380	352	380	352	292
$M_{2max,G}$	Nm	352	380	352	352	352	352	380	352	380	352	380	352	352
$M_{2Em.Off}$	Nm	625	625	625	625	625	625	625	625	625	625	625	625	625
$J_{1,G}$	kg cm²	3.28	2.8	2.38	2.14	2.2	2.08	2.06	1.98	1.97	1.92	1.92	1.91	1.91
$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox TP025 1- and 2-stage (continued)

Servomotor data			Selection data servomotors with planetary gearbox													Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)														
Nm	Nm	kg cm²														
9.98	31.8	0.036	n_{2N}	r/min	250	200	200	150	125	100	100	100	75	60	–	–	–	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	27.5	39.5	48	77	119	160	169	173	225	270	–	–	–	■■■ + ■■■ + . . .
10.2	34.6		$M_{2.0}$	Nm	39.5	50	70	101	164	200	250	280	350	350	–	–	–	NEW
			M_{2max}	Nm	138	172	240	340	352	352	380	352	380	352	–	–	–	

Planetary gearbox data														
Gearbox type:			TP025, 1-stage				TP025, 2-stage							
1. Order code			H41				H42							
i			4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	352	380	352	318	352	352	380	352	380	352	380	352	292
	$M_{2max,G}$	Nm	352	380	352	352	352	352	380	352	380	352	380	352	352
	$M_{2Em.Off}$	Nm	625	625	625	625	625	625	625	625	625	625	625	625	625
	$J_{1,G}$	kg cm²	3.28	2.8	2.38	2.14	2.2	2.08	2.06	1.98	1.97	1.92	1.92	1.91	1.91
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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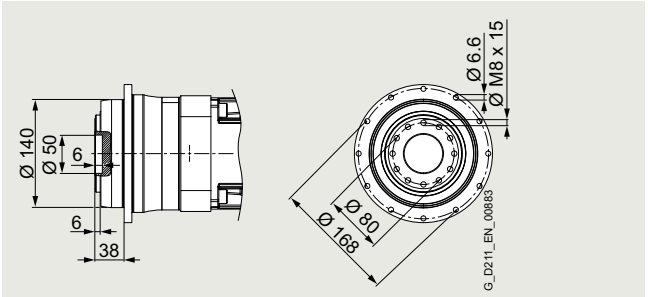
Gearbox type TP050

Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	6130 N
Average axial force for 30000 h	$F_{A,eq}$	5400 N
Maximum axial force	$F_{A,max}$	6130 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data			Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)																
Nm	Nm	kg cm²																
SIMOTICS S-1FT2, SH 40, 48, 52, High Dynamic with planetary gearbox TP050 1- and 2-stage																		
0.552	2.85	0.036	n_{2N}	r/min	150	200	200	200	150	125	100	100	75	60	60	37.5	30	1FT2104-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.32	2	3.6	6.9	9.5	14.7	22	26	35.5	42.5	53	75	96	■■■ + ■■■ + . . .
1.11	3.45		$M_{2.0}$	Nm	2.2	3.15	4.3	6.5	13.4	16.7	22.5	27	37	44	55	75	90	NEW
			M_{2max}	Nm	11.4	14.6	20	29.5	51	64	81	93	119	138	171	230	295	
0.545	2.95	0.036	n_{2N}	r/min	150	250	200	200	150	125	100	100	75	60	60	37.5	30	1FT2104-4AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	1.29	1.59	3.55	7	10.9	15.5	21.5	26	35.5	42.5	52	74	95	■■■ + ■■■ + . . .
1.1	3.55		$M_{2.0}$	Nm	2.15	3.1	4.2	6.4	13.3	16.6	22	26.5	37	44	55	74	89	NEW
			M_{2max}	Nm	11.7	15	20.5	30.5	53	66	84	95	122	141	176	240	305	
1.57	6.02	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2104-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	4.9	6.6	11.1	17.9	28.5	36.5	49	56	74	86	107	151	200	■■■ + ■■■ + . . .
2.16	6.98		$M_{2.0}$	Nm	6.2	8.2	11.3	16.8	30.5	38	49	56	74	86	107	146	184	NEW
			M_{2max}	Nm	25.5	32	44.5	65	109	136	170	192	240	275	345	470	594	
1.56	6.1	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2104-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	4.85	6.5	11	17.6	28.5	36	48.5	56	73	85	106	150	200	■■■ + ■■■ + . . .
2.15	7.08		$M_{2.0}$	Nm	6.2	8.1	11.2	16.6	30	37.5	48.5	56	73	85	106	145	182	NEW
			M_{2max}	Nm	26	32.5	45.5	66	110	137	173	194	245	280	350	475	594	
2.28	7.98	0.036	n_{2N}	r/min	250	250	200	200	125	100	100	100	75	60	60	37.5	30	1FT2104-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	7	8.9	15.6	22	40	52	67	77	100	116	144	200	265	■■■ + ■■■ + . . .
2.88	9.32		$M_{2.0}$	Nm	9.1	11.7	16.2	23.5	42	52	67	76	99	115	143	195	245	NEW
			M_{2max}	Nm	35	44	61	88	147	183	230	255	320	370	460	620	594	
3.92	11.8	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2105-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	13.8	16.7	26.5	36.5	61	67	98	110	151	182	210	310	345	■■■ + ■■■ + . . .
4.53	14		$M_{2.0}$	Nm	15.7	19.9	27.5	40	69	86	108	123	156	180	220	305	390	NEW
			M_{2max}	Nm	54	68	95	136	220	275	345	385	485	550	690	770	594	
3.94	11.8	0.036	n_{2N}	r/min	250	200	200	200	125	100	100	100	75	60	60	37.5	30	1FT2105-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12.9	19	25	32	58	76	93	105	144	173	200	295	315	■■■ + ■■■ + . . .
4.55	14		$M_{2.0}$	Nm	15.8	20	27.5	40.5	69	86	109	124	158	182	225	305	390	NEW
			M_{2max}	Nm	54	68	95	136	220	275	345	385	485	550	690	770	594	

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Planetary gearbox data														
Gearbox type:			TP050, 1-stage				TP050, 2-stage							
1. Order code			H51				H52							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	605	681	840	648	667	825	825	825	825	825	825	770	594
	$M_{2max,G}$	Nm	605	681	868	720	667	825	825	825	825	825	825	770	594
	$M_{2Em.Off}$	Nm	625	756	1059	1190	741	926	1158	1250	1250	1250	1250	1250	1250
	$J_{1,G}$	kg cm²	9.47	7.85	6.39	5.54	2.53	2.08	2.01	1.67	1.64	1.44	1.42	1.41	1.4
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 40, 48, 52, High Dynamic with planetary gearbox TP050 1- and 2-stage (continued)																		
6.34	18.1	0.036	n_{2N}	r/min	200	200	150	150	100	100	100	100	75	60	60	37.5	25	1FT2105-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25	31.5	46	64	101	119	136	157	215	260	295	440	460	■■■ + ■■■ + . . .
7.35	22.6		$M_{2.0}$	Nm	27	34	47.5	68	115	143	180	200	255	290	365	495	590	NEW
			M_{2max}	Nm	89	111	155	220	360	445	550	620	780	825	825	770	594	
SIMOTICS S-1FT2, SH 40, 48, 52, Compact with planetary gearbox TP050 1- and 2-stage																		
1.53	5.7	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2204-5AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	4.7	6.3	10.8	16.8	28	33.5	47.5	55	72	84	104	147	191	■■■ + ■■■ + . . .
2.12	6.6		$M_{2.0}$	Nm	6.1	8	11	16.4	30	37	48	55	72	84	105	144	180	NEW
			M_{2max}	Nm	24	30	42	61	103	128	161	181	225	260	325	445	594	
1.55	5.7	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2204-5AK..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	4.75	6.5	10.9	17.3	28	34.5	48	55	72	84	105	148	197	■■■ + ■■■ + . . .
2.14	6.6		$M_{2.0}$	Nm	6.1	8.1	11.1	16.5	30	37.5	48	55	73	85	106	144	181	NEW
			M_{2max}	Nm	24	30	42	61	103	128	161	181	225	260	325	445	594	
2.26	7.59	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2204-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	7.7	9.7	16.2	23.5	40	46.5	67	76	99	115	143	200	265	■■■ + ■■■ + . . .
2.85	8.85		$M_{2.0}$	Nm	9	11.6	16.1	23.5	42	52	66	76	98	114	142	193	245	NEW
			M_{2max}	Nm	33	41.5	58	84	139	174	215	240	305	350	435	590	594	
2.55	8.6	0.036	n_{2N}	r/min	250	200	200	200	125	100	100	75	60	50	50	30	20	1FT2205-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	6.4	10.3	13.9	18.2	34	45.5	54	71	95	114	131	197	250	■■■ + ■■■ + . . .
3.15	10.1		$M_{2.0}$	Nm	10.1	13	18.1	26.5	46.5	58	74	84	108	125	156	210	270	NEW
			M_{2max}	Nm	38	48	67	96	159	198	245	275	350	400	500	670	594	
2.68	8.6	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2205-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	7	9.5	15	22.5	36.5	44.5	61	71	97	117	138	200	240	■■■ + ■■■ + . . .
3.25	10.1		$M_{2.0}$	Nm	10.6	13.6	18.9	27.5	48	60	76	87	112	129	161	215	275	NEW
			M_{2max}	Nm	38	48	67	96	159	198	245	275	350	400	500	670	594	
2.6	8.6	0.036	n_{2N}	r/min	250	250	200	200	125	125	100	100	75	60	60	37.5	30	1FT2205-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	6.8	8.4	14.5	19.7	34.5	37.5	57	65	90	109	128	187	225	■■■ + ■■■ + . . .
3.18	10.1		$M_{2.0}$	Nm	10.3	13.3	18.4	27	47	58	74	85	109	126	157	210	270	NEW
			M_{2max}	Nm	38	48	67	96	159	198	245	275	350	400	500	670	594	
4.68	13.9	0.036	n_{2N}	r/min	200	200	150	150	125	100	100	100	75	60	60	37.5	25	1FT2205-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	16.1	20.5	30	43.5	56	82	96	110	150	181	205	305	375	■■■ + ■■■ + . . .
5.4	16.8		$M_{2.0}$	Nm	19.4	24.5	34	49.5	83	104	131	148	187	215	265	365	465	NEW
			M_{2max}	Nm	66	82	115	165	265	335	415	465	580	670	825	770	594	

Planetary gearbox data														
Gearbox type:			TP050, 1-stage				TP050, 2-stage							
1. Order code			H51				H52							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	605	681	840	648	667	825	825	825	825	825	825	770	594
	$M_{2max,G}$	Nm	605	681	868	720	667	825	825	825	825	825	825	770	594
	$M_{2Em.Off}$	Nm	625	756	1059	1190	741	926	1158	1250	1250	1250	1250	1250	1250
	$J_{1,G}$	kg cm²	9.47	7.85	6.39	5.54	2.53	2.08	2.01	1.67	1.64	1.44	1.42	1.41	1.4
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

3 4

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type TP050

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 63, High Dynamic with planetary gearbox TP050 1- and 2-stage																		
6.87	19.4	0.036	n_{2N}	r/min	250	200	200	150	125	100	100	100	75	60	60	37.5	25	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	21	31.5	39	65	84	124	143	165	225	270	310	455	480	■■■ + ■■■ + . . .
8	24.4		$M_{2.0}$	Nm	30	38	53	76	125	156	196	220	275	315	395	530	590	NEW
			M_{2max}	Nm	97	121	169	240	390	485	600	670	825	825	825	770	594	
9.99	29.3	0.036	n_{2N}	r/min	250	200	200	150	100	100	100	100	75	60	60	37.5	–	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	27	40.5	48	81	126	144	157	179	260	315	350	520	–	■■■ + ■■■ + . . .
10.3	31.2		$M_{2.0}$	Nm	40	50	70	101	164	200	255	285	360	410	510	690	–	NEW
			M_{2max}	Nm	124	155	215	310	495	610	770	825	825	825	825	770	–	
14.3	42	0.036	n_{2N}	r/min	200	200	150	150	100	100	75	75	75	60	60	–	–	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	47.5	57	84	107	168	177	270	300	350	430	455	–	–	■■■ + ■■■ + . . .
14.6	43.4		$M_{2.0}$	Nm	57	71	100	144	230	290	360	405	500	580	720	–	–	NEW
			M_{2max}	Nm	173	215	300	430	680	825	825	825	825	825	825	–	–	
SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox TP050 1- and 2-stage																		
4.57	13.9	0.036	n_{2N}	r/min	200	200	150	150	100	100	75	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	16.7	20	31	40	69	72	112	126	164	194	225	330	405	■■■ + ■■■ + . . .
5.28	16.8		$M_{2.0}$	Nm	18.7	23.5	32.5	47.5	81	101	127	144	183	210	260	355	455	NEW
			M_{2max}	Nm	66	82	115	165	265	335	415	465	580	670	825	770	594	
4.81	13.9	0.036	n_{2N}	r/min	250	250	200	200	125	100	100	100	75	60	60	37.5	25	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	15	18.3	28	36.5	63	83	99	110	150	183	205	305	390	■■■ + ■■■ + . . .
5.55	16.8		$M_{2.0}$	Nm	20	25.5	35	51	85	107	135	152	193	220	275	375	480	NEW
			M_{2max}	Nm	66	82	115	165	265	335	415	465	580	670	825	770	594	
4.66	13.9	0.036	n_{2N}	r/min	250	200	150	150	100	100	100	100	75	60	60	37.5	25	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	12.8	20	30	43	67	81	92	104	151	182	210	305	360	■■■ + ■■■ + . . .
5.4	16.8		$M_{2.0}$	Nm	19.4	24.5	34	49.5	82	103	130	147	187	215	265	360	465	NEW
			M_{2max}	Nm	66	82	115	165	265	335	415	465	580	670	825	770	594	
7.01	20	0.036	n_{2N}	r/min	200	200	150	150	100	75	60	60	50	37.5	30	25	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	25	30.5	46	61	100	131	169	188	240	290	360	475	590	■■■ + ■■■ + . . .
8.15	25.4		$M_{2.0}$	Nm	30.5	38	53	77	128	160	200	225	280	325	405	550	590	NEW
			M_{2max}	Nm	101	126	176	250	405	500	620	700	825	825	825	770	594	
6.91	20	0.036	n_{2N}	r/min	200	200	150	150	100	100	75	100	75	60	60	37.5	25	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	24.5	29.5	45	58	98	105	158	134	215	255	295	435	415	■■■ + ■■■ + . . .
8.02	25.4		$M_{2.0}$	Nm	30	37.5	52	76	126	157	197	220	275	320	395	540	590	NEW
			M_{2max}	Nm	101	126	176	250	405	500	620	700	825	825	825	770	594	

➥ Continued on the next page

Planetary gearbox data														
Gearbox type:		TP050, 1-stage				TP050, 2-stage								
1. Order code		H51				H52								
	i	4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$ Nm	605	681	840	648	825	825	825	825	825	825	825	770	594
	$M_{2max,G}$ Nm	605	681	868	720	825	825	825	825	825	825	825	770	594
	$M_{2Em.Off}$ Nm	625	756	1059	1190	1250	1250	1250	1250	1250	1250	1250	1250	1250
	$J_{1,G}$ kg cm²	9.47	7.85	6.39	5.54	3.22	2.77	2.7	2.37	2.33	2.13	2.12	2.1	2.09
	$\varphi_{2,G}$ '	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 63, Compact with planetary gearbox TP050 1- and 2-stage (continued)																	
9.09	26.6	0.036	n_{2N}	r/min	200	150	150	125	75	60	60	60	50	50	37.5	30	15	**1FT2206-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	27	41.5	46.5	66	129	169	190	210	285	305	400	470	560	■■■ + ■■■ + . . .
10.7	36		$M_{2.0}$	Nm	40.5	51	71	102	169	210	260	295	370	425	530	710	590	NEW
			M_{2max}	Nm	144	179	250	355	570	710	825	825	825	825	825	770	594	
10.5	33.2	0.036	n_{2N}	r/min	200	200	200	150	100	100	75	75	75	60	60	–	–	**1FT2206-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	35.5	43	49	84	135	145	215	240	285	345	385	–	–	■■■ + ■■■ + . . .
10.8	34		$M_{2.0}$	Nm	41.5	52	73	105	171	210	265	295	375	430	530	–	–	NEW
			M_{2max}	Nm	136	170	235	335	540	670	825	825	825	825	825	–	–	
8.79	25.5	0.036	n_{2N}	r/min	200	200	150	150	100	75	75	75	75	60	50	37.5	20	**1FT2206-4AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	30	35.5	54	67	111	161	185	210	240	320	390	500	520	■■■ + ■■■ + . . .
10.3	34		$M_{2.0}$	Nm	39.5	49.5	69	100	163	200	250	285	355	410	510	690	590	NEW
			M_{2max}	Nm	136	170	235	335	540	670	825	825	825	825	825	770	594	

Planetary gearbox data														
Gearbox type:			**TP050, 1-stage**				**TP050, 2-stage**							
1. Order code			**H51**				**H52**							
	i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code			**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
	$M_{2N,G}$	Nm	605	681	840	648	825	825	825	825	825	825	825	770	594
	$M_{2max,G}$	Nm	605	681	868	720	825	825	825	825	825	825	825	770	594
	$M_{2Em.Off}$	Nm	625	756	1059	1190	1250	1250	1250	1250	1250	1250	1250	1250	1250
	$J_{1,G}$	kg cm²	9.47	7.85	6.39	5.54	3.22	2.77	2.7	2.37	2.33	2.13	2.12	2.1	2.09
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type TP050

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox													Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 80, High Dynamic with planetary gearbox TP050 1- and 2-stage																
21.2	80	0.036	n_{2N}	r/min	200	200	150	125	75	75	60	60	–	–	–	–	1FT2108-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	60	68	102	140	250	260	360	400	–	–	–	–	■■■ + ■■■ + . . .
21.4	83.8		$M_{2.0}$	Nm	84	106	149	210	340	425	530	590	–	–	–	–	NEW
			M_{2max}	Nm	330	415	580	720	825	825	825	825	–	–	–	–	
26	96.1	0.036	n_{2N}	r/min	200	200	150	125	75	75	60	60	–	–	–	–	1FT2108-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	74	85	125	170	290	305	415	465	–	–	–	–	■■■ + ■■■ + . . .
26.4	101		$M_{2.0}$	Nm	104	131	184	260	420	520	650	720	–	–	–	–	NEW
			M_{2max}	Nm	405	500	700	720	825	825	825	825	–	–	–	–	
25.8	96.1	0.036	n_{2N}	r/min	200	200	150	125	75	75	60	60	–	–	–	–	1FT2108-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	68	76	113	152	270	275	380	425	–	–	–	–	■■■ + ■■■ + . . .
26.1	101		$M_{2.0}$	Nm	103	130	182	260	415	510	640	720	–	–	–	–	NEW
			M_{2max}	Nm	405	500	700	720	825	825	825	825	–	–	–	–	
32.7	126	0.036	n_{2N}	r/min	200	200	150	125	75	60	–	60	–	–	–	–	1FT2108-7AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	86	97	143	189	320	410	–	495	–	–	–	–	■■■ + ■■■ + . . .
33.4	136		$M_{2.0}$	Nm	133	166	230	330	530	650	–	820	–	–	–	–	NEW
			M_{2max}	Nm	540	670	868	720	825	825	–	825	–	–	–	–	
32.2	126	0.036	n_{2N}	r/min	200	200	150	125	75	60	–	60	–	–	–	–	1FT2108-7AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	83	93	136	179	310	395	–	465	–	–	–	–	■■■ + ■■■ + . . .
32.8	136		$M_{2.0}$	Nm	130	163	225	325	520	640	–	820	–	–	–	–	NEW
			M_{2max}	Nm	540	670	868	720	825	825	–	825	–	–	–	–	
31.9	126	0.036	n_{2N}	r/min	200	150	125	100	75	60	50	50	–	–	–	–	1FT2108-7AE..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	77	115	150	200	285	370	470	510	–	–	–	–	■■■ + ■■■ + . . .
32.5	136		$M_{2.0}$	Nm	129	162	225	320	510	640	800	820	–	–	–	–	NEW
			M_{2max}	Nm	540	670	868	720	825	825	825	825	–	–	–	–	
SIMOTICS S-1FT2, SH 80, Compact with planetary gearbox TP050 1- and 2-stage																
10.1	33.6	0.036	n_{2N}	r/min	250	200	150	150	100	100	75	75	75	60	60	37.5	1FT2208-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	26.5	41.5	59	77	126	128	197	215	250	310	325	500	■■■ + ■■■ + . . .
10.6	35.9		$M_{2.0}$	Nm	40	50	71	102	168	210	260	290	365	420	520	710	NEW
			M_{2max}	Nm	143	179	250	355	570	710	825	825	825	825	825	770	
15.5	47	0.036	n_{2N}	r/min	200	150	150	125	75	75	60	60	50	37.5	30	–	1FT2208-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	42.5	64	72	101	191	200	280	310	425	550	660	–	■■■ + ■■■ + . . .
16	48.6		$M_{2.0}$	Nm	61	77	109	156	255	315	395	440	550	630	790	–	NEW
			M_{2max}	Nm	193	240	335	480	760	825	825	825	825	825	825	–	
15.5	47.1	0.036	n_{2N}	r/min	200	200	150	150	100	75	75	75	60	50	–	–	1FT2208-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	49.5	58	87	103	166	235	260	290	405	485	–	–	■■■ + ■■■ + . . .
15.8	48.6		$M_{2.0}$	Nm	62	77	109	156	250	315	390	440	550	630	–	–	NEW
			M_{2max}	Nm	193	240	335	480	760	825	825	825	825	825	–	–	

➥ Continued on the next page

Planetary gearbox data													
Gearbox type:		TP050, 1-stage				TP050, 2-stage							
1. Order code		H51				H52							
i		4	5	7	10	16	20	25	28	35	40	50	70
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70
$M_{2N,G}$	Nm	840	840	840	648	825	825	825	825	825	825	825	770
$M_{2max,G}$	Nm	992	992	868	720	825	825	825	825	825	825	825	770
$M_{2Em.Off}$	Nm	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
$J_{1,G}$	kg cm²	12.6	11	9.55	8.7	10.3	9.83	9.77	9.43	9.4	9.2	9.18	9.17
$\varphi_{2,G}$	'	3				3							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2, SH 80, Compact with planetary gearbox TP050 1- and 2-stage (continued)																	
15.2	47.1	0.036	n_{2N}	r/min	200	200	150	125	100	75	75	75	60	60	–	–	**1FT2208-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	47.5	55	82	115	155	225	245	275	395	425	–	–	■■■ + ■■■ + . . .
15.5	48.6		$M_{2.0}$	Nm	60	76	106	153	245	305	385	430	540	620	–	–	NEW
			M_{2max}	Nm	193	240	335	480	760	825	825	825	825	825	–	–	
19	60.6	0.036	n_{2N}	r/min	150	150	125	100	60	60	50	50	50	37.5	30	–	**1FT2208-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	57	64	83	116	225	235	305	335	380	530	630	–	■■■ + ■■■ + . . .
19.4	63.2		$M_{2.0}$	Nm	75	95	133	191	310	385	480	530	670	770	820	–	NEW
			M_{2max}	Nm	250	315	440	620	825	825	825	825	825	825	825	–	
19.4	61.1	0.036	n_{2N}	r/min	200	200	150	125	75	75	60	60	60	50	–	–	**1FT2208-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	59	67	100	138	245	255	350	390	430	550	–	–	■■■ + ■■■ + . . .
19.6	63.2		$M_{2.0}$	Nm	77	97	136	195	310	390	485	540	680	780	–	–	NEW
			M_{2max}	Nm	250	315	440	620	825	825	825	825	825	825	–	–	
18.2	61.1	0.036	n_{2N}	r/min	200	200	150	125	100	75	75	75	60	60	–	–	**1FT2208-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	58	67	100	138	176	255	275	305	405	420	–	–	■■■ + ■■■ + . . .
18.6	63.2		$M_{2.0}$	Nm	72	91	128	184	295	365	460	510	640	730	–	–	NEW
			M_{2max}	Nm	250	315	440	620	825	825	825	825	825	825	–	–	
23.4	73.6	0.036	n_{2N}	r/min	200	200	150	125	75	75	60	60	–		–	–	**1FT2208-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	65	74	110	149	260	275	375	415	–		–	–	■■■ + ■■■ + . . .
23.6	76.8		$M_{2.0}$	Nm	93	117	165	235	375	470	580	650	–		–	–	NEW
			M_{2max}	Nm	305	380	530	720	825	825	825	825	–		–	–	
23.3	73.6	0.036	n_{2N}	r/min	200	200	150	125	75	60	60	60	–	–	–	–	**1FT2208-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	66	74	110	148	260	335	365	400	–	–	–	–	■■■ + ■■■ + . . .
23.5	76.8		$M_{2.0}$	Nm	93	117	164	235	375	465	580	650	–	–	–	–	NEW
			M_{2max}	Nm	305	380	530	720	825	825	825	825	–	–	–	–	

Planetary gearbox data														
Gearbox type:			**TP050, 1-stage**				**TP050, 2-stage**							
1. Order code			**H51**				**H52**							
	i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**
2. Order code			**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**
	$M_{2N,G}$	Nm	840	840	840	648	825	825	825	825	825	825	825	770
	$M_{2max,G}$	Nm	992	992	868	720	825	825	825	825	825	825	825	770
	$M_{2Em.Off}$	Nm	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
	$J_{1,G}$	kg cm²	12.6	11	9.55	8.7	10.3	9.83	9.77	9.43	9.4	9.2	9.18	9.17
	$\varphi_{2,G}$	'	3				3							

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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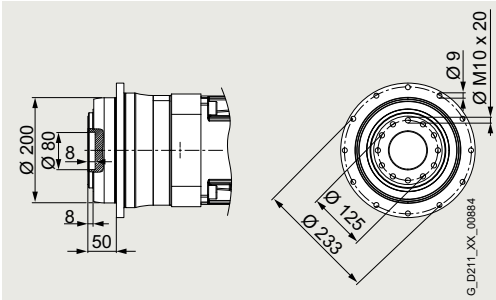
Gearbox type TP110

Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	10050 N
Average axial force for 30000 h	$F_{A,eq}$	8900 N
Maximum axial force	$F_{A,max}$	10050 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic with planetary gearbox TP110 1- and 2-stage																		
0.669	2.78	0.036	n_{2N}	r/min	–	–	–	–	75	75	100	75	60	60	50	37.5	30	**1FT2104-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	5.4	10.6	14	21	30.5	36.5	47	63	66	■■■ + ■■■ + . . .
0.99	3.37		$M_{2.0}$	Nm	–	–	–	–	10.6	16.3	23	26.5	34.5	39.5	48	61	67	NEW
			M_{2max}	Nm	–	–	–	–	49	64	82	93	117	134	166	220	275	
0.662	2.86	0.036	n_{2N}	r/min	–	–	–	–	75	100	100	75	60	60	50	37.5	30	**1FT2104-4AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	5.2	8.4	14.9	20.5	30.5	36	47	62	70	■■■ + ■■■ + . . .
0.982	3.46		$M_{2.0}$	Nm	–	–	–	–	10.5	16.2	22.5	26.5	34	39	47.5	60	67	NEW
			M_{2max}	Nm	–	–	–	–	50	66	84	95	120	138	171	225	285	
1.62	5.89	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	30	**1FT2104-5AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	21	30.5	42.5	51	69	80	101	138	166	■■■ + ■■■ + . . .
2.05	6.91		$M_{2.0}$	Nm	–	–	–	–	27.5	37.5	49.5	56	71	82	101	133	162	NEW
			M_{2max}	Nm	–	–	–	–	106	135	171	193	240	275	340	460	580	
1.61	5.97	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	30	**1FT2104-5AK..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	20.5	30	42	51	68	79	101	137	163	■■■ + ■■■ + . . .
2.04	7		$M_{2.0}$	Nm	–	–	–	–	27.5	37.5	49	56	71	81	100	132	161	NEW
			M_{2max}	Nm	–	–	–	–	108	137	174	195	245	280	345	465	590	
2.26	7.92	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	25	**1FT2104-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	31	41.5	55	72	95	110	139	190	250	■■■ + ■■■ + . . .
2.78	9.29		$M_{2.0}$	Nm	–	–	–	–	39.5	52	67	76	97	110	137	182	225	NEW
			M_{2max}	Nm	–	–	–	–	145	183	230	255	320	370	460	620	790	
3.73	11.9	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	25	**1FT2105-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	55	71	89	119	154	178	220	295	365	■■■ + ■■■ + . . .
4.43	14		$M_{2.0}$	Nm	–	–	–	–	66	85	109	123	155	177	220	295	370	NEW
			M_{2max}	Nm	–	–	–	–	220	275	350	390	490	550	690	940	1190	
3.76	11.9	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	25	**1FT2105-4AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	52	64	78	113	151	170	210	280	345	■■■ + ■■■ + . . .
4.47	14		$M_{2.0}$	Nm	–	–	–	–	67	86	110	124	156	178	220	295	375	NEW
			M_{2max}	Nm	–	–	–	–	220	275	350	390	490	550	690	940	1190	

