DATASENSING

easing automation challenges

MACHINE VISION

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DATASENSING
easing automation challenges

OUR EXPERTISE MAKES YOUR WORK EASIER

Datasensing is merging Datalogic's Sensor & Safety and Machine Vision business unit with M.D. Micro Detectors, both with 50 years of experience and representing the history of sensors in Italy since the early '70s.
Our company is developing, manufacturing and supplying Machine Vision, Sensor and Safety, with more than 200 product lines, including 22500 standard and custom part numbers, protected by over 100 patents.
Our products are designed to inspect, detect and protect your production in better and easier way, with diffused applications in industrial automation of manufacturing and intralogistics processes.
Datasensing means high technology and innovative products... but it's the experience of our extraordinary people that makes the difference, from pre-sales to order processing and post-sales.
We have a global presence, with Headquarters in Italy and offices in Europe, China and US, together with a qualified network of distribution partners in all countries.
Datasensing not only focus on products, but also on Environmental, Social and Governance initiatives, as reducing the impact of products, production and logistics.

Our Mission is to create added value through smart sensing solutions based on sustainable standard and custom products, developed with care and leading know how.
Our Vision is to be the top of mind partner to innovate sensing solutions for industrial automation.

WEBSITE

KNOWING HOW FROM 50+ YEARS

1970

DATALOGIC is founded by Romano Volta in Bologna, Italy, and DIELL in nearby Modena on the initiative of Paolo Iori, to meet the new sensor needs of the manufacturing and packaging industries

1975

DATALOGIC expands with new offices in Germany (1974), Japan (1976), US (1978).
DIELL specializes in photoelectric sensors, introducing the first cylindrical M18 (1977) one of the most popular type in the world

1980

DATALOGIC develops the optical barcode reading technology and the first industrial laser scanner application in Europe, becoming in a short time the reference technology leader

1985

DATALOGIC introduces the first barcode reader in an airport, Milan - Linate (1984) and continues its growth at a global level. DIELL changes its name to M.D. Micro Detectors introducing inductive sensors

1990

The new strategy "Il Punto di Volta" leads DATALOGIC to be "an industrial reality with constant and lasting growth, important at an international level" and to enter the portable terminal market

DATALOGIC OPTIC ELECTRONICS

DIELL

DATALOGIC
EMPOWER YOUR VISION

Datalogic Group is a global leader in the automatic data capture and factory automation markets. It is well known around the world for designing and producing barcode readers, mobile computers,sensors for detection, measurement and safety, RFID, machine vision and laser marking systems. Datalogic solutions help customers increase the quality of their processes in the Retail, Manufacturing, Transportation & Logistics, and Healthcare industries.

The Group has a rich history of over 50 years, during which enormous successes have been achieved: 8 R&D centers and 3 DL Labs in Italy, USA, Vietnam, and China; 11 manufacturing and repair facilities in the USA, Hungary, Slovakia, Italy, China, Vietnam, and Australia; a portfolio of around 1,200 patents and patent applications in multiple jurisdictions; thousands of prestigious partners and customers spread across five continents.

Datalogic Group has offices in 29 countries worldwide, with headquarters in Bologna, Italy. It is through the close cooperation of more than 3,000 employees that Datalogic can boast some of the most remarkable automatic data capture and factory automation solutions available in the market today.

To further strengthen its market position in Industrial Automation, in 2021 Datalogic acquired M.D. Micro Detectors, an Italian company specializing in optical, inductive, capacitive and ultrasonic sensors. This, merged with Datalogic's Sensors & Safety and Machine Vision Business Unit in early 2022, creating a new company and brand Datasensing.

Datasensing's Machine Vision, Sensors and Safety portfolio solves the most challenging applications in Factory Automation, specializing in Processing and Packaging machinery, and Automated Material Handling Systems related to Manufacturing Industries such as Automotive, Electronics, Food & Beverage, Pharmaceutical, Home & Personal Care, Paper and Printing, Metal- and Wood-working, Ceramics, Glass, Textiles etc.

With advanced Inspection, Detection, and Protection devices, the Datasensing Mission is to create added value through smart sensing solutions based on sustainable standard and custom products. They are developed with care and leading know how, with the Vision to be the premier partner for innovative sensing solutions for industrial automation.

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DATALOGIC is a world leader in automatic data acquisition, in 2001 is listed on the New Market of the Milan Stock Exchange and focuses on the sensor market through the new company DATASENSOR

M.D. develops ultrasonic sensors and starts manufacturing in China. DATALOGIC makes new acquisitions (Evolution Robotics, PPT Vision, Accu-Sort) and DATASENSOR becomes the Sensor & Safety business unit

DATALOGIC acquires M.D. Micro Detectors (2021) and Pekat Vision (2022), creating the new Company DATASENSING to strengthen its presence in sensors, safety and machine vision markets

1995

M.D. Micro Detectors starts the Spanish branch, Diell Ibérica SA, also introducing capacitive sensors and area light arrays.
Datalogic starts a new production plant in Castiglion Messer Raimondo, Teramo, Italy

2000

DATASENSOR
value through detection

2005

DATASENSOR wins the "International Best Factory Award" 2005 and introduces many new application sensors, a complete safety light curtains range, and an innovative smart camera sensor

2010

2015

DATALOGIC increases its presence in Manufacturing, T&L, Retail, Healthcare.
Valentina Volta is Datalogic Group's C.E.O. and the founder Romano Volta President.
The first Safety Laser Scanner is launched

2020

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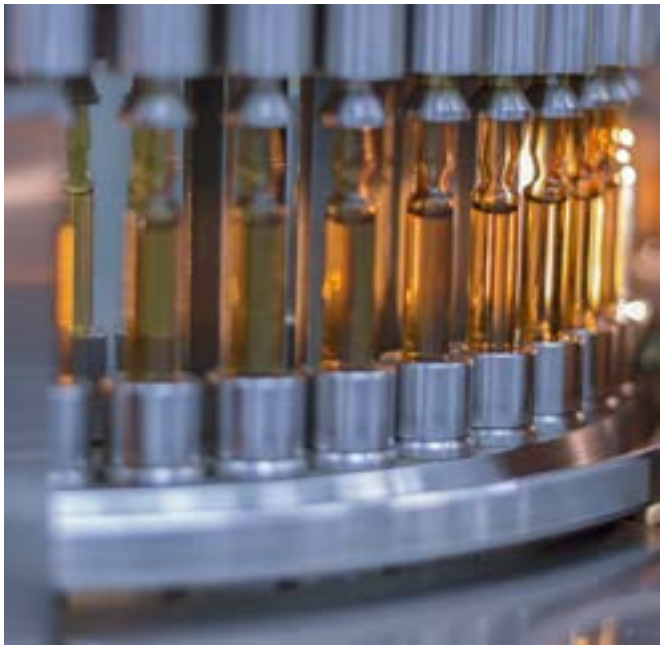
DATALOGIC
EMPOWER YOUR VISION

TRACEABILITY

Product traceability is becoming more and more important in every industry, where the identification of items along every manufacturing and intra-logistic process is required, from raw material receiving to finished good shipment whilst passing through work-in-progress management and monitoring. Datalogic provides a wide portfolio of products and solutions to solve all traceability needs.

INSPECTION



Machine vision is an indispensable tool for controlling the quality of processes and products in factory automation and intra-logistics. For this purpose Datasensing offers smart cameras, industrial cameras, vision processors and software tools suitable to read codes or characters (OCR), recognize patterns, detect defects, locate parts, guide robot arms, and control assembly and manufacturing lines.

DETECTION

Photoelectric, inductive, capacitive and ultrasonic sensors are essential in industrial automation to detect the presence of objects or parts, inspect their integrity or correct assembly and measure dimensions, distance, or positioning. Datasensing sensors are available in many different lines, models and functionalities, sensing the smallest or fastest moving objects, even with transparent or shiny surfaces.

PROTECTION

Safety devices are mandatory for operator protection in potentially hazardous areas, plants or machinery. Datasensing safety light curtains are used for the detection of finger, hand, arm, body, or presence detection in fixed applications; whereas safety laser scanners are recommended for area protection in static or dynamic applications, such as robotic cells and automated guided vehicles (AGV).

