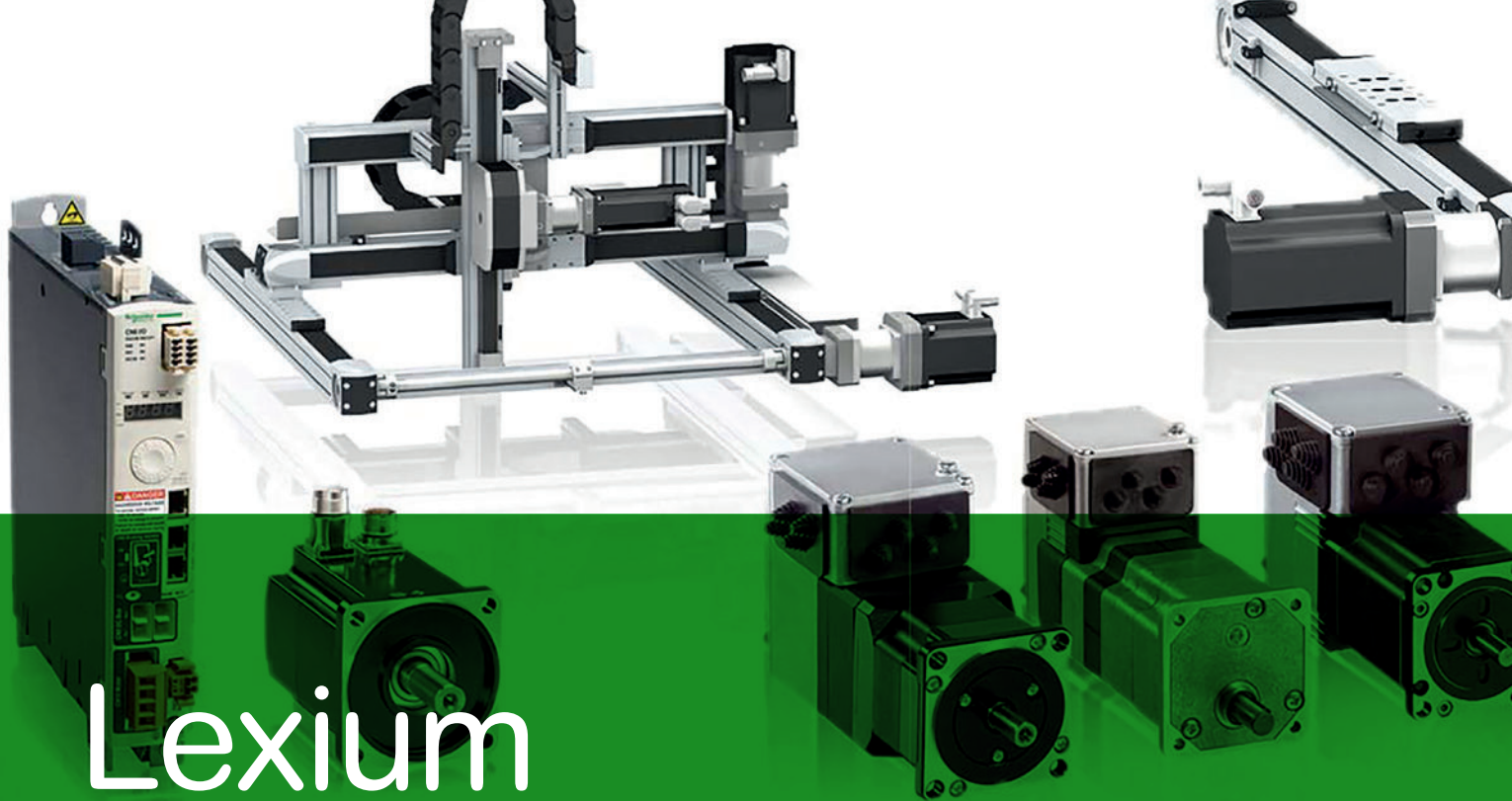# Lexium Cobot

Collaborative robot

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Lexium

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Lexium servo drives, motors, and robotics series are designed for a broad range of motion-centric machines. From single-axis to high-performance multi-axis machines, the **Lexium** range enables high-speed movements and precise positioning in packaging, material handling, material working, electronics, and food and beverage applications.