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Planetary gearbox data														
Gearbox type:			TP110, 1-stage				TP110 2-stage							
1. Order code			H61				H62							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	1920	1920	1920	1680	1760	1760	1760	1760	1760	1760	1760	1760	1540
	$M_{2max,G}$	Nm	2560	2560	2560	2240	1760	1760	1760	1760	1760	1760	1760	1760	1540
	$M_{2Em.Off}$	Nm	3075	3075	3075	3075	2420	3025	3075	3075	3075	3075	3075	3075	3075
	$J_{1.G}$	kg cm²	44.5	34.6	25.5	20.6	8.51	8.21	7.82	6.57	6.37	5.63	5.54	5.44	5.4
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic with planetary gearbox TP110 1- and 2-stage (continued)																		
6.22	18.9	0.036	n_{2N}	r/min	–	–	–	–	100	75	75	75	60	60	50	37.5	20	**1FT2105-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	80	130	162	180	235	260	325	425	570	■■■ + ■■■ + . . .
7.31	22.6		$M_{2.0}$	Nm	–	–	–	–	113	143	181	200	255	290	360	485	620	NEW
			M_{2max}	Nm	–	–	–	–	360	450	560	630	780	890	1110	1500	1540	
6.96	20.4	0.036	n_{2N}	r/min	200	150	150	125	100	100	75	75	60	60	50	37.5	20	**1FT2106-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	22	31.5	44	64	84	100	165	183	240	265	330	435	580	■■■ + ■■■ + . . .
8.17	25		$M_{2.0}$	Nm	32	40	57	80	127	161	200	225	285	325	400	540	690	NEW
			M_{2max}	Nm	99	124	174	245	390	485	610	680	850	970	1200	1620	1540	
9.12	25.5	0.036	n_{2N}	r/min	200	150	150	125	100	75	75	75	60	60	50	37.5	20	**1FT2106-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	29.5	41.5	57	81	103	165	200	220	290	320	395	500	640	■■■ + ■■■ + . . .
10.9	31.9		$M_{2.0}$	Nm	43	54	76	108	168	210	265	295	370	425	530	710	910	NEW
			M_{2max}	Nm	126	158	220	315	495	620	770	870	1080	1230	1530	1760	1540	
12.5	34.1	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	60	50	37.5	20	**1FT2106-6AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	41	61	84	118	192	235	285	310	400	435	530	620	720	■■■ + ■■■ + . . .
14.9	44.1		$M_{2.0}$	Nm	59	73	104	148	230	290	365	410	510	580	730	980	1250	NEW
			M_{2max}	Nm	175	215	305	435	690	860	1070	1200	1490	1760	1760	1760	1540	
18.3	58	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	60	50	37.5	25	15	**1FT2108-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	76	86	127	175	260	300	440	470	500	620	780	900	910	■■■ + ■■■ + . . .
22.6	85		$M_{2.0}$	Nm	89	112	158	220	350	435	540	610	760	870	1080	1460	1540	NEW
			M_{2max}	Nm	335	420	590	840	1320	1650	1760	1760	1760	1760	1760	1760	1540	
22.3	66.2	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	50	37.5	30	25	15	**1FT2108-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	92	105	154	210	315	365	520	550	700	850	1040	1010	1000	■■■ + ■■■ + . . .
27.9	103		$M_{2.0}$	Nm	110	138	194	275	430	530	670	750	930	1070	1320	1760	1540	NEW
			M_{2max}	Nm	410	510	710	1020	1600	1760	1760	1760	1760	1760	1760	1760	1540	
22	66.2	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	60	50	50	37.5	25	15	**1FT2108-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	87	98	143	197	290	420	480	500	650	660	820	930	930	■■■ + ■■■ + . . .
27.6	103		$M_{2.0}$	Nm	109	137	192	270	425	530	660	740	920	1050	1310	1760	1540	NEW
			M_{2max}	Nm	410	510	710	1020	1600	1760	1760	1760	1760	1760	1760	1760	1540	
27.5	78.2	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	60	50	37.5	30	25	15	**1FT2108-7AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	111	125	181	245	360	510	580	610	770	970	1120	1030	1010	■■■ + ■■■ + . . .
35.1	137		$M_{2.0}$	Nm	139	174	245	345	540	670	840	940	1180	1340	1660	1760	1540	NEW
			M_{2max}	Nm	540	680	950	1360	1760	1760	1760	1760	1760	1760	1760	1760	1540	
27.1	78.2	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	60	50	50	37.5	25	12.5	**1FT2108-7AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	109	122	177	240	345	495	550	580	740	730	900	990	1140	■■■ + ■■■ + . . .
34.6	137		$M_{2.0}$	Nm	137	172	240	340	530	660	830	930	1160	1320	1630	1760	1540	NEW
			M_{2max}	Nm	540	680	950	1360	1760	1760	1760	1760	1760	1760	1760	1760	1540	
26.9	78.2	0.036	n_{2N}	r/min	150	150	125	100	60	60	60	50	50	37.5	37.5	20	12.5	**1FT2108-7AE..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	104	115	166	220	410	465	510	640	670	890	820	1130	1080	■■■ + ■■■ + . . .
34.1	137		$M_{2.0}$	Nm	136	170	235	340	520	660	820	920	1150	1310	1620	1760	1540	NEW
			M_{2max}	Nm	540	680	950	1360	1760	1760	1760	1760	1760	1760	1760	1760	1540	

Planetary gearbox data														
Gearbox type:		**TP110, 1-stage**				**TP110 2-stage**								
1. Order code		**H61**				**H62**								
i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code		**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
$M_{2N,G}$	Nm	1920	1920	1920	1680	1760	1760	1760	1760	1760	1760	1760	1760	1540
$M_{2max,G}$	Nm	2560	2560	2560	2240	1760	1760	1760	1760	1760	1760	1760	1760	1540
$M_{2Em.Off}$	Nm	3075	3075	3075	3075	2420	3025	3075	3075	3075	3075	3075	3075	3075
$J_{1,G}$	kg cm²	44.5	34.6	25.5	20.6	8.51	8.21	7.82	6.57	6.37	5.63	5.54	5.44	5.4
$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type TP110

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox	
SIMOTICS S-1FT2 Compact with planetary gearbox TP110 1- and 2-stage																			
1.59	5.56	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	30	1FT2204-5AF..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	20	29	40	50	67	78	99	135	150	■■■ + ■■■ + . . .	
2.01	6.54		$M_{2.0}$	Nm	–	–	–	–	27	36.5	48.5	55	70	80	99	130	158		NEW
			M_{2max}	Nm	–	–	–	–	100	128	162	182	225	260	320	435	550		
1.6	5.56	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	30	1FT2204-5AK..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	20.5	29.5	41	50	67	78	99	135	154	■■■ + ■■■ + . . .	
2.02	6.54		$M_{2.0}$	Nm	–	–	–	–	27	37	49	55	70	80	99	131	159		NEW
			M_{2max}	Nm	–	–	–	–	100	128	162	182	225	260	320	435	550		
2.25	7.52	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	25	1FT2204-6AF..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	32	44	58	71	94	108	137	188	245	■■■ + ■■■ + . . .	
2.76	8.8		$M_{2.0}$	Nm	–	–	–	–	39	52	67	76	96	110	136	181	220		NEW
			M_{2max}	Nm	–	–	–	–	137	174	215	245	305	350	435	590	750		
2.5	8.57	0.036	n_{2N}	r/min	–	–	–	–	100	75	75	75	60	50	50	30	20	1FT2205-2AC..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	26	45	60	67	92	111	128	185	230	■■■ + ■■■ + . . .	
3.06	10.1		$M_{2.0}$	Nm	–	–	–	–	44	57	74	84	106	121	150	200	250		NEW
			M_{2max}	Nm	–	–	–	–	157	199	250	280	350	400	495	670	850		
2.61	8.57	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	25	1FT2205-2AF..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	29	40	53	72	98	112	141	188	230	■■■ + ■■■ + . . .	
3.17	10.1		$M_{2.0}$	Nm	–	–	–	–	45.5	60	77	87	110	126	156	205	260		NEW
			M_{2max}	Nm	–	–	–	–	157	199	250	280	350	400	495	670	850		
2.55	8.57	0.036	n_{2N}	r/min	–	–	–	–	100	100	100	75	60	60	50	37.5	25	1FT2205-2AH..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	27.5	36.5	46	67	92	105	132	175	215	■■■ + ■■■ + . . .	
3.1	10.1		$M_{2.0}$	Nm	–	–	–	–	44.5	58	75	85	108	123	153	200	250		NEW
			M_{2max}	Nm	–	–	–	–	157	199	250	280	350	400	495	670	850		
4.55	14.3	0.036	n_{2N}	r/min	–	–	–	–	100	75	75	75	60	60	50	37.5	25	1FT2205-4AF..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	–	–	–	–	50	86	108	121	160	179	220	290	330	■■■ + ■■■ + . . .	
5.38	16.9		$M_{2.0}$	Nm	–	–	–	–	82	105	133	150	188	215	265	360	455		NEW
			M_{2max}	Nm	–	–	–	–	265	335	420	470	580	670	830	1120	1540		
4.39	14.3	0.036	n_{2N}	r/min	150	150	150	125	75	75	75	75	60	50	50	30	20	1FT2206-2AC..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	16.3	20.5	29	41	70	89	112	124	165	195	225	325	385	■■■ + ■■■ + . . .	
5.2	17.1		$M_{2.0}$	Nm	20	25	36	50	78	101	128	144	181	205	255	345	435		NEW
			M_{2max}	Nm	68	84	119	170	265	335	420	470	580	670	830	1120	1540		
4.78	14.3	0.036	n_{2N}	r/min	200	200	150	150	100	100	100	75	60	60	50	37.5	25	1FT2206-2AF..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	12.9	14.9	28	35	59	73	84	121	161	179	220	290	365	■■■ + ■■■ + . . .	
5.69	17.1		$M_{2.0}$	Nm	22	27.5	39.5	55	86	110	139	157	197	225	275	375	475		NEW
			M_{2max}	Nm	68	84	119	170	265	335	420	470	580	670	830	1120	1540		
4.63	14.3	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	60	50	37.5	20	1FT2206-2AH..-0..0-Z	
...	...	(0.04)	M_{2N}	Nm	12.6	19.2	27.5	40.5	66	85	108	121	160	180	220	295	405	■■■ + ■■■ + . . .	
5.5	17.1		$M_{2.0}$	Nm	21.5	26.5	38.5	54	83	106	135	152	191	215	270	365	460		NEW
			M_{2max}	Nm	68	84	119	170	265	335	420	470	580	670	830	1120	1540		

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Planetary gearbox data														
Gearbox type:			TP110, 1-stage				TP110 2-stage							
1. Order code			H61				H62							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	1920	1920	1920	1680	1760	1760	1760	1760	1760	1760	1760	1760	1540
	$M_{2max,G}$	Nm	2560	2560	2560	2240	1760	1760	1760	1760	1760	1760	1760	1760	1540
	$M_{2Em.Off}$	Nm	3075	3075	3075	3075	2420	3025	3075	3075	3075	3075	3075	3075	3075
	$J_{1,G}$	kg cm²	44.5	34.6	25.5	20.6	8.51	8.21	7.82	6.57	6.37	5.63	5.54	5.44	5.4
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox														Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox TP110 1- and 2-stage (continued)																	
6.93	21.1	0.036	n_{2N}	r/min	200	150	150	125	75	75	60	60	50	37.5	30	25	15	**1FT2206-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	19.9	32	44.5	63	104	130	174	191	240	290	365	470	630	■■■ + ■■■ + . . .
8.14	26		$M_{2.0}$	Nm	32	39.5	56	80	126	160	200	225	280	320	400	540	690	NEW
			M_{2max}	Nm	103	129	181	255	405	500	630	710	880	1010	1250	1760	1540	
6.84	21.1	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	60	50	37.5	20	**1FT2206-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	19.1	31	43.5	61	102	129	160	178	230	260	320	415	510	■■■ + ■■■ + . . .
8.03	26		$M_{2.0}$	Nm	31.5	39	56	79	124	158	199	220	280	320	395	530	680	NEW
			M_{2max}	Nm	103	129	181	255	405	500	630	710	880	1010	1250	1760	1540	
9.09	29	0.036	n_{2N}	r/min	150	125	125	100	75	60	60	60	50	50	37.5	25	15	**1FT2206-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	36	48.5	62	87	124	188	220	235	315	325	430	540	610	■■■ + ■■■ + . . .
10.7	36.7		$M_{2.0}$	Nm	42	52	75	106	167	210	265	295	370	425	520	710	900	NEW
			M_{2max}	Nm	146	183	255	365	570	710	890	1000	1240	1420	1760	1760	1540	
9.4	27.6	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	60	50	37.5	20	**1FT2206-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	30	45	62	89	145	180	220	240	315	350	430	520	640	■■■ + ■■■ + . . .
11.1	34.8		$M_{2.0}$	Nm	43.5	54	77	110	173	215	275	305	385	440	540	730	940	NEW
			M_{2max}	Nm	138	173	240	345	540	680	840	950	1180	1340	1670	1760	1540	
9.03	27.6	0.036	n_{2N}	r/min	150	150	150	100	75	75	75	75	60	60	50	30	20	**1FT2206-4AH..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	34	42	53	89	135	167	200	215	295	325	400	550	530	■■■ + ■■■ + . . .
10.8	34.8		$M_{2.0}$	Nm	42.5	53	75	107	166	210	260	295	370	420	520	710	900	NEW
			M_{2max}	Nm	138	173	240	345	540	680	840	950	1180	1340	1670	1760	1540	
9.21	29	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	60	50	37.5	15	**1FT2208-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	27.5	42	57	79	133	164	198	215	280	305	375	445	760	■■■ + ■■■ + . . .
11	36.7		$M_{2.0}$	Nm	43	54	76	108	169	210	265	300	375	430	530	720	920	NEW
			M_{2max}	Nm	146	183	255	365	570	710	890	1000	1240	1420	1760	1760	1540	
13.6	37.7	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	60	50	37.5	30	25	15	**1FT2208-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	55	61	91	127	192	280	330	355	470	560	700	740	780	■■■ + ■■■ + . . .
16.3	49.6		$M_{2.0}$	Nm	64	80	113	161	250	315	395	445	550	630	790	1070	1350	NEW
			M_{2max}	Nm	197	245	345	490	770	960	1200	1340	1670	1760	1760	1760	1540	
13.8	37.7	0.036	n_{2N}	r/min	150	150	150	100	75	75	75	75	60	50	50	30	15	**1FT2208-3AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	54	66	83	137	205	250	295	310	415	490	520	710	890	■■■ + ■■■ + . . .
16.7	49.6		$M_{2.0}$	Nm	66	83	117	166	255	320	405	455	560	640	800	1080	1370	NEW
			M_{2max}	Nm	197	245	345	490	770	960	1200	1340	1670	1760	1760	1760	1540	
13.4	37.7	0.036	n_{2N}	r/min	150	150	125	100	75	75	75	75	60	60	50	30	15	**1FT2208-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	53	65	94	135	205	240	275	285	420	425	495	670	860	■■■ + ■■■ + . . .
16.3	49.6		$M_{2.0}$	Nm	64	80	113	161	250	315	395	440	550	630	780	1060	1340	NEW
			M_{2max}	Nm	197	245	345	490	770	960	1200	1340	1670	1760	1760	1760	1540	
16.4	46.8	0.036	n_{2N}	r/min	150	125	100	75	60	60	50	50	50	37.5	30	20	12.5	**1FT2208-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	59	79	117	167	245	280	385	405	435	590	700	820	820	■■■ + ■■■ + . . .
19.7	64.3		$M_{2.0}$	Nm	78	98	138	196	310	385	485	540	670	770	960	1290	1540	NEW
			M_{2max}	Nm	255	320	445	630	1000	1250	1550	1760	1760	1760	1760	1760	1540	

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Planetary gearbox data														
Gearbox type:			TP110, 1-stage				TP110 2-stage							
1. Order code			H61				H62							
	i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code			R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
	$M_{2N,G}$	Nm	1920	1920	1920	1680	1760	1760	1760	1760	1760	1760	1760	1760	1540
	$M_{2max,G}$	Nm	2560	2560	2560	2240	1760	1760	1760	1760	1760	1760	1760	1760	1540
	$M_{2Em.Off}$	Nm	3075	3075	3075	3075	2420	3025	3075	3075	3075	3075	3075	3075	3075
	$J_{1,G}$	kg cm²	44.5	34.6	25.5	20.6	8.51	8.21	7.82	6.57	6.37	5.63	5.54	5.44	5.4
	$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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Gearbox type TP110

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox TP110 1- and 2-stage (continued)																		
16.9	46.8	0.036	n_{2N}	r/min	150	150	125	100	75	75	75	60	60	50	37.5	25	15	1FT2208-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	68	82	118	167	250	290	315	420	470	560	720	870	910	■■■ + ■■■ + . . .
20.7	64.3		$M_{2.0}$	Nm	82	103	145	205	320	400	500	560	700	800	990	1340	1540	NEW
			M_{2max}	Nm	255	320	445	630	1000	1250	1550	1760	1760	1760	1760	1760	1540	
15.9	46.8	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	60	50	30	15	1FT2208-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	48.5	75	96	125	225	265	305	315	415	425	500	730	910	■■■ + ■■■ + . . .
19.4	64.3		$M_{2.0}$	Nm	77	96	135	193	300	375	470	520	660	750	930	1260	1540	NEW
			M_{2max}	Nm	255	320	445	630	1000	1250	1550	1760	1760	1760	1760	1760	1540	
20.1	54.5	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	50	37.5	30	25	15	1FT2208-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	81	94	137	189	280	315	445	485	600	730	900	920	930	■■■ + ■■■ + . . .
25	78		$M_{2.0}$	Nm	99	124	175	245	385	480	600	670	840	960	1190	1610	1540	NEW
			M_{2max}	Nm	310	385	540	770	1220	1510	1760	1760	1760	1760	1760	1760	1540	
20.1	54.5	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	50	50	37.5	25	15	1FT2208-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	81	95	139	191	280	310	445	475	590	600	770	880	910	■■■ + ■■■ + . . .
25	78		$M_{2.0}$	Nm	99	124	174	245	385	480	600	670	840	950	1190	1600	1540	NEW
			M_{2max}	Nm	310	385	540	770	1220	1510	1760	1760	1760	1760	1760	1760	1540	
16.1	43.3	0.036	n_{2N}	r/min	200	150	150	125	75	75	75	75	60	50	50	30	15	1FT2210-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	54	78	103	137	240	285	330	350	460	550	570	810	1000	■■■ + ■■■ + . . .
19.6	58.3		$M_{2.0}$	Nm	77	97	137	194	300	380	475	530	660	760	940	1270	1540	NEW
			M_{2max}	Nm	230	290	405	580	910	1130	1410	1580	1760	1760	1760	1760	1540	
15.9	43.3	0.036	n_{2N}	r/min	200	150	150	100	75	75	75	75	60	60	50	25	15	1FT2210-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	49.5	79	98	161	240	290	340	350	470	495	560	920	960	■■■ + ■■■ + . . .
19.3	58.3		$M_{2.0}$	Nm	76	95	135	191	300	375	470	520	650	750	930	1250	1540	NEW
			M_{2max}	Nm	230	290	405	580	910	1130	1410	1580	1760	1760	1760	1760	1540	
22.9	59.5	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	50	37.5	30	25	12.5	1FT2210-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	108	122	176	240	375	420	590	610	750	980	1150	1050	1240	■■■ + ■■■ + . . .
28.4	87.9		$M_{2.0}$	Nm	113	141	198	280	445	550	690	770	960	1100	1370	1760	1540	NEW
			M_{2max}	Nm	350	435	610	870	1370	1710	1760	1760	1760	1760	1760	1760	1540	
22.9	59.5	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	50	50	37.5	25	12.5	1FT2210-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	107	121	175	235	375	420	590	620	780	790	960	1070	1240	■■■ + ■■■ + . . .
28.4	87.9		$M_{2.0}$	Nm	112	141	198	280	445	550	690	770	960	1100	1360	1760	1540	NEW
			M_{2max}	Nm	350	435	610	870	1370	1710	1760	1760	1760	1760	1760	1760	1540	
22.5	59.5	0.036	n_{2N}	r/min	150	150	125	100	75	75	60	60	50	50	37.5	20	12.5	1FT2210-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	97	116	164	220	340	365	520	550	690	670	850	1200	1150	■■■ + ■■■ + . . .
27.9	87.9		$M_{2.0}$	Nm	110	138	194	275	435	540	680	760	950	1080	1340	1760	1540	NEW
			M_{2max}	Nm	350	435	610	870	1370	1710	1760	1760	1760	1760	1760	1760	1540	
30	72	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	50	50	37.5	30	20	7.5	1FT2210-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	131	146	205	275	420	590	640	790	810	1070	1210	1320	1540	■■■ + ■■■ + . . .
38.1	118		$M_{2.0}$	Nm	152	190	265	380	590	740	930	1040	1290	1470	1760	1760	1540	NEW
			M_{2max}	Nm	465	580	820	1160	1760	1760	1760	1760	1760	1760	1760	1760	1540	

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Planetary gearbox data														
Gearbox type:		TP110, 1-stage				TP110 2-stage								
1. Order code		H61				H62								
i		4	5	7	10	16	20	25	28	35	40	50	70	100
2. Order code		R04	R05	R07	R10	R16	R20	R25	R28	R35	R40	R50	R70	R00
$M_{2N,G}$	Nm	1920	1920	1920	1680	1760	1760	1760	1760	1760	1760	1760	1760	1540
$M_{2max,G}$	Nm	2560	2560	2560	2240	1760	1760	1760	1760	1760	1760	1760	1760	1540
$M_{2Em.Off}$	Nm	3075	3075	3075	3075	2420	3025	3075	3075	3075	3075	3075	3075	3075
$J_{1,G}$	kg cm²	44.5	34.6	25.5	20.6	8.51	8.21	7.82	6.57	6.37	5.63	5.54	5.44	5.4
$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox															Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox TP110 1- and 2-stage (continued)																		
29.7	72	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	50	50	37.5	30	20	7.5	1FT2210-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	129	144	205	270	415	580	640	790	810	1060	1200	1310	1540	■■■ + ■■■ + . . .
37.7	118		$M_{2.0}$	Nm	150	188	260	375	590	730	920	1030	1280	1460	1760	1760	1540	NEW
			M_{2max}	Nm	465	580	820	1160	1760	1760	1760	1760	1760	1760	1760	1760	1540	
29.3	72	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	50	50	37.5	30	20	12.5	1FT2210-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	126	143	200	265	400	570	610	760	770	1030	1160	1270	1190	■■■ + ■■■ + . . .
37.4	118		$M_{2.0}$	Nm	149	186	260	370	580	720	900	1010	1260	1440	1760	1760	1540	NEW
			M_{2max}	Nm	465	580	820	1160	1760	1760	1760	1760	1760	1760	1760	1760	1540	
35	80.7	0.036	n_{2N}	r/min	150	150	125	100	75	60	60	60	50	37.5	30	25	7.5	1FT2210-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	150	177	245	325	495	670	740	760	940	1210	1340	1140	1540	■■■ + ■■■ + . . .
45.9	147		$M_{2.0}$	Nm	182	225	320	455	710	880	1100	1230	1540	1750	1760	1760	1540	NEW
			M_{2max}	Nm	580	730	1020	1460	1760	1760	1760	1760	1760	1760	1760	1760	1540	
36.1	80.7	0.036	n_{2N}	r/min	150	150	125	100	60	60	50	50	37.5	37.5	30	20	6	1FT2210-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	148	162	225	295	570	620	800	820	1090	1090	1210	1310	1530	■■■ + ■■■ + . . .
47.6	147		$M_{2.0}$	Nm	189	235	330	470	730	920	1140	1280	1590	1760	1760	1760	1540	NEW
			M_{2max}	Nm	580	730	1020	1460	1760	1760	1760	1760	1760	1760	1760	1760	1540	

Planetary gearbox data														
Gearbox type:		**TP110, 1-stage**				**TP110 2-stage**								
1. Order code		**H61**				**H62**								
i		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
2. Order code		**R04**	**R05**	**R07**	**R10**	**R16**	**R20**	**R25**	**R28**	**R35**	**R40**	**R50**	**R70**	**R00**
$M_{2N,G}$	Nm	1920	1920	1920	1680	1760	1760	1760	1760	1760	1760	1760	1760	1540
$M_{2max,G}$	Nm	2560	2560	2560	2240	1760	1760	1760	1760	1760	1760	1760	1760	1540
$M_{2Em.Off}$	Nm	3075	3075	3075	3075	2420	3025	3075	3075	3075	3075	3075	3075	3075
$J_{1,G}$	kg cm²	44.5	34.6	25.5	20.6	8.51	8.21	7.82	6.57	6.37	5.63	5.54	5.44	5.4
$\varphi_{2,G}$	'	3				3								

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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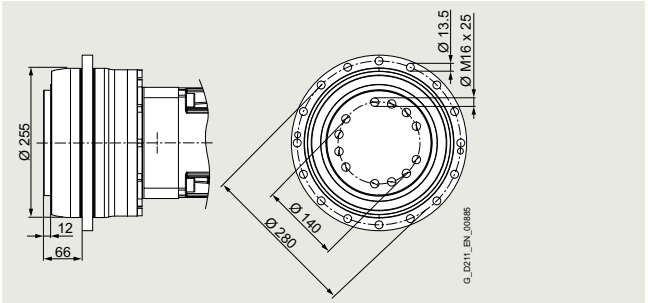
Gearbox type TP300

Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	33000 N
Average axial force for 30000 h	$F_{A,eq}$	29200 N
Maximum axial force	$F_{A,max}$	33000 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data			Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)											
Nm	Nm	kg cm²											
SIMOTICS S-1FT2 High Dynamic with planetary gearbox TP300 1- and 2-stage													
6.96	20.9	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	20	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	132	173	260	370	475	560	■■■ + ■■■ + . . .
8.08	24.4		$M_{2.0}$	Nm	–	–	–	158	200	280	400	540	690	NEW
			M_{2max}	Nm	–	–	–	485	610	850	1210	1640	2050	
9.37	26.4	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	20	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	167	215	325	455	580	630	■■■ + ■■■ + . . .
10.8	31.1		$M_{2.0}$	Nm	–	–	–	210	270	375	540	730	930	NEW
			M_{2max}	Nm	–	–	–	620	770	1080	1540	2050	2800	
12.7	35.9	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	15	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	235	300	445	620	780	1020	■■■ + ■■■ + . . .
14.7	43		$M_{2.0}$	Nm	–	–	–	290	365	510	730	980	1260	NEW
			M_{2max}	Nm	–	–	–	850	1070	1500	2100	2850	2800	
19.3	64.8	0.036	n_{2N}	r/min	150	125	100	60	60	50	37.5	25	15	1FT2108-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	82	120	184	370	465	630	820	950	990	■■■ + ■■■ + . . .
22.5	83.2		$M_{2.0}$	Nm	105	148	215	445	560	780	1110	1510	1920	NEW
			M_{2max}	Nm	410	570	830	1650	2050	2850	3600	3630	2800	
23.6	76.1	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	25	15	1FT2108-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	99	145	220	440	540	730	1090	1090	1120	■■■ + ■■■ + . . .
27.6	101		$M_{2.0}$	Nm	130	183	265	550	690	960	1370	1850	2350	NEW
			M_{2max}	Nm	495	690	1000	1990	2450	3450	3600	3630	2800	
23.3	76.1	0.036	n_{2N}	r/min	125	125	100	60	60	50	37.5	25	12.5	1FT2108-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	111	135	215	410	510	690	870	990	1230	■■■ + ■■■ + . . .
27.4	101		$M_{2.0}$	Nm	128	181	265	540	680	950	1350	1830	2300	NEW
			M_{2max}	Nm	495	690	1000	1990	2450	3450	3600	3630	2800	
29.3	95.9	0.036	n_{2N}	r/min	125	125	100	60	60	50	30	25	12.5	1FT2108-7AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	138	168	265	500	630	820	1190	1130	1380	■■■ + ■■■ + . . .
34.7	135		$M_{2.0}$	Nm	165	230	335	690	860	1210	1710	2300	2800	NEW
			M_{2max}	Nm	660	930	1340	2650	3300	3949	3600	3630	2800	