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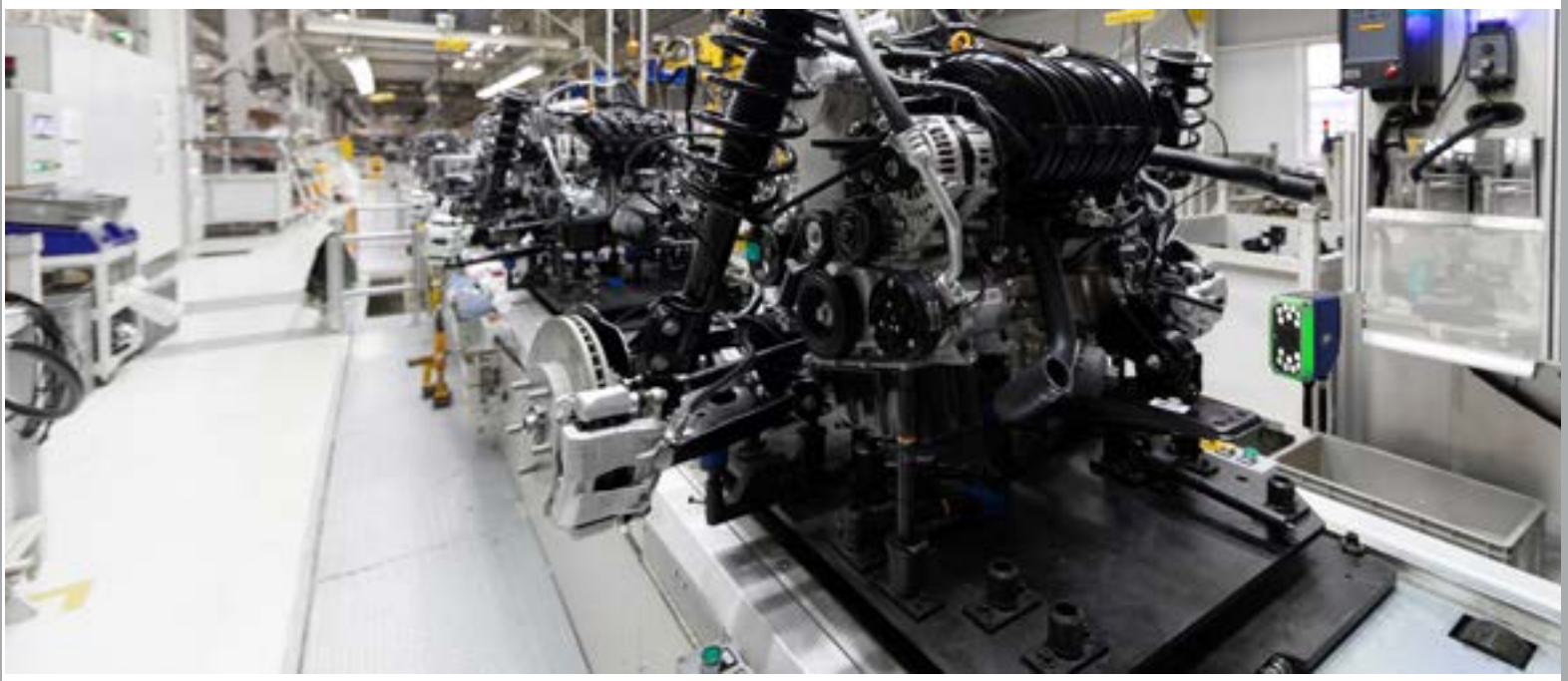
MACHINE VISION



Machine Vision is a pivotal technology in automation and automated inspection, leveraging smart devices like smart cameras and vision processors.

These systems enable the identification of parts through barcodes or optical character recognition (OCR), detection of defects, part location, and even robotic arm guidance, contributing to the control of production processes.

Smart cameras, compact and highly integrated, combine advanced image capture and analysis functionalities into a single device, simplifying machine integration. Additionally, they offer industrial-grade communication interfaces and I/O for direct connection to PLCs and actuators, making them both flexible and easy to install.

Industrial vision processors, such as the MX-E series, support high-performance multi-camera systems through GigE connectivity. This allows users to tailor system complexity and power to specific needs, with support for up to eight high-speed cameras.

Industrial cameras, equipped with the latest CMOS sensors, offer resolutions up to 20 MP with area-scan versions and up to 8k with line-scan versions.

The area-scan cameras, with their compact design, are ideal for space-constrained installations, delivering high performance and excellent cost-effectiveness. Both cameras and processors are essential tools for complex applications, such as inspecting continuous surfaces or printed materials in industries like printing.

Supporting these technologies is software like Datalogic's IMPACT suite, which allows users to create custom inspection programs quickly without requiring programming skills, thanks to its intuitive drag-and-drop interface.

Additionally, PEKAT VISION, using advanced deep learning algorithms, detects and classifies anomalies and defects, including previously unseen ones, providing an efficient solution for automated quality control.

WHAT IS MACHINE VISION?

Machine vision is the process through which a computer automatically acquires and analyzes images.
The technology uses cameras to capture images from the environment.
Then it leverages on a mix of hardware and software to elaborate the information.
Two of the most useful machine vision applications in factory automation are automatic object recognition and quality inspection (i.e. machine vision used to verify if a part is good or bad on an assembly line).

More in detail, some specific industrial machine vision applications are:

- **Object location** In robotics, machine vision could help in determinining the position of objects to guide robots in the picking process
- **Optical character recognition** OCR enables a computer to extract printed text from images and to understand the content and the meaning. In labeling, it is possible to automatically control the content and its correctness
- **Materials inspection** Machine vision capabilities in materials inspection systems ensure quality control. Machine vision checks for flaws, defects, and contaminants in a range of materials and products
- **Electronic component analysis** Machine vision is used in the manufacturing of circuit boards for tasks such as solder paste inspection and component placement
- **Items counting** This capability is used to count the items such as pills in a packet or bottles in a case

MACHINE VISION SYSTEMS

When implementing an industrial vision solution, machine vision needs to be supported by:

- **Lighting** The right light is essential to acquire good quality and consistent images, emphasizing the characteristics of the object to inspect. Sometimes the use of filters is recommended to further improve the acquired image
- **Lenses** They have the role of capturing the images and sending them to the sensor inside the camera. Different types of lenses exist, with diverse mechanical and optical features (i.e. C-Mount, microlenses, telecentric)
- **Capture board and sensor** They process images coming from the lens then convert them in a digital extension. The conversion of light into electrical signals is done thanks to one of the following technologies: complementary metal-oxide semiconductor or charge-coupled device
- **Software** A software with different algorithms, enabling the industrial vision system to accomplish all the different machine vision functions
- **Processor** The processor has the aim of running software and the related algorithms able to process the image and extract the required information
- **Communication/connectivity** Systems enabling the machine vision cameras and processing system to communicate with other industrial automation devices like PLCs, Robots, actuators (using either input/output signal or a fieldbus connection)

Two main types of machine vision cameras can be used:

- Area scan, based on rectangular sensor, able to catch an entire picture with number of pixels given by height X width
- Line scan, where the image is acquired line by line leveraging the movement of the target object

The main specifications in any vision system are sensitivity and resolution
The sensitivity refers to the ability of perceiving signals with low light and to detect weak impulses at invisible wavelengths

MACHINE VISION VS COMPUTER VISION

The terms machine vision and computer vision are often confused.
Machine vision is often associated with industrial applications of a computer's ability to see. The term computer vision is often used to describe any technology where a computer is tasked with:

- digitizing images captured by computer vision
- cameras processing the data, it contains
- acting

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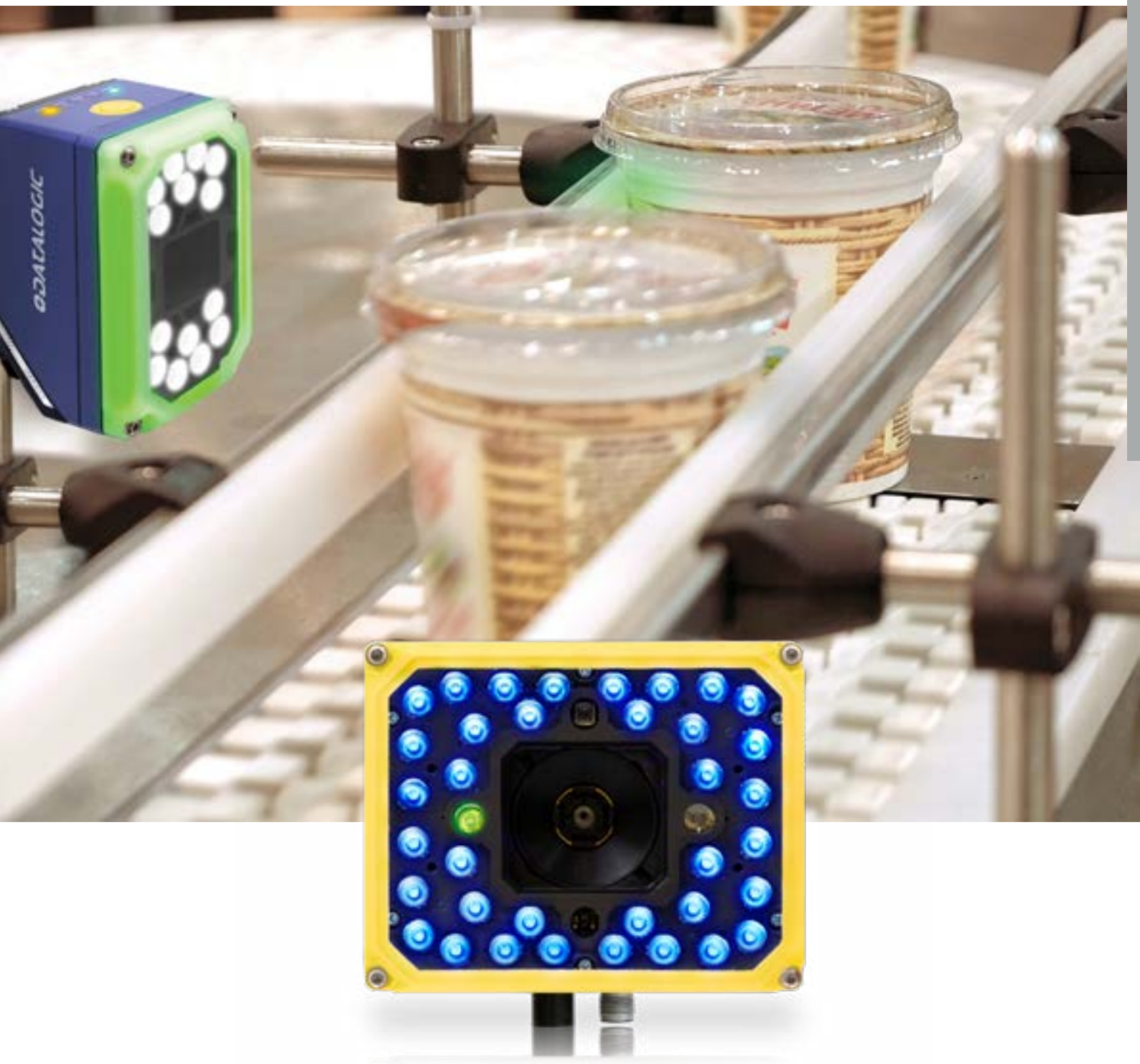