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- [Lexium Servo Drives and Motors](#)
- [Lexium Integrated Servo Drives](#)
- [Lexium Robotics](#)
- [Lexium Stepper Drives](#)

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Quick access to product information

## Get technical information about your product

Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

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- Up-to-date catalogs
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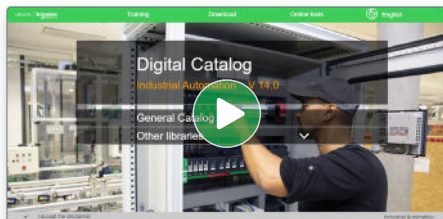
> With just 3 clicks, you can access the Industrial Automation and Control catalogs, in both English and French
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General content

Lexium Cobot
Collaborative robot

Lexium Cobot
Collaborative robot

Lexium Cobot at HANNOVER MESSE 2022
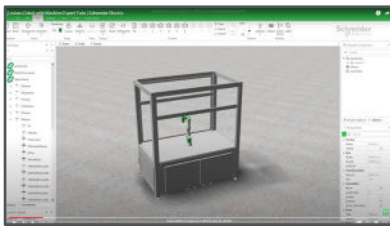
[Lexium Cobot with Machine Expert Twin](#) *(45 s.)*
Click to open video

[Lexium Cobot with Robobar and EcoStruxure Machine Expert Twin](#) *(44 s.) Click to open video*

Programming collaborative robot

Definition

Collaborative robots (cobot) are a form of robotic automation designed to work safely alongside human workers in a shared, collaborative workspace.
In most applications, a collaborative robot is tasked with repetitive, subordinated tasks while a human worker performs more complex and demanding tasks.
The accuracy, uptime and repeatability of collaborative robots are designed to complement the intelligence and problem-solving capabilities of a human worker.

Schneider Electric introduces Lexium Cobot – the range of collaborative robots – to its portfolio of Motion Control products for automation solutions, already including robotics (Lexium P & T – Delta Robots, Lexium PAS & PAD – Portal axes), Transportation system (Lexium MC12 – Multicarrier system), Motion controllers, Drives, Motors, ..., Please visit our [Motion Control and Robotics website](#)

Robots as partners to humans

Unlike the traditional industrial robot that works for humans, the collaborative robot (cobot) is made to work with humans. While the traditional industrial robot remains locked in its safety cage with safety barriers, the collaborative robot makes room for a real interaction between man and robot. The focus is on cooperation when the more traditional robot remains alone in its safety enclosure.

■ The human aspect of cobot can also be seen in their function: cobot does not replace employees, on the contrary, cobot enhances the value of employees by allowing them to increase their skills or to devote themselves to tasks with greater added value, for example, programming the cobot.

■ The cobot allows companies to reduce the drudgery of the employees' work.
The cobot performs tasks with low added value, difficult and/or unpleasant for its teammate, tasks reducing the risk of MusculoSkeletal Disorders (MSD) for its employees.

Reliable robots

To be able to work next to its human colleagues, the cobot is programmed to stop immediately in case of danger to people in the vicinity.
The robot is equipped with a series of sensors to avoid collisions with human workers, as well as safety protocols to stop in case of unexpected contact, avoiding the installation of safety barriers.

■ Safe cooperation with humans
■ Collision protection
■ With their rounded edges, force limits, and light weights, collaborative robots are designed for safety
■ Optional visual protection *(planned for a future launch)*
■ Precise force control *(planned for a future launch)*

Basic robot

■ Lexium Cobot can learn by teaching and free-drive functions: the user can teach points or paths to use in the application.

■ The collaborative robot does not require advanced skills, but the common sense and judgment of a human being.

■ Lexium Cobot can be easily programmed: while the traditional industrial robot will require advanced computer programming skills, Lexium Cobot is simple to program and allows for simple functionalities to program the robot oneself. In some cases, the robot can be shown how to perform a task by physically moving the robot's arm to the correct locations. This allows collaborative robots to automate several different tasks with fast changeover times, and productivity.

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Lexium Cobot
Collaborative robot

Flexible robot

Lexium Cobot can be easily moved, re-installed and re-programmed, and integrated into multiple projects, rather than simply being confined to a single task like the traditional industrial robot.