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Planetary gearbox data										
Gearbox type:		TP300, 1-stage			TP300, 2-stage					
1. Order code		H71			J72					
	i	5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
	$M_{2N,G}$ Nm	4200	3960	2280	3850	3949	3949	3600	3630	2800
	$M_{2max,G}$ Nm	5600	5250	2800	3850	3949	3949	3600	3630	2800
	$M_{2Em.Off}$ Nm	9900	9900	8750	9900	9900	9900	9900	9900	8750
	$J_{1,G}$ kg cm²	82.6	61.2	49.5	27.5	25.9	22.4	21.5	21.3	21.2
	$\varphi_{2,G}$ '	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data			Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)												
Nm	Nm	kg cm²												
SIMOTICS S-1FT2 High Dynamic with planetary gearbox TP300 1- and 2-stage (continued)														
29	95.9	0.036	n_{2N}	r/min	150	125	100	60	60	50	37.5	25	12.5	1FT2108-7AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	113	165	255	490	600	780	970	1070	1320	■■■ + ■■■ + . . .
34.3	135		$M_{2.0}$	Nm	162	225	330	680	850	1190	1690	2250	2800	NEW
			M_{2max}	Nm	660	930	1340	2650	3300	3949	3600	3630	2800	
28.7	95.9	0.036	n_{2N}	r/min	125	125	100	60	60	50	37.5	20	12.5	1FT2108-7AE..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	132	155	250	455	550	710	870	1240	1240	■■■ + ■■■ + . . .
33.9	135		$M_{2.0}$	Nm	161	225	330	670	840	1180	1670	2250	2800	NEW
			M_{2max}	Nm	660	930	1340	2650	3300	3949	3600	3630	2800	
SIMOTICS S-1FT2 Compact with planetary gearbox TP300 1- and 2-stage														
4.34	14.5	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	20	1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	90	119	181	260	335	340	■■■ + ■■■ + . . .
5.1	16.8		$M_{2.0}$	Nm	–	–	–	98	126	177	255	340	430	NEW
			M_{2max}	Nm	–	–	–	330	420	580	830	1130	1450	
4.87	14.5	0.036	n_{2N}	r/min	–	–	–	100	75	50	37.5	30	20	1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	69	114	176	250	320	395	■■■ + ■■■ + . . .
5.7	16.8		$M_{2.0}$	Nm	–	–	–	110	142	199	285	380	485	NEW
			M_{2max}	Nm	–	–	–	330	420	580	830	1130	1450	
4.72	14.5	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	20	1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	84	113	173	245	320	380	■■■ + ■■■ + . . .
5.54	16.8		$M_{2.0}$	Nm	–	–	–	107	137	192	275	370	470	NEW
			M_{2max}	Nm	–	–	–	330	420	580	830	1130	1450	
6.92	21.7	0.036	n_{2N}	r/min	–	–	–	75	60	50	30	25	15	1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	132	182	255	380	485	640	■■■ + ■■■ + . . .
8.04	25.4		$M_{2.0}$	Nm	–	–	–	157	200	280	400	540	690	NEW
			M_{2max}	Nm	–	–	–	500	630	880	1250	1700	2150	
6.83	21.7	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	20	1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	130	170	255	365	470	485	■■■ + ■■■ + . . .
7.92	25.4		$M_{2.0}$	Nm	–	–	–	155	197	275	395	530	680	NEW
			M_{2max}	Nm	–	–	–	500	630	880	1250	1700	2150	
9.14	30.3	0.036	n_{2N}	r/min	–	–	–	60	60	50	37.5	25	15	1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	191	240	340	460	570	640	■■■ + ■■■ + . . .
10.6	35.8		$M_{2.0}$	Nm	–	–	–	205	260	370	520	710	910	NEW
			M_{2max}	Nm	–	–	–	710	890	1250	1770	2350	2800	
9.46	28.7	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	15	1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	182	230	345	490	630	860	■■■ + ■■■ + . . .
10.9	34		$M_{2.0}$	Nm	–	–	–	215	270	380	540	730	940	NEW
			M_{2max}	Nm	–	–	–	670	840	1180	1680	2250	2800	
9.2	28.7	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	15	1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	168	215	325	460	570	740	■■■ + ■■■ + . . .
10.7	34		$M_{2.0}$	Nm	–	–	–	210	265	370	530	710	920	NEW
			M_{2max}	Nm	–	–	–	670	840	1180	1680	2250	2800	

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Planetary gearbox data										
Gearbox type:		TP300, 1-stage			TP300, 2-stage					
1. Order code		H71			J72					
i		5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
$M_{2N,G}$	Nm	4200	3960	2280	3850	3949	3949	3600	3630	2800
$M_{2max,G}$	Nm	5600	5250	2800	3850	3949	3949	3600	3630	2800
$M_{2Em.Off}$	Nm	9900	9900	8750	9900	9900	9900	9900	9900	8750
$J_{1,G}$	kg cm²	82.6	61.2	49.5	27.5	25.9	22.4	21.5	21.3	21.2
$\varphi_{2,G}$	'	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Gearbox type TP300

Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox TP300 1- and 2-stage (continued)													
9.46	28.7	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	15	1FT2208-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	182	230	345	490	630	860	■■■ + ■■■ + . . .
10.9	34		$M_{2.0}$	Nm	–	–	–	215	270	380	540	730	940	NEW
			M_{2max}	Nm	–	–	–	670	840	1180	1680	2250	2800	
9.2	28.7	0.036	n_{2N}	r/min	–	–	–	75	75	50	37.5	30	15	1FT2208-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	168	215	325	460	570	740	■■■ + ■■■ + . . .
10.7	34		$M_{2.0}$	Nm	–	–	–	210	265	370	530	710	920	NEW
			M_{2max}	Nm	–	–	–	670	840	1180	1680	2250	2800	
9.48	30.3	0.036	n_{2N}	r/min	150	150	125	75	75	50	37.5	30	15	1FT2208-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	38	51	76	165	205	315	440	560	780	■■■ + ■■■ + . . .
11	35.8		$M_{2.0}$	Nm	49.5	70	104	215	270	380	540	730	940	NEW
			M_{2max}	Nm	174	245	355	710	890	1250	1770	2350	2800	
13.8	40	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	25	12.5	1FT2208-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	59	88	140	270	350	485	730	760	970	■■■ + ■■■ + . . .
15.9	48.3		$M_{2.0}$	Nm	74	105	155	315	395	550	790	1070	1370	NEW
			M_{2max}	Nm	235	330	480	960	1200	1680	2350	3200	2800	
14.3	40	0.036	n_{2N}	r/min	150	125	125	75	75	50	37.5	30	15	1FT2208-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	61	88	116	250	315	475	660	730	960	■■■ + ■■■ + . . .
16.5	48.3		$M_{2.0}$	Nm	76	108	159	325	410	570	820	1110	1420	NEW
			M_{2max}	Nm	235	330	480	960	1200	1680	2350	3200	2800	
14	40	0.036	n_{2N}	r/min	150	125	125	75	75	50	37.5	30	15	1FT2208-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	61	88	109	230	300	470	650	680	900	■■■ + ■■■ + . . .
16.2	48.3		$M_{2.0}$	Nm	74	105	155	320	400	560	800	1090	1390	NEW
			M_{2max}	Nm	235	330	480	960	1200	1680	2350	3200	2800	
16.7	50.7	0.036	n_{2N}	r/min	125	100	100	50	60	50	30	20	10	1FT2208-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	79	116	146	325	335	455	720	850	1090	■■■ + ■■■ + . . .
19.4	62.8		$M_{2.0}$	Nm	91	129	190	385	480	670	960	1300	1660	NEW
			M_{2max}	Nm	305	430	620	1250	1550	2150	3050	3630	2800	
17.5	50.7	0.036	n_{2N}	r/min	150	125	125	75	75	50	37.5	25	15	1FT2208-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	76	109	134	280	355	550	760	920	990	■■■ + ■■■ + . . .
20.4	62.8		$M_{2.0}$	Nm	96	136	199	405	500	710	1010	1370	1750	NEW
			M_{2max}	Nm	305	430	620	1250	1550	2150	3050	3630	2800	
16.6	50.7	0.036	n_{2N}	r/min	150	150	125	75	75	50	37.5	30	15	1FT2208-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	70	84	132	270	320	490	670	750	990	■■■ + ■■■ + . . .
19.3	62.8		$M_{2.0}$	Nm	89	126	185	380	480	670	950	1290	1650	NEW
			M_{2max}	Nm	305	430	620	1250	1550	2150	3050	3630	2800	
21.2	60.3	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	25	12.5	1FT2210-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	88	129	191	385	475	640	950	980	1220	■■■ + ■■■ + . . .
24.8	76.4		$M_{2.0}$	Nm	116	164	240	490	610	860	1220	1660	2100	NEW
			M_{2max}	Nm	375	520	760	1510	1890	2600	3600	3630	2800	

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Planetary gearbox data										
Gearbox type:		TP300, 1-stage			TP300, 2-stage					
1. Order code		H71			J72					
i		5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
$M_{2N,G}$	Nm	4200	3960	2280	3850	3949	3949	3600	3630	2800
$M_{2max,G}$	Nm	5600	5250	2800	3850	3949	3949	3600	3630	2800
$M_{2Em.Off}$	Nm	9900	9900	8750	9900	9900	9900	9900	9900	8750
$J_{1,G}$	kg cm²	82.6	61.2	49.5	27.5	25.9	22.4	21.5	21.3	21.2
$\varphi_{2,G}$	'	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox TP300 1- and 2-stage (continued)													
16.6	46.5	0.036	n_{2N}	r/min	150	150	125	75	75	50	37.5	25	12.5	**1FT2210-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	75	94	143	275	350	540	740	920	1180	■■■ + ■■■ + . . .
19.2	57		$M_{2.0}$	Nm	89	126	185	380	480	670	950	1290	1650	NEW
			M_{2max}	Nm	275	390	560	1130	1410	1970	2750	3630	2800	
23.7	66.8	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	20	12.5	**1FT2210-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	120	174	255	490	610	750	1170	1360	1380	■■■ + ■■■ + . . .
27.8	86.1		$M_{2.0}$	Nm	133	188	270	550	690	970	1370	1860	2350	NEW
			M_{2max}	Nm	425	590	860	1700	2100	2950	3600	3630	2800	
23.7	66.8	0.036	n_{2N}	r/min	150	125	100	60	60	50	37.5	25	12.5	**1FT2210-3AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	119	173	255	490	600	790	970	1100	1380	■■■ + ■■■ + . . .
27.8	86.1		$M_{2.0}$	Nm	133	188	270	550	690	960	1370	1860	2350	NEW
			M_{2max}	Nm	425	590	860	1700	2100	2950	3600	3630	2800	
23.3	66.8	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	20	12.5	**1FT2210-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	111	156	225	445	540	680	1060	1230	1250	■■■ + ■■■ + . . .
27.2	86.1		$M_{2.0}$	Nm	130	184	265	540	680	950	1350	1820	2300	NEW
			M_{2max}	Nm	425	590	860	1700	2100	2950	3600	3630	2800	
31.4	84.9	0.036	n_{2N}	r/min	150	125	100	60	60	50	–	20	12.5	**1FT2210-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	141	200	315	550	660	810	–	1400	1380	■■■ + ■■■ + . . .
37.2	115		$M_{2.0}$	Nm	181	255	370	740	930	1300	–	2450	2800	NEW
			M_{2max}	Nm	570	800	1150	2250	2800	3949	–	3630	2800	
31.1	84.9	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	20	12.5	**1FT2210-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	139	200	310	540	650	810	1230	1400	1380	■■■ + ■■■ + . . .
36.9	115		$M_{2.0}$	Nm	178	250	365	730	920	1280	1820	2450	2800	NEW
			M_{2max}	Nm	570	800	1150	2250	2800	3949	3600	3630	2800	
30.7	84.9	0.036	n_{2N}	r/min	150	125	100	60	60	50	30	20	12.5	**1FT2210-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	139	199	295	520	620	760	1180	1330	1310	■■■ + ■■■ + . . .
36.5	115		$M_{2.0}$	Nm	177	245	360	720	910	1270	1800	2400	2800	NEW
			M_{2max}	Nm	570	800	1150	2250	2800	3949	3600	3630	2800	
37.7	101	0.036	n_{2N}	r/min	150	125	100	60	60	50	–	20	10	**1FT2210-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	168	240	345	640	780	960	–	1530	1770	■■■ + ■■■ + . . .
45.3	145		$M_{2.0}$	Nm	215	305	445	900	1130	1580	–	3000	2800	NEW
			M_{2max}	Nm	710	1000	1440	2800	3500	3949	–	3630	2800	
38.6	101	0.036	n_{2N}	r/min	125	125	100	60	50	37.5	–	20	10	**1FT2210-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	189	220	350	580	810	1090	–	1390	1680	■■■ + ■■■ + . . .
46.4	145		$M_{2.0}$	Nm	225	320	460	920	1150	1610	–	3050	2800	NEW
			M_{2max}	Nm	710	1000	1440	2800	3500	3949	–	3630	2800	

Planetary gearbox data										
Gearbox type:		**TP300, 1-stage**			**TP300, 2-stage**					
1. Order code		**H71**			**J72**					
i		**5**	**7**	**10**	**20**	**25**	**35**	**50**	**70**	**100**
2. Order code		**R05**	**R07**	**R10**	**R20**	**R25**	**R35**	**R50**	**R70**	**R00**
$M_{2N,G}$	Nm	4200	3960	2280	3850	3949	3949	3600	3630	2800
$M_{2max,G}$	Nm	5600	5250	2800	3850	3949	3949	3600	3630	2800
$M_{2Em.Off}$	Nm	9900	9900	8750	9900	9900	9900	9900	9900	8750
$J_{1,G}$	kg cm²	82.6	61.2	49.5	27.5	25.9	22.4	21.5	21.3	21.2
$\varphi_{2,G}$	'	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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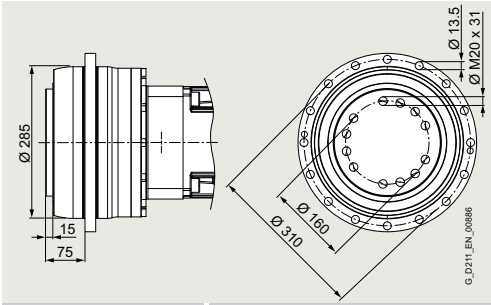
Gearbox type TP500

Selection and ordering data



Permissible output shaft loads		
Average axial force for 20000 h	$F_{A,eq}$	50000 N
Average axial force for 30000 h	$F_{A,eq}$	44300 N
Maximum axial force	$F_{A,max}$	50000 N

Radial loads: Calculation using breakdown torques, see Configuration Manual

Servomotor data			Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)												
Nm	Nm	kg cm²												
SIMOTICS S-1FT2 High Dynamic with planetary gearbox TP500 1- and 2-stage														
6.73	21.1	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	30	15	1FT2106-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	125	163	250	345	440	560	■■■ + ■■■ + . . .
8	24.3		$M_{2.0}$	Nm	–	–	–	156	198	275	395	530	670	NEW
			M_{2max}	Nm	–	–	–	485	600	840	1210	1630	2100	
9.19	26.8	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	30	15	1FT2106-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	162	205	320	430	530	670	■■■ + ■■■ + . . .
10.7	31		$M_{2.0}$	Nm	–	–	–	210	265	370	530	720	910	NEW
			M_{2max}	Nm	–	–	–	610	770	1080	1530	2050	2650	
12.6	36.9	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	30	12.5	1FT2106-6AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	235	295	455	600	720	1030	■■■ + ■■■ + . . .
14.5	42.9		$M_{2.0}$	Nm	–	–	–	285	360	500	720	970	1250	NEW
			M_{2max}	Nm	–	–	–	850	1070	1490	2100	2850	3650	
19.4	68.9	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	20	10	1FT2108-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	310	395	670	790	1140	1340	■■■ + ■■■ + . . .
22.4	82.5		$M_{2.0}$	Nm	–	–	–	445	550	780	1110	1500	1930	NEW
			M_{2max}	Nm	–	–	–	1640	2050	2850	4050	5500	4800	
23.9	82.1	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	30	20	10	1FT2108-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	380	480	780	1080	1320	1520	■■■ + ■■■ + . . .
27.5	99.5		$M_{2.0}$	Nm	–	–	–	540	680	960	1370	1850	2350	NEW
			M_{2max}	Nm	–	–	–	1990	2450	3450	4975	5500	4800	
23.6	82.1	0.036	n_{2N}	r/min	–	–	–	50	50	37.5	37.5	20	10	1FT2108-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	435	540	790	840	1220	1430	■■■ + ■■■ + . . .
27.2	99.5		$M_{2.0}$	Nm	–	–	–	540	680	950	1350	1830	2350	NEW
			M_{2max}	Nm	–	–	–	1990	2450	3450	4975	5500	4800	
29.9	107	0.036	n_{2N}	r/min	–	–	–	50	50	37.5	30	20	10	1FT2108-7AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	540	660	920	1240	1430	1620	■■■ + ■■■ + . . .
34.6	133		$M_{2.0}$	Nm	–	–	–	690	860	1200	1710	2300	2950	NEW
			M_{2max}	Nm	–	–	–	2650	3300	4600	4975	5500	4800	

➥ Continued on the next page

Planetary gearbox data										
Gearbox type:		TP500, 1-stage			TP500, 2-stage					
1. Order code		H81			H82					
	i	5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
	$M_{2N,G}$ Nm	7200	6000	4000	5446	6808	6808	4975	5500	4800
	$M_{2max,G}$ Nm	9600	6790	4000	5446	6808	6808	4975	5500	4800
	$M_{2Em.Off}$ Nm	15000	15000	15000	15000	15000	15000	15000	15000	15000
	$J_{1,G}$ kg cm²	182	142	120	35.9	33.7	27.4	25.4	25	24.8
	$\varphi_{2,G}$ '	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox												Servomotors with planetary gearbox
SIMOTICS S-1FT2 High Dynamic with planetary gearbox TP500 1- and 2-stage (continued)															
29.5	107	0.036	n_{2N}	r/min	–	–	–	50	50	37.5	30	20	10		1FT2108-7AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	520	630	890	1190	1370	1580		■■■ + ■■■ + . . .
34.2	133		$M_{2.0}$	Nm	–	–	–	680	850	1190	1690	2250	2950		NEW
			M_{2max}	Nm	–	–	–	2650	3300	4600	4975	5500	4800		
29.2	107	0.036	n_{2N}	r/min	–	–	–	50	50	37.5	30	20	10		1FT2108-7AE..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	500	600	880	1130	1280	1500		■■■ + ■■■ + . . .
33.8	133		$M_{2.0}$	Nm	–	–	–	670	840	1180	1670	2250	2900		NEW
			M_{2max}	Nm	–	–	–	2650	3300	4600	4975	5500	4800		
SIMOTICS S-1FT2 Compact with planetary gearbox TP500 1- and 2-stage															
9.3	30.9	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	30	12.5		1FT2206-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	161	205	315	420	470	760		■■■ + ■■■ + . . .
10.9	35.7		$M_{2.0}$	Nm	–	–	–	210	270	375	540	720	930		NEW
			M_{2max}	Nm	–	–	–	710	890	1240	1770	2400	3050		
13.7	41.3	0.036	n_{2N}	r/min	–	–	–	50	50	37.5	30	20	10		1FT2206-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	285	355	510	720	890	1080		■■■ + ■■■ + . . .
15.8	48.1		$M_{2.0}$	Nm	–	–	–	310	390	550	780	1060	1360		NEW
			M_{2max}	Nm	–	–	–	960	1200	1670	2350	3200	4100		
14.2	41.3	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	25	12.5		1FT2206-2AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	255	320	490	630	810	980		■■■ + ■■■ + . . .
16.4	48.1		$M_{2.0}$	Nm	–	–	–	325	405	570	810	1100	1410		NEW
			M_{2max}	Nm	–	–	–	960	1200	1670	2350	3200	4100		
13.9	41.3	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	25	12.5		1FT2206-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	245	310	480	630	760	930		■■■ + ■■■ + . . .
16	48.1		$M_{2.0}$	Nm	–	–	–	315	400	550	800	1080	1380		NEW
			M_{2max}	Nm	–	–	–	960	1200	1670	2350	3200	4100		
16.7	53	0.036	n_{2N}	r/min	–	–	–	50	50	37.5	30	20	10		1FT2206-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	295	360	550	730	840	1030		■■■ + ■■■ + . . .
19.2	62.5		$M_{2.0}$	Nm	–	–	–	380	480	670	960	1290	1660		NEW
			M_{2max}	Nm	–	–	–	1240	1550	2150	3050	4150	4800		
17.5	53	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	20	10		1FT2206-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	305	380	590	740	1090	1330		■■■ + ■■■ + . . .
20.2	62.5		$M_{2.0}$	Nm	–	–	–	400	500	700	1000	1360	1750		NEW
			M_{2max}	Nm	–	–	–	1240	1550	2150	3050	4150	4800		
16.6	53	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	25	10		1FT2206-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	275	335	520	640	870	1330		■■■ + ■■■ + . . .
19.2	62.5		$M_{2.0}$	Nm	–	–	–	380	475	660	950	1290	1650		NEW
			M_{2max}	Nm	–	–	–	1240	1550	2150	3050	4150	4800		
21.4	63.7	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	30	20	10		1FT2206-4AH..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	335	420	680	940	1190	1400		■■■ + ■■■ + . . .
24.6	76		$M_{2.0}$	Nm	–	–	–	490	610	860	1220	1660	2100		NEW
			M_{2max}	Nm	–	–	–	1510	1890	2600	3700	5000	4800		

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Planetary gearbox data										
Gearbox type:		TP500, 1-stage			TP500, 2-stage					
1. Order code		H81			H82					
i		5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
$M_{2N,G}$	Nm	7200	6000	4000	5446	6808	6808	4975	5500	4800
$M_{2max,G}$	Nm	9600	6790	4000	5446	6808	6808	4975	5500	4800
$M_{2Em.Off}$	Nm	15000	15000	15000	15000	15000	15000	15000	15000	15000
$J_{1,G}$	kg cm²	182	142	120	35.9	33.7	27.4	25.4	25	24.8
$\varphi_{2,G}$	'	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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SIMOTICS S-1FK2 and S-1FT2 servo planetary geared motors

Precision geared motors for servo converters with line connection 400 V 3 AC

Gearbox type TP500

Servomotor data			Selection data servomotors with planetary gearbox											Servomotors with planetary gearbox
$M_{0,M}$	$M_{max,M}$	J_M ($J_{M,Br}$)												
Nm	Nm	kg cm²												
SIMOTICS S-1FT2 Compact with planetary gearbox TP500 1- and 2-stage (continued)														
21.4	63.7	0.036	n_{2N}	r/min	–	–	–	60	60	37.5	37.5	20	10	1FT2208-2AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	–	–	–	335	410	680	770	1180	1410	■■■ + ■■■ + . . .
24.7	76		$M_{2.0}$	Nm	–	–	–	490	610	860	1230	1660	2100	NEW
			M_{2max}	Nm	–	–	–	1510	1890	2600	3700	5000	4800	
16.8	48.3	0.036	n_{2N}	r/min	125	100	100	60	60	37.5	37.5	25	10	1FT2208-3AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	65	102	125	290	360	560	700	930	1390	■■■ + ■■■ + . . .
19.7	57.6		$M_{2.0}$	Nm	94	136	196	385	485	670	960	1310	1680	NEW
			M_{2max}	Nm	280	400	570	1130	1410	1970	2800	3750	4800	
16.6	48.3	0.036	n_{2N}	r/min	125	100	75	60	60	37.5	37.5	25	10	1FT2208-3AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	67	104	160	295	365	560	720	860	1350	■■■ + ■■■ + . . .
19.4	57.6		$M_{2.0}$	Nm	92	134	193	380	475	660	950	1280	1650	NEW
			M_{2max}	Nm	280	400	570	1130	1410	1970	2800	3750	4800	
23.9	71.1	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	1FT2208-3AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	127	175	265	520	640	910	1220	1410	1630	■■■ + ■■■ + . . .
27.9	86.9		$M_{2.0}$	Nm	135	193	275	550	690	960	1370	1860	2350	NEW
			M_{2max}	Nm	425	600	860	1700	2100	2950	4150	5500	4800	
23.9	71.1	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	1FT2208-4AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	127	174	260	510	640	900	1210	1400	1620	■■■ + ■■■ + . . .
27.9	86.9		$M_{2.0}$	Nm	134	193	275	550	690	960	1370	1860	2350	NEW
			M_{2max}	Nm	425	600	860	1700	2100	2950	4150	5500	4800	
23.5	71.1	0.036	n_{2N}	r/min	125	100	75	50	50	37.5	30	20	10	1FT2208-4AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	97	157	230	460	560	780	1070	1270	1530	■■■ + ■■■ + . . .
27.4	86.9		$M_{2.0}$	Nm	132	190	270	540	670	940	1340	1820	2350	NEW
			M_{2max}	Nm	425	600	860	1700	2100	2950	4150	5500	4800	
32	92.8	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	1FT2208-4AF..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	164	210	330	610	730	1050	1310	1470	1700	■■■ + ■■■ + . . .
37.6	116		$M_{2.0}$	Nm	183	260	375	740	920	1290	1840	2450	3200	NEW
			M_{2max}	Nm	570	810	1160	2250	2800	3950	4975	5500	4800	
31.7	92.8	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	1FT2208-5AB..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	161	210	325	600	720	1040	1300	1460	1680	■■■ + ■■■ + . . .
37.2	116		$M_{2.0}$	Nm	181	255	370	730	910	1280	1820	2450	3150	NEW
			M_{2max}	Nm	570	810	1160	2250	2800	3950	4975	5500	4800	
31.4	92.8	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	1FT2208-5AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	151	205	305	590	700	1010	1240	1390	1640	■■■ + ■■■ + . . .
36.8	116		$M_{2.0}$	Nm	179	255	365	720	900	1260	1800	2400	3100	NEW
			M_{2max}	Nm	570	810	1160	2250	2800	3950	4975	5500	4800	
38.8	113	0.036	n_{2N}	r/min	125	100	75	50	50	37.5	30	20	10	1FT2210-2AC..-0..0-Z
...	...	(0.04)	M_{2N}	Nm	147	245	360	700	850	1180	1500	1640	1810	■■■ + ■■■ + . . .
46.1	146		$M_{2.0}$	Nm	225	320	460	900	1120	1570	2200	3000	3850	NEW
			M_{2max}	Nm	720	1010	1450	2800	3500	4900	4975	5500	4800	

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Planetary gearbox data										
Gearbox type:		TP500, 1-stage			TP500, 2-stage					
1. Order code		H81			H82					
i		5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
$M_{2N,G}$	Nm	7200	6000	4000	5446	6808	6808	4975	5500	4800
$M_{2max,G}$	Nm	9600	6790	4000	5446	6808	6808	4975	5500	4800
$M_{2Em.Off}$	Nm	15000	15000	15000	15000	15000	15000	15000	15000	15000
$J_{1,G}$	kg cm²	182	142	120	35.9	33.7	27.4	25.4	25	24.8
$\varphi_{2,G}$	'	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	The motor and gearbox combination is fatigue-proof
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	Check acceleration and inertias, perform service life calculation if necessary
	$M_{max,M} \times i > M_{2max,G}$	The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary

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Servomotor data $M_{0,M}$ Nm	$M_{max,M}$ Nm	J_M ($J_{M,Br}$) kg cm²	Selection data servomotors with planetary gearbox										Servomotors with planetary gearbox
SIMOTICS S-1FT2 Compact with planetary gearbox TP500 1- and 2-stage (continued)													
16.6	48.3	0.036	n_{2N}	r/min	125	100	75	60	60	37.5	37.5	25	10	**1FT2210-2AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	67	104	160	295	365	560	720	860	1350	■■■ + ■■■ + . . .
19.4	57.6		$M_{2.0}$	Nm	92	134	193	380	475	660	950	1280	1650	NEW
			M_{2max}	Nm	280	400	570	1130	1410	1970	2800	3750	4800	
23.9	71.1	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	**1FT2210-3AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	127	175	265	520	640	910	1220	1410	1630	■■■ + ■■■ + . . .
27.9	86.9		$M_{2.0}$	Nm	135	193	275	550	690	960	1370	1860	2350	NEW
			M_{2max}	Nm	425	600	860	1700	2100	2950	4150	5500	4800	
23.9	71.1	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	**1FT2210-3AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	127	174	260	510	640	900	1210	1400	1620	■■■ + ■■■ + . . .
27.9	86.9		$M_{2.0}$	Nm	134	193	275	550	690	960	1370	1860	2350	NEW
			M_{2max}	Nm	425	600	860	1700	2100	2950	4150	5500	4800	
23.5	71.1	0.036	n_{2N}	r/min	125	100	75	50	50	37.5	30	20	10	**1FT2210-3AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	97	157	230	460	560	780	1070	1270	1530	■■■ + ■■■ + . . .
27.4	86.9		$M_{2.0}$	Nm	132	190	270	540	670	940	1340	1820	2350	NEW
			M_{2max}	Nm	425	600	860	1700	2100	2950	4150	5500	4800	
32	92.8	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	**1FT2210-4AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	164	210	330	610	730	1050	1310	1470	1700	■■■ + ■■■ + . . .
37.6	116		$M_{2.0}$	Nm	183	260	375	740	920	1290	1840	2450	3200	NEW
			M_{2max}	Nm	570	810	1160	2250	2800	3950	4975	5500	4800	
31.7	92.8	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	**1FT2210-4AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	161	210	325	600	720	1040	1300	1460	1680	■■■ + ■■■ + . . .
37.2	116		$M_{2.0}$	Nm	181	255	370	730	910	1280	1820	2450	3150	NEW
			M_{2max}	Nm	570	810	1160	2250	2800	3950	4975	5500	4800	
31.4	92.8	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	20	10	**1FT2210-4AF..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	151	205	305	590	700	1010	1240	1390	1640	■■■ + ■■■ + . . .
36.8	116		$M_{2.0}$	Nm	179	255	365	720	900	1260	1800	2400	3100	NEW
			M_{2max}	Nm	570	810	1160	2250	2800	3950	4975	5500	4800	
38.8	113	0.036	n_{2N}	r/min	125	100	75	50	50	37.5	30	20	10	**1FT2210-5AB..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	147	245	360	700	850	1180	1500	1640	1810	■■■ + ■■■ + . . .
46.1	146		$M_{2.0}$	Nm	225	320	460	900	1120	1570	2200	3000	3850	NEW
			M_{2max}	Nm	720	1010	1450	2800	3500	4900	4975	5500	4800	
39.7	113	0.036	n_{2N}	r/min	100	100	75	50	50	37.5	30	15	10	**1FT2210-5AC..-0..0-Z**
...	...	(0.04)	M_{2N}	Nm	192	235	380	650	770	1100	1330	1980	1710	■■■ + ■■■ + . . .
47	146		$M_{2.0}$	Nm	230	325	465	920	1150	1610	2250	3100	3950	NEW
			M_{2max}	Nm	720	1010	1450	2800	3500	4900	4975	5500	4800	