SMART CAMERAS

P2x
SMART CAMERA

IP67 360°

Industrial smart camera providing exceptional inspection performance in a compact housing. State-of-the-art CMOS imagers with resolutions up to 2 MP deliver maximum image quality.

- qHD (960 x 540) and 2MP (1920 x 1080) resolution imager options both available in monochrome and color
- Field interchangeable lenses, illuminators and filters
- Two embedded illuminator sizes: 14-LED compact and 36-LED high power both integrating TIR lenses to deliver maximum brightness onto the field of view available in 4 different colors (white, blue, red and IR)
- Lens options: Micro-video (6, 8, 12.5 and 17.5 mm) or C-Mount
- Innovative 360° software configurable visual feedback
- Top industrial grade: -10 to 50 °C / 14 to 122 °F operating temperature, IP65/67 rating
- Powered by IMPACT software suite with 100+ inspection tools
- Add-on licenses to run even the most advanced Datasensing algorithms

- Packaging machinery
- Robot guidance
- Electronics
- Automotive

P3x
SMART CAMERA

IP67 NEW!

High-end smart camera providing state of the art computing performance. With resolutions up to 5 MP, P3x enables high-accuracy quality inspection and measurement applications.

- qHD (960 x 540), 2MP (1920 x 1080) and 5MP (2560 x 1936) resolution imager options both available in monochrome and color
- Field interchangeable lenses, illuminators and filters
- Two embedded illuminator sizes: 14-LED compact and 36-LED high power both integrating TIR lenses to deliver maximum brightness onto the field of view available in 4 different colors (white, blue, red and IR)
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- Electronics
- Robot guidance
- Automotive

DATASENSING
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IP67

360°

WEBSITE

P2x
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CODE DESCRIPTION

	P2	2	M	-	0	0	0	-	0	0	0	-	ML
series	**P2**	Smart camera											
resolution	**0**	qHD (960 x 540 pixels)											
	2	2 MP (1920 x 1080 pixels)											
mono / color	**M**	Monochrome											
	C	Color											
imager type	**0**	qHD (960 x 540 pixels) color											
	1	qHD (960 x 540 pixels) mono											
	6	2 MP (1920 X 1080 pixels) color											
	7	2 MP (1920 X 1080 pixels) mono											
lens mount type	**ML**	Micro Video lens											
	CM	C-Mount lens											

TECHNICAL SPECIFICATIONS

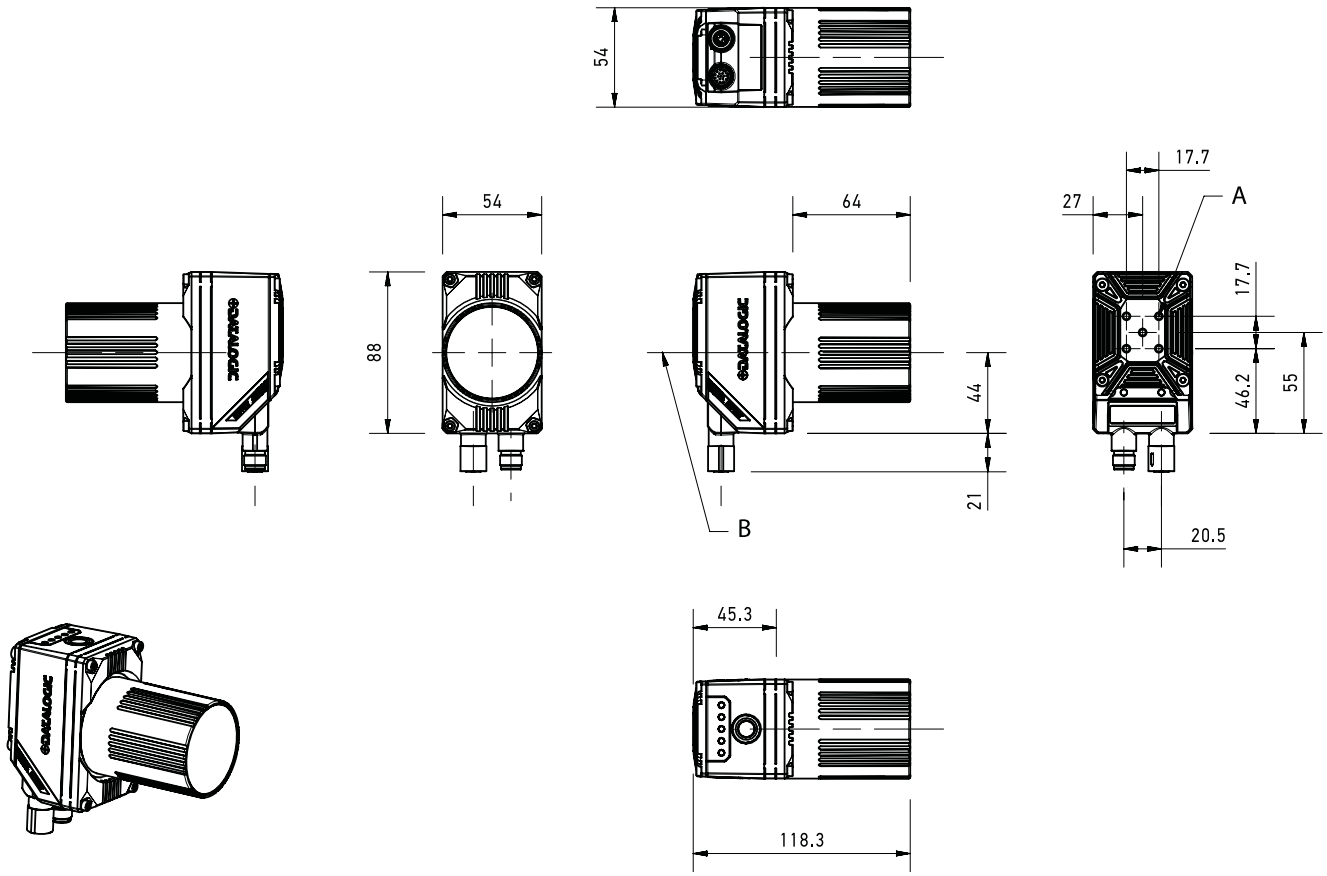
	P20M/00-000-**	P20C/00-000-**	P22M/00-000-**	P22C/00-000-**
GENERAL DATA				
Description	P20M 100-000 CM, P20M 100-000 ML	P20C 000-000 CM, P20C 000-000 ML	P22M 700-000 CM, P22M 700-000 ML	P22C 600-000 CM, P22C 600-000 ML
Storage	380 MB			
System Memory	1 GB			
Illuminator type	Illuminator colors: White, Red, Infrared, Blue Illuminator power: High Power 14 LEDs, Very High Power 36 LEDs			
Keypad button	Reset; Camera Button Event (internal software event only); Loader			
Digital IN	IN 1 (external trigger) and IN 2: opto-isolated and polarity insensitive (Max voltage: 30 Vdc, Max Input current: 10 mA)			
Digital output	OUT 1 and 2: NPN or PNP short circuit protected, opto-isolated only when connected to CBX500/800 OUT 3: NPN or PNP short circuit protected, Opto-isolated only when connected to CBX800 (Strobe signal is shared with Output 3. Output 3 is active only if the External Strobe is disabled)			
Ethernet	1000 Mbit/s supports application protocols: TCP/IP, EtherNet/IP, Profinet IO, Modbus TCP, MC protocol			
RS232	2400 to 115200 bit/s			
DETECTION CAPABILITIES				
Resolution	960 x 540 pixels		1920 x 1080 pixels	
Frame rate (FPS)	60 fps			
Imager	1/2.8 " CMOS			
Mono / Color	Monochrome	Color	Monochrome	Color
Pixel size	5.6 µm square			
Shutter	Global			
INPUT/OUTPUT				
I/O	2 IN / 3 OUT			
COMMUNICATION				
Connectivity	Ethernet/IP, PROFINET, Modbus, TCP/IP, RS232 Serial			
Serial Communications	1x RS-232 serial port			
Network Interface	1 Gbit/s Ethernet			
ELECTRICAL DATA				
Supply voltage	24 Vdc ±10%			
MECHANICAL DATA				
Dimensions	14 LEDs illuminator: 109 x 54 x 56 (4.3 x 2.1 x 2.2 in.) 36 LEDs illuminator: 116 x 126 x 70 (4.6 x 4.9 x 2.8 in.)			
Material	Aluminum (housing) and plastic (front head)			
Weight	300 g – C-Mount w/o ill. 900 g – C-Mount 36L ill., 380 g – Micro-video Lens 14L ill. 640 g - Micro-video Lens 36L ill.			
led safety	According to EN 62471			
Lens mount	C-Mount or Micro Video Lens options: 4 mm / 6 mm / 8 mm / 12 mm / 16 mm / 25 mm / 35 mm / 50 mm Lens focusing: manual			
Filters	Bandpass (red, blue, IR), YAG cut, IR cut, UV cut			
Polarizing filter	With dedicated polarizer front cover accessory			
ENVIRONMENTAL DATA				
Operating Temperature	-10 ... 50 °C			
Mechanical Protection	IP65 / IP67			
Shocks and vibrations	Vibration IEC 60068-2-6 / Shock IEC 60068-2-27			
Humidity	90 % no condensation			