■ The versatility of the cobot allows it to work in two ways in its environment:
  □ Cooperative work: the human delegates tasks to the cobot
  □ Collaborative work: the cobot and the human interact together on the same element at the same time.
■ In addition to bringing ergonomics to the workstation and reducing drudgery, the cobot contributes to improving the quality of life at work.

Cost-effective robots

■ The use of Lexium Cobot allows to save of 30 to 40% of floor space compared to a traditional robotic cell and eliminates safety barriers.
■ Better return on investment thanks to the flexibility of the cobot allowing its integration to multiple projects within the company instead of the execution of a single operating mode as in traditional robotics.

Applications

■ Future of the business
  □ Soldering printed circuit boards or packing hundreds of boxes on a production line does not attract anyone in the industry (huge, dangerous and noisy industrial machines). In **Industry 4.0**, the operator works together with intelligent and manipulative robots: Lexium cobot is an excellent tool to attract new operators because it makes their work more intellectually interesting, more comfortable, and less painful.
  □ The benefits of Lexium Cobot in terms of image for the company with its customers. A company using collaborative robots gives an image of modernity and efficiency. The advantages brought by collaborative robots allow companies to tackle high-tech or more specialized markets.
■ Fields of application
  □ CPG (Consumer Packaged Goods)
    - Dispensing
    - Loading/unloading
    - Filling/Capping
    - Case erector
  □ Automotive
    - Assembly
    - Painting
    - Polishing
    - Screw-driving
    - Pick and Place
  □ Electronics
    - Screw-driving
    - Inspection
    - Assembly
    - Soldering
  □ Metal & Machinery
    - Palletizing
    - Loading/unloading
    - Machine tending
    - Bin picking.

Filling application

Pick and Place application
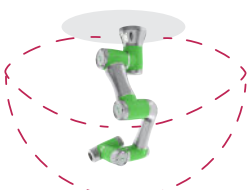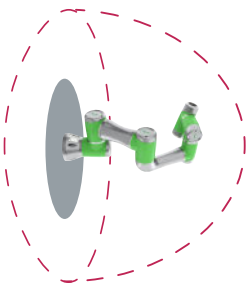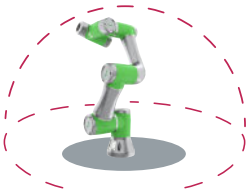

Loading/unloading application

Lexium Cobot
Collaborative robot

Cobot

Cobot Controller

Cobot Compact Controller

Offer components

Cobots

- It consists of a series of 5 collaborative robot arms characterized by:
  - payload capacity: from 3 to 18 kg (6.61...39.68 lb)
  - execution speed: from 1.5 to ...3.5 m/s (4.92...11.48 ft/s)
  - working range: from 626 mm to 1327 mm (24.65...52.24 in)
  - positioning repeatability: ± 0.02 to ± 0.03 mm *(0.0007...0.0012 in).*
- Each cobot has 6 articulated arms giving it 6 degrees of freedom and is equipped with 2x Digital inputs, 2x Digital outputs, and 2x Analog inputs.

Cobot Controllers

- The cobot is associated with a controller to operate.
  Two types of controllers:
  - Cobot Controller (100-240 V AC, IP Level IP44) is designed for stand-alone solutions or customer solutions
  - Cobot Compact Controller (48 V DC, IP Level: IP20) is used when integrating Lexium Cobot as part of a solution architecture.
- The Cobot Controllers support the following protocols: TCP/IP, Modbus TCP, Modbus RTU, ProfiNet, and Ethernet/IP.

Control Stick

- Along with the cobot controller, a Control Stick is provided, and when the set-up is finished, it could be used to control the robot.
- Commands (ON/Off, Power/Enable, Start/Stop, Home, Pause/Resume, Lock/Function, Lock indicator), can be sent to the robot using buttons on the Control Stick
- Emergency Stop button
- Indicator for Lock and Status.

Software

- The programming of the cobot is done on a graphic tablet with **EcoStruxure Cobot Expert** software available on Lexium Cobot website.
- In the case of integration of Lexium Cobot in a Schneider Motion Control architecture, it can be supported by **EcoStruxure Machine Expert** and **EcoStruxure Machine Expert Twin** software.