Planetary gearbox data										
Gearbox type:		TP500, 1-stage			TP500, 2-stage					
1. Order code		H81			H82					
i		5	7	10	20	25	35	50	70	100
2. Order code		R05	R07	R10	R20	R25	R35	R50	R70	R00
$M_{2N,G}$	Nm	7200	6000	4000	5446	6808	6808	4975	5500	4800
$M_{2max,G}$	Nm	9600	6790	4000	5446	6808	6808	4975	5500	4800
$M_{2Em.Off}$	Nm	15000	15000	15000	15000	15000	15000	15000	15000	15000
$J_{1,G}$	kg cm²	182	142	120	35.9	33.7	27.4	25.4	25	24.8
$\varphi_{2,G}$	'	3			3					

Color legend:		
	$M_{max,M} \times i < M_{2N,G}$	**The motor and gearbox combination is fatigue-proof**
	$M_{2N,G} < M_{max,M} \times i < M_{2max,G}$	**Check acceleration and inertias, perform service life calculation if necessary**
	$M_{max,M} \times i > M_{2max,G}$	**The motor can destroy the gearbox, Check acceleration and inertias, perform service life calculation if necessary**

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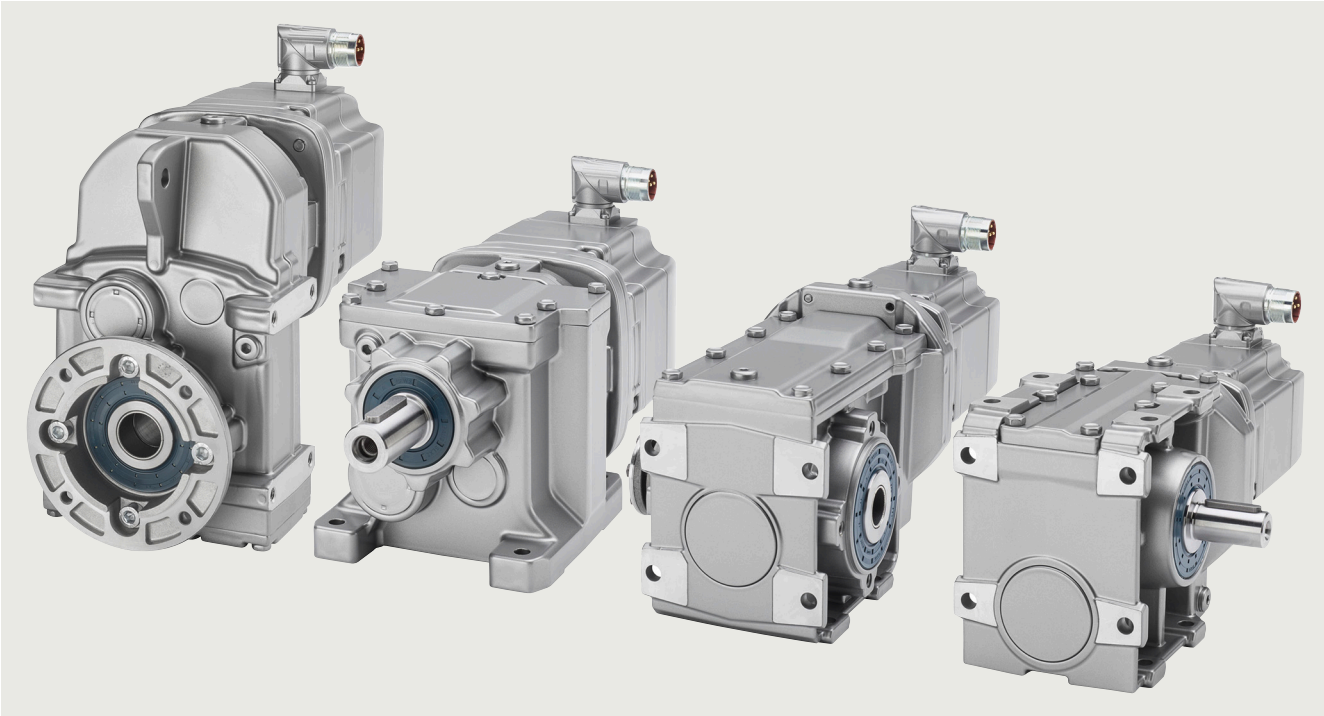
Overview



SIMOTICS S-1FG1 - the new generation of servo geared motors from Siemens

SIMOTICS S-1FG1 servo geared motors are available as servo helical, servo parallel shaft, servo bevel and servo helical worm geared motors and are delivered as a completely assembled unit and with oil-filled gearbox. A wide range of mechanical mounting methods can be implemented with the numerous options. SIMOTICS S-1FG1 servo geared motors are designed for operation without external cooling and the heat is dissipated through the motor surface and the gearbox mounting surface.

SIMOTICS S-1FG1 servo geared motors can be combined with the SINAMICS S120 drive system to create a powerful system with high functionality.

The **Catalog D 41** www.siemens.com/d41 presents a comprehensive overview of the portfolio of SIMOTICS S-1FG1 servo geared motors and is designed to help users make a preliminary selection of products to meet the requirements of a particular drive application. The information in the catalog relating to specific motors and gearboxes is intended as a guide so that the correct servo geared motor can be identified on the basis of a known application.

We recommend use of the "SIZER for Siemens Drives" (integrated into TIA Selection Tool) engineering tool so that SIMOTICS S-1FG1 servo geared motors can be accurately configured. This tool takes load duty cycles into account and performs a thermal and mechanical analysis of the gearbox.

Operation of SIMOTICS S-1FG1 servo geared motors on SINAMICS S210 (6SL5...) servo converters (from FW 6.4 HF2)

The following configuration options apply to the SIMOTICS S-1FG1 servo geared motors in combination with the SINAMICS S210 (6SL5...) servo converters (from FW 6.4 HF2):

- Motors: SIMOTICS S-1FG1 servo geared motors with a maximum standstill current I_0 of up to 15 A are supported.
- Brakes:

Permanent magnet brakes with a rated current I_N of up to 1 A are permitted.

The order codes **N23** and **N24** are configurable with one limitation: For motors with shaft height 100 a holding brake with increased braking torque (order code **N24**) is not possible.

Spring-applied brakes (order codes **N30** to **N34**) are generally not configurable.

Encoders: Only AM20DQI and AS20DQI DRIVE-CLiQ encoders can be used. These are marked by the letter **R** or **Q** in the 9th position of the article number.

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Detailed technical information on the SINAMICS S210 servo drive system is available on the internet at: www.siemens.com/sinamics-s210/documentation

In addition, the Siemens Product Configurator can be used on the internet at the following address: www.siemens.com/sinamics-s210/configuration

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MOTION-CONNECT connection systems

Overview

MOTION-CONNECT cables are suitable for use with many different types of machine tools and production machinery.

The following variants of MOTION-CONNECT cable are available as fully-assembled power and signal cables or sold by the meter:

- **MOTION-CONNECT 500**
  - Cost-effective solution for predominantly fixed installation
  - Suitable for low mechanical loading
  - Tested for traversing paths up to 5 m (16.4 ft)
- **MOTION-CONNECT 800PLUS**
  - Meets requirements for use in cable carriers
  - Suitable for high mechanical loading
  - Oil resistance
  - Tested for traversing paths of up to 50 m (164 ft)
- **MOTION-CONNECT 400 (only for SIMOTICS S-1FS2 motors)**
  - Extremely chemically resistant FEP jacket (especially against common cleaning agents and disinfectants used in the F&B industry)
  - With integrated pressure compensation tube
  - Not suitable for repeated bending stress!

Benefits

Pre-assembled MOTION-CONNECT cables provide high quality and impeccable system-tested functionality.

SPEED-CONNECT

Connectors with SPEED-CONNECT quick-release locks enable fast, stable and reliable connection. All that is required to attain stable interlocking and a secure connection is less than a quarter turn of the lock nut of the connector. Tools are not required.

Cables with SPEED-CONNECT connectors supplement the previous offering of MOTION-CONNECT cables with full-thread connectors.

Application

MOTION-CONNECT cables are designed for machinery use. They are not suitable for building technology applications or outdoor installation.

MOTION-CONNECT cables have been tested in a cable carrier with horizontal traversing path and have also been designed for this type of application. They are not self-supporting.

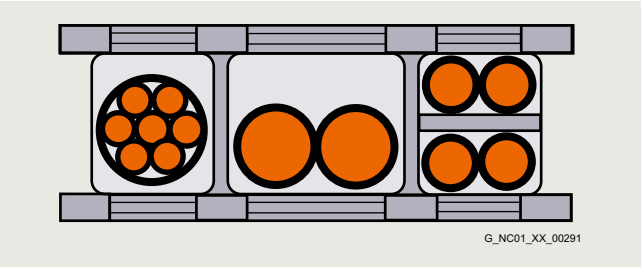
The pre-assembled cables can be ordered in length units of 10 cm (3.94 in) and can be extended, if necessary.

When cable lengths (basic cables and extensions) are determined for the systems and applications described in this catalog, the technically permissible maximum cable lengths (e.g. 25 m (82 ft)) specified in the catalog must be observed. Malfunctions can occur if longer cables are used. Siemens assumes no liability for correct transmission of signals or power in this case.

Connector on motor with external thread	Connector with cap nut on cable	Compatibility
SPEED-CONNECT	SPEED-CONNECT	✓
SPEED-CONNECT [1)]	Full-thread	✓
Full-thread	Full-thread	✓
Full-thread	SPEED-CONNECT	–

Function

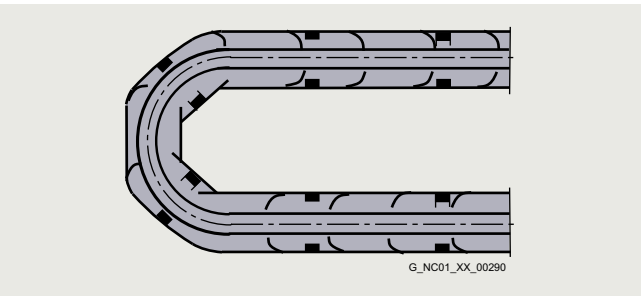
The cables must be removed from the drum without twisting, i.e., the cables must be unwound and must never be lifted over the drum flange in loops.



To maximize the service life of the cable carrier and cables, cables in the carrier made from different materials must be separated by spacers in the cable carrier. The spacers must be filled evenly to ensure that the position of the cables does not change during operation. The cables should be distributed as symmetrically as possible according to their weights and dimensions. Cables with very different outer diameters should also be separated by spacers.

When inserting pre-assembled cables into the cable carrier, do not pull at the connector, as this may damage the strain relief or cable clamping.

The cables must not be fixed in the cable carrier. They must be freely movable.



The cables must be able to be moved without applying force in particular in the bending radii of the carrier. The specified minimum bending radius must be adhered to.

[1)] If shocks and vibration can occur, an additional O-ring is recommended to prevent the connection from coming loose.

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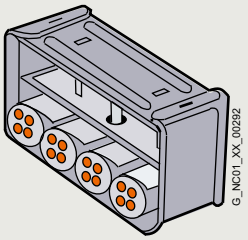
Function

The cable fixings must be attached at both ends at an appropriate distance away from the end points of the moving parts in a dead zone.



MOTION-CONNECT cables are tested in a cable carrier. The cables are attached at one end by means of strain relief to the moving ends of the cable carrier. Strain relief is applied over a wide area of the cable jacket surface without crimping the cable.

Cables must be installed in accordance with the instructions supplied by the cable carrier manufacturer.

Note:

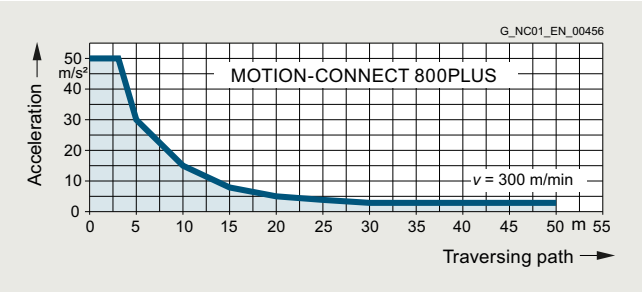
If, for example, pre-assembled cables are installed in a cable carrier in such a way that the connector would inhibit assembly, pre-assembled cables without assembled connector can also be supplied (power and signal cables [1]). Depending on the version, the contacts of the cables are crimped and the connector is supplied separately. After installing the cables, the customer assembles the connector.

In case of vibration load and with horizontal or vertical cable entries, we recommend that the cable is additionally fixed if between the cable strain relief on the cable carrier and the terminal at the motor part of the cable is hanging loose or is not routed. To prevent machine vibrations being transmitted to the connectors, the cable should be fixed at the moving part where the motor is mounted.

Characteristic curves

Characteristic curve for MOTION-CONNECT 800PLUS

The blue area beneath the characteristic curve represents the potential range of use for the cables. The characteristic curve represents the tested operating points.



Permissible acceleration for MOTION-CONNECT 800PLUS signal and power cables up to 16 mm^2

4

[1] Not for DRIVE-CLiQ signal cables.

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More information

Current carrying capacity for power and signal cables

The current carrying capacity of PVC/PUR-insulated copper cables is specified in the table for installation types B1, B2, C, and E under continuous operating conditions with reference to an ambient air temperature of 40 °C (104 °F). For other ambient temperatures, the values must be corrected by the derating factors from the table.

Cross-section	Current carrying capacity rms AC 50/60 Hz or DC in amps for installation type			
	B1 Single-core cables in conduits or installation ducts	B2 Multi-core cables in conduits or installation ducts	C Multi-core cables, vertically or horizontally on walls/open, without conduits and installation ducts/ with contact	E Multi-core cables, horizontally or vertically on perforated cable racks/open, without conduits and installation ducts/ with contact
mm^2				
Electronics [1]				
0.2	–	4.3	4.4	4.4
0.5	–	7.5	7.5	7.8
0.75	–	9	9.5	10
Power [2]				
0.38	6.2	6.1	7.1	7.4
0.75	8.6	8.5	9.8	10.4
1	10.3	10.1	11.7	12.4
1.5	13.5	13.1	15.2	16.1
2.5	18.3	17.4	21	22
4	24	23	28	30
6	31	30	36	37
10	44	40	50	52
16	59	54	66	70

Derating factors for PVC/PUR-insulated power and signal cables

Ambient air temperature °C (°F)	Derating factor acc. to EN 60204-1, Table D.1
30 (86)	1.15
35 (95)	1.08
40 (104)	1
45 (113)	0.91
50 (122)	0.82
55 (131)	0.71
60 (140)	0.58

Note:

Derating for MOTION-CONNECT 400 analog acc. to EN 60204-1.

[1] One control circuit pair.

[2] One symmetrically loaded three-phase AC cable.

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Overview

Motor and converter are simply connected to one another by one cable instead of the usual two or three cables. With this One Cable Technology, energy supply, encoder signals and braking signal are brought together in a single cable.

This results in the following advantages:

- Time-saving by laying only one cable
- Smaller installation space and space requirement in cable collars
- Only one cable has to be cleaned. This is advantageous, e.g. in the pharmaceutical industry and where higher requirements are placed upon hygiene
- Can be ordered to the decimeter
- Compact connection system
- Rotatable connectors on the motor side
- Motor with very low interfering contour for restricted installation space
- Bending radius optimized to 2.5 × cable diameter static or 4 × cable diameter dynamic for MOTION-CONNECT 800PLUS

Technical specifications

MOTION-CONNECT 500	6FX5002-8QN04-1...	6FX5002-8QN08-1...	6FX5002-8QN11-1...	6FX5002-8QN21-1...
Cable jacket material	PVC	PVC	PVC	PVC
Connector • Converter side • Motor side	 Siemens IX M12 (SPEED-CONNECT)	 Siemens IX M17 (SPEED-CONNECT)	 Siemens IX M23 (SPEED-CONNECT)	 Siemens IX M23 (SPEED-CONNECT)
Number of cores	10	10	10	10
Cross-section	0.38 mm^2	0.84 mm^2	1.5 mm^2	2.5 mm^2
Cable length, max.	50 m (164 ft)	50 m (164 ft)	50 m (164 ft)	50 m (164 ft)
Cable structure	4G0.38+1Q0.2+1P0.38	4G0.75+1Q0.2+1P0.5	4G1.5+1Q0.2+1P1.5	4G2.5+1Q0.2+1P1.5
Max. number of bends	100000	100000	100000	100000
Number of disconnection points, max.	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)
Degree of protection • Converter side • Motor side	 IP20 IP67	 IP20 IP67	 IP20 IP67	 IP20 IP67
Certificates of suitability	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA
Suitable for SIMOTICS S-1FK2/ S-1FT2/S-1FS2 servomotors	1F.2102, 1F.2.03-.AG	1F.2.03-.AH, 1F.2.03-.AK, 1F.2.04, 1F.2.05	1F.2.06, 1F.2.08, 1F.2210	1F.2.06, 1F.2.08, 1F.2210

MOTION-CONNECT 800PLUS	6FX8002-8QN04-1...	6FX8002-8QN08-1...	6FX8002-8QN11-1...	6FX8002-8QN21-1...
Cable jacket material	PUR	PUR	PUR	PUR
Connector • Converter side • Motor side	 Siemens IX M12 (SPEED-CONNECT)	 Siemens IX M17 (SPEED-CONNECT)	 Siemens IX M23 (SPEED-CONNECT)	 Siemens IX M23 (SPEED-CONNECT)
Number of cores	10	10	10	10
Cross-section	0.38 mm^2	0.84 mm^2	1.5 mm^2	2.5 mm^2
Cable length, max.	50 m (164 ft)	50 m (164 ft)	50 m (164 ft)	50 m (164 ft)
Cable structure	4G0.38+1Q0.2+1P0.38	4G0.75+1Q0.2+1P0.5	4G1.5+1Q0.2+1P1.5	4G2.5+1Q0.2+1P1.5
Max. number of bends	10 million	10 million	10 million	10 million
Number of disconnection points, max.	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)
Degree of protection • Converter side • Motor side	 IP20 IP67	 IP20 IP67	 IP20 IP67	 IP20 IP67
Certificates of suitability	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA
Suitable for SIMOTICS S-1FK2/ S-1FT2/S-1FS2 servomotors	1F.2102, 1F.2.03	1F.2.04, 1F.2.05	1F.2.06, 1F.2.08, 1F.2210	1F.2.06, 1F.2.08, 1F.2210

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One Cable Connection (OCC) technology for SINAMICS S210

Technical specifications

MOTION-CONNECT 400	6FX4002-8QN08-1...	6FX4002-8QN11-1...
Cable jacket material	FEP	FEP
Connector • Converter side • Motor side	 Siemens IX M17 (SPEED-CONNECT)	 Siemens IX M23 (SPEED-CONNECT)
Number of cores	10	10
Cross-section	0.84 mm^2	1.5 mm^2
Cable length, max.	50 m (164 ft)	50 m (164 ft)
Cable structure	4x0.75+4x0.34+2x0.5C C	4x1.5+4x0.34+2x0.5C C
Max. number of bends	Not suitable for bending loads	Not suitable for bending loads
Number of disconnection points, max.	3 in 50 m (3 in 164 ft)	3 in 50 m (3 in 164 ft)
Degree of protection • Converter side • Motor side	 IP20 IP67	 IP20 IP67
Certificates of suitability	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA
Suitable for SIMOTICS S-1FS2 servomotors	1FS2104, 1FS2105	1FS2106, 1FS2208

Selection and ordering data

4

Motor connection cable

Version	Description	Connector size	Cross-section mm^2	D_{max} mm (in)	r_{static} mm (in)	$r_{dynamic}$ mm (in)	For motor (Possible for 1FS2 with Q1x)	Article No. (Length code see table)
	Pre-assembled OCC motor connection cable MOTION-CONNECT 500 for predominantly fixed routing with SPEED-CONNECT connector on the motor side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	M12	0.38	9.7 (0.38)	23.5 (0.93)	195 (7.68)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX5002-8QN04-1■■■**
		M17	0.84	10.5 (0.41)	25.5 (1.00)	195 (7.68)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX5002-8QN08-1■■■**
		M23	1.5	12.7 (0.50)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX5002-8QN11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX5002-8QN21-1■■■**
	Pre-assembled OCC motor connection cable MOTION-CONNECT 800PLUS for use with cable carriers with SPEED-CONNECT connector on the motor side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	M12	0.38	9.7 (0.38)	28.2 (1.11)	38 (1.50)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX8002-8QN04-1■■■**
		M17	0.84	10.5 (0.41)	30.6 (1.20)	38 (1.50)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX8002-8QN08-1■■■**
		M23	1.5	12.7 (0.50)	36.9 (1.45)	92.2 (3.63)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX8002-8QN11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	39.9 (1.57)	99.7 (3.93)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX8002-8QN21-1■■■**
	Pre-assembled OCC motor connection cable MOTION-CONNECT 400 for fixed routing with SPEED-CONNECT connector on the motor side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	M17	0.84	10.1 (0.40)	97 (3.82)	–	1FS2104, 1FS2105	**6FX4002-8QN08-1■■■**
		M23	1.5	11.8 (0.46)	114 (4.49)	–	1FS2106, 1FS2208	**6FX4002-8QN11-1■■■**

[1] For increased requirement regarding routing type and ambient temperature.

See tables on page 4/4.

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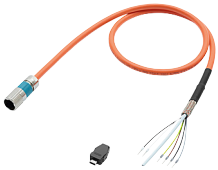
Selection and ordering data

Version	Description	Connector size	Cross-section mm²	D_{max} mm (in)	r_{static} mm (in)	$r_{dynamic}$ mm (in)	For motor (Possible for 1FS2 with Q1x)	Article No. (Length code see table)
	**Partially assembled OCC motor connection cable MOTION-CONNECT 500 for predominantly fixed routing** With SPEED-CONNECT connector on the motor side and Siemens IX signal connector for the converter side enclosed separately (shield clamp included in the scope of delivery)	M12	0.38	9.7 (0.38)	23.5 (0.93)	195 (7.68)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX5012-8QN04-1■■■**
		M17	0.84	10.5 (0.41)	25.5 (1.00)	195 (7.68)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX5012-8QN08-1■■■**
		M23	1.5	12.7 (0.50)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX5012-8QN11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX5012-8QN21-1■■■**
	OCC motor connection cable MOTION-CONNECT 800PLUS for use with cable carriers With SPEED-CONNECT connector on the motor side and Siemens IX signal connector for the converter side enclosed separately (shield clamp included in the scope of delivery)	M12	0.38	9.7 (0.38)	28.2 (1.11)	38 (1.50)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX8012-8QN04-1■■■**
		M17	0.84	10.5 (0.41)	30.6 (1.20)	38 (1.50)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX8012-8QN08-1■■■**
		M23	1.5	12.7 (0.50)	36.9 (1.45)	92.2 (3.63)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX8012-8QN11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	39.9 (1.57)	99.7 (3.93)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX8012-8QN21-1■■■**
	OCC motor connection cable MOTION-CONNECT 400 for fixed routing With SPEED-CONNECT connector on the motor side and Siemens IX signal connector for the converter side enclosed separately (shield clamp included in the scope of delivery)	M17	0.84	10.1 (0.40)	97 (3.82)	–	1FS2104, 1FS2105	**6FX4012-8QN08-1■■■**
		M23	1.5	11.8 (0.46)	114 (4.49)	–	1FS2106, 1FS2208	**6FX4012-8QN11-1■■■**

[1] For increased requirement regarding routing type and ambient temperature.
See tables on page 4/4.

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Selection and ordering data

Extension cable

Version	Description	Connector size	Cross-section mm²	D_{max} mm (in)	r_{static} mm (in)	$r_{dynamic}$ mm (in)	For motor (Possible for 1FS2 with Q1x)	Article No. (Length code see table)
	Pre-assembled OCC extension cable MOTION-CONNECT 500 for predominantly fixed routing with SPEED-CONNECT connectors	M12	0.38	9.7 (0.38)	23.5 (0.93)	195 (7.68)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX5002-8QE04-1■■■**
		M17	0.84	10.5 (0.41)	25.5 (1.00)	195 (7.68)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX5002-8QE08-1■■■**
		M23	1.5	12.7 (0.50)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX5002-8QE11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX5002-8QE21-1■■■**
	Pre-assembled OCC extension cable MOTION-CONNECT 800PLUS for use with cable carriers with SPEED-CONNECT connectors	M12	0.38	9.7 (0.38)	28.2 (1.11)	38 (1.50)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX8002-8QE04-1■■■**
		M17	0.84	10.5 (0.41)	30.6 (1.20)	38 (1.50)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX8002-8QE08-1■■■**
		M23	1.5	12.7 (0.50)	36.9 (1.45)	92.2 (3.63)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX8002-8QE11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	39.9 (1.57)	99.7 (3.93)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX8002-8QE21-1■■■**
	Partially assembled OCC extension cable MOTION-CONNECT 500 for predominantly fixed routing with SPEED-CONNECT connectors (male contacts inserted on the converter side, insulator and connector housing enclosed separately) [2]	M12	0.38	9.7 (0.38)	23.5 (0.93)	195 (7.68)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX5012-8QE04-1■■■**
		M17	0.84	10.5 (0.41)	25.5 (1.00)	195 (7.68)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX5012-8QE08-1■■■**
		M23	1.5	12.7 (0.50)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX5012-8QE11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	30.7 (1.21)	195 (7.68)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX5012-8QE21-1■■■**
	Partially assembled OCC extension cable MOTION-CONNECT 800PLUS for use with cable carriers with SPEED-CONNECT connectors (male contacts inserted on the converter side, insulator and connector housing enclosed separately) [2]	M12	0.38	9.7 (0.38)	28.2 (1.11)	38 (1.50)	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX8012-8QE04-1■■■**
		M17	0.84	10.5 (0.41)	30.6 (1.20)	38 (1.50)	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX8012-8QE08-1■■■**
		M23	1.5	12.7 (0.50)	36.9 (1.45)	92.2 (3.63)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX8012-8QE11-1■■■**
		M23	2.5 [1]	13.7 (0.54)	39.9 (1.57)	99.7 (3.93)	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX8012-8QE21-1■■■**

[1] For increased requirement regarding routing type and ambient temperature. See tables on page 4/4.

[2] For the extension cable, special tools for assembling are required. For more information, refer to the installation instructions.

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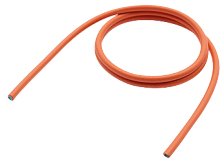
Selection and ordering data

Accessories

OCC components for customer assembly

Version	Description	Cross-section mm^2	For motor (Possible for 1FS2 with Q1x)	Article No. (Length code see table)
	**Sold by the meter, OCC cable MOTION-CONNECT 500** For the self assembly of motor connection or extension cables MOTION-CONNECT 500 for predominantly fixed routing (see table for length codes)	0.38	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX5008-1BE04-■■A0**
		0.84	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX5008-1BE08-■■A0**
		1.5	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX5008-1BE11-■■A0**
		2.5 [1]	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX5008-1BE21-■■A0**
	Sold by the meter, OCC cable MOTION-CONNECT 800PLUS For the self assembly of motor connection or extension cables MOTION-CONNECT 800PLUS for use with cable carriers (see table for length codes)	0.38	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX8008-1BE04-■■A0**
		0.84	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX8008-1BE08-■■A0**
		1.5	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX8008-1BE11-■■A0**
		2.5 [1]	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210	**6FX8008-1BE21-■■A0**
	Sold by the meter, OCC cable MOTION-CONNECT 400 For the self assembly of motor connection or extension cables MOTION-CONNECT 400 for fixed routing (see table for length codes)	0.84	1FS2104, 1FS2105	**6FX4008-1BE08-■■A0**
		1.5	1FS2106, 1FS2208	**6FX4008-1BE11-■■A0**
	Motor-side M12 SPEED-CONNECT connector 10-pole, including all socket contacts	0.38	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX2003-0LU64**
	Motor-side M17 SPEED-CONNECT connector 10-pole, including all socket contacts	0.84	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX2003-0LU54**
	Motor-side M23 SPEED-CONNECT connector 10-pole, including all socket contacts	1.5 and 2.5	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX2003-0LU34**
	M12 SPEED-CONNECT connector with male thread for extension cable 10-pole, including all pin contacts	0.38	1FK2102, 1FK2.03-..G 1FT2102, 1FT2.03-..G	**6FX2003-0LA64**

[1] For increased requirement regarding routing type and ambient temperature.
See tables on page 4/4.