AVAILABLE MODELS

Resolution	Mono / Color	Lens mount	Frame rate (FPS)	Model
960 x 540 pixels	Monochrome	C-Mount	60 fps	**P20M-100-000-CM** (937710005)
		Micro Video		**P20M-100-000-ML** (937710021)
	Color	C-Mount		**P20C-000-000-CM** (937710006)
		Micro Video		**P20C-000-000-ML** (937710022)
1920 x 1080 pixels	Monochrome	C-Mount		**P22M-700-000-CM** (937710007)
		Micro Video		**P22M-700-000-ML** (937710023)
	Color	C-Mount		**P22C-600-000-CM** (937710008)
		Micro Video		**P22C-600-000-ML** (937710024)

MECHANICAL DRAWINGS

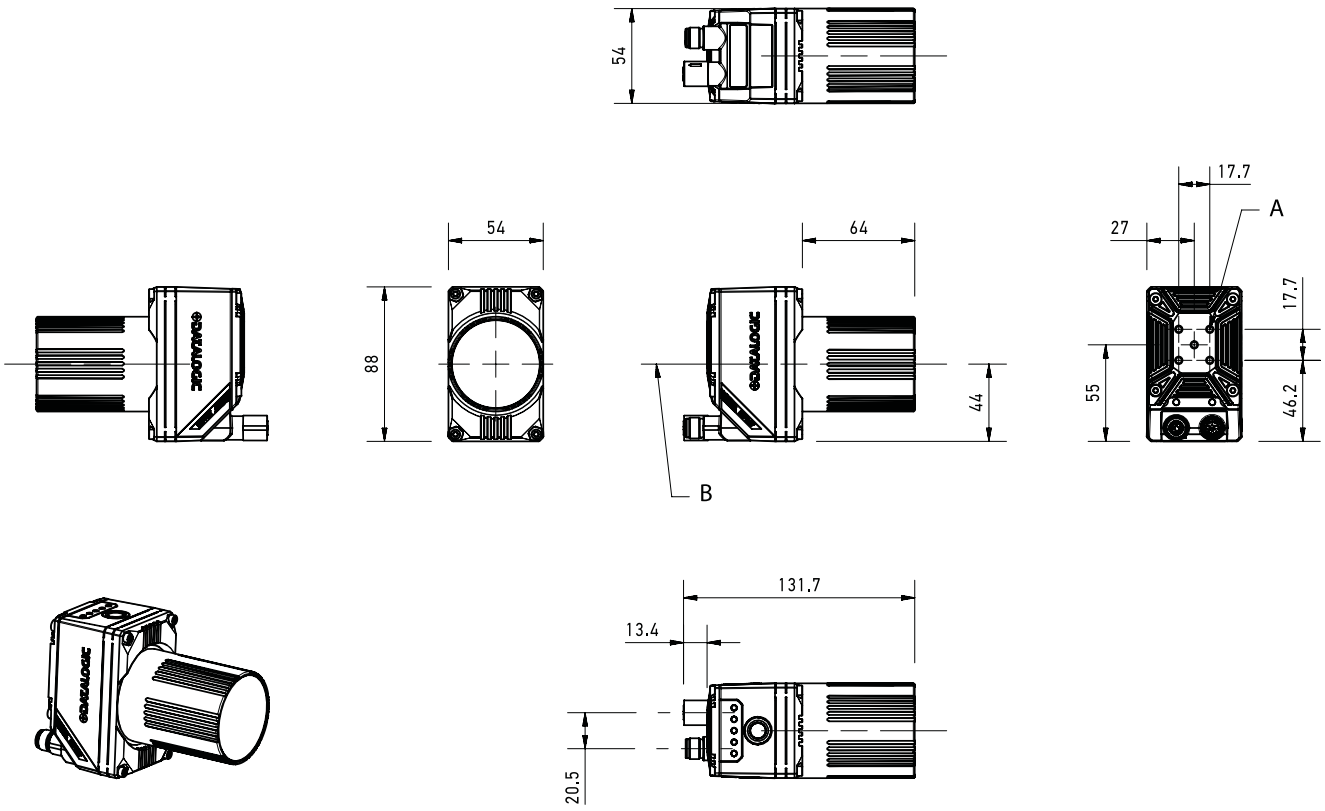
P2X-SERIES C-MOUNT (No illuminator) Long cover (0° connection)



(mm)

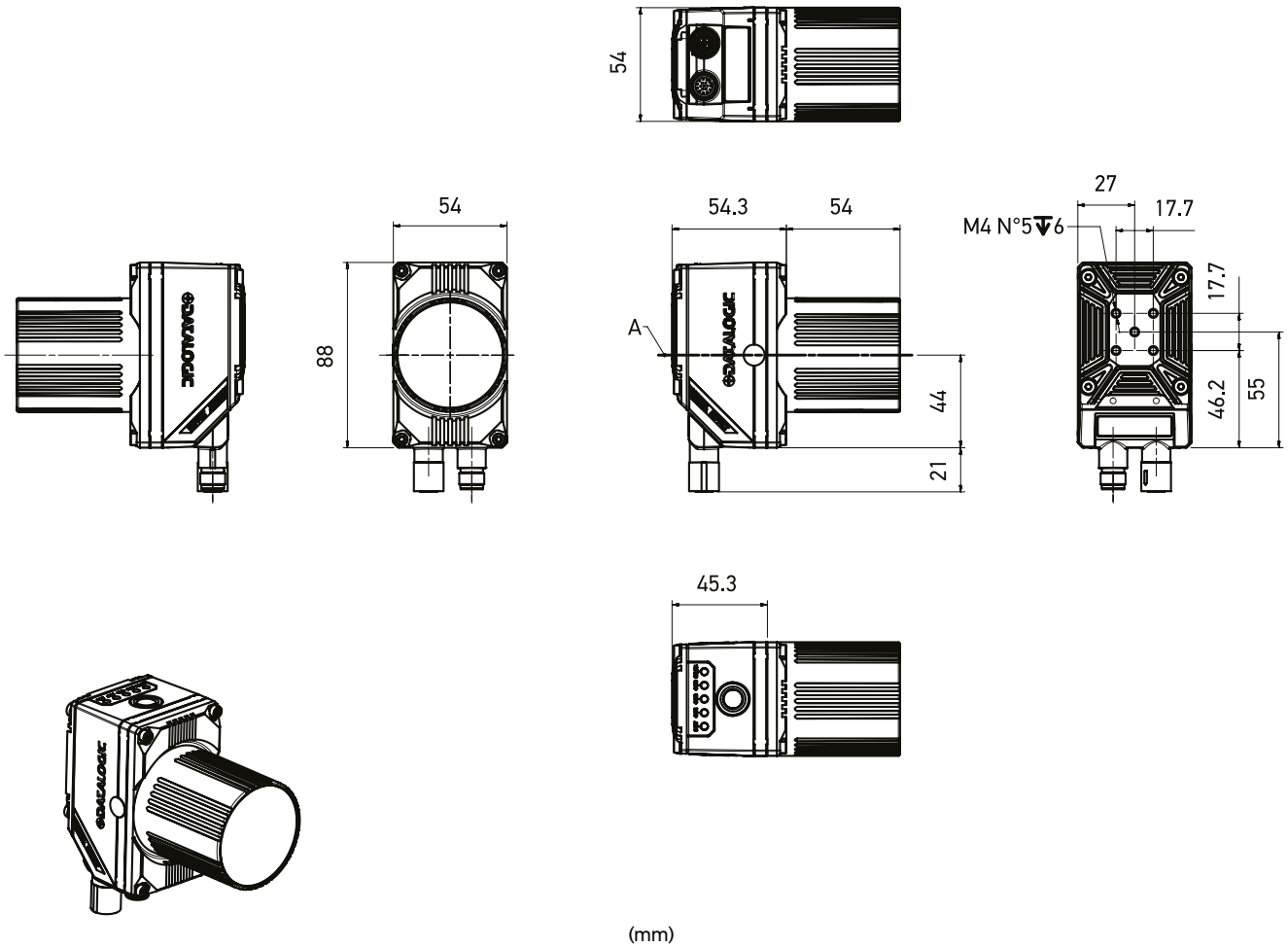
MECHANICAL DRAWINGS

P2X-SERIES C-MOUNT (No illuminator) Long cover (90° connection)