Installation

Cobots

- The Lexium Cobot arm is designed to be mounted on its base in various installation positions as floor, ceiling, wall mounting, or as moving platform (vertical/horizontal linear axis). Adjust the location or position respectively to the installation position during initial start-up.
- The gripper tool is designed to be installed on the tool end.
- All the joints of the cobot can move according to the values indicated in the *Selection guide* and can be placed in any position (standard articulated robots have limits on movement, space/operating radius). Precise servo control of the joints: 6 arms assembled on 6 axes of rotation give them 6 degrees of freedom, and define the range of action (working range) of each robot model.
- The aim of the installation is to ensure that there is no risk to the operator:
  - Marking the area of right of way on the floor
  - Installation of emergency stop buttons
  - Analysis of robot trajectories
  - Training of the people handling the robot.
- This leads to the definition of 5 work area configurations in volume to ensure the integral safety of the operators and to improve the global productivity
  - Collaborative work area
  - Robot work area
  - Protected area
  - Tool orientation limitation zone
  - Collision detection deactivation zone.

Cobot Controller

- The Cobot Controller is intended to be placed on a flat surface, next to the Cobot arm, and connected to it using the power supply connection cable (6 m/*19.68 ft* long), supplied with the Cobot Controller. Place it freely in its work area and maintain a distance of 100 mm *(3.9 in)* on each side of the Cobot controller.
- The Cobot Compact Controller is designed to be mounted on a panel or guide rail in a steel enclosure.

Power supply

- For stand-alone solutions, use a single-phase AC power supply
- When integrated into enclosures (Integration in Schneider Electric Machine Control solution), use an external DC power supply
Please consult our Modicon Power Supply catalogue.

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Lexium Cobot
Collaborative robot

Certifications

Lexium Cobot complies with the following directives and certifications.
For details on standards, see EU Declaration of Conformity/Declaration of Incorporation.

Directive	
Machinery Directive	2006/42/EC
Radio Equipment Directive	2014/53/EU

Certifications	
Functional Safety Certification SGS – PLd	ISO 13849-1 Safety of machinery – Safety related parts of control systems – Part 1: General principles for design
Markings *The currently applicable markings are visible on the product type plate.*	CE
	UKCA
	KCs
	cSGSus
NRTL for North America	UL1740 ANSI/RIAR15.06 (Functional) CAN/CSAZ434 (Functional) NFPA79 (Functional) CAN/CSA C22.2 No.14 (Functional)

Other certification marks may be applied, please get in contact with your Schneider representative

Green Premium™

Green Premium™ is the only label allowing you to develop effectively an environmental policy and to promote it, while preserving your business efficiency.

Lexium Cobot's offer is Green Premium, designed to limit its carbon footprint:
- Transparent environmental information about Schneider Electric products is available digitally 24/7
- Minimal use of hazardous substances in, and beyond, compliance with regulations (RoHS and REACh)
- Environmental Disclosure such as Product Environmental Profiles (PEP) to provide robust environmental information
- Circularity Profiles guides responsible product end-of-life treatments along with circular value propositions

Experience our offer on se.com/green-premium

Lexium Cobot
Collaborative robot

Operation

Stand-alone solution (customer solution)

The Cobot and the Cobot Controller can operate as an autonomous system. In this case, each Cobot requires a Cobot Controller, which is bundled according to the payload.

Connected products (wireless communication)

Cobot **+** Cobot Controller **+** EcoStruxure Cobot Expert software

Combinations of cobot and controller for a stand-alone solution

Cobot Controller	Cobot				
	LXMRL03S0000	**LXMRL05S0000** *(1)*	**LXMRL07S0000** *(1)*	**LXMRL12S0000** *(1)*	**LXMRL18S0000** *(1)*
LXMRL03C1000	☑ 3 kg payload	na	na	na	na
LXMRL07C1000 *(1)*	na	☑ 5 kg payload	☑ 7 kg payload	na	na
LXMRL12C1000 *(1)*	na	na	na	☑ 12 kg payload	☑ 18 kg payload