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One Cable Connection (OCC) technology for SINAMICS S210

Selection and ordering data

Version	Description	Cross-section mm²	For motor (Possible for 1FS2 with Q1x)	Article No. (Length code see table)
	M17 SPEED-CONNECT connector with male thread for extension cable 10-pole, including all pin contacts	0.84	1FK2103-..H, 1FK2203-..K, 1FK2.04, 1FK2.05 1FT2103-..H, 1FT2203-..K, 1FT2.04, 1FT2.05 1FS2104, 1FS2105	**6FX2003-0LA54**
	M23 SPEED-CONNECT connector with male thread for extension cable 10-pole, including all pin contacts	1.5 and 2.5	1FK2.06, 1FK2208, 1FK2210 1FT2.06, 1FT2.08, 1FT2210 1FS2106, 1FS2208	**6FX2003-0LA34**
	Siemens IX signal connector on the converter side Device version in insulation displacement method for field assembly		–	**6FX2003-0DE01**
	Shield clamp For attaching the connection cables to the shield plate of the converter (packing unit 10 items)			
	• For pre-assembled cables with M12 and M17 plugs		–	**6FX2003-7EX10**
	• For pre-assembled cables with M23 plugs		–	**6FX2003-7EX11**

Control cabinet bushing

Version	Description	Article No.
	Mounting flange For cabinet bushing	
	• For connector size M12	**6FX2003-7JX00**
	• For connector size M17	**6FX2003-7HX00**
	• For connector size M23	**6FX2003-7BX00**

4

Length codes for pre-assembled cables (max. 50 m (164 ft))

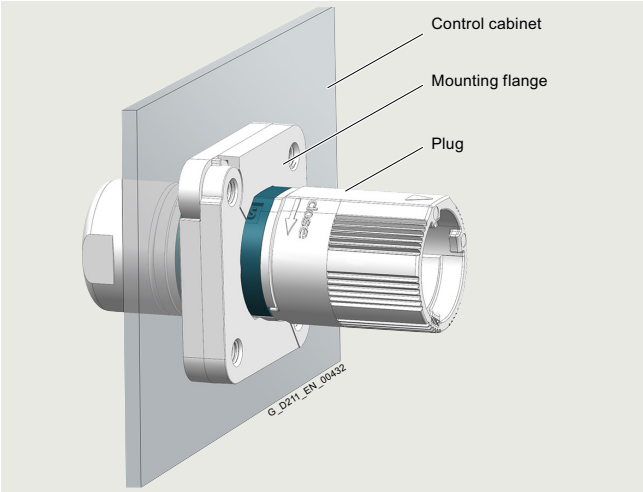
Description	Article No. supplement		
MOTION-CONNECT cable	**6FX . 0 . 2-8Q . 0 . -1 ■ ■ ■**		
0 m (0 ft)	**A**		
10 m (32.8 ft)	**B**		
20 m (65.6 ft)	**C**		
30 m (98.4 ft)	**D**		
40 m (131 ft)	**E**		
50 m (164 ft)	**F**		
0 m (0 ft)		**A**	
1 m (3.28 ft)		**B**	
2 m (6.56 ft)		**C**	
3 m (9.84 ft)		**D**	
4 m (13.1 ft)		**E**	
5 m (16.4 ft)		**F**	
6 m (19.7 ft)		**G**	
7 m (23.0 ft)		**H**	
8 m (26.2 ft)		**J**	
9 m (29.5 ft)		**K**	
0 m (0 ft)			**0**
0.1 m (0.33 ft)			**1**
0.2 m (0.66 ft)			**2**
0.3 m (0.98 ft)			**3**
0.4 m (1.31 ft)			**4**
0.5 m (1.64 ft)			**5**
0.6 m (1.97 ft)			**6**
0.7 m (2.30 ft)			**7**
0.8 m (2.62 ft)			**8**

Length code for cables sold by the meter

Description	Article No. supplement		
MOTION-CONNECT cable	**6FX . 008-1BE . . -■ ■ A0**		
50 m (164 ft)	**1**	**F**	
100 m (328 ft)	**2**	**A**	
200 m (656 ft)	**3**	**A**	
500 m (1640 ft)	**6**	**A**	

The maximum permissible cable length must be observed.

More information



Arrangement of mounting flange and plug in a control cabinet panel

More information, particularly on grounding, is available in the technical documentation on the internet at:
www.siemens.com/sinamics-s210/documentation

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Overview

The SINAMICS S210 (6SL5...) servo converters have a communications interface for connecting a 2nd encoder with DRIVE-CLiQ interface as a direct measuring system (as of firmware V6.3).

For this purpose, there are pre-assembled DRIVE-CLiQ MOTION-CONNECT signal cables for connecting the encoder and converter.

Selection and ordering data

Pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables

Version	Description	Length, max. m (ft)	D_{max} mm (in)	Converter side *connector/ degree of protection*	Encoder side *connector/ degree of protection*	Article No. (Length code see table)
Basic cable between encoder and SINAMICS S210 (6SL5...) servo converter						
To the meter [1]	**Pre-assembled MOTION-CONNECT 500 DRIVE-CLiQ signal cable for predominantly fixed routing** with 8-pole M12 socket on the encoder side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	100 (328)	7.1 (0.28)	Siemens IX/IP20	M12/IP67	**6FX5002-2DX30-■■■0**
	Pre-assembled MOTION-CONNECT 800PLUS DRIVE-CLiQ signal cable for use with cable carriers with 8-pole M12 socket on the encoder side and Siemens IX pre-assembled signal connector for the converter side (shield clamp included in the scope of delivery)	75 (246)	7.1 (0.28)	Siemens IX/IP20	M12/IP67	**6FX8002-2DX30-1■■0**
Extension for all cables with 8-pole M12 connection						
To the meter [1]	**Pre-assembled MOTION-CONNECT 500 DRIVE-CLiQ extension cable for predominantly fixed routing** with 8-pole M12 connection	30 (98.4)	7.1 (0.28)	M12/IP67	M12/IP67	**6FX5002-2DC34-1■■0**
	Pre-assembled MOTION-CONNECT 800PLUS DRIVE-CLiQ extension cable for use with cable carriers with 8-pole M12 connection	30 (98.4)	7.1 (0.28)	M12/IP67	M12/IP67	**6FX8002-2DC34-1■■0**

[1] To the meter up to 20 m (65.6 ft), beyond that in steps of 5 m (16.4 ft) up to the maximum length.

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DRIVE-CLiQ signal cables for SINAMICS S210 (6SL5...)

Selection and ordering data

Length code for pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables

Description	Article No. supplement
Pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables	**6FX . 002-2D . 3 . - ■■■ 0**
0 m (0 ft)	**1**
100 m (328 ft)	**2**
0 m (0 ft)	**A**
10 m (32.8 ft)	**B**
20 m (65.6 ft)	**C**
30 m (98.4 ft)	**D**
40 m (131 ft)	**E**
50 m (164 ft)	**F**
60 m (197 ft)	**G**
70 m (230 ft)	**H**
80 m (262 ft)	**J**
90 m (295 ft)	**K**
0 m (0 ft)	**A**
1 m (3.28 ft)	**B**
2 m (6.56 ft)	**C**
3 m (9.84 ft)	**D**
4 m (13.1 ft)	**E**
5 m (16.4 ft)	**F**
6 m (19.7 ft)	**G**
7 m (23.0 ft)	**H**
8 m (26.2 ft)	**J**
9 m (29.5 ft)	**K**

Technical specifications

Pre-assembled DRIVE-CLiQ signal cables MOTION-CONNECT 500	**Basic cable 6FX5002-2DX30-....**	**Extension 6FX5002-2DC34-....**
Cable jacket material	PVC	PVC
Connector		
Converter side	Siemens IX	M12, 8-pole plug
Encoder side	M12, 8-pole socket	M12, 8-pole socket
Cable length, max.	100 m (328 ft)	30 m (98.4 ft)
Length steps	To the meter up to 20 m (65.6 ft), beyond that in steps of 5 m (16.4 ft) up to the maximum length.	To the meter up to 20 m (65.6 ft), beyond that in steps of 5 m (16.4 ft) up to the maximum length.
Max. number of bends	100000	100000
Number of disconnection points, max.	2 in 100 m (2 in 328 ft)	2 in 100 m (2 in 328 ft)
Degree of protection		
Converter side	IP20	IP67
Encoder side	IP67	IP67
Certificates of suitability	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA

Pre-assembled DRIVE-CLiQ signal cables MOTION-CONNECT 800PLUS	**Basic cable 6FX8002-2DX30-....**	**Extension 6FX8002-2DC34-....**
Cable jacket material	PUR	PUR
Connector		
Converter side	Siemens IX	M12, 8-pole plug
Encoder side	M12, 8-pole socket	M12, 8-pole socket
Cable length, max.	75 m (246 ft)	30 m (98.4 ft)
Length steps	To the meter up to 20 m (65.6 ft), beyond that in steps of 5 m (16.4 ft) up to the maximum length.	To the meter up to 20 m (65.6 ft), beyond that in steps of 5 m (16.4 ft) up to the maximum length.
Max. number of bends	10 million	10 million
Number of disconnection points, max.	2 in 75 m (2 in 246 ft)	2 in 75 m (2 in 246 ft)
Degree of protection		
Converter side	IP20	IP67
Encoder side	IP67	IP67
Certificates of suitability	RoHS, cURus, CE, UKCA	RoHS, cURus, CE, UKCA

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5/2	**DriveSim Designer**
5/4	**DriveSim Engineer**
5/6	**Siemens Product Configurator**
5/7	**TIA Selection Tool**
5/8	**SINAMICS web server for SINAMICS S210 (6SL5...)**
5/12	**SINAMICS Startdrive commissioning tool**
5/13	**SINAMICS Migration Tool**

Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit www.siemens.com/cybersecurity-industry

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under www.siemens.com/cert

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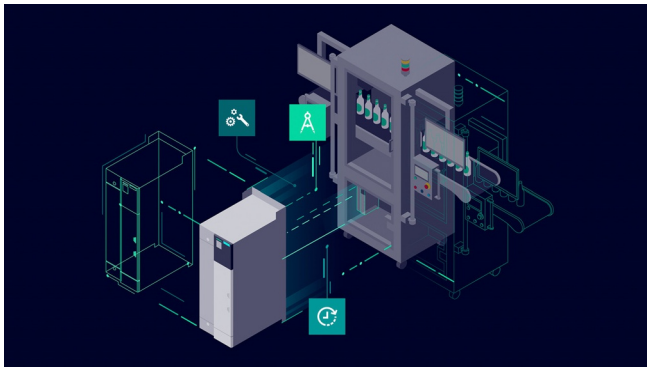
DriveSim Designer

Overview



DriveSim Designer provides easy-to-use models for PROFIdrive-enabled SINAMICS converters, so you can create a digital twin of your drive.

The models are validated and tested against real SINAMICS converters and are available in the form of a standardized FMU (Functional Mockup Unit). Therefore, they are compatible with various standard time-based simulation programs such as SIMIT, Simcenter Amesim, ANSYS Twin Builder, MATLAB Simulink or Hopsan.

DriveSim Designer is another element in your engineering toolbox. Together with other virtual Siemens solutions, e.g. SIMATIC S7-PLCSIM Advanced or NX Mechatronics Concept Designer, a consistent model-based development process can be implemented.

Benefits

- Speed up time-to-market for OEMs
- Test validated SINAMICS models under real conditions already at the design or planning stage and make needed adjustments
- Identify issues and improvement capabilities early in the design stage and reduce testing effort to save time and cost
- Download the free-of-charge test version for 1 month to try the suitability of our solution before buying it
- DriveSim Designer offers a wide range of additional functionalities to improve the SINAMICS simulation model, e. g. safety or position telegrams
- Valid for the most used Siemens drives

Advantages of DriveSim Designer compared to SIMIT PROFIdrive blocks:

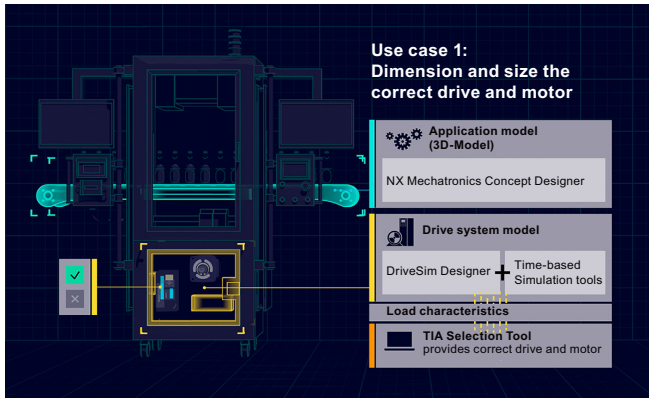
- Increased level of detail due to speed controller, current setpoint filters and internal load model
- Identical parameter values and meaning as in the real SINAMICS device
- Direct reference to SINAMICS documentation
- Basic Safety functions
- Brake control functions for lifting applications
- Validated against the real SINAMICS drive
- No wiring effort to represent functional configurations
- Significant reduction of SIMIT simulation tags (even more is possible if unused in-/ outputs are deselected within the Component Type Editor (CTE)
- Enables simulation of an (internal) two-mass oscillator as application with realistic SINAMICS parameter settings, besides the known limitations by the minimum sample time in SIMIT
- Compatible with every FMU Co-Simulation 2.0 compatible simulation too

Application

With DriveSim Designer, you can implement three major use cases:

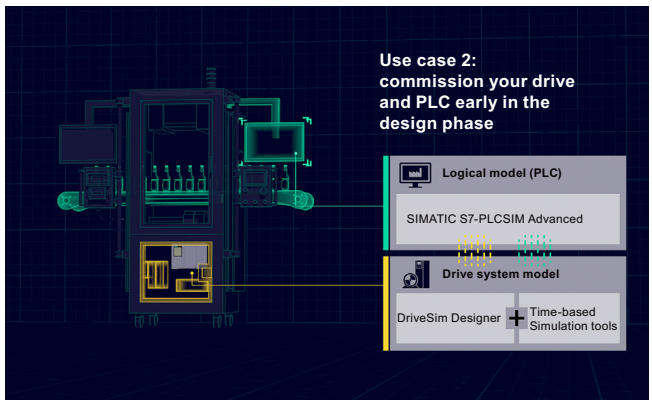
- Providing load characteristics for drive selection and dimensioning
- Virtual commission your PLC already in the design phase
- Test and improve interaction between PLC, drives and application virtually

Use case 1: Dimension and size the correct drive and motor for your application



If you are designing a machine, you want to make sure that you select the SINAMICS converter and SIMOTICS motor most suitable for your drive application. As DriveSim Designer is control-unit-agnostic and thus represents a generic drive, you can parametrize it according to the functionality of your application. Running the simulation results in load characteristics, i.e. torque or speed curves over time. You can import these load profiles into TIA Selection Tool to select the suitable Control Unit and dimension the drive to best fit to the demand. So as a result, you have well selected SINAMICS converters and SIMOTICS motors with the help of the digital twin.

Use case 2: Virtual commission your drive and PLC early in the design phase



If you are designing a machine, you want to make sure the PLC code works with your SINAMICS drive. After writing the PLC code in TIA Portal, you can connect it via SIMATIC S7-PLCSIM Advanced to any time-based simulation tool (e.g. SIMIT). Integrated into the simulation tool, DriveSim Designer acts as a realistic communication partner for the PLC. Next, you can commission the virtual PLC in TIA Portal as you would do with a real PLC connected to a real drive. Without simulation, you would need to do that on-site. With simulation, you not only save time, but also have the freedom to try out various configurations and optimize your PLC code early in the process.

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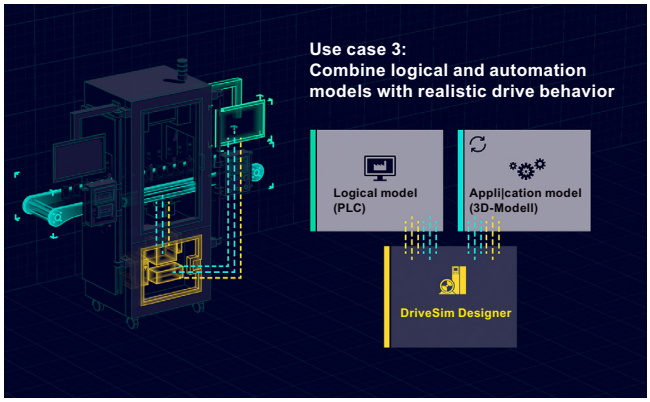
Application

Use case 3: Combine the application model and automation model with realistic drive system behavior



With the third Use case, you can connect a simulation tool such as NX Mechatronic Concept Designer to visualize the mechanical movements of your application. This way, you ensure that the drive behaves according to the desired machine performance. You can test several fault scenarios and optimize the interaction between PLC, application and drive virtually so overall, you can avoid unplanned machine behavior and increase the performance of your setup.

Integration

DriveSim Designer can be run in tools that support FMU 2.0 Co-Simulation Import (https://fmi-standard.org/tools/).

The FMU has been tested in the following simulation environments and is available in the attached application examples.

Tool	Manufacturer	DriveSim*** variant	SIMATIC S7-PLCSIM Advanced interface	Notes
SIMIT	Siemens	***.fmu	Yes	• Permissible configuration: ExternalLoad = 1 & . Speed-Controller = 0 or ExternalLoad = 0 & . Speed-Controller = 1 • Simulation with external load can provide wrong results because the minimum possible time step is 1 ms
Simcenter Amesim	Siemens	***_double.fmu	Yes	
MATLAB Simulink	MathWorks	< 2019a ***_unstruct.fmu ≥ 2019a ***.fmu	Yes	
ANSYS Twin Builder	ANSYS	***.fmu	No	
Hopsan	Linköping University	***_double.fmu	No	• Open Source • Install "win64-with_compiler-installer.exe" package

Selection and ordering data

Description	Article No.
DriveSim Designer	**9SV1110-3AA00-0AA0**

More information

More information is provided on the internet at:
www.siemens.com/drive-virtualization
https://support.industry.siemens.com/cs/document/109812859

You can find more videos on the topic at:

- Simulation of drive systems - Quick, Easy and Validated
- Simulation of drive systems - An introduction to SINAMICS
- Getting started with DriveSim Designer
- How to import DriveSim Designer into SIMIT, Matlab Simulink, Amesim and ANSYS TwinBuilder
- How to connect DriveSim Designer via SIMATIC S7-PLCSIM Advanced to TIA Portal
- How to use DriveSim Designer for drive sizing with TIA Selection Tool
- How to visualize drive system behavior in NX Mechatronics Concept Designer

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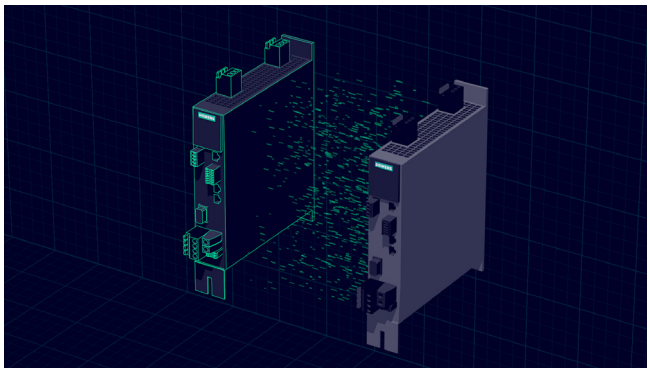
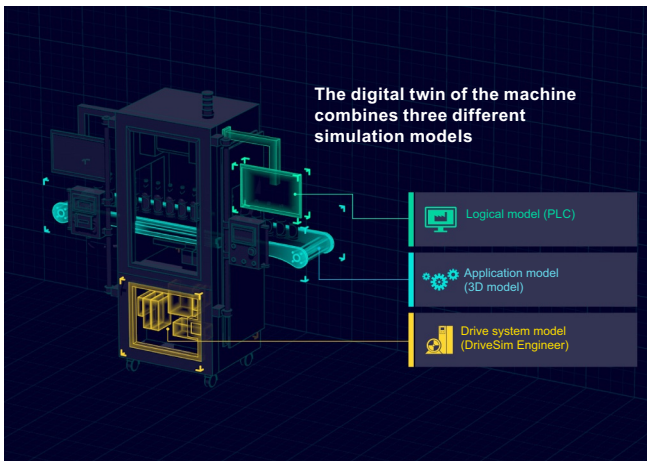
DriveSim Engineer

Overview



In summary, DriveSim Engineer is a powerful tool that provides a complete digital twin of the next generation of SINAMICS converters SINAMICS G220 and SINAMICS S210 (6SL5...), ensuring unparalleled accuracy and reliability.
With its seamless integration into the TIA Portal and SINAMICS Startdrive, the advanced level of customization, the detailed and intuitive interface, it is the ultimate solution for optimizing your drive train system.



DriveSim Engineer is an innovative solution that combines drive simulation and virtual commissioning. With this powerful combination, you can optimize your drive systems, test and validate your projects and ensure that your drive systems function correctly prior to the installation. DriveSim Engineer is the ultimate solution for
optimizing your drive systems. With its advanced technology and user-friendly interface, you can simulate and optimize the performance of your drive systems to meet the demands of your processes. DriveSim Engineer is the solution you have been searching for to improve efficiency, productivity, as well as the overall performance of your drive systems.

The complete digital twin of the real SINAMICS firmware for the next generation of SINAMCS converters SINAMICS G220 and SINAMICS S210 (6SL5...) ensures that all parameters and configurations are identical to those of the real drive, providing unparalleled accuracy and reliability.

DriveSim Engineer is a software-dependent solution that works seamlessly with the TIA Portal and SINAMICS Startdrive, eliminating the need for additional simulation tools. Its low-level interaction with the current control loop of the real drive ensures that the behavior is validated and verified, making it a reliable partner for optimizing your drive train system.

What sets DriveSim Engineer apart is its advanced level of customization and detail, allowing for more accurate testing and optimization of the drive train system. Its intuitive interface enables the fast set-up and configuration of your digital twin as well as the simulation of different operating conditions and scenarios.

Whether you are designing, commissioning or optimizing your drive train system, DriveSim Engineer is the tool you need. Its advanced features and high level of accuracy make it an essential tool for the best possible system performance.

Benefits

- Reduce costs and time: Eliminate the need for on-site visits, reduce costs and speed up the commissioning process.
- Connectivity to SIMATIC S7-PLCSIM Advanced for SINAMICS S210 (6SL5...) with telegram 105
- Testing and optimization of the drive train system without material damage.
- Improved accuracy: Perform precision simulations and tests on your systems, ensuring that they are optimized before the actual purchase.
- Increased flexibility: Make changes to your systems quickly and easily with flexibility to respond to the changes in your project requirements.
- Train the engineers and new users with the help of the virtual twin acting as a realistic partner.
- Virtual demonstration of the SINAMICS converters (prior to mounting or purchase).
- Diagnose and validate the faults or issues in the real environment and fix them with the help of the simulation without any risk of material damage and save resources (lower maintenance and downtime time, i.e. lower costs) without time pressure on the plant side.
- Identify issues and improvement capabilities early in the design stage and reduce testing effort to save time and cost.
- Valid for the next generation of SINAMICS converters SINAMICS G220 and SINAMICS S210 (6SL5...).

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Application

DriveSim Engineer can be implemented in three major use cases.

Use case	Old approach	Advantages of the new approach with DriveSim Engineer
Virtual commissioning and engineering of the next generation of SINAMICS converters SINAMICS G220 and SINAMICS S210 (6SL5...) prior to the mounting	Commissioning of the converters after mounting or purchase	• Saving of resources (lower maintenance and shorter downtime, i.e. lower costs) • No time pressure in the real installation, quick and fast reconfiguration of the system • Improved accuracy of the drive train system in detecting and resolving potential issues • Virtual commissioning helps ensure that the system is future-proof by incorporating the latest technologies and design standards.
Virtual training and demonstration of the next generation of SINAMICS converters SINAMICS G220 and SINAMICS S210 (6SL5...) for engineers and new users	Trainings and demonstrations on the plant side (not in advance)	• Virtual trainings and demonstrations in advance with the digital twin acting as a realistic partner • Make the changes to your systems quickly and easily. • Show and use different application (drives) just on one computer (no need for demo cases). • Traveling costs for trainings and demonstrations will not rise. Everything can be done virtually and in advance (before the hardware is purchased or released).
Diagnose and validate the faults or issues in the real environment and fix them with the digital twin (optimization of the real machine)	Faults and issues of the system are solved on the plant side	• Saving of resources (lower maintenance and shorter downtime, i.e. lower costs) • No time pressure in the real installation, quick and fast reconfiguration of the system • Improved accuracy of the drive train system in detecting and resolving potential issues • Virtual commissioning helps ensure that the system is future-proof by incorporating the latest technologies and design standards.

Integration

DriveSim Engineer is directly integrated in TIA Portal and SINAMICS Startdrive, i.e. different software tools are not necessary. Only the installation of DriveSim Engineer, TIA Portal with SINAMICS Startdrive and SIMATIC S7-PLCSIM Advanced is required.

Selection and ordering data

Description	Article No.
DriveSim Engineer – Subscription (1 year license)	**9SV1320-3AA00-0AA0**
DriveSim Engineer V2.x – Perpetual license (unlimited)	**9SV1310-4AA00-0AA0**
DriveSim Engineer Software Update Service	**9SV1320-7AA00-0AA0**

More information

More information is provided on the internet at:
www.siemens.com/drive-virtualization

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Siemens Product Configurator

Overview

The Siemens Product Configurator helps you to configure the optimum drive technology products for a number of applications. The product portfolio comprises the full drive technology range of gearbox, motor, converter and connection system as well as corresponding controller with suitable software license. The intuitive user interface in conjunction with product-specific preliminary selectors makes it simple, fast and efficient to configure products. The result is a bill of materials with extensive documentation consisting of technical data sheets, motor characteristic curves, 2D dimensional drawings / 3D CAD models, EPLAN macros and much more. You can order the products directly by transferring the bill of materials to the shopping cart of SiePortal.

Siemens Product Configurator at a glance

- Quick and easy configuration of drive products and associated components – gearboxes, motors, converters, controllers, connection systems
- Extensive documentation for all products and components, such as
  - Data sheets in up to 12 languages
  - Motor characteristic curves
  - 2D dimensional drawings / 3D CAD models in different formats
  - Terminal box drawing and terminal connection diagram
  - Certificates
  - EPLAN macros
- Ability to order products directly through SiePortal

Access to the Siemens Product Configurator

The Siemens Product Configurator can be accessed without the need for registration or logging in:
www.siemens.com/spc

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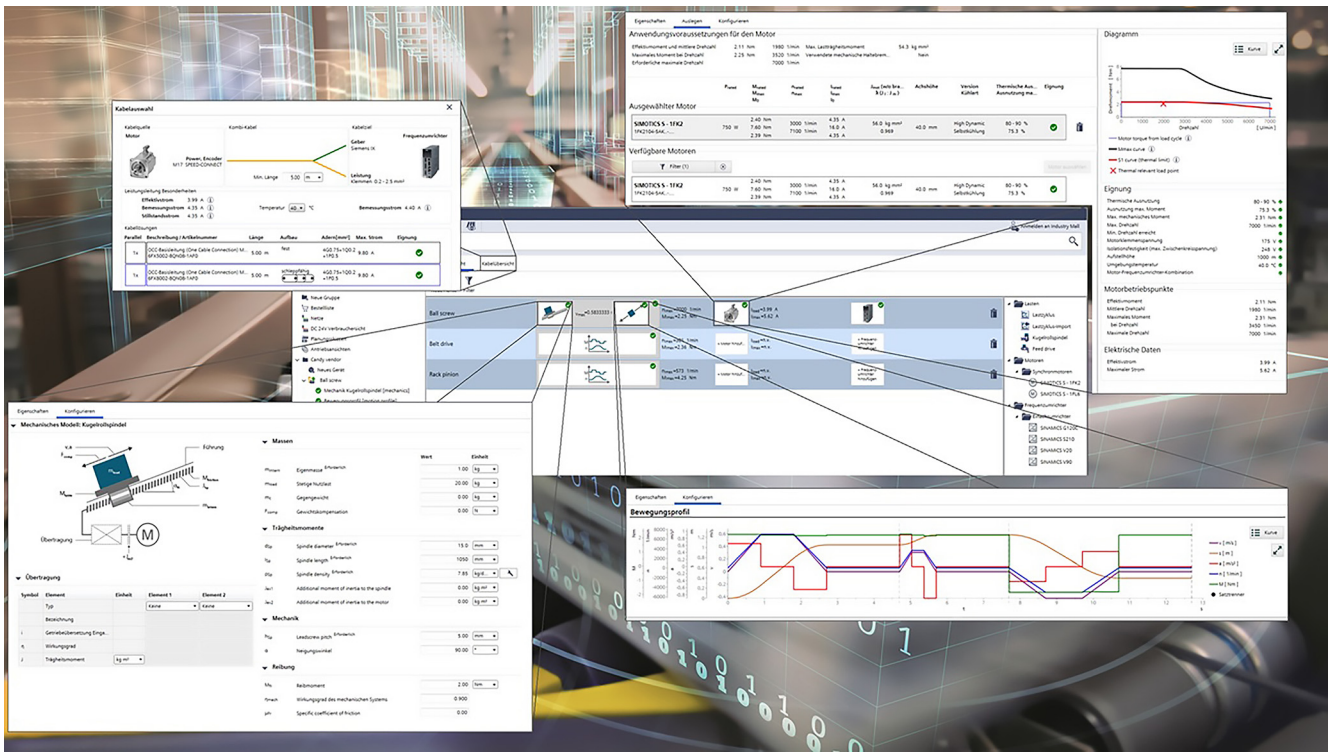
Overview



Selection guide and configurator for automation technology

Error-free configuration without expert knowledge through intelligent configurators and selection wizards. Desktop and cloud versions enable cross-team collaboration with maximum flexibility.