(mm)

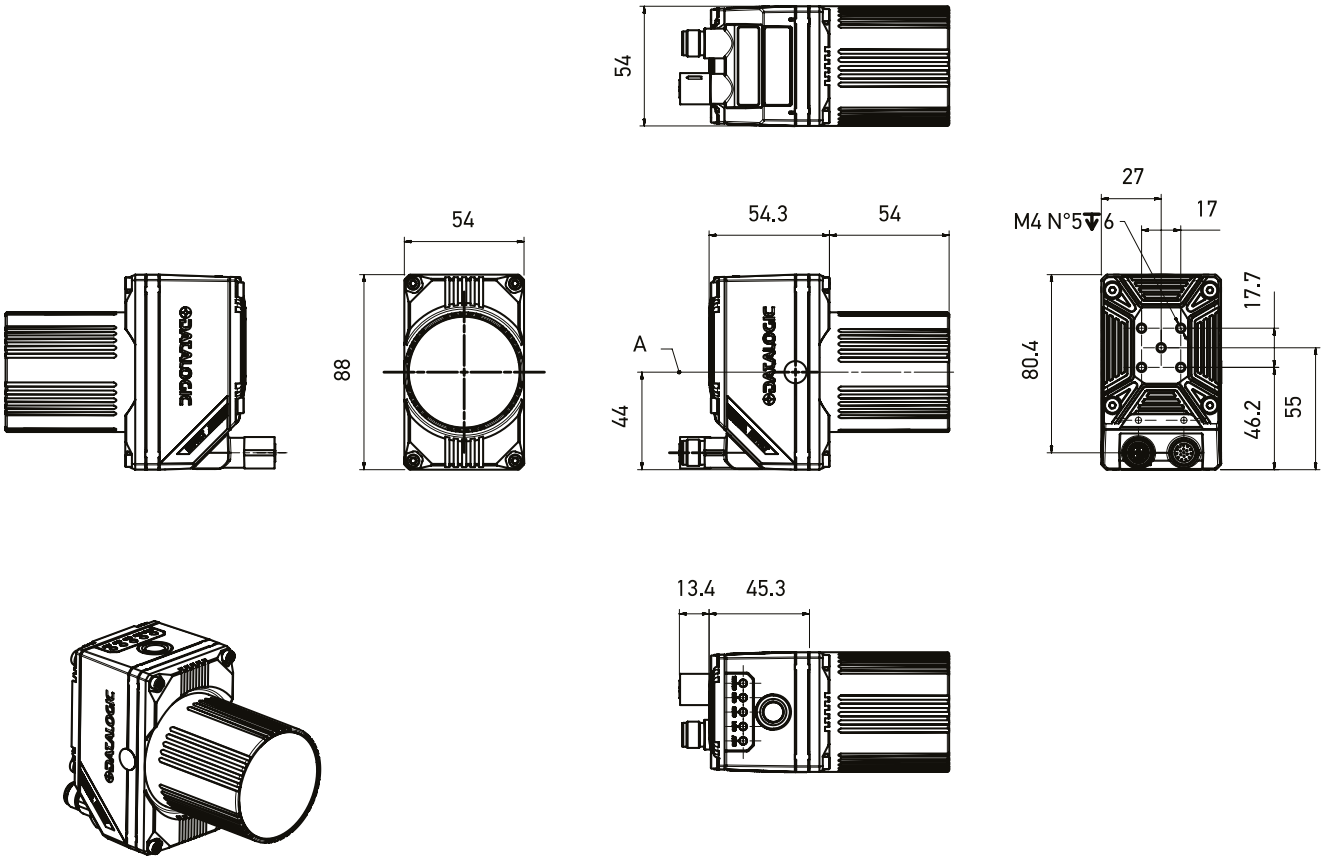
P2X-SERIES C-MOUNT (No illuminator) Short cover (0° connection)



(mm)

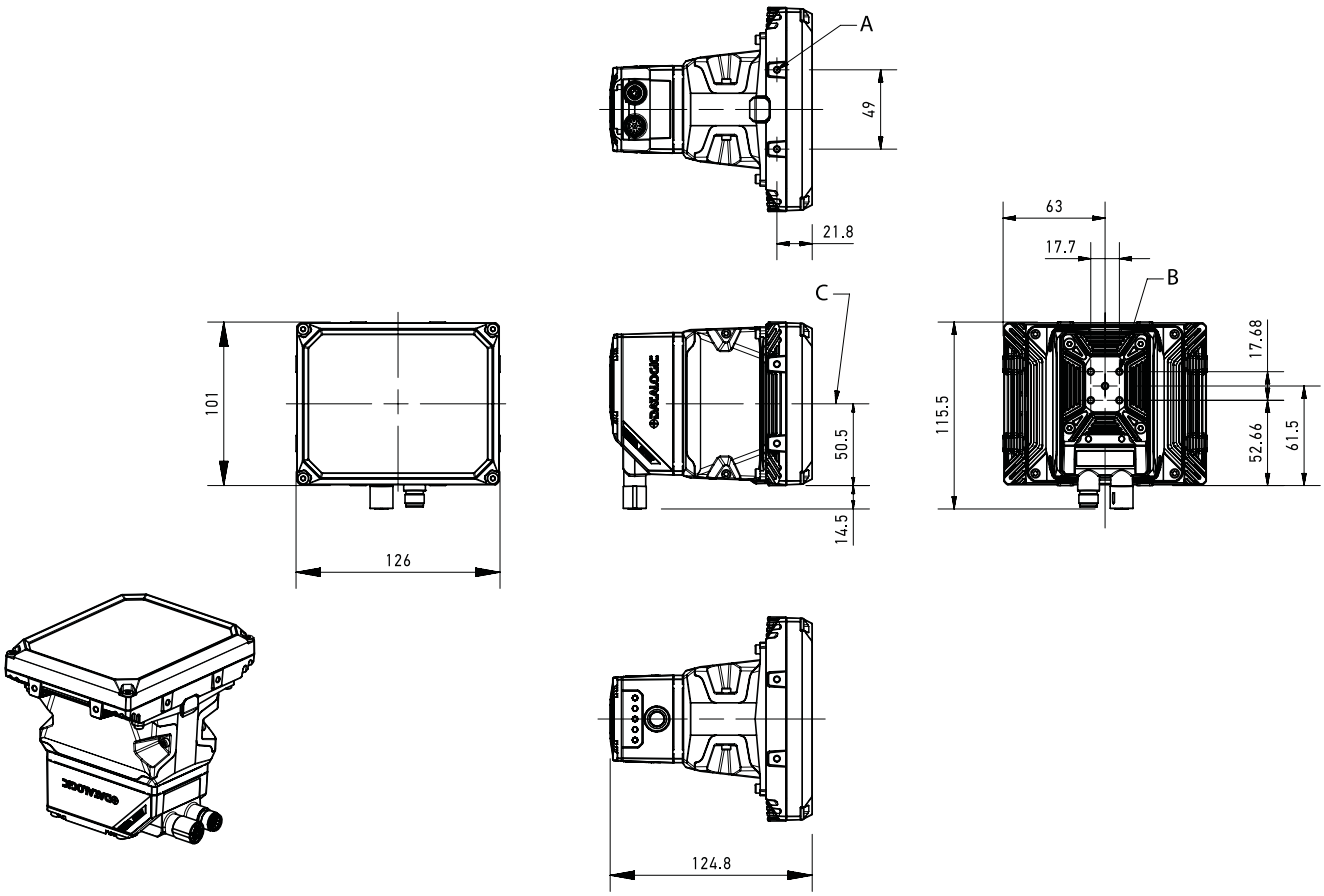
MECHANICAL DRAWINGS

P2X-SERIES C-MOUNT (No illuminator) Short cover (90° connection)



(mm)