Note Each Cobot require a Cobot Controller.
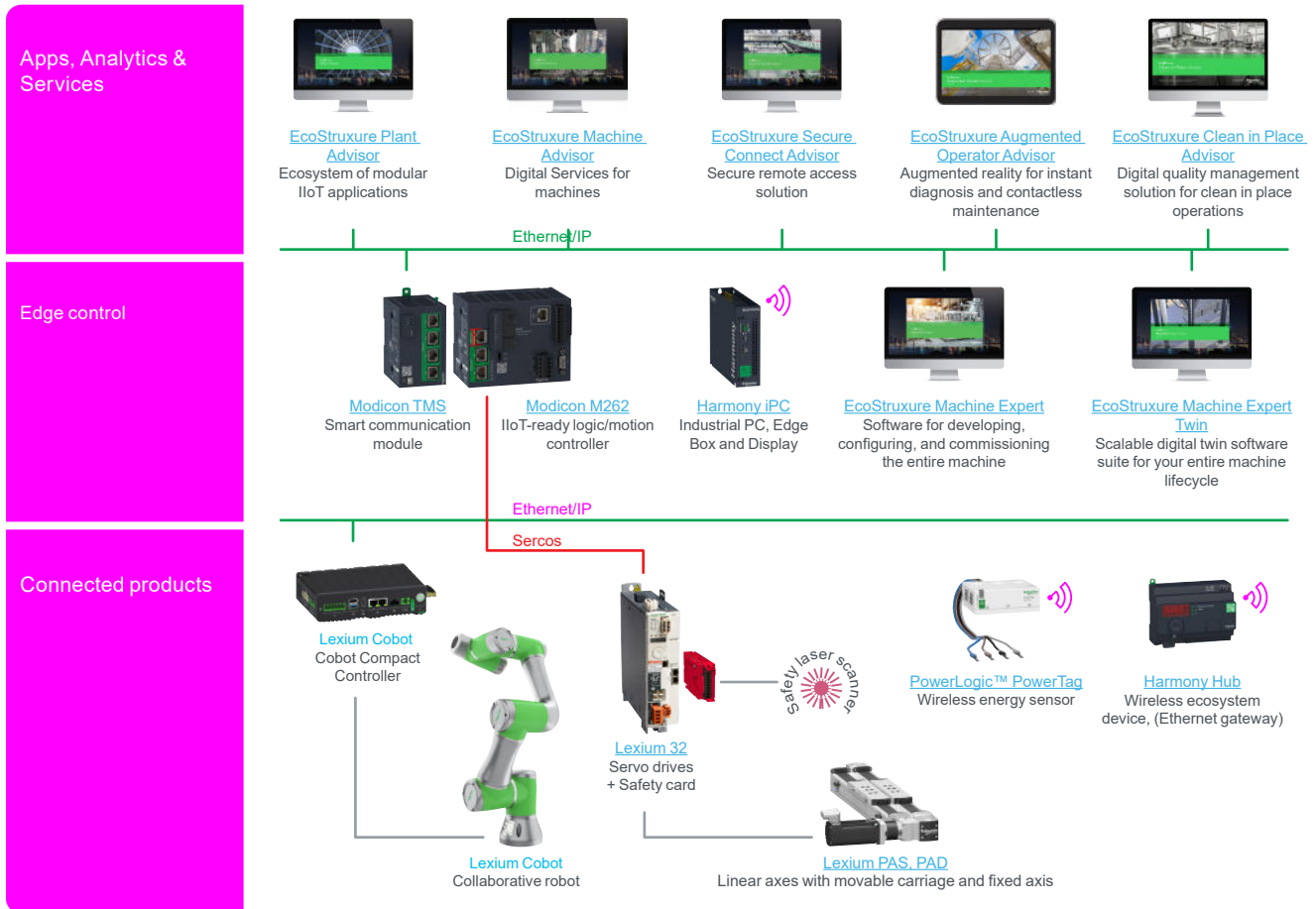
Stand-alone Cobot solution
- The Cobot system consists of a Cobot Arm and a Cobot Controller, their programming is done by the operator
  - □ Operators can change settings without special robotics knowledge
  - □ Tablet configuration: support for IOS *(1),*Android, and Windows, and wireless connectivity
  - □ Easy to control and to program, including position teaching by hand guidance according to "FREE and POINT" buttons on the Cobot Arm.
- The cobots are equipped with safety features and do not require fencing or other industrial safety equipment, further reducing costs and integration time
- Wide range of fieldbus systems for Cobot Controller: TCP/IP, Modbus TCP, Modbus RTU, ProfiNet, Ethernet/IP
- The ease of programming a collaborative robot reduces the time and resources required for integration, lowering the automation investment.