There are two versions of TIA Selection Tool:

- Desktop version:
  for downloading and executing on Microsoft Windows PCs (from Microsoft Windows 10)
- Cloud version:
  for running in the cloud and launching directly out of the browser (we recommend Google Chrome, Mozilla Firefox and Microsoft Edge)

Projects stored in the cloud can be edited with both tools. This makes it possible to work on-the-go using a tablet, at home on a PC – and vice versa, or together with colleagues and customers.

In order to use the full functionality, we recommended setting up a SiePortal account for both cases. This gives you access to prices and enables you to save your projects to our cloud.

You can find additional information about TIA Selection Tool at:
www.siemens.com/tia-selection-tool

Drive dimensioning with SIZER in TIA Selection Tool (desktop version)

Application-specific requirements can be determined using drive technology dimensioning in TIA Selection Tool. This can include motors, gearboxes, converters and cables. The tool supports the configuration and dimensioning of control functions with an open and closed control loop. The technical documentation with features of the technical drive system, as well as a product list for ordering via SiePortal can also be compiled.

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SINAMICS web server for SINAMICS S210 (6SL5...)

Overview

Web server for efficient commissioning, diagnostics, maintenance and operator control and monitoring, any time, from anywhere

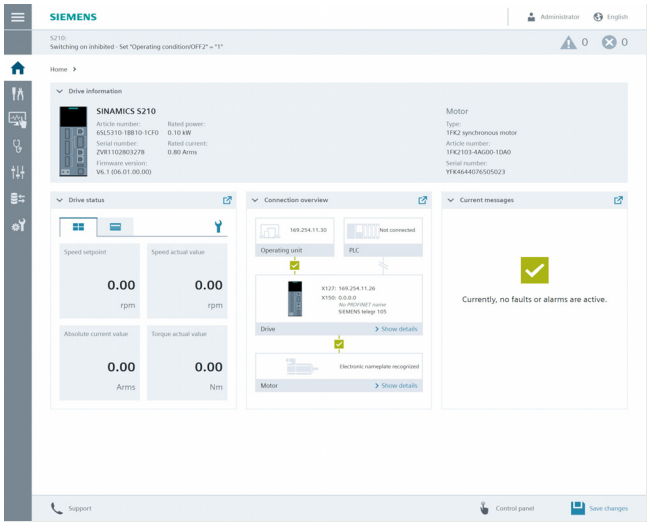
Thanks to the web server, the SINAMICS S210 drive system with the innovated SINAMICS S210 (6SL5...) servo converters offers an efficient commissioning, diagnostics, maintenance option as well as operation and monitoring functions. The user is supported by a help function and additional links to specific product information, downloads, FAQs and manuals.

The web server provides access to a multi-faceted range of new options for commissioning or parameter assignment, drive diagnostics, remote maintenance as well as operator control and monitoring for any networked PC with a web browser or for tablets and smartphones (via a separate WLAN access point, such as SINAMICS Smart Adapter).

The following provides an insight into the functionality offered.

The start screen offers a quick overview of the state of the drive

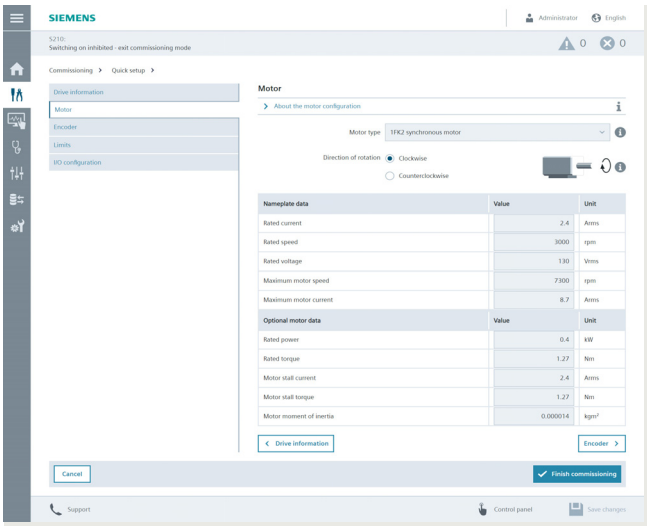
- Drive type, connected motor as well as the article number and installed firmware
- Important drive parameters show the operating state (can be configured)
- The connection overview provides information about the status of the connections (operating unit - converter - motor)
- Overview of all pending fault and warning messages



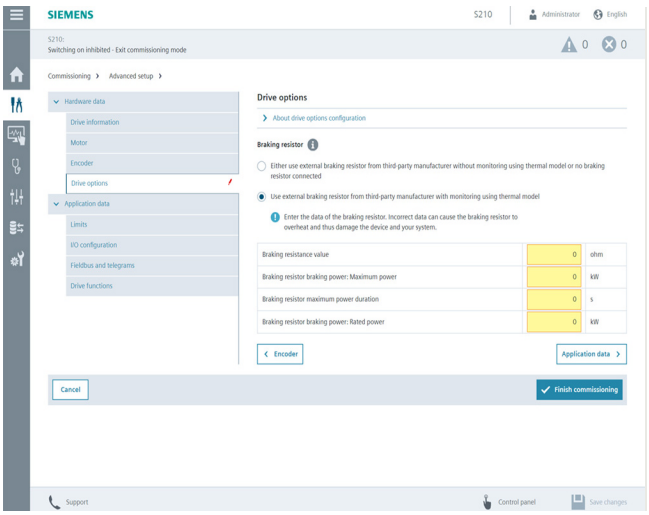
Start screen of the web server integrated into SINAMICS S210 (6SL5...)

Commissioning

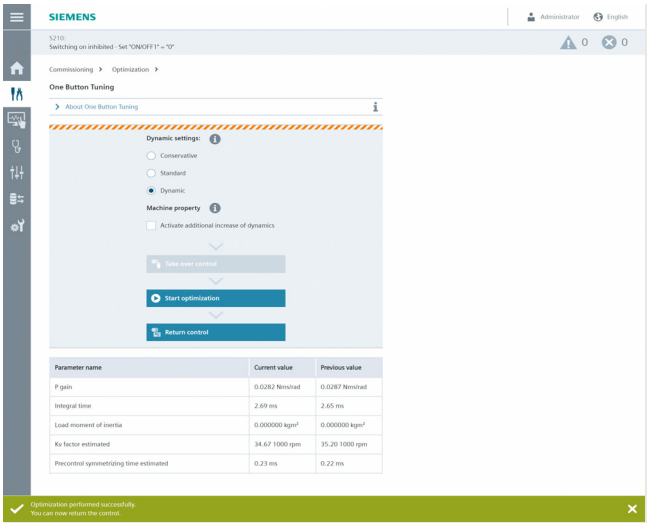
- The quick commissioning provides information about the current motor/encoder and offers the configuration of limit values and digital inputs
- Advanced commissioning defines drive options and functions to suit your application. Advanced commissioning includes all the settings of quick commissioning, as well as additional options and functions.
- Optimization of the drive settings using One Button Tuning (OBT)
- Easily and conveniently commission Safety Integrated functions



Quick commissioning with open dialog showing the set motor data



Advanced commissioning with open dialog for drive options



One Button Tuning (OBT)

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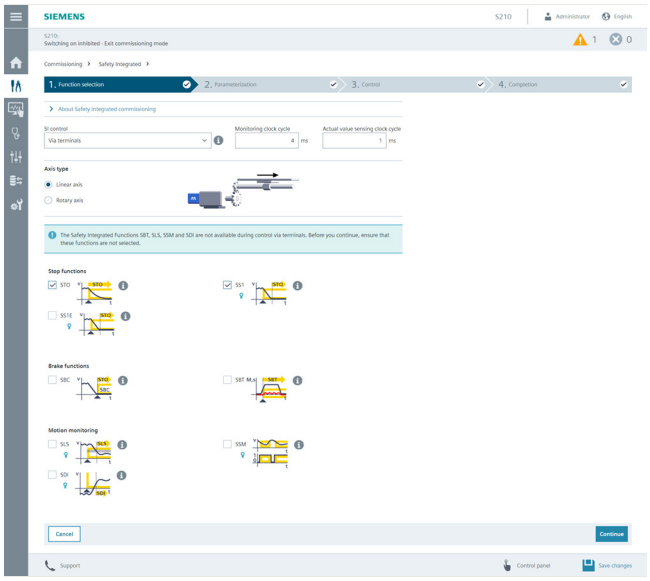
Overview

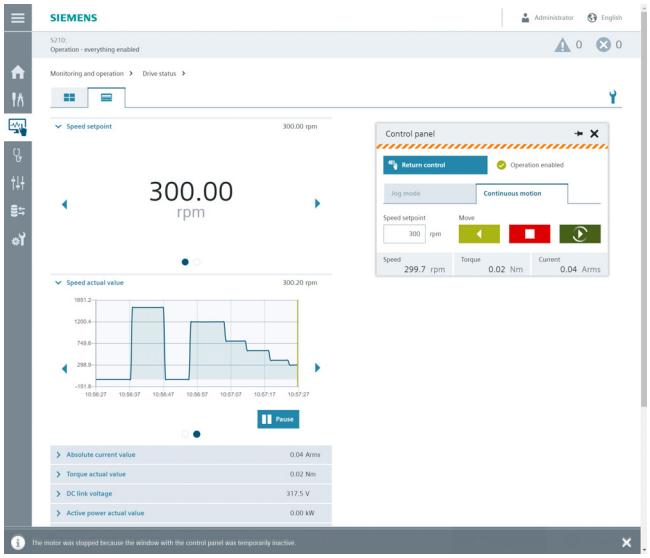
Commissioning (continued)



Safety Integrated assistant

Operator control and monitoring

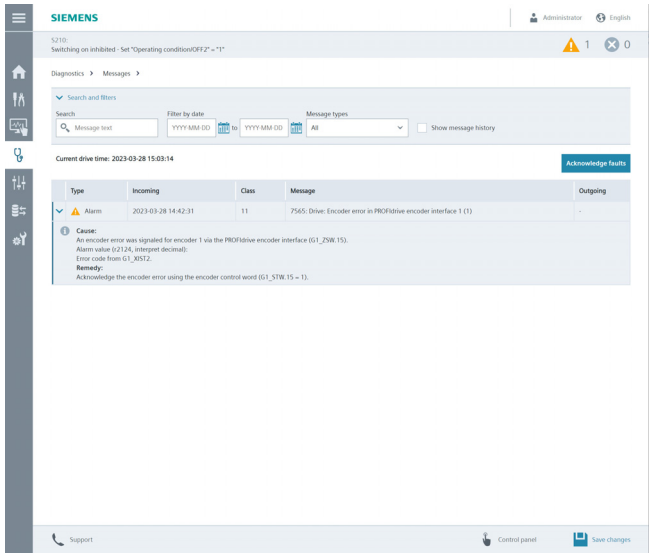
- Configurable drive status with value or trend display
- Status of the inputs and outputs
- Drive traversing via the control panel, which can be freely positioned on the screen



Operator control and monitoring of the drive with the help of the drive status and control panel

Diagnostics

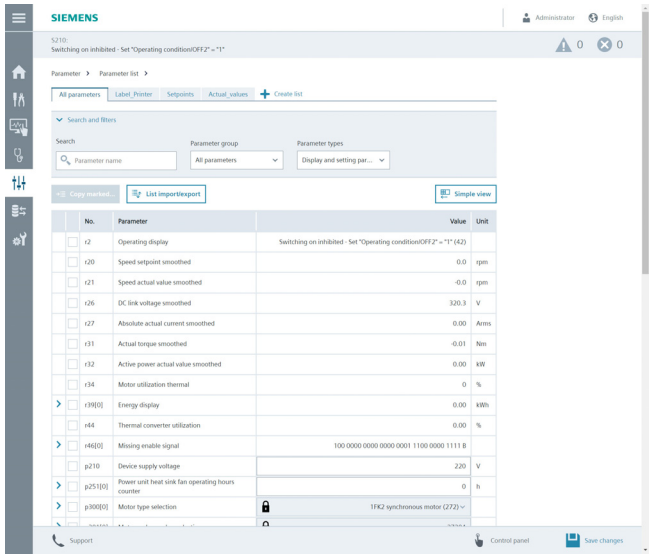
- Evaluation of warnings and fault messages
- Evaluation of system events (diagnostic buffer)
- Analysis of the safety status
- Connection overview, diagnostics of the drive communication and control and status words



Alarm view with convenient search and filter functions

Service and maintenance functions

- Monitor and adjust drive parameters
- Create, import and export user-specific parameter lists
- Back up and restore the drive configuration
- Perform firmware update, also via the network
- Manage software licenses
- Configure basic settings for the drive and web server (e.g. date and time of the drive)
- Configure and manage user accounts and access controls (UMAC)



Parameter list for quick access to drive parameters, also via user-defined parameter lists

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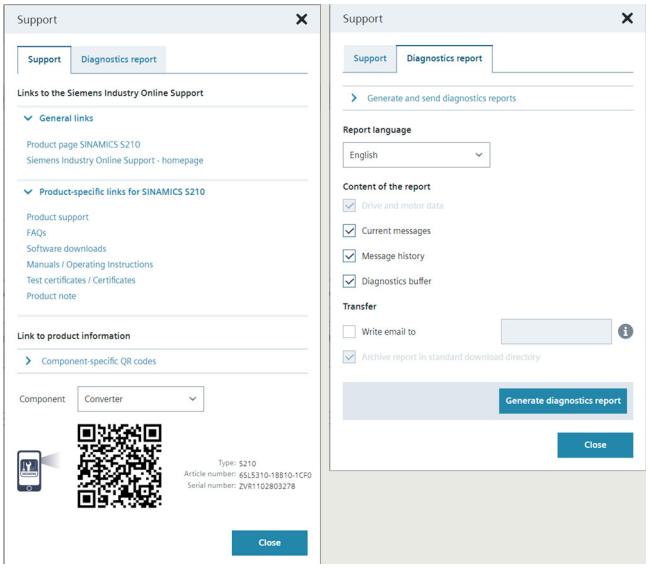
SINAMICS web server for SINAMICS S210 (6SL5...)

Overview

Support

- Operator support with comprehensive information about the drive and user interface
- Easy access to product information such as FAQs, software downloads, manuals and certificates
- When storing the html documentation on the drive memory card, the user manual can be accessed in a context-sensitive manner from the user interface
- The diagnostics report supports the support with basic information on the current status of the converter, e.g. in the event of a malfunction or error. The diagnostics report always contains the drive, motor and encoder data and, optionally, an overview of the errors and messages that have occurred.



Support dialog for quick access to product-specific information

Benefits

Simple and fast commissioning

- Installation of additional commissioning software is not required.
- Tools required for the commissioning are ready to use via the integrated web server.
- Standard pages to set thresholds and onboard inputs
- Simple controller optimization with One Button Tuning (OBT)
- Guided parameterization of Safety Integrated functions
- Extensive online help with context-sensitive access to the Operating Instructions (memory card required)

Shorter machine downtimes

- Quick overview of the current configuration and the state of the drive
- Efficient diagnostics and maintenance
- Understandable diagnostic information and messages, including the causes of issues and possible remedies, are displayed in plain text in multiple languages
- Context-sensitive help with optional access to the web-based device documentation provides quick help with questions about drive functions

Convenient service and maintenance functions

- Quick backup and restoration of the drive data
- Convenient firmware update, also via the network
- Convenient access to drive parameters
- User-defined parameter lists that focus on what matters
- Easy and efficient handling of the parameter list by using search functions and filters (e.g. parameter groups, parameter types)
- Easy exchange with operating personnel by importing/exporting user-defined parameter lists.
- User-defined parameter lists can be exchanged between the SINAMICS Startdrive and the web server.
- The generation and dispatch of a diagnostics report supports communication with service personnel or machine builders.

Direct language selection

- English, French, German, Italian, Spanish, Chinese Simplified

Accessibility

- Via all LAN or PROFINET interfaces
- Use of mobile devices (e.g. notebooks/tablets and smartphones) via WLAN e.g. with SINAMICS Smart Adapter or a separate access point
- Access to the web server via PCs/notebooks, SIMATIC HMI (> 10”), smartphones/tablets with a Chromium-based internet browser

Access security

- Protection against unauthorized access to the drive functions and data
- Convenient user administration that supports a roles concept
- Easy set-up and management of user accounts

Application

The web server is ideal for applications not requiring any special commissioning software or version dependencies. Commissioning, diagnostics and maintenance as well as operator control and monitoring are possible both locally and remotely, provided appropriate security measures are applied.

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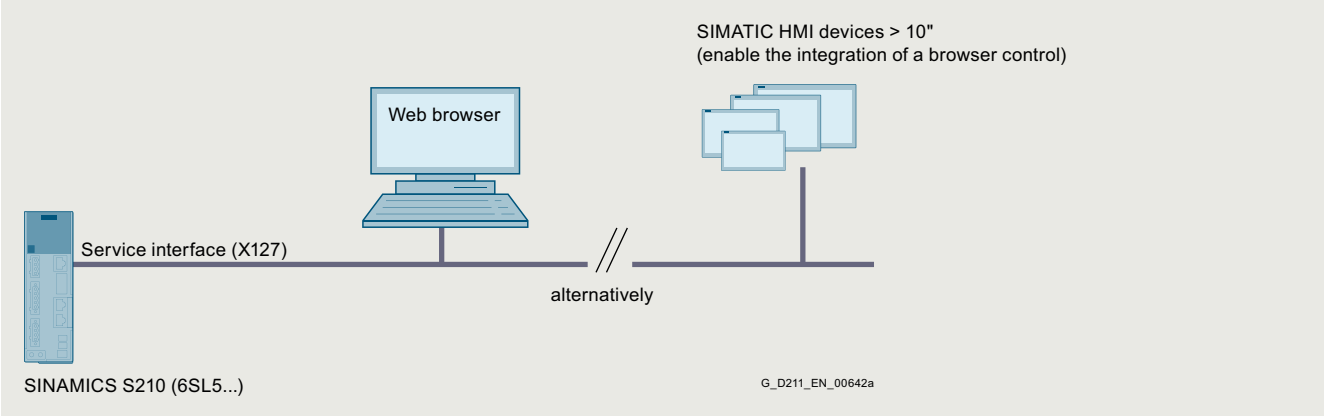
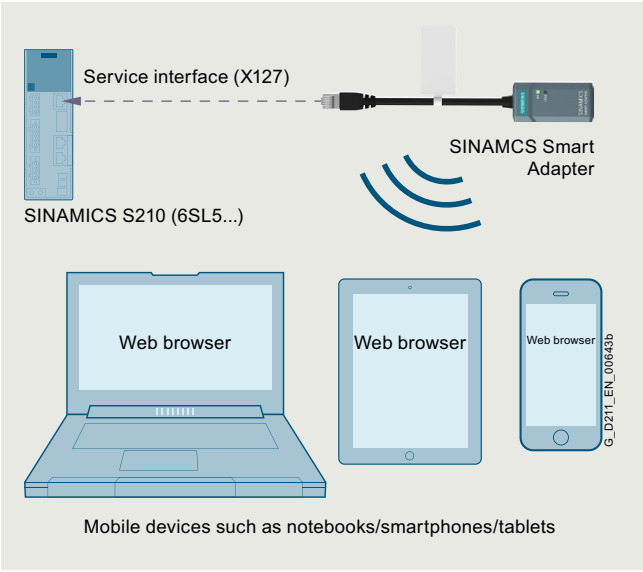
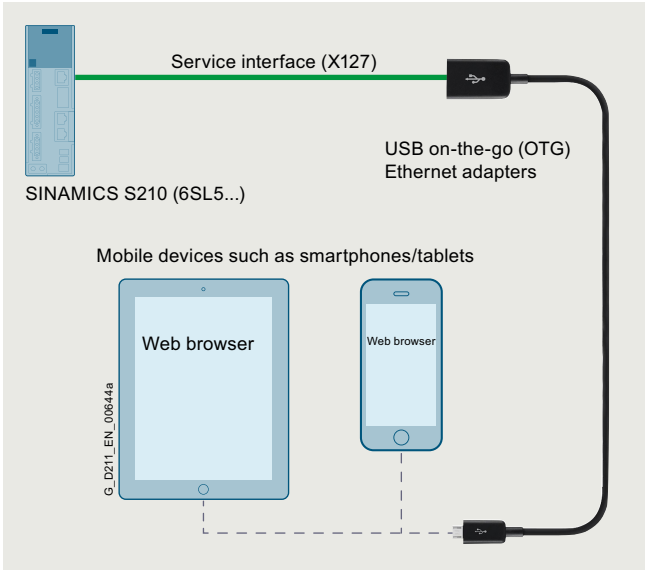
Integration



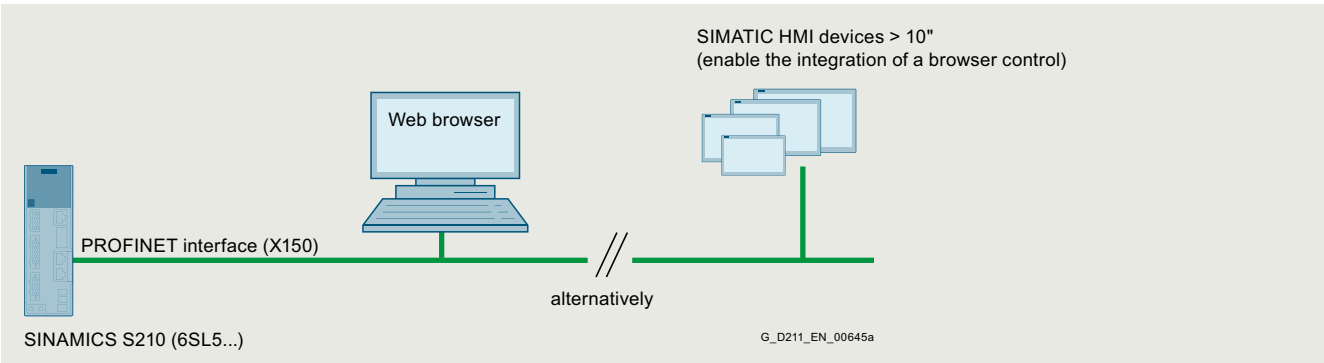
Integration of the SINAMICS web server based on the example of a SINAMICS S210 (6SL5...) and the service interface (X127)



Wireless access to the web server via the service interface (X127) of the SINAMICS S210 (6SL5...) with the help of the SINAMICS Smart Adapter



Access to the web server via the service interface (X127) of the SINAMICS S210 (6SL5...) with the help of a USB on-the-go (OTG) Ethernet adapter



Integration of the SINAMICS web server based on the example of a SINAMICS S210 (6SL5...) and the PROFINET interface (X150) as connected web client (e.g. PC, SIMATIC HMI etc.)

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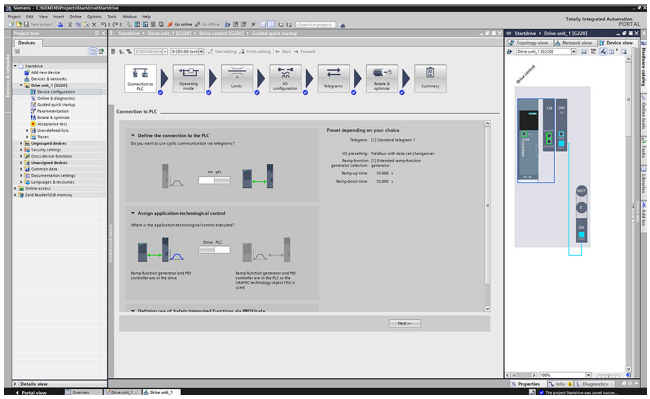
SINAMICS Startdrive commissioning tool

Overview

SINAMICS Startdrive is integrated in the TIA Portal and is a tool for the configuration, commissioning and diagnostics of the SINAMICS family of converters.

The SINAMICS Startdrive commissioning tool has been optimized with regard to user friendliness and consistent use of the TIA Portal benefits of a common working environment for PLC, HMI and drives. Time-saving and guided step-by-step commissioning with maximum flexibility is complemented by user-friendly graphic function views for all drive functions, including functional safety (Safety Integrated) and drive-based technology functions (e.g. EPOS). The automatic message display, the powerful real-time trace and the context-sensitive online help make converter diagnostics very easy.



The software packages based on the TIA Portal are harmonized with each other and offer important benefits, the main advantage being a shared project storage. The TIA Portal enables simple integration of SINAMICS converters in your automation solution. Thanks to the standardization of operator actions and the integration in general TIA Portal operating concepts (e.g. UMAC, Openness) as well as standard TIA Portal functions (e.g. Undo/Redo), familiarization is easy both for drive experts as well as SIMATIC users. Special focus is placed on the interaction between SIMATIC and SINAMICS, especially when connecting the SINAMICS drives to SIMATIC technology objects.

Integration

Supported frequency converters

SINAMICS Startdrive Basic enables complete commissioning, diagnostics, parameterization, optimization and connection to the PLC for the following SINAMICS converters integrated in SINAMICS Startdrive:

- SINAMICS G120, G120C, G120D, G120P
- SINAMICS G115D
- SINAMICS G130, G150
- SINAMICS G220 (as of V18 SP2 Update 1)
- SINAMICS S120 [1], S150
- SINAMICS S200 (as of V18 SP2)
- SINAMICS S210 (6SL3...) and innovated SINAMICS S210 (6SL5...) (as of V18 SP1)
- SINAMICS S220
- SINAMICS MV

SINAMICS Startdrive Advanced

With SINAMICS Startdrive Advanced (available as of V15) you benefit from powerful engineering functions that save you considerable time and ultimately costs.

- Safety acceptance test:
  - Guided acceptance test wizard for all drive-based Safety Integrated functions
  - Automatic and safety function-specific generation of traces to analyze the machine behavior
  - Generation of an acceptance report as Excel file (xlsx format, can also be used with OpenOffice)
- Improved optimization options in the drive: Extended measuring functions (available for CU320-2 PN/DP and CU310-2 PN as of V5.2 SP3 and all devices from V6.x), long-term trace (available for CU320-2 PN/DP and CU310-2 PN from V5.2 SP3)
- Export of backup files from the Startdrive project
- Also contains all Startdrive Basic functions
- Only license key required, no additional installation

New in V21

Startdrive Basic V21

- Comparison of drive parameters for up to 5 drives
- Offline firmware upgrade as a mass operation
- Download in the background
- Integration of the drive version V6.6 for SINAMICS G220, S220, G200 Basic

Installation versions

SINAMICS Startdrive can only be installed as an option package for SIMATIC STEP 7. However, a SIMATIC STEP 7 license is not required to run SINAMICS Startdrive.

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Integration

System requirements

The following table shows the recommended hardware and system equipment for the operation of SINAMICS Startdrive.

Hardware	Recommendation
Computer	As of SIMATIC FIELD PG M6 Comfort (or comparable PC)
Processor	Intel Core i5-8400H (2.5 ... 4.2 GHz; 4 cores + hyper-threading; 8 MB Smart Cache)
RAM	16 GB or more (32 GB for large projects)
Hard disk	SSD with at least 50 GB available memory
Screen resolution	15.6" Full HD display (1920 × 1080 or larger)
Operating systems	• **Microsoft Windows 10 (64 bit)** - Windows 10 Enterprise 21H2 • **Microsoft Windows 11 (64 bit)** - Windows 11 Home Version 24H2 - Windows 11 Professional Version 24H2 - Windows 11 Enterprise 24H2, 23H2 • **Microsoft Windows Server (64 bit)** - Windows Server 2022 Standard (full installation) - Windows Server 2025 Standard (full installation)

Compatibility with other products

- SINAMICS Startdrive V21 operates with STEP 7 and WinCC V21 in one framework
- SINAMICS Startdrive V21 can be installed on the same computer in parallel with other versions of SINAMICS Startdrive V12 to V20
- SINAMICS Startdrive can be installed on the same computer as SINAMICS MICROMASTER STARTER

Supported virtualization platforms

SINAMICS Startdrive can be installed in a virtual machine. For this purpose, one of the following virtualization platforms in the specified version or a newer version can be used:

- VMware vSphere Hypervisor (ESXi) 8.0 or higher
- VMware Workstation 17.0 or higher
- VMware Player 17.0 or higher
- Microsoft Hyper-V Server 2019 or higher

Supported safety programs

The following safety programs have been tested with SINAMICS Startdrive V20:

- Virus scanners:
  - Symantec Endpoint Protection 14.3 RU8
  - Trend Micro Apex One
  - McAfee Endpoint Security (ENS) 10.7
  - Microsoft Defender
  - Qihoo 360 (Safe Guard and Virus Scanner)
  - Crowdstrike Falcon Go (Falcon Prevent and Falcon Device Control)
- Encryption software:
  - Microsoft Bitlocker
- Host-based Intrusion Detection System
  - McAfee Application Control 8.4 (Trellix)

Selection and ordering data

Description	Article No.
SINAMICS Startdrive Basic V21 commissioning tool Single license and certificate of license English, French, German, Italian, Spanish, Chinese Simplified	
• Software download (email address required for delivery)	**6SL3072-4MA02-0XG0**
SINAMICS Startdrive Advanced V21 commissioning tool License key (floating license) English, French, German, Italian, Spanish, Chinese Simplified	
• On USB flash drive	**6SL3072-4MA02-0XA5**
• Software download incl. license key (email address required for delivery)	**6SL3072-4MA02-0XG5**
Upgrade SINAMICS Startdrive Advanced V15 ... V20 to V21	
• On USB flash drive	**6SL3072-4MA02-0XE5**
• Software download incl. license key (email address required for delivery)	**6SL3072-4MA02-0XK5**
Software Update Service with SINAMICS Startdrive Advanced in the TIA Portal Delivery is performed according to the number of ordered SUS products (e.g. 10 upgrade license keys (floating license) with 10 USB flash drives, etc.)	
• On USB flash drive	**6SL3072-4AA02-0XL8**
• Software download incl. license key (email address required for delivery)	**6SL3072-4AA02-0XY8**

Accessories

Depending on the version of the Control Unit (CU), the Control Unit of the drive unit can communicate with the programming device (PG) or PC via PROFIBUS or PROFINET/Ethernet or via a serial interface. The following accessories are available for the particular drive system as listed in the following table.