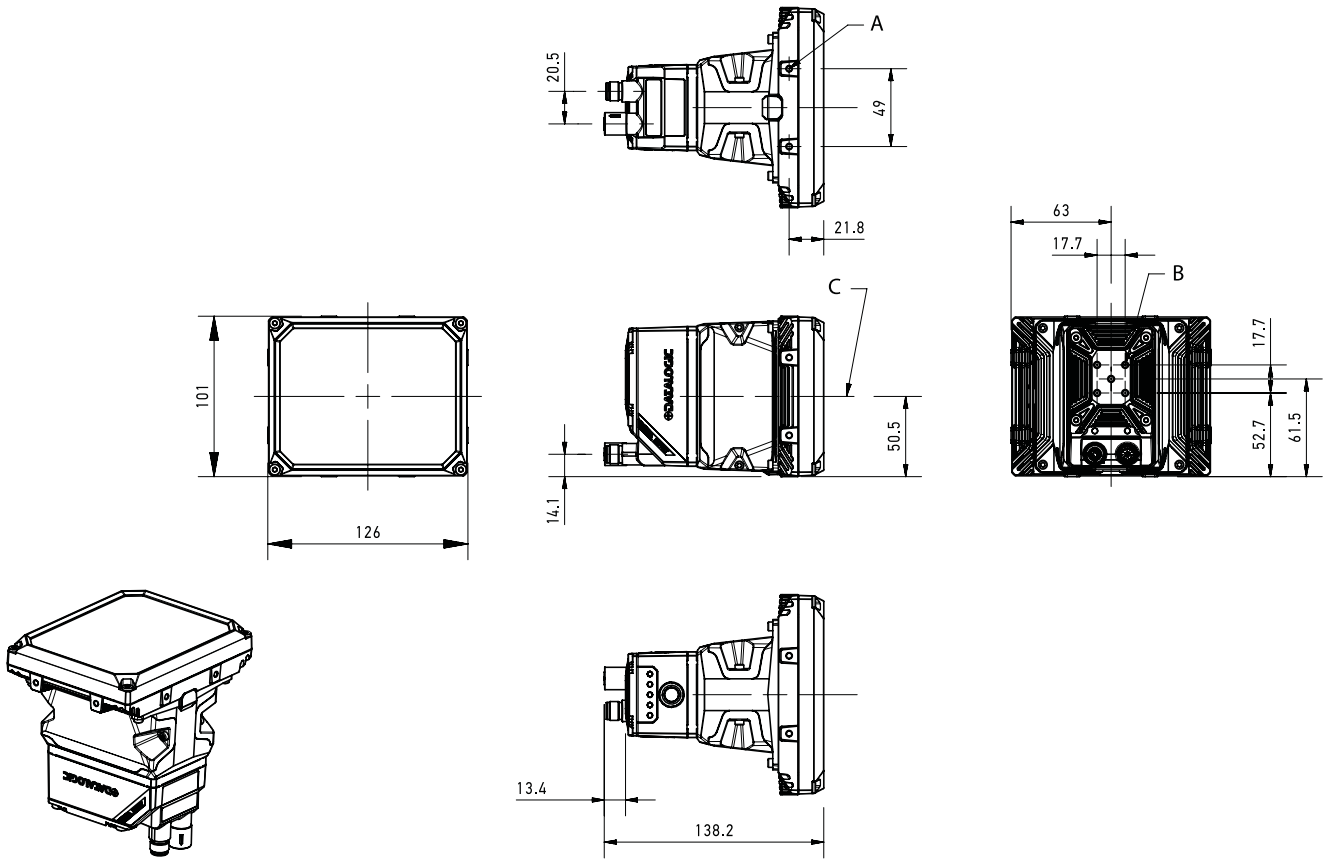
P2X-SERIES C-MOUNT, ILLUMINATOR 36 LED (0° connection)



(mm)

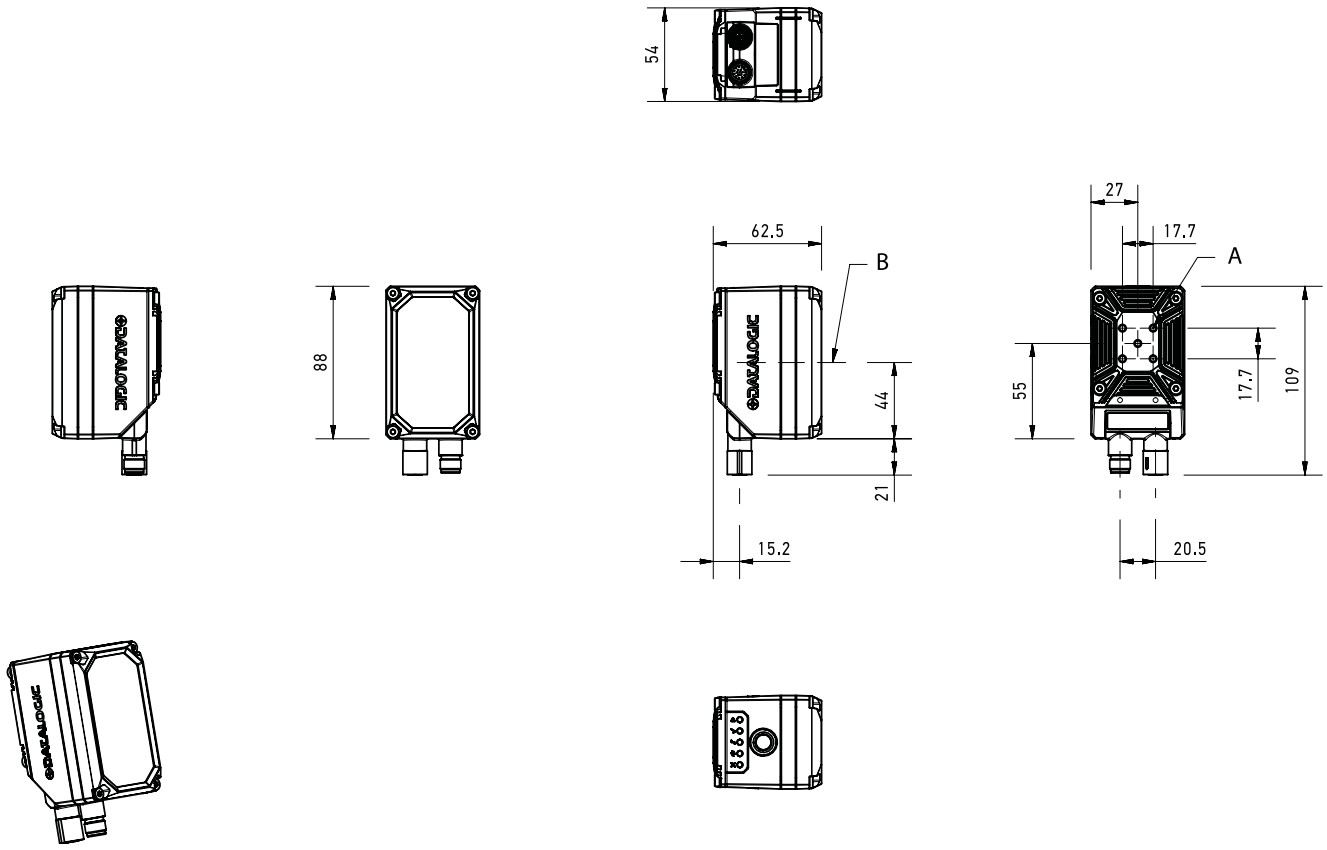
MECHANICAL DRAWINGS

P2X-SERIES C-MOUNT, ILLUMINATOR 36 LED (90° connection)



(mm)