(1) Commercialisation is planned for the fourth quarter of 2023.

Lexium Cobot
Collaborative robot

Operation

Integration in Schneider Electric Machine Control solution

Lexium Cobot becomes a part of a complete machine control solution: Lexium Cobot can be combined with Lexium PAD portal axe (linear axes to move the robot on an additional axis, horizontally or vertically), monitored by a Modicon M262 motion controller on a Sercos bus, and with Ecostruxure Machine software solutions.

Apps, Analytics & Services

EcoStruxure Plant Advisor
Ecosystem of modular IIoT applications

EcoStruxure Machine Advisor
Digital Services for machines

EcoStruxure Secure Connect Advisor
Secure remote access solution

EcoStruxure Augmented Operator Advisor
Augmented reality for instant diagnosis and contactless maintenance

EcoStruxure Clean in Place Advisor
Digital quality management solution for clean in place operations

Ethernet/IP

Edge control

Modicon TMS
Smart communication module

Modicon M262
IIoT-ready logic/motion controller

Harmony iPC
Industrial PC, Edge Box and Display

EcoStruxure Machine Expert
Software for developing, configuring, and commissioning the entire machine

EcoStruxure Machine Expert Twin
Scalable digital twin software suite for your entire machine lifecycle

Ethernet/IP

Sercos

Connected products

Lexium Cobot
Cobot Compact Controller

Lexium Cobot
Collaborative robot

Lexium 32
Servo drives + Safety card

safety laser scanner

Lexium PAS, PAD
Linear axes with movable carriage and fixed axis

PowerLogic™ PowerTag
Wireless energy sensor

Harmony Hub
Wireless ecosystem device, (Ethernet gateway)

Combinations of cobot and controller for integration into machine control solution

	Cobot				
	LXMRL03S0000	LXMRL05S0000 *(1)*	LXMRL07S0000 *(1)*	LXMRL12S0000 *(1)*	LXMRL18S0000 *(1)*
Cobot Compact Controller					
LXMRL00C2000 *(1)*	☑ 3 kg payload	☑ 5 kg payload	☑ 7 kg payload	☑ 12 kg payload	☑ 18 kg payload

Note Each Cobot requires a Controller.

Integration as part of a complete EcoStruxure machine solution for targeted applications

■ Control integration with hardware platform from the Schneider portfolio (Modicon M262 or PacDrive LMC Eco, LMC Pro motion controllers, configured with EcoStruxure Machine Expert software.
■ Software integration
  □ Integration interface to Machine Expert robot library
  □ Integration with **EcoStruxure Machine Expert Twin** for simulation and digital twin
  □ Predefined function blocks available.
■ Communication integration
  □ Wide range of fieldbuses to communicate with controllers via Ethernet (including 3rd party PLC/iPC for system approach)
  □ Automation Expert interation with Next Generation Motion.

(1) Commercialisation is planned for the fourth quarter of 2023.

Robot type	Collaborative robot								
Max. payload	**3 kg** *(6.61 lb)*		**5 kg** *(11.02 lb)*		**7 kg** *(15.43 lb)*		**12 kg** *(26.45 lb)*		**18 kg** *(39.68 lb)*