Recommended accessories
For communication between the drive unit and the programming device or PC

Description		Article No.
SINAMICS S210 (6SL5...)		
• Wi-Fi	**SINAMICS Smart Adapter** Wi-Fi solution for the next generation of SINAMICS converters SINAMICS S200, SINAMICS S210 (6SL5...) and SINAMICS G220	**6SL4950-0AJ00-0AA0**

More information

The SINAMICS Startdrive Basic commissioning tool is available free on the internet at
www.siemens.com/startdrive

5

SINAMICS Migration Tool

Overview

Support for migration from SINAMICS S210 TIA projects

To update TIA projects with existing SINAMICS S210 (6SL3...) and firmware V5.x to innovated SINAMICS S210 (6SL5...) with firmware V6.x, the SINAMICS Migration Tool is on hand, offering a convenient way to replace the converters.

Migration tends to take place automatically in offline mode. Parameter assignment and drive networking remain unchanged.

Only the security settings (incl. Safety Integrated) need to be manually set, for the purpose of protecting the project.

The SINAMICS Migration Tool requires the TIA Portal V18 SP1 or higher.
https://support.industry.siemens.com/cs/document/109822030

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Notes

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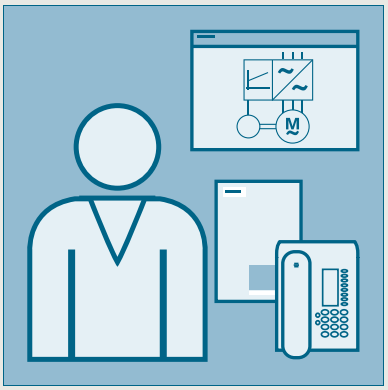

6/2 **Partner**

6/3 **Digital Enterprise Services**

6/4 **Training**
6/4 SITRAIN – Digital Industry Academy
6/6 SINAMICS S210 training case

6/7 **Applications**

6/8 **Drives Options Partner**

6/9 **mySupport documentation**

6/10 **Documentation**
6/11 General documentation
6/11 SINAMICS S210 documentation

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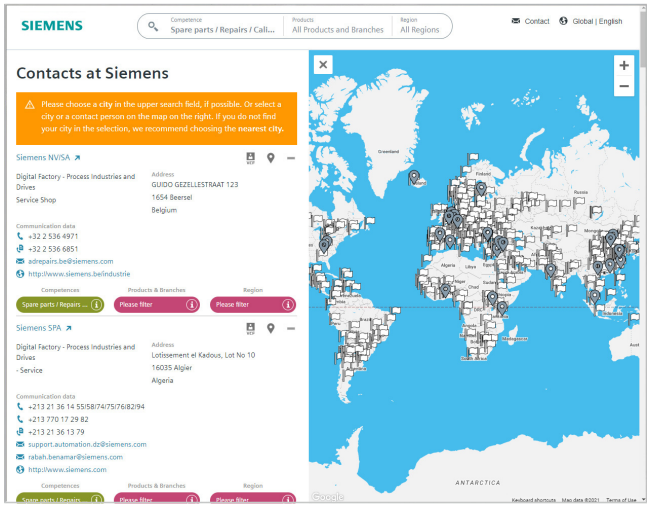
Overview

Partner at Siemens



At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Siemens.

Your partner can be found in our Personal Contacts Database at:
www.siemens.com/automation-contact

You start by selecting

- the required competence,
- products and branches,
- a country and a city

or by a

- location search or free text search.

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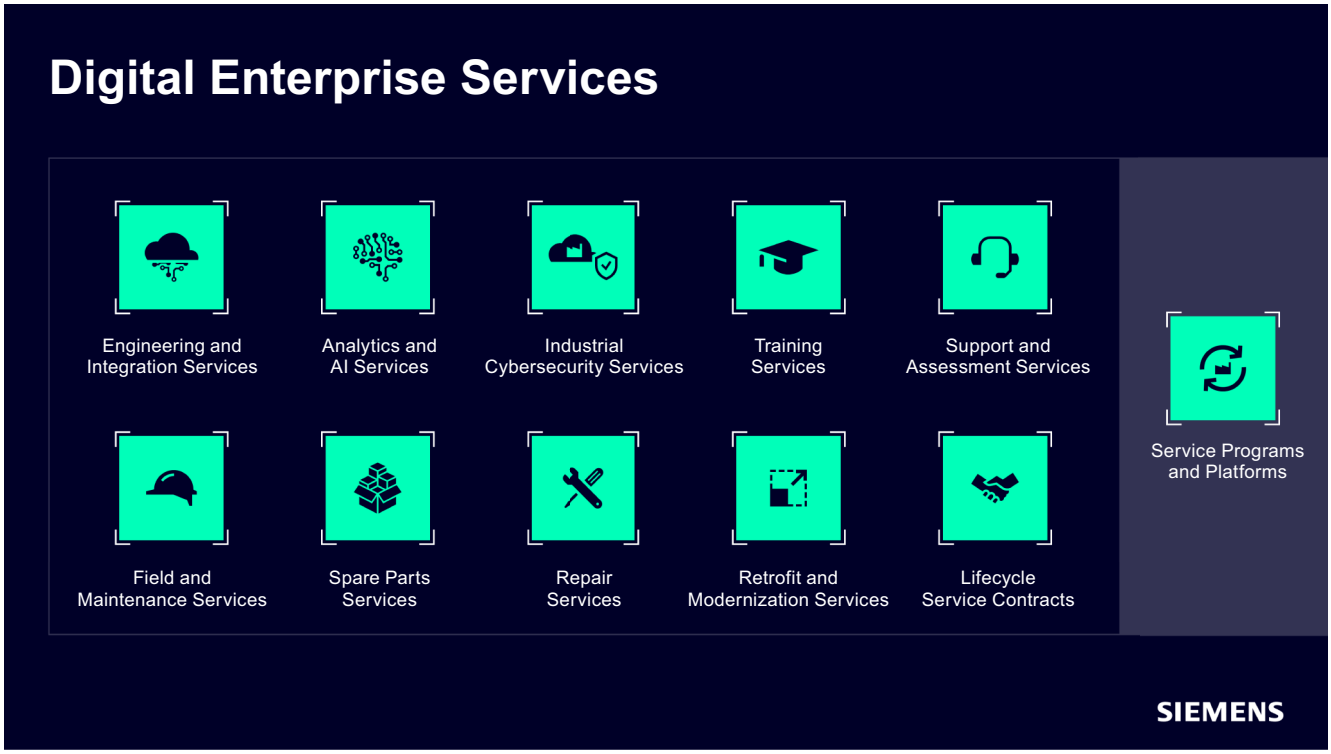
Overview



At Digital Enterprise Services, we provide you with comprehensive services throughout the entire lifecycle. From a fully digital factory to a reliable spare parts supply and quick support in the event of outages, we work with our partners to ensure your plant operates optimally – improving availability, productivity, and efficiency.

Our services take industry to the next level and give you a competitive edge:

- **Services for Digital Transformation:**
  Our innovative and scalable services streamline operations by optimizing your Overall Equipment Effectiveness (OEE), increasing productivity, preventing outages and improving business continuity – all while supporting IT/OT convergence.
- **Services for Sustainability:**
  Our optimization and lifetime extension services help make your sustainability goals a reality by providing data-driven insights into energy use, enabling you to reduce your carbon footprint and costs. By enabling a circular economy and focusing on product safety, cybersecurity, and supply chain visibility, we extend asset life, save resources, and improve operational efficiency.
- **Lifecycle Services:**
  Our innovative Lifecycle Services provide reliable support worldwide, offering tailored solutions throughout their entire lifecycle. By optimizing maintenance processes, we improve asset performance, efficiency, reliability, and productivity – from machines to entire plants or factories.

For more information, please visit us at:

www.siemens.com/digital-enterprise-services

www.siemens.com/find-your-service

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SITRAIN – Digital Industry Academy

Introduction

Learn the way you like it – with SITRAIN

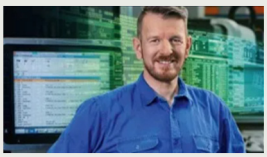
SITRAIN imparts a wide range of technical knowledge for all industries and applications. Our offering is oriented toward the needs of learners and the demands of innovative companies. Get pleasure out of learning - thanks to innovative learning methods, personal support, and knowledge that will help you in your work and further development. For successful, flexible, and continuous learning.

Education and training directly from the manufacturer

SITRAIN provides you with training from the industrial product and solution portfolio from Siemens and benefits from 30 years of expertise in technical training. Take a look at the many options for expanding your knowledge with SITRAIN and find the course that meets your needs! The following training and further education units are available to you for your individual knowledge building:

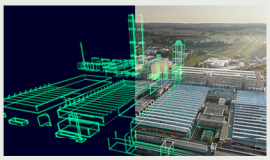
Industrial Automation Systems SIMATIC
Training available for:
SIMATIC S7-1200/S7-1500. TIA Portal,
SIMATIC S7-300/400

Drive Technology
Training available for:
SINAMICS S120, S210,
SINAMICS G120, G220,
SINAMICS G130 / G150 /
G180 / S150



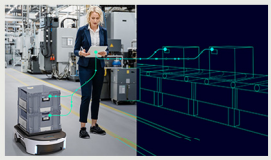
SINUMERIK CNC automation system
Training available for:
SINUMERIK 840D, SINUMERIK 840D sl and SINUMERIK ONE

Process Control Systems
Training available for:
SIMATIC PCS 7,
SIMATIC PCS neo



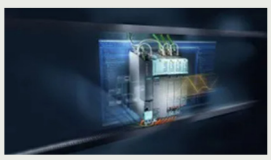
Digital Enterprise
Training available for:
Openness, SIMIT, OPC UA, Industrial Edge,
virtual commissioning

Industrial Communications
Training available for:
OPC UA, PROFINET, SCALANCE, RUGGEDOM, Industrial Ethernet, fieldbus communication, Industrial Security,
remote communication

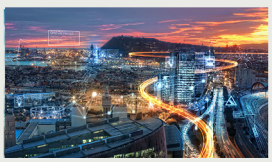


Identification and Locating
Training available for:
RFID, RTLS-Systems

Operator Control and Monitoring Systems
Training available for:
SIMATIC WinCC Unified in TIA Portal, SIMATIC WinCC in TIA Portal, SIMATIC WinCC V7/8



Motion Control Systems
Training available for:
SIMATIC Motion Control and SIMOTION



Smart Infrastructure
Training available for industrial switching technology solutions and low voltage power distribution

Process Analytics & Instrumentation
Training is available for process analytics and instrumentation, explosion protection, process gas chromatographs

Additional training offer
Battery manufacturing, Creativity LAB, SIMOVE with automated guided vehicles (AGV), cranes, guidelines and standards for control cabinets, Technological Basics

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Introduction

Different learning formats and methods for maximum learning success

With our SITRAIN training formats, you learn in the way that best suits your preferences and routine. You decide whether you prefer learning in a virtual or real classroom.

It is also up to you whether you prefer to learn on demand or at fixed dates and times. With a learning consultant, in a team, or independently – you can explore all the possibilities.

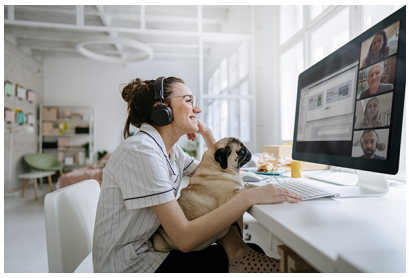
Discover our three learning formats:

Learning Event

SITRAIN Learning Events are the perfect choice when you want to achieve a defined learning goal in the shortest possible time. You learn in a protected learning environment outside of the daily work routine under the guidance of a learning consultant - virtually, in the training center, or at your company.

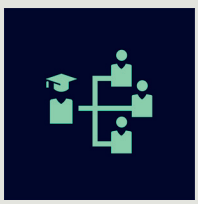
Learning Membership SITRAIN access

With SITRAIN access, you enter a world of extensive and constantly expanding self-study units on our digital learning platform for industry. With SITRAIN access, you can implement a modern learning culture in your team or company with independent and continuous learning.



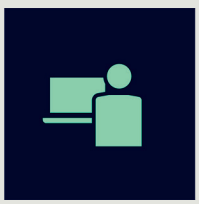
Learning Journey

The Learning Journey is the perfect combination of units taken live and self-study units for sustainable learning success. The modular approach enables simple integration into your daily work. This also includes one-year membership for using the SITRAIN access digital learning platform.



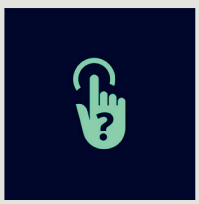
Live

Learn together with others, simultaneously and guided by a learning consultant. Online, in the SITRAIN training center or at your company.



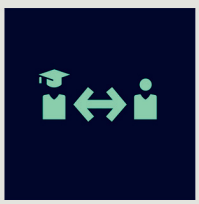
Self-reliant

Expand your knowledge self-determined with industry learning and work on your learning units at your own pace and according to your own schedule.



On demand

Get the knowledge you need, exactly when you need it. Be it to answer a current question or to work on a special topic.



Individual

Talk directly with the learning consultant, clarify detailed questions and get personal coaching for transferring the learned topics to your own application.

Training cases catalog

https://www.siemens.com/sitrain-catalog-training-cases

www.siemens.com/sitrain

Find your local offer here

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SINAMICS S210 training case

Overview

SINAMICS S210 training case

The SINAMICS S210 training case (version with 2 axes and PROFINET) is a convincing demonstration system thanks to its compact design. It is suitable for direct presentations as well as for tests in technical departments. The training case enables the functions of SINAMICS S210 servo drive system to be demonstrated and tested quickly and easily.

It contains the following components:

- 2 × SINAMICS S210 (6SL5...) servo converters, 0.1 kW, 230 V 1 AC
- 2 × SIMOTICS S-1FK2 servomotors, High Dynamic (1 × singleturn, 1 × multiturn, without break)
- 2 × One Cable Connection (OCC) motor connection cable
- Rail, prepared for installation of a controller, e.g. SIMATIC S7-1500 (controller not included in scope of delivery)

The SINAMICS S210 training case is supplied as a trolley with a hood.

Technical specifications

SINAMICS S210 training case	6AG1067-1AA33-0AA0
Supply voltage	230 V 1 AC
Dimensions	
• Width	420 mm (16.54 in)
• Height	580 mm (22.83 in)
• Depth	340 mm (13.39 in)
Weight, approx.	21 kg (46.3 lb)

Selection and ordering data

Description	Article No.
SINAMICS S210 training case	**6AG1067-1AA33-0AA0**

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Overview

Our understanding of an application is the customer-specific solution of an automation task based on standard hardware and software components. In this respect, industry knowledge and technological expertise are just as important as expert knowledge about how our products and systems work. We are setting ourselves this challenge with more than 280 application engineers in 20 countries.

Application centers

We currently have application centers in:

- Germany:
  Head Office in Erlangen and in other German regions, e.g. in Munich, Nuremberg, Stuttgart, Mannheim, Frankfurt, Chemnitz, Cologne, Bielefeld, Bremen, Hanover, Hamburg
- Belgium: Brussels
- Brazil: Sao Paulo
- China: Beijing and 12 regions
- Denmark: Ballerup
- France: Paris
- Great Britain: Manchester
- India: Mumbai
- Italy: Bologna, Milan
- Japan: Tokyo, Osaka
- The Netherlands: The Hague
- Austria: Vienna
- Poland: Warsaw
- Sweden: Göteborg
- Switzerland: Zurich, Lausanne
- Spain: Madrid
- South Korea: Seoul
- Taiwan: Taipei
- Turkey: Istanbul
- USA: Atlanta

These application centers specialize in the use of SIMATIC/SIMOTION/SINAMICS. You therefore can rely on automation and drive specialists for implementing successful applications. By involving your personnel at an early stage in the process, we can provide a solid basis for rapid knowledge transfer, maintenance and further development of your automation solution.

Advice on applications and implementation

We offer a variety of consultation services to help you find the optimum solution for the SIMATIC/SIMOTION/SINAMICS application you want to implement:

The quotation phase includes

- clarification of technical questions,
- discussion of machine concepts and customer-specific solutions,
- selection of suitable technology and
- suggestions for implementation.

A technical feasibility study is also performed at the outset. In this way, difficult points of the application can be identified and solved early on. We can also configure and implement your application as a complete solution from a single source.

A large number of proven standard applications are available for use during the implementation phase. This saves engineering costs.

The system can be commissioned by experienced, competent personnel, if required. This saves time and trouble.

If servicing is required, we can support you on site or remotely. For further information about servicing, please see the section "Industry Services".

On-site application training

Training for the implemented applications can also be organized and carried out on site. This training for machine manufacturers and their customers does not deal with individual products, but the entire hardware and software system (for example, automation, drives and visualization).

From an initial concept to successful installation and commissioning: We provide complete support for SIMATIC/SIMOTION/SINAMICS! Contact your Siemens representative.

You can find further information at
www.siemens.com/machinebuilding

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Overview

Siemens Product Partners for Drives Options

Individual options for our drives

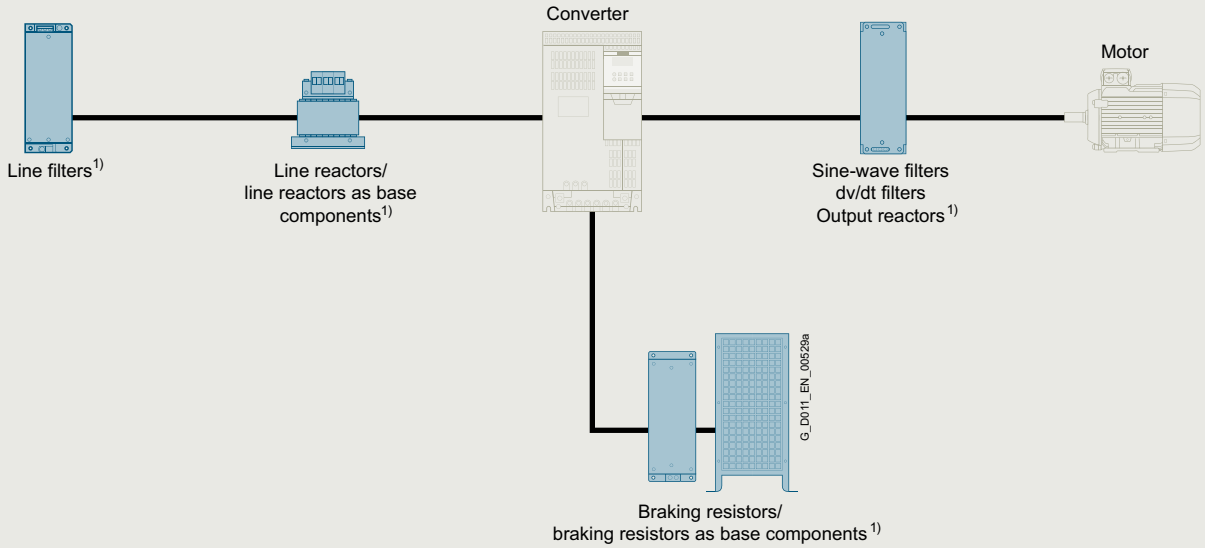
In order to meet as many customer requirements as possible in the field of drive technology, in addition to its own products, Siemens also relies on the individual and complementary services of selected partners.

We are increasingly focusing on the standard drive options, and our Siemens Product Partners for Drives Options supplement our drives with individual drive options.

This gives Siemens a unique flexibility to meet all application requirements. Naturally, we support our Siemens Product Partners for Drives Options in tailoring their options perfectly to our drives.

For you as our customer, there are multiple benefits:

- The Siemens Product Partners for Drives Options meet the same high standards of quality and performance that we place on our own products
- Drive options can be adapted to individual requirements/ designs
- The Siemens Product Partners for Drives Options know our Siemens converter portfolio and can advise you individually and quickly



1) Options that can be supplied from Siemens as well as from Product Partners for Drives Options.

Schematic circuit diagram

6

More information

You can find more information on the internet at
www.siemens.com/drives-options-partner

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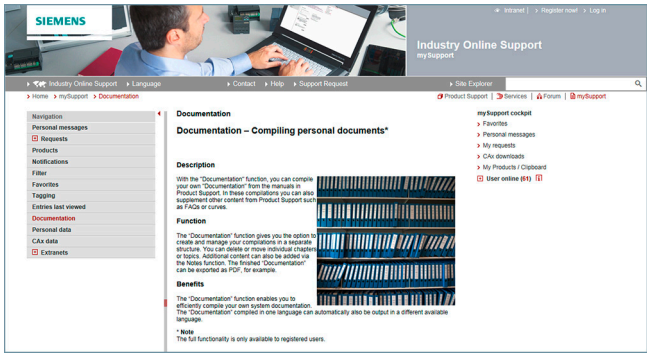
Overview

mySupport documentation – Compiling personal documents



mySupport documentation is a web-based system for generating personalized documentation based on standard documents and is part of the Siemens Industry Online Support portal.

In mySupport, a personal document library can be created in the "Documentation" category. This library can be accessed online in mySupport or also be generated in various formats for offline use.

Previously, this functionality was available in the My Documentation Manager for configurable manuals. Due to the integration in mySupport, all entries of the Industry Online Support can now be imported into the personal document library, including FAQs or product notifications.

If you have already worked with the My Documentation Manager, all of the previously created libraries will continue to be available without restrictions in mySupport.

In addition, the personal library in mySupport can be shared with other mySupport users. In this way, a collection of relevant documents can be created very effectively and used together with other mySupport users all over the world.

You must register/log in for configuring and generating/ managing.

Benefits

- Display
  View, print or download standard documents or personalized documents
- Configure
  Transfer standard documents or parts of them to personalized documents
- Generate/Manage
  Generate and manage personalized documents in the formats PDF, RTF or XML in all available languages

Function

Opening mySupport documentation in the Industry Online Support portal

- Via the product support, entry type "Manual":
  https://support.industry.siemens.com/cs/ww/en/ps/man
  By clicking on the required version of the manual and then "Show and configure", the manual opens in a modular view, where you can navigate from topic to topic. Here the direct link to a topic can be used and made available to other users. The selected document can be added to the personal library via "mySupport Cockpit" > "Add to mySupport documentation".
- Via the direct link
  https://support.industry.siemens.com/my/ww/en/documentation/advanced
  After logon/registration, the online help is displayed as the current document.

More information

You can find additional information on the internet at

- https://support.industry.siemens.com/my/ww/en/documentation
- https://support.industry.siemens.com/cs/helpcenter/en/index.htm?#persoenliche_bibliothek_aufbauen.htm

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Overview

A high-quality programmable control or drive system can be used to maximum effect only if the user is aware of the performance of the products used as a result of intensive training and good technical documentation.

This is becoming more important due to the shorter innovation cycles of modern automation products and the convergence of electronics and mechanical engineering.

A comprehensive range of documentation is available which includes a Getting Started guide, operating instructions, installation manuals and a list manual.

In addition to technical information for SINUMERIK, SINAMICS, SIMOTION and SIMOTICS, the documentation is available for downloading as a PDF file from the internet:

- SINUMERIK
  https://support.industry.siemens.com/cs/document/108464614
- SINAMICS
  https://support.industry.siemens.com/cs/document/109807358
- SIMOTION
  https://support.industry.siemens.com/cs/document/109479653
- SIMOTICS
  https://support.industry.siemens.com/cs/document/109813641

Application

Explanations of the manuals:

- **Operating Instructions**
  contain all the information needed to install the device and make electrical connections, information about commissioning and a description of the converter functions.
  Phases of use: Control cabinet construction, commissioning, operation, maintenance and servicing.
- **Hardware Installation Manual**
  contains all relevant information about the intended use of the components of a system (technical specifications, interfaces, dimensional drawings, characteristics, or possible applications), information about installation and electrical connections and information about maintenance and servicing.
  Phases of use: Control cabinet configuration/construction, maintenance and servicing.
- **Operating and Installation Instructions**
  (for converter and accessories)
  contain all relevant information about the intended use of the components, such as technical specifications, interfaces, dimensional drawings, characteristics, or possible applications.
  Phases of use: Control cabinet configuration/construction.
- **Manual/Configuration Manual**
  contains all necessary information about the intended use of the components of a system, e.g. technical specifications, interfaces, dimensional drawings, characteristics, or possible applications.
  Phases of use: Cabinet configuration/setup, circuit diagram configuration/drawing.
- **Commissioning Manual**
  contains all information relevant to commissioning after installation and wiring. It also contains all safety and warning notices relevant to commissioning in addition to overview drawings.
  Phases of use: Commissioning of components that have already been connected, configuration of system functions.
- **List Manual**
  contains all parameters, function diagrams, and faults/alarms for the product/system as well as their meanings and setting options. It contains parameter data and fault/alarm descriptions with functional correlations.
  Phases of use: Commissioning of components that have already been connected, configuration of system functions, fault cause/diagnosis.
- **Getting Started**
  provides information about getting started for the first-time user as well as references to additional information. It contains information about the basic steps to be taken during commissioning. The information in the other documentation should be carefully observed for all of the other work required.
  Phases of use: Commissioning of components that have already been connected.
- **Function Manual Drive Functions**
  contains all the relevant information about individual drive functions: Description, commissioning and integration in the drive system.
  Phases of use: Commissioning of components that have already been connected, configuration of system functions.

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General documentation

Overview

Description	Article No.
Decentralization with PROFIBUS DP/DPV1	Via bookstore
• German	**ISBN 978-3-89578-189-6**
• English	**ISBN 978-3-89578-218-3**
Automating with PROFINET: Industrial Communication Based on Industrial Ethernet	Via bookstore
• German	**ISBN 978-3-89578-293-0**
• English	**ISBN 978-3-89578-294-7**

SINAMICS S210 documentation

Overview

A **Quick Installation Guide** is supplied in hard copy form in English and Turkish with every SINAMICS S210.

Identification link according to IEC 61406 for SINAMICS S210 (6SL5...)

The ID link contains the article and serial number of the product. As a QR code, it replaces the previous data matrix code on the nameplate and takes you with the URL directly to a product information page on the internet with access to the technical documentation, data sheet, certificates, FAQs, product notifications, and catalogs. Paper package inserts become superfluous since the information is available electronically directly via the QR code, even years later. In this way, we are making a valuable contribution to the preservation of our environment. You don't need an additional app. Simply scan the QR code with your smartphone or tablet. According to IEC 61406, the QR code of an ID link is marked with a frame and a triangle at the bottom right.

With their globally unique identifiers, Siemens products are ready for Industry 4.0.

The ID serves as a connection to the administration shell with which modules of the digital twin can be provided.

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-s210/documentation

Detailed information on the SINAMICS S210 drive system, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates, manuals and operating instructions), is available on the internet at:
www.siemens.com/sinamics-s210

and is also available via the Siemens Product Configurator on the internet.
The Siemens Product Configurator can be found in SiePortal at the following address:
www.siemens.com/sinamics-s210/configuration

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Notes

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Appendix

7/2	Certificates of suitability (approvals)
7/4	Software licenses
7/6	Conversion tables
7/8	Metal surcharges
7/11	Conditions of sale and delivery

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Certificates of suitability (approvals)

Overview

Many of the products in this catalog fulfill requirements, e.g. for UL, CSA or FM and are labeled with the corresponding approval designation.

All of the certificates of suitability, approvals, certificates, declarations of conformity, test certificates, e.g. CE, UL, Safety Integrated etc. have been performed with the associated system components as they are described in the Catalogs and Configuration Manuals.

The certificates are only valid if the products are used with the described system components, are installed according to the Installation Guidelines and used for their intended purpose.

In other cases, the vendor of these products is responsible for arranging for the issue of new certificates.