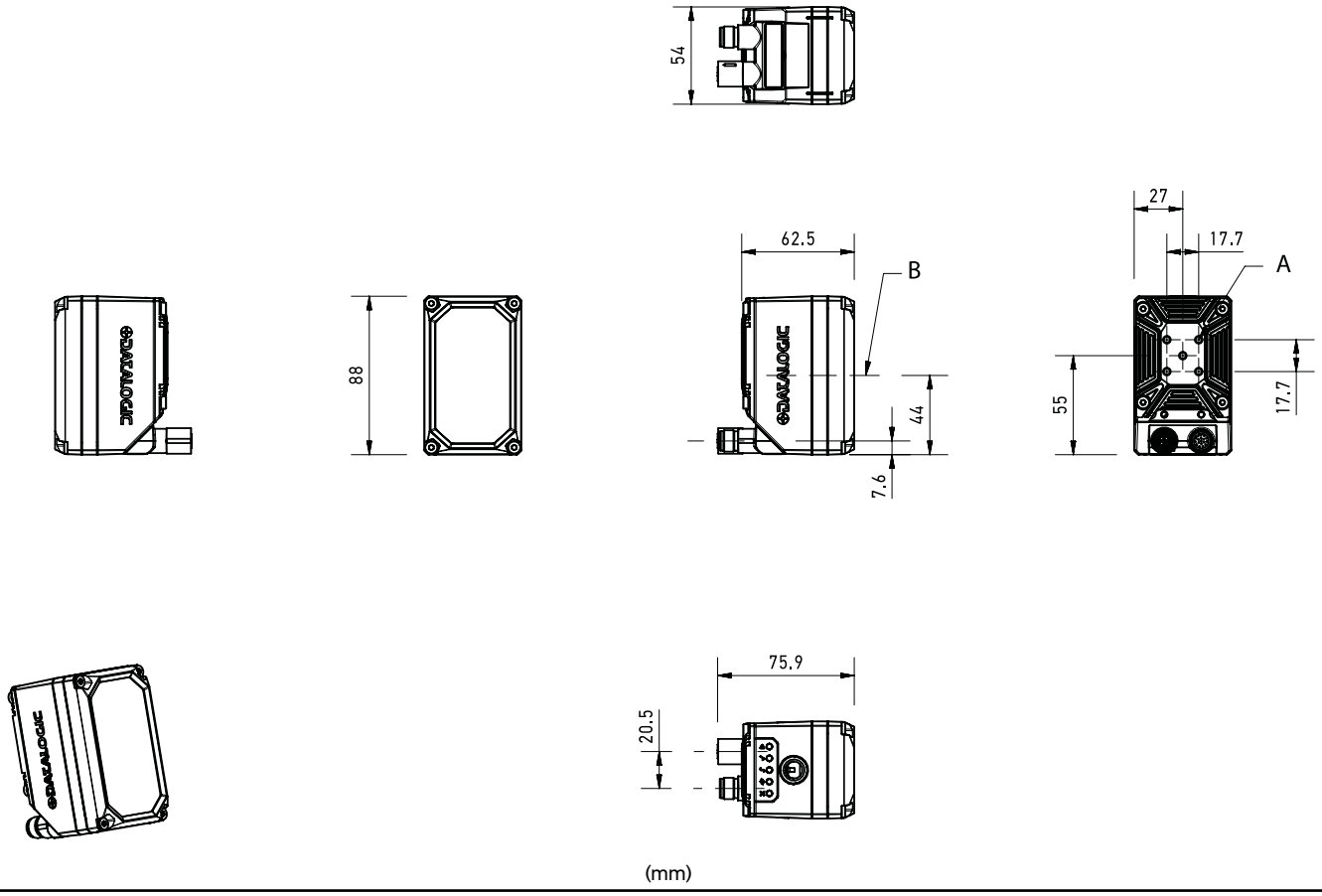
P2X-SERIES MICRO LENS, ILLUMINATOR 14 LED or no illuminator (0° connection)



(mm)

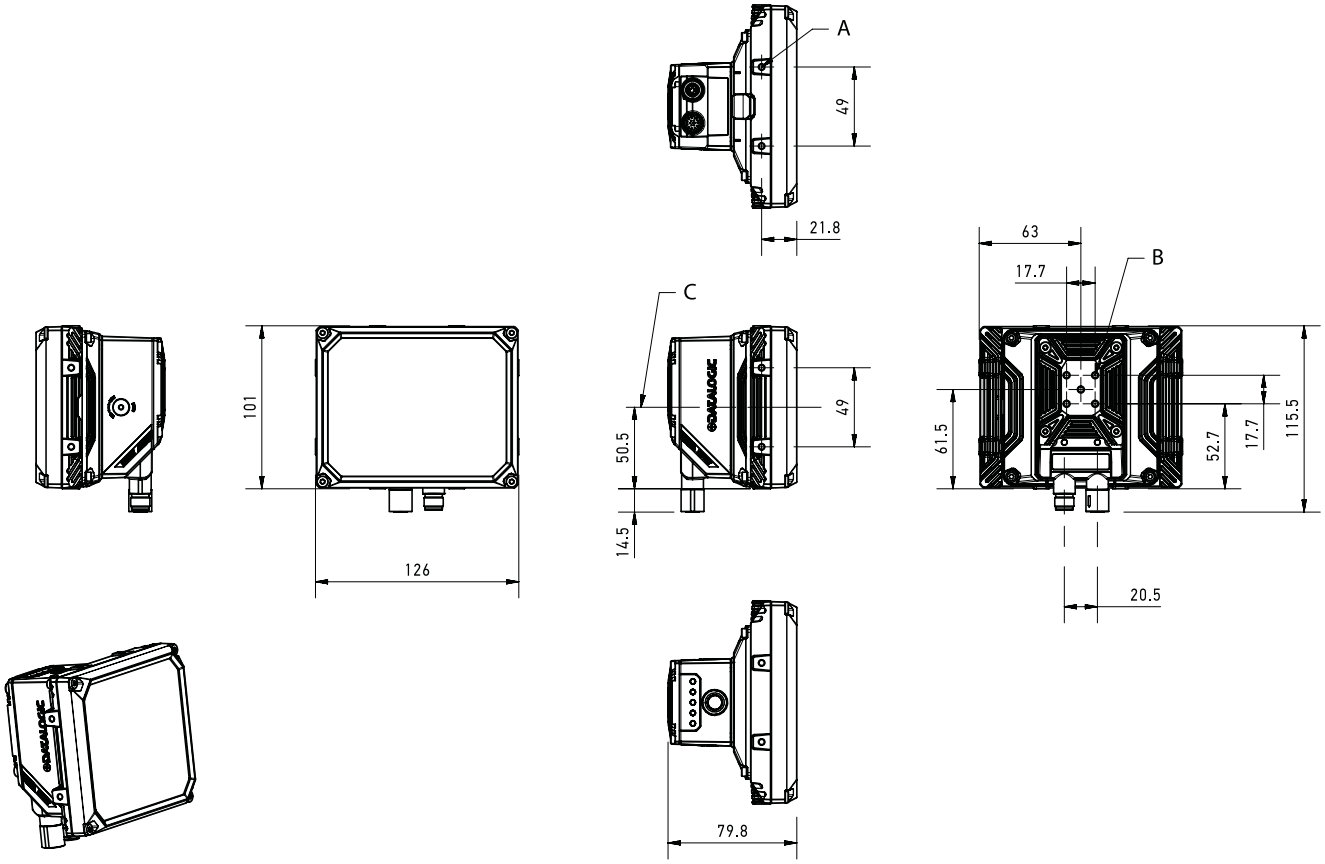
MECHANICAL DRAWINGS

P2X-SERIES MICRO LENS, ILLUMINATOR 14 LED (90° connection)



(mm)

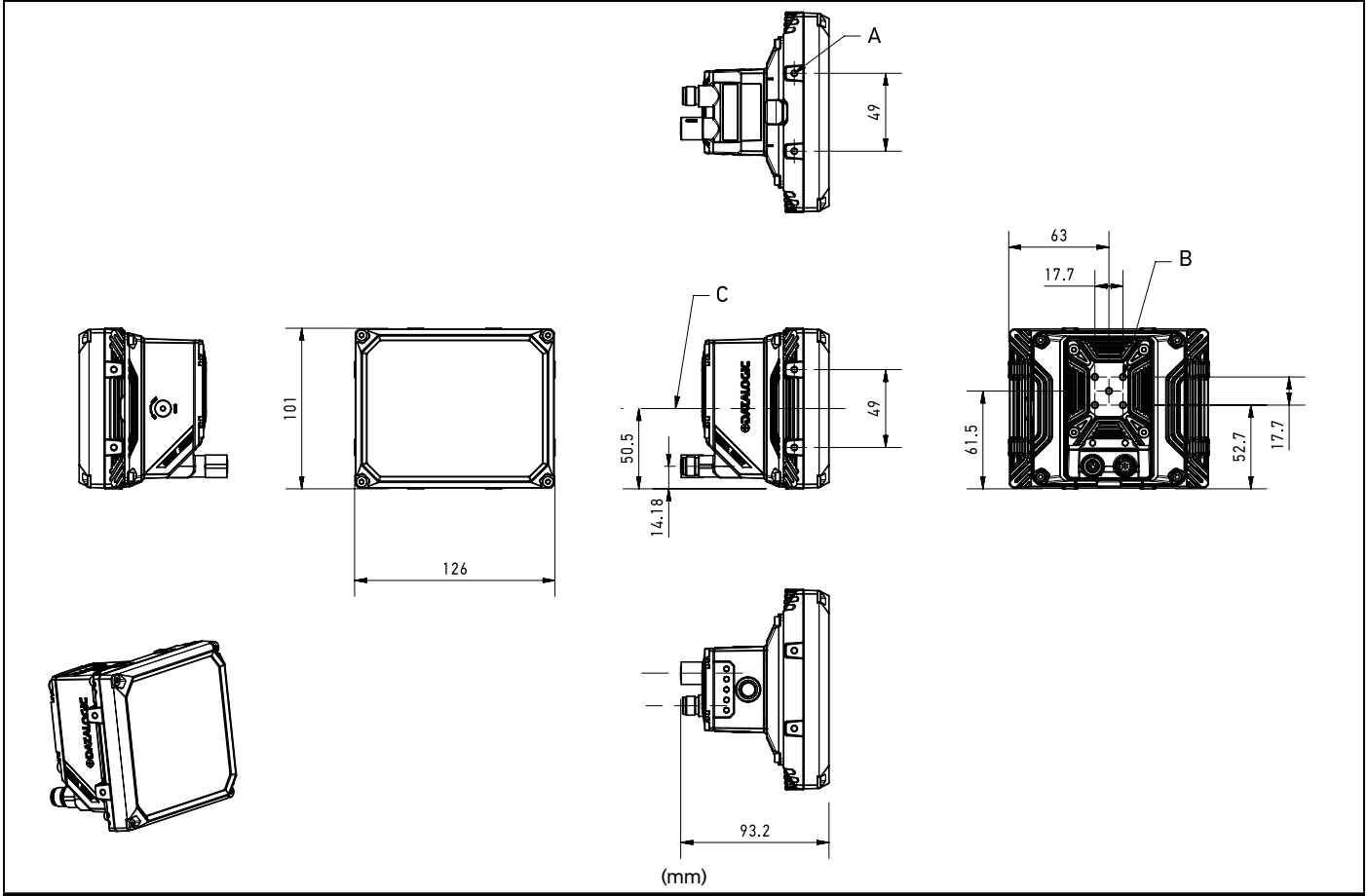
P2X-SERIES MICRO LENS, ILLUMINATOR 36 LED (0° connection)