		3 kg		5 kg		7 kg		12 kg		18 kg
Degree of freedom (Number of axes)		6		6		6		6		6
Operating radius (working range)		626 mm *(24.645 in)*		954 mm *(37.55 in)*		819 mm *(32.24 in)*		1327 mm *(52.24 in)*		1073 mm *(42.24 in)*
Positioning repeatability		± 0.02 mm *(0.0007 in)*		± 0.02 mm *(0.0007 in)*		± 0.02 mm *(0.0007 in)*		± 0.03 mm *(0.0012 in)*		± 0.03 mm *(0.0012 in)*
Robotic arm		Degree of motion	Max. speed	Degree of motion	Max. speed	Degree of motion	Max. speed	Degree of motion	Max. speed	Degree of motion	Max. speed
	Joint 1	± 360°	180°/s	± 360°	180°/s	± 360°	180°/s	± 360°	120°/s	± 360°	120°/s
	Joint 2	-85°... +265°	180°/s	-85°...+265°	180°/s	-85°...+265°	180°/s	-85°...+265°	120°/s	-85°...+265°	120°/s
	Joint 3	± 175°	180°/s	± 175°	180°/s	± 175°	180°/s	± 175°	120°/s	± 175°	180°/s
	Joint 4	-85°...+265°	220°/s	-85°...+265°	180°/s	-85°...+265°	180°/s	-85°...+265°	180°/s	-85°...+265°	180°/s
	Joint 5	± 360°	220°/s	± 360°	180°/s	± 360°	180°/s	± 360°	180°/s	± 360°	180°/s
	Joint 6	± 360°	220°/s	± 360°	180°/s	± 360°	180°/s	± 360°	180°/s	± 360°	180°/s
Maximum speed of the tool end		1.5 m/s *(4.92 ft/s)*		3 m/s *(9.84 ft/s)*		2.5 m/s *(8.20 ft/s)*		3 m/s *(9.84 ft/s)*		3.5 m/s *(11.48 ft/s)*
Base diameter		129 mm *(5.07 in)*		158 mm *(6.22 in)*		158 mm *(6.22 in)*		188 mm *(7.40 In)*		188 mm *(7.40 In)*
Power consumption		150 W		350 W		350 W		500 W		600 W
Embedded I/O		24 VDC powered I/O: - 2x Digital inputs - 2 Digital outputs - 1x Analog input								
Tool I/O size		M8								
Material		Aluminium								
Cable (between robot and controller)		6 m long *(19.68 ft)*								
Programming		Graphical Drag & Drop with Tablet								
Teach-in device		Android tablet/Android App								
Collaborative Standard		GB 11291.1-2011 *(1)*								
Operating temperature		0...50°C *(32 ... 122 °F)*								
IP level		IP54								
Cobot installation		Any position								
Cobot reference		**LXMRL03S 0000**		**LXMRL05S0000** *(2)*		**LXMRL07S0000** *(2)*		**LXMRL12S0000** *(2)*		**LXMRL18S0000** *(2)*
	See page	11								
Compatible controller	**Cobot Controller** 100-240 V AC IP Level: IP44									
		LXMRL03C1000		**LXMRL07C1000** *(2)*				**LXMRL12C1000** *(2)*		
	See page	11								
	Cobot Compact Controller 30...60 V DC IP Level: IP20									
		LXMRL00C2000 *(2)*								
	See page	11								

*(1) GB standards are the China national standards, also called as **Guobiao** Standards. Prefix code GB are mandatory standards that have the force of law as do other technical regulations in China.*
*(2) Commercialisation is planned for the fourth quarter of 2023.*

Lexium Cobot
Collaborative robot
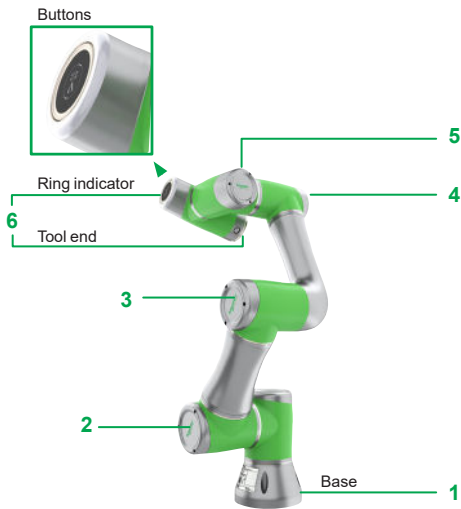
Description