Test code	Tested by	Device series/ Component	Test standard	Product category/ File-No.
UL: Underwriters Laboratories Independent public testing body in North America				
	UL according to UL standard	SINUMERIK	Standard UL 508, CSA C22.2 No. 142	NRAQ/7.E164110 NRAQ/7.E217227
		SIMOTION	Standard UL 508, CSA C22.2 No. 142	NRAQ/7.E164110
	UL according to CSA standard	SINAMICS	Standard UL 508, 508C, 61800-5-1 CSA C22.2 No. 142, 274	NRAQ/7.E164110, NMMS/2/7/8.E192450, NMMS/2/7/8.E203250, NMMS/7.E214113, NMMS/7.E253831
	UL according to UL and CSA standards			NMMS/2/7/8.E121068 NMMS/7.E355661 NMMS/7.E323473
	UL according to UL standard	SIMODRIVE	Standard UL 508C, CSA C22.2 No. 274	NMMS/2/7/8.E192450 NMMS/7.E214113
	UL according to CSA standard	SIMOTICS	Standard UL 1004-1, 1004-6, 1004-8, CSA C22.2 No. 100	PRGY2/8.E227215 PRHZ2/8.E93429 PRHJ2/8.E342747 PRGY2/8.E253922 PRHZ2/8.E342746
	UL according to UL and CSA standards			
		Line/motor reactors	Standard UL 508, 506, 5085-1, 5085-2, 1561, CSA C22.2 No. 14, 47, 66.1-06, 66.2-06	XQNX2/8.E257859 NMTR2/8.E219022 NMMS2/8.E333628 XPTQ2/8.E257852 XPTQ2/8.E103521 NMMS2/8.E224872 XPTQ2/8.E354316 XPTQ2/8.E198309 XQNX2/8.E475972
		Line filters, dv/dt filters, sine-wave filters	UL 1283, CSA C22.2 No. 8	FOKY2/8.E70122
		Resistors	UL 508, 508C, CSA C22.2 No. 14, 274	NMTR2/8.E224314 NMMS2/8.E192450 NMTR2/8.E221095 NMTR2/8.E226619
TUV: TUV Rheinland of North America Inc. Independent public testing body in North America, Nationally Recognized Testing Laboratory (NRTL) TÜV: TÜV SÜD Product Service Independent public testing body in Germany, Nationally Recognized Testing Laboratory (NRTL) for North America				
	TUV according to UL and CSA standards	SINAMICS	NRTL listing according to standard UL 508C	U7V 12 06 20078 013 U7 11 04 20078 009 U7 11 04 20078 010 U7 11 04 20078 011
		SIMOTION	NRTL listing according to standard UL 508	U7V 13 03 20078 01
		SIMODRIVE	NRTL listing according to standard UL 508C, CSA C22.2. No. 14	CU 72090702
		Motion Control Encoder	NRTL listing according to UL 61010-1 CSA C22.2 No. 61010-1	U8V 10 06 20196 024

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Overview

Test code	Tested by	Device series/ Component	Test standard	Product category/ File-No.
CSA: Canadian Standards Association Independent public testing body in Canada				
	CSA according to CSA standard	SINUMERIK	Standard CSA C22.2 No. 142	2252-01 : LR 102527
FMRC: Factory Mutual Research Corporation Independent public testing body in North America				
	FM according to FM standard	SINUMERIK	Standard FMRC 3600, FMRC 3611, FMRC 3810, ANSI/ISA S82.02.1	–
EAC: Independent public testing body within the Eurasian Conformity Area				
	EAC in accordance with the EAC Directive	SINAMICS SINUMERIK SIMOTION	Standard IEC 61800-5-1/-2, IEC 61800-3	–
RCM: Australian Communications and Media Authority Independent public testing body in Australia				
	RCM according to EMC standard	SINAMICS SINUMERIK SIMOTION	Standard IEC AS 61800-3, EN 61800-3	–
KC: National Radio Research Agency Independent public testing body in South Korea				
	KC according to EMC standard	SINAMICS SINUMERIK SIMOTION	Standard KN 11	–
BIA Federal Institute for Occupational Safety				
–	Functional safety	SINAMICS SINUMERIK SIMOTION	Standard EN 61800-5-2	–
TÜV SÜD Rail				
–	Functional safety	SINAMICS SINUMERIK SIMOTION	Standard EN 61800-5-2	–

More information about certificates can be found online at:
https://support.industry.siemens.com/cs/ww/en/ps/cert

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Software licenses

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of supply can be found in the readme file supplied with the relevant product(s).

License types

Siemens Digital Industries and Smart Infrastructure offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of License (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

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Overview

ServicePack

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Digital Industries and Smart Infrastructure supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

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Appendix

Conversion tables

Rotary inertia (to convert from A to B, multiply by entry in table)

A \ B	lb-in^2	lb-ft^2	lb-in-s^2	lb-ft-s^2 slug-ft^2	kg-cm^2	kg-cm-s^2	gm-cm^2	gm-cm-s^2	oz-in^2	oz-in-s^2
lb-in^2	1	6.94×10^{-3}	2.59×10^{-3}	2.15×10^{-4}	2.926	2.98×10^{-3}	2.92×10^{3}	2.984	16	4.14×10^{-2}
lb-ft^2	144	1	0.3729	3.10×10^{-2}	421.40	0.4297	4.21×10^{5}	429.71	2304	5.967
lb-in-s^2	386.08	2.681	1	8.33×10^{-2}	1.129×10^{3}	1.152	1.129×10^{6}	1.152×10^{3}	6.177×10^{3}	16
lb-ft-s^2 slug-ft^2	4.63×10^{3}	32.17	12	1	1.35×10^{4}	13.825	1.355×10^{7}	1.38×10^{4}	7.41×10^{4}	192
kg-cm^2	0.3417	2.37×10^{-3}	8.85×10^{-4}	7.37×10^{-5}	1	1.019×10^{-3}	1000	1.019	5.46	1.41×10^{-2}
kg-cm-s^2	335.1	2.327	0.8679	7.23×10^{-2}	980.66	1	9.8×10^{5}	1000	5.36×10^{3}	13.887
gm-cm^2	3.417×10^{-4}	2.37×10^{-6}	8.85×10^{-7}	7.37×10^{-8}	1×10^{-3}	1.01×10^{-6}	1	1.01×10^{-3}	5.46×10^{-3}	1.41×10^{-5}
gm-cm-s^2	0.335	2.32×10^{-3}	8.67×10^{-4}	7.23×10^{-5}	0.9806	1×10^{-3}	980.6	1	5.36	1.38×10^{-2}
oz-in^2	0.0625	4.34×10^{-4}	1.61×10^{-4}	1.34×10^{-5}	0.182	1.86×10^{-4}	182.9	0.186	1	2.59×10^{-3}
oz-in-s^2	24.13	0.1675	6.25×10^{-2}	5.20×10^{-3}	70.615	7.20×10^{-2}	7.09×10^{4}	72.0	386.08	1

Torque (to convert from A to B, multiply by entry in table)

A \ B	lb-in	lb-ft	oz-in	N-m	kg-cm	kg-m	gm-cm	dyne-cm
lb-in	1	8.333×10^{-2}	16	0.113	1.152	1.152×10^{-2}	1.152×10^{3}	1.129×10^{6}
lb-ft	12	1	192	1.355	13.825	0.138	1.382×10^{4}	1.355×10^{7}
oz-in	6.25×10^{-2}	5.208×10^{-3}	1	7.061×10^{-3}	7.200×10^{-2}	7.200×10^{-4}	72.007	7.061×10^{4}
N-m	8.850	0.737	141.612	1	10.197	0.102	1.019×10^{4}	1×10^{7}
kg-cm	0.8679	7.233×10^{-2}	13.877	9.806×10^{-2}	1	10^{-2}	1000	9.806×10^{5}
kg-m	86.796	7.233	1.388×10^{3}	9.806	100	1	1×10^{5}	9.806×10^{7}
gm-cm	8.679×10^{-4}	7.233×10^{-5}	1.388×10^{-2}	9.806×10^{-5}	1×10^{-3}	1×10^{-5}	1	980.665
dyne-cm	8.850×10^{-7}	7.375×10^{-8}	1.416×10^{-5}	10^{-7}	1.0197×10^{-6}	1.019×10^{-8}	1.019×10^{-3}	1

Length (to convert from A to B, multiply by entry in table)

A \ B	inches	feet	cm	yd	mm	m
inches	1	0.0833	2.54	0.028	25.4	0.0254
feet	12	1	30.48	0.333	304.8	0.3048
cm	0.3937	0.03281	1	1.09×10^{-2}	10	0.01
yd	36	3	91.44	1	914.4	0.914
mm	0.03937	0.00328	0.1	1.09×10^{-3}	1	0.001
m	39.37	3.281	100	1.09	1000	1

Power (to convert from A to B, multiply by entry in table)

A \ B	hp	Watts
hp (English)	1	745.7
(lb-in) (deg./s)	2.645×10^{-6}	1.972×10^{-3}
(lb-in) (r/min)	1.587×10^{-5}	1.183×10^{-2}
(lb-ft) (deg./s)	3.173×10^{-5}	2.366×10^{-2}
(lb-ft) (r/min)	1.904×10^{-4}	0.1420
Watts	1.341×10^{-3}	1

Force (to convert from A to B, multiply by entry in table)

A \ B	lb	oz	gm	dyne	N
lb	1	16	453.6	4.448×10^{5}	4.4482
oz	0.0625	1	28.35	2.780×10^{4}	0.27801
gm	2.205×10^{-3}	0.03527	1	1.02×10^{-3}	N.A.
dyne	2.248×10^{-6}	3.59×10^{-5}	980.7	1	0.00001
N	0.22481	3.5967	N.A.	100000	1

Mass (to convert from A to B, multiply by entry in table)

A \ B	lb	oz	gm	kg	slug
lb	1	16	453.6	0.4536	0.0311
oz	6.25×10^{-2}	1	28.35	0.02835	1.93×10^{-3}
gm	2.205×10^{-3}	3.527×10^{-2}	1	10^{-3}	6.852×10^{-5}
kg	2.205	35.27	10^{3}	1	6.852×10^{-2}
slug	32.17	514.8	1.459×10^{4}	14.59	1

Rotation (to convert from A to B, multiply by entry in table)

A \ B	r/min	rad/s	degrees/s
r/min	1	0.105	6.0
rad/s	9.55	1	57.30
degrees/s	0.167	1.745×10^{-2}	1

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Temperature Conversion

°F	°C	°C	°F
0	–17.8	–10	14
32	0	0	32
50	10	10	50
70	21.1	20	68
90	32.2	30	86
98.4	37	37	98.4
212	100	100	212
subtract 32 and multiply by $^5/_9$		multiply by $^9/_5$ and add 32	

Mechanism Efficiencies

Acme-screw with brass nut	~0.35–0.65
Acme-screw with plastic nut	~0.50–0.85
Ball-screw	~0.85–0.95
Chain and sprocket	~0.95–0.98
Preloaded ball-screw	~0.75–0.85
Spur or bevel-gears	~0.90
Timing belts	~0.96–0.98
Worm gears	~0.45–0.85
Helical gear (1 reduction)	~0.92

Friction Coefficients

Materials	μ
Steel on steel (greased)	~0.15
Plastic on steel	~0.15–0.25
Copper on steel	~0.30
Brass on steel	~0.35
Aluminum on steel	~0.45
Steel on steel	~0.58

Mechanism	μ
Ball bushings	<0.001
Linear bearings	<0.001
Dove-tail slides	~0.2++
Gibb ways	~0.5++

Material Densities

Material	lb-in^3	gm-cm^3
Aluminum	0.096	2.66
Brass	0.299	8.30
Bronze	0.295	8.17
Copper	0.322	8.91
Hard wood	0.029	0.80
Soft wood	0.018	0.48
Plastic	0.040	1.11
Glass	0.079–0.090	2.2–2.5
Titanium	0.163	4.51
Paper	0.025–0.043	0.7–1.2
Polyvinyl chloride	0.047–0.050	1.3–1.4
Rubber	0.033–0.036	0.92–0.99
Silicone rubber, without filler	0.043	1.2
Cast iron, gray	0.274	7.6
Steel	0.280	7.75

Wire Gauges[1)]

Cross-section mm^2	Standard Wire Gauge (SWG)	American Wire Gauge (AWG)
0.2	25	24
0.3	23	22
0.5	21	20
0.75	20	19
1.0	19	18
1.5	17	16
2.5	15	13
4	13	11
6	12	9
10	9	7
16	7	6
25	5	3
35	3	2
50	0	1/0
70	000	2/0
95	00000	3/0
120	0000000	4/0
150	–	6/0
185	–	7/0

1) The table shows approximate SWG/AWG sizes nearest to standard metric sizes; the cross-sections do not match exactly.

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Explanation of the raw material/metal surcharges[1)]

Surcharge calculation

To compensate for variations in the price of the raw materials silver, copper, aluminum, lead, gold, dysprosium[2)] and/or neodym[2)], surcharges are calculated on a daily basis using the so-called metal factor. These apply to products containing these raw materials and are calculated per raw material. These surcharges are added to the price of a product if the basic official price (BOP) of the raw material in question is exceeded.

Surcharges are calculated in accordance with the following criteria:

Basic official price (BOP) of the raw material

- BOP of the workday prior to receipt of the order or prior to release order (Daily Price) for:
  - Silver (processed) [3)]
  - Gold (processed) [3)]
  - Aluminum per 100 kg (LME-notation/10, converted from USD to EUR using LME-FX-Rate [MTLE] +1.2%) [4)]
  - Copper per 100 kg (LME-notation/10, converted from USD to EUR using LME-FX-Rate [MTLE] +1.2%) + 1% [4)]
  - Lead (constant 199.50 EUR per 100 kg)
- If BOP is suspended, the last one is used.

Metal factor of the products

Certain products are displayed with a metal factor. The metal factor determines the official price (for those raw materials concerned) as of which the metal surcharges are applied and the calculation method used (weight or percentage method). An exact explanation is given below.

Structure of the metal factor

Metal factor consists of several digits; the first digit indicates whether the percentage method of calculation refers to the list price or a discounted price (customer net price) (L = list price / N = customer net price).

The remaining digits indicate the method of calculation used for the respective raw material. If no surcharge is added for a raw material, a "-" is used.

1st digit	List or customer net price using the percentage method
2nd digit	for silver (AG)
3rd digit	for copper (CU)
4th digit	for aluminum (AL)
5th digit	for lead (PB)
6th digit	for gold (AU)
7th digit	for dysprosium (Dy)[2)]
8th digit	for neodym (Nd)[2)]

Weight method

The weight method uses the BOP, the daily price and the raw material weight. In order to calculate the surcharge, the BOP must be subtracted from the daily price. The difference is then multiplied by the raw material weight.

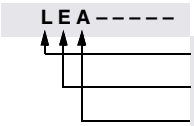
The BOP can be found in the table below using the number (1 to 9) of the respective digit of the metal factor. The raw material weight can be found in the respective product descriptions.

Percentage method

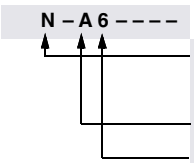
Use of the percentage method is indicated by the letters A-Z at the respective digit of the metal factor.

The surcharge is increased - dependent on the deviation of the daily price compared with the BOP - using the percentage method in "steps" and consequently offers surcharges that remain constant within the framework of this "step range". A higher percentage rate is charged for each new step. The respective percentage level can be found in the table below.

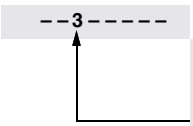
Metal factor examples



Basis for % surcharge: List price
Silver Basis 150 €, Step 50 €, 0.5 %
Copper Basis 150 €, Step 50 €, 0.1 %
No surcharge for aluminum
No surcharge for lead
No surcharge for gold
No surcharge for dysprosium
No surcharge for neodym



Basis for % surcharge: Customer net price
No surcharge for silver
Copper Basis 150 €, Step 50 €, 0.1 %
Aluminum acc. to weight, basic offic. price 225 €
No surcharge for lead
No surcharge for gold
No surcharge for dysprosium
No surcharge for neodym



No basis necessary
No surcharge for silver
Copper acc. to weight, basic official price 150 €
No surcharge for aluminum
No surcharge for lead
No surcharge for gold
No surcharge for dysprosium
No surcharge for neodym

1) Refer to the separate explanation on the next page regarding the raw materials dysprosium and neodym (= rare earths).
2) For a different method of calculation, refer to the separate explanation for these raw materials on the next page.
3) Source: Umicore, Hanau (https://pmm.umicore.com/en).
4) Source: The London Metal Exchange – an HKEX Company (https://www.lme.com/).
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Explanation of the raw material/metal surcharges for dysprosium and neodym (rare earths)

Surcharge calculation

To compensate for variations in the price of the raw materials silver[1], copper[1], aluminum[1], lead[1], gold[1], dysprosium and/or neodym, surcharges are calculated on a daily basis using the so-called metal factor. This applies to products containing at least one of these raw materials. The surcharge for dysprosium and neodym is calculated as a supplement to the price of a product if the basic official price (BOP) of the raw material in question is exceeded.

The surcharge is calculated in accordance with the following criteria:

- Basic official price (BOP) of the raw material[2]
  Three-month basic average price (see below) in the period before the quarter in which the order was received or the release order took place (average official price) for
  - Dysprosium (Dy metal, 99 %min. FOB China; USD/kg)
  - Neodym (Nd metal, 99 %min. FOB China; USD/kg)
- Metal factor of the products
  Certain products are displayed with a metal factor. The metal factor indicates (for those raw materials concerned) the BOP as of which the surcharges for dysprosium and neodym are calculated using the weight method. An exact explanation of the metal factor is given below.

Three-month average price

The prices of rare earths vary according to the foreign currency, and there is no freely accessible stock exchange listing. This makes it more difficult for all parties involved to monitor changes in price. In order to avoid continuous adjustment of the surcharges, but to still ensure fair, transparent pricing, an average price is calculated over a three-month period using the average monthly foreign exchange rate from USD to EUR (source: European Central Bank). Since not all facts are immediately available at the start of each month, a one-month buffer is allowed before the new average price applies.

Examples of calculation of the average official price:

Period for calculation of the average price:	Period during which the order/release order is effected and the average price applies:
Sep 2012 - Nov 2012	Q1 in 2013 (Jan - Mar)
Dec 2012 - Feb 2013	Q2 in 2013 (Apr - Jun)
Mar 2013 - May 2013	Q3 in 2013 (Jul - Sep)
Jun 2013 - Aug 2013	Q4 in 2013 (Oct - Dec)

Structure of the metal factor

The metal factor consists of several digits; the first digit is not relevant to the calculation of dysprosium and neodym.

The remaining digits indicate the method of calculation used for the respective raw material. If no surcharge is added for a raw material, a "-" is used.

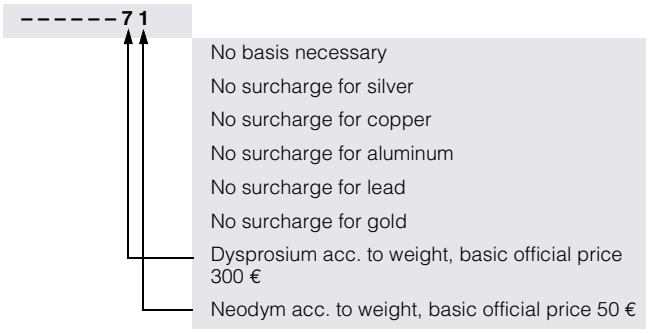
1st digit	List or customer net price using the percentage method
2nd digit	for silver (AG)[1]
3rd digit	for copper (CU)[1]
4th digit	for aluminum (AL)[1]
5th digit	for lead (PB)[1]
6th digit	for gold (AU)[1]
7th digit	for dysprosium (Dy)
8th digit	for neodym (Nd)

Weight method

The weight method uses the basic official price, the average price and the raw material weight. In order to calculate the surcharge, the BOP must be subtracted from the average price. The difference is then multiplied by the raw material weight.

The basic official price can be found in the table below using the number (1 to 9) of the respective digit of the metal factor. Your Sales contact can inform you of the raw material weight.

Metal factor examples



[1] For a different method of calculation, refer to the separate explanation for these raw materials on the previous page.

[2] Source: Asian Metal Ltd (www.asianmetal.com)

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Metal surcharges

Values of the metal factor

Percentage method	Basic official price in €	Step range in €	% surcharge 1st step	% surcharge 2nd step	% surcharge 3rd step	% surcharge 4th step	% surcharge per additional step
			Price in €	Price in €	Price in €	Price in €	
			150.01 - 200.00	200.01 - 250.00	250.01 - 300.00	300.01 - 350.00	
A	150	50	0.1	0.2	0.3	0.4	0.1
B	150	50	0.2	0.4	0.6	0.8	0.2
C	150	50	0.3	0.6	0.9	1.2	0.3
D	150	50	0.4	0.8	1.2	1.6	0.4
E	150	50	0.5	1.0	1.5	2.0	0.5
F	150	50	0.6	1.2	1.8	2.4	0.6
G	150	50	1.0	2.0	3.0	4.0	1.0
H	150	50	1.2	2.4	3.6	4.8	1.2
I	150	50	1.6	3.2	4.8	6.4	1.6
J	150	50	1.8	3.6	5.4	7.2	1.8
			175.01 - 225.00	225.01 - 275.00	275.01 - 325.00	325.01 - 375.00	
O	175	50	0.1	0.2	0.3	0.4	0.1
P	175	50	0.2	0.4	0.6	0.8	0.2
R	175	50	0.5	1.0	1.5	2.0	0.5
			225.01 - 275.00	275.01 - 325.00	325.01 - 375.00	375.01 - 425.00	
S	225	50	0.2	0.4	0.6	0.8	0.2
U	225	50	1.0	2.0	3.0	4.0	1.0
V	225	50	1.0	1.5	2.0	3.0	1.0
W	225	50	1.2	2.5	3.5	4.5	1.0
			150.01 - 175.00	175.01 - 200.00	200.01 - 225.00	225.01 - 250.00	
Y	150	25	0.3	0.6	0.9	1.2	0.3
			400.01 - 425.00	425.01 - 450.00	450.01 - 475.00	475.01 - 500.00	
Z	400	25	0.1	0.2	0.3	0.4	0.1
	Price basis (1st digit)						
L	Calculation based on the list price						
N	Calculation based on the customer net price (discounted list price)						
Weight method	**Basic official price in €**						
1	50	Calculation based on raw material weight					
2	100						
3	150						
4	175						
5	200						
6	225						
7	300						
8	400						
9	555						
Miscellaneous							
-	No metal surcharge						

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1. General Provisions

By using this catalog you can purchase hard- and software products as well as services (together hereinafter referred to as "products") described therein from Siemens Aktiengesellschaft subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Note, for products purchased from any Siemens entity having a registered office outside of Germany, the respective terms and conditions of sale and delivery of the respective Siemens entity apply exclusively. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in European Union

For customers with a seat or registered office in European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the text of the product description, these specific terms and conditions shall apply and subordinate thereto,,
- for stand-alone software products and software products forming a part of a product or project, the "General Conditions for Software Products for Infrastructure & Industry Business (German law)"[1)] and/or
- for consulting services the "Allgemeine Geschäftsbedingungen für Beratungsleistungen für Infrastructure & Industry Geschäft (Deutsches Recht)"[1)] (available only in German) and/or
- for other services, the „Supplementary Terms and Conditions for Services for Infrastructure & Industry Business (German Law) ("BL")"[1)] and/or
- for other products the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)].
  In case such products should contain Open Source Software, the conditions of which shall prevail over the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)], the Product will be given a note as to which special conditions apply to this open source software. This shall apply mutatis mutandis for notices referring to other third-party software components.

1.2 For customers with a seat or registered office outside European Union

For customers with a seat or registered office outside European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for consulting services the "Standard Terms and Conditions for Consulting Services for Infrastructure & Industry Business (Swiss Law)"[1)] and/or
- for other services the "International Terms & Conditions for Services"[1)] supplemented by "Software Licensing Conditions"[1)] and/or
- for other products the "International Terms & Conditions for Products"[1)] supplemented by "Software Licensing Conditions"[1)]

1.3 For customers with master or framework agreement

To the extent products offered are covered by an existing master or framework agreement, the terms and conditions of that agreement shall apply instead of T&C.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials.
A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation. The metal factor, provided it is relevant, can be found in the respective product description.

You will find a detailed explanation of the metal factor on the page headed "Metal surcharges".

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog – especially with regard to data, dimensions and weights given – these are subject to change without prior notice.

[1)] The text of the Terms and Conditions of Siemens AG can be downloaded at
https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

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4. Export Control and Sanctions Compliance

4.1 General

Customer shall comply with all applicable sanctions, embargoes and (re-)export control laws and regulations, and, in any event, with those of the European Union, the United States of America and any locally applicable jurisdiction (collectively "Export Regulations").

4.2 Checks for Products

Prior to any transaction by customer concerning products (including hardware, documentation and technology) delivered by Siemens, or products (including maintenance and technical support) performed by Siemens with a third party, customer shall check and certify by appropriate measures that

- (i) the customer's use, transfer, or distribution of such products, the brokering of contracts or the provision of other economic resources in connection with products will not be in violation of any Export Regulations, also taking into account any prohibitions to circumvent these (e.g., by undue diversion)
- (ii) the products are not intended or provided for prohibited or unauthorized non-civilian purposes (e.g. armaments, nuclear technology, weapons, or any other usage in the field of defense and military);
- (iii) customer has screened all direct and indirect parties involved in the receipt, use, transfer, or distribution of the products against all applicable restricted party lists of the Export Regulations concerning trading with entities, persons and organizations listed therein and
- (iv) products within the scope of items-related restrictions, as specified in the respective annexes to the Export Regulations, will not, unless permitted by the Export Regulations, be
  (a) exported, directly or indirectly (e.g., via Eurasian Economic Union (EAEU) countries), to Russia or Belarus, or
  (b) resold to any third party business partner that does not take a prior commitment not to export such products to Russia or Belarus.

4.3 Non-Acceptable Use of Software and Cloud Services

Customer shall not, unless permitted by the Export Regulations or respective governmental licenses or approvals,

(i) download, install, access or use the products from or in any location prohibited by or subject to comprehensive sanctions or subject or to license requirements according to the Export Regulations;
(ii) grant access to, transfer, (re-)export (including any "deemed (re-)exports"), or otherwise make available the products to any entity, person, or organization identified on a restricted party list of the Export Regulations;
(iii) use the products for any purpose prohibited by the Export Regulations (e.g. use in connection with armaments, nuclear technology or weapons);
(iv) upload to a products platform any customer content unless it is non-controlled (e.g. in the EU: AL = N;
in the U.S.: ECCN = N or EAR99);
(v) facilitate any of the afore mentioned activities by any user.
Customer shall provide all users with all information necessary to ensure compliance with the Export Regulations.

4.4 Semiconductor Development

Customer will not, without advance written authorization from Siemens, use offerings for the development or production of integrated circuits at any semiconductor fabrication facility located in China meeting the criteria specified in the U.S. Export Administration Regulations, 15 C.F.R. 744.23.

4.5 Information

Upon request by Siemens, customer shall promptly provide Siemens with all information pertaining to users, the intended use and the location of use or the final destination (in the case of hardware, documentation and technology) of the products. Customer will notify Siemens prior to customer disclosing any information to Siemens that is defense-related or requires controlled or special data handling pursuant to applicable government regulations, and will use the disclosure tools and methods specified by Siemens.

4.6 Reservation

Siemens shall not be obligated to fulfill this agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes or other sanctions. Customer acknowledges that Siemens may be obliged under the Export Regulations to limit or suspend access by customer and/or users to products.

5. Miscellaneous

Errors excepted and subject to change without prior notice.

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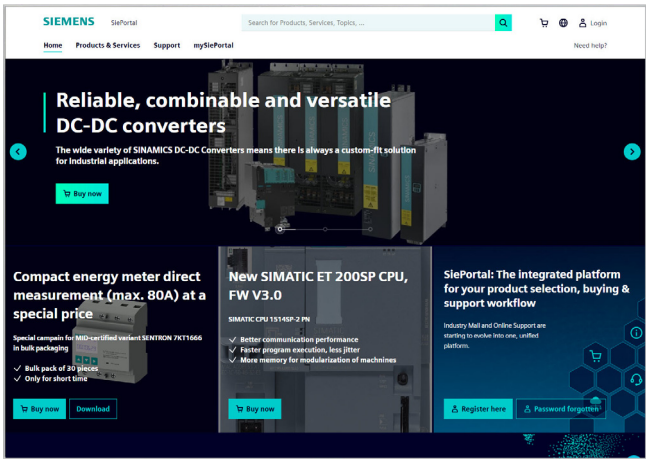

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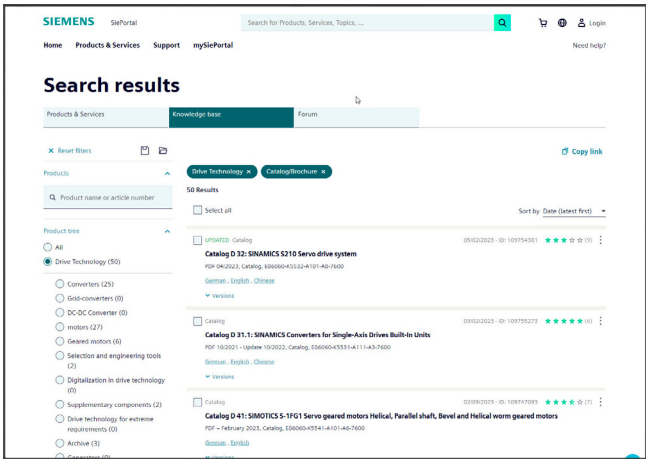

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Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit
www.siemens.com/cybersecurity-industry

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

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