The robot consists mainly of six joints and aluminium tubes
1 Joint 1 is the base of the robot used to install the robot
2 Joint 2
3 Joint 3
4 Joint 4
5 Joint 5
6 Joint 6 supports:
  □ Tool end flange, used to mount the tool (gripper). The tool can perform translational and rotational movements in the robot's working range.
  □ The illuminated ring shows the current status of the Cobot operation
  □ Play/Pause button
  □ FREE and POINT buttons
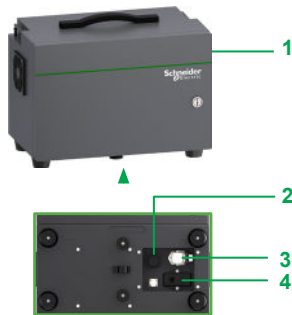
Cobot Controller
Dimensions (WxHxD): 410 x 307 x 235 mm *(16.14 x 12.08 x 9.25 in)*
1 Control stick connector
2 Communication Interface
3 Connector for connecting the controller to the cobot
4 Power supply connector (100-240 VAC)
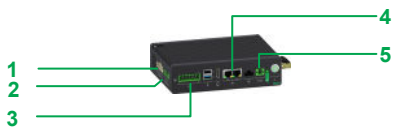
Cobot Compact Controller
Dimensions (WxHxD): 180 x 47 x 128 mm *(7.08 x 1.85 x 5.03 in)*
1 Cobot Connector
2 Power supply connector (24V DC)
3 Configurable digital I/O connector
4 Communication interface connector (RJ45) *(1)*
5 Emergency stop connector

(1) An ethernet hub can be used if multiple connections are needed, see Modicon Networking offer.

Lexium Cobot
Collaborative robot

LXMRL03S0000

LXMRL03C1000

LXMRL05S0000

LXMRL07S0000

LXMRL07C1000

LXMRL12S0000

LXMRL18S0000

LXMRL12C1000

LXMRL00C2000

References

Robots

Designation	Payload kg *(lb)*	For use with controller	Reference	Weight kg/*lb*
Collaborative robot with 6 degrees of freedom	3 *(6.61)*	LXMRL03C1000	**LXMRL03S0000**	12.000 *26.45*
	5 *(11.02)*	LXMRL07C1000	**LXMRL05S0000** *(1)*	23.000 *50.70*
	7 *(15.43)*		**LXMRL07S0000** *(1)*	22.000 *48.50*
	12 *(26.45)*	LXMRL12C1000	**LXMRL12S0000** *(1)*	41.000 *90.38*
	18 *(39.68)*		**LXMRL18S0000** *(1)*	35.000 *77.16*

Cobot Controllers

Designation	For use with Robot type	Payload kg *(lb)*	Reference	Weight kg/*lb*
Cobot Controllers - AC power supply: 100-240 V - IP level: IP44 - High-speed input for belt tracking - 16x Digital input and output - 2x Analog input or output - Communication interface: TCP/IP, Modbus TCP, Modbus RTU, ProfiNet, Ethernet/IP - Stainless steel housing	LXMRL03S0000	3 *(6.61)*	**LXMRL03C1000**	12.000 *26.45*
	LXMRL05S0000 LXMRL07S0000	5 to 7 *(11.02 to15.43)*	**LXMRL07C1000** *(1)*	12.000 *26.45*
	LXMRL12S0000 LXMRL18S0000	12 to 18 *(26.45 to 39.68)*	**LXMRL12C1000** *(1)*	16.000 *35.27*
Cobot Compact Controller (Panel mount) - DC power supply: 30...60 V - IP level: IP20 - 7x channels configurable as input or output (input power 24V DC) - Communication interface: TCP/IP, Modbus TCP, Modbus RTU, ProfiNet, Ethernet/IP - Aluminum and steel housing	LXMRL03S0000 LXMRL05S0000 LXMRL07S0000 LXMRL12S0000 LXMRL18S0000	3 to 18 *(6.61 to 39.68)*	**LXMRL00C2000** *(1)*	1.1000 *2.425*

Configuration software

EcoStruxure Cobot Expert software	For Windows version	Available on Lexium Cobot website
	For Android version	

Customization

Customization and bundling: - Color change - Brand printing - IP level IP68 rating	Consult our Customer Care Center

Accessories for cobots

Force sensor base	*Commercialisation is planned for the fourth quarter of 2023.*
Force sensor flange	
Camera 2D	
Visual protection system	

(1) Commercialisation is planned for the fourth quarter of 2023.

(1) Scheduled for commercialization in the third quarter of 2023.

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Learn more about our products at
www.se.com

Design: Schneider Electric
Photos: Schneider Electric