(mm)

MECHANICAL DRAWINGS

P2X-SERIES MICRO LENS, ILLUMINATOR 36 LED (90° connection)



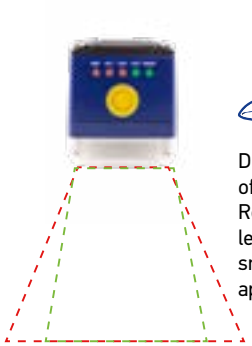
(mm)

	A	B	C
P*x CM long 0	5x M4 depth 7	Optical Axis	-
P*x CM long 90			
P*x CM short 0	Optical Axis	-	
P*x CM short 90			
P*x/CM-36LED-0-LANDSCAPE	8x M4 Depth 7	5x M4 depth 7	Optical axis
P*x/CM-36LED-90-LANDSCAPE			-
P*x ML 14 LED	Optical Axis	5x M4 depth 7	
P*x ML 14led 90°			
P*x/ML-36LED-LANDSCAPE	8x M4 Depth 7	5x M4 depth 7	Optical axis
P3x/ML-36LED-LANDSCAPE-90			-

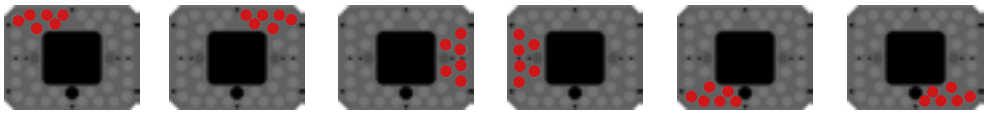
ACCESSORIES TO BE ORDERED SEPARATELY

Mounting brackets	
Description	**Article code**
BK-32-000 STD FIX BRACKET M320/P2 BODY	93ACC0282
BK-32-010 PIVOT FIX BRACKET M320/P2 BODY	93ACC0283
Software	
Description	**Article code**
LICENSE, ENHANCED, SMART CAMERA	95A900008
LICENSE, PRO, SMART CAMERA	95A900009

Blue **White** **Red** **Infrared**



Different options of Total Internal Reflection (TIR) Led lenses to match smart camera lens aperture



Software configurable lighting segments to optimize image brightness on the Field-of-View

Illuminators	
Description	**Article code**
LTP 110-003 SN14L 90D IR 850nm NL	95A900043
LTP 110-350 SN14L 35D RED 625nm	95A900026
LTP 110-351 SN14L 35D WHT white	95A900027
LTP 110-352 SN14L 35D BLU 475nm	95A900028
LTP 110-353 SN14L 35D IR 850nm	95A900044
LTP 110-600 SN14L 60D RED 625nm	95A900023
LTP 110-601 SN14L 60D WHT white	95A900024
LTP 110-602 SN14L 60D BLU 475nm	95A900025
LTP 112-000 SN36L 120D RED 625nm NL	95A900045
LTP 112-001 SN36L 120D WHT white NL	95A900046
LTP 112-002 SN36L 120D BLU 475nm NL	95A900047
LTP 112-003 SN36L 90D IR 850nm NL	95A900048
LTP 112-350 SN36L 35D RED 625nm	95A900034
LTP 112-351 SN36L 35D WHT white	95A900035
LTP 112-352 SN36L 35D BLU 475nm	95A900036
LTP 112-353 SN36L 35D IR 850nm	95A900049
LTP 112-600 SN36L 60D RED 625nm	95A900031
LTP 112-601 SN36L 60D WHT white	95A900032
LTP 112-602 SN36L 60D BLU 475nm	95A900033
Adapter LL ML LT 36L M320/P2	95A900038
Adapter CM LT 36L P2/P3	95A900029

ACCESSORIES TO BE ORDERED SEPARATELY

Cables	
Description	**Article code**
CAB-DS01-S M12-IP67 TO CBX 1M	93A050058
CAB-DS03-S M12-IP67 TO CBX 3M	93A050059
CAB-DS05-S M12-IP67 TO CBX 5M	93A050060
CAB-DS10-S M12-IP67 TO CBX 10M	93A051390
CV-A1-30-F-05 M12 12p, High-Flex, 5m	95A900061
CV-A1-30-F-10 M12 12p, High-Flex, 10m	95A900062
CV-A1-30-F-15 M12 12p, High-Flex, 15m	95A900063
CV-N1-48-F-05 GigETH-X, High-Flex, 5m	95A900058
CV-N1-48-F-10 GigETH-X, High-Flex, 10m	95A900059
CV-N1-48-F-15 GigETH-X, High-Flex, 15m	95A900060
CAB-ETH-X-M01 M12-IP67 GETH-X CAB 1 m	93A050122
CAB-ETH-X-M03 M12-IP67 GETH-X CAB 3 m	93A050123
CAB-ETH-X-M05 M12-IP67 GETH-X CAB 5 m	93A050124
CAB-ETH-X-M10 M12-IP67 GETH-X CAB 10M	93A050140

Red bandpass | Blue bandpass | UV-cut | IR bandpass | YAG-cut | IR-cut

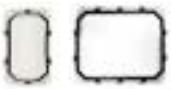
Filters	
Description	**Article code**
Filter IR Cut LT 14L M320/P2	95A900064
Filter IR Cut LT 36L M320/P2	95A900065
Filter RED Bandpass 625 nm LT 14L P2x/P3x	95A900015
Filter BLU Bandpass 475 nm LT 14L P2x/P3x	95A900016
Filter IR Bandpass 850 nm LT 14L P2x/P3x	95A900017
Filter YAG Cut LT 14L P2x/P3x	95A900018
Filter UV Cut Longpass 415 LT 14L P2x/P3x	95A900039
Filter RED Bandpass 625 nm LT 36L P2x/P3x	95A900019
Filter BLU Bandpass 475 nm LT 36L P2x/P3x	95A900020
Filter IR Bandpass 850 nm LT 36L P2x/P3x	95A900021
Filter YAG Cut LT 36L P2x/P3x	95A900022
Filter UV Cut Longpass415 LT 36L P2x/P3x	95A900040

ACCESSORIES TO BE ORDERED SEPARATELY


STANDARD


ESD


POLARIZED


HARSH ENVIRONMENT

Covers	
Description	**Article code**
Cover ESD LT 14L P2x/P3x	93ACC0278
Cover LT 14L P2x/P3x	93ACC0323
Cover LT 36L P2x/P3x	93ACC0324
Cover Polarizer LT 14L P2x/P3x	93ACC0273
Cover Polarizer LT 36L P2x/P3x	93ACC0274
Cover STD LT 14L P2x/P3x	93ACC0271
Cover STD LT 36L P2x/P3x	93ACC0272
C-Mount lens standard cover P2x	937710025
C-Mount lens long cover P2x/P3x	937710026




P2X-SERIES FIELD OF VIEW qHD /2 MP (H x V in mm)				
operating distance (mm)	**6 mm**	**8 mm**	**12.5 mm**	**17.5 mm**
50	67 x 37	46 x 26	24 x 13	-
100	117 x 66	82 x 46	46 x 25	31 x 17
200	218 x 122	155 x 87	90 x 49	62 x 35
300	318 x 179	227 x 128	133 x 73	93 x 52
400	419 x 236	300 x 169	177 x 96	124 x 70
500	519 x 292	373 x 209	220 x 120	155 x 87
600	620 x 349	445 x 250	263 x 144	185 x 104
700	720 x 405	518 x 291	307 x 167	216 x 121
800	821 x 462	590 x 332	350 x 191	247 x 139
900	921 x 518	663 x 373	394 x 214	277 x 156
1000	1022 x 575	735 x 414	437 x 238	308 x 173
1100	-	808 x 454	480 x 262	339 x 190
1200	-	880 x 495	524 x 285	369 x 208
1300	-	-	567 x 309	400 x 225
1400	-	-	611 x 333	431 x 242
1500	-	-	654 x 357	461 x 259

ACCESSORIES TO BE ORDERED SEPARATELY

P2X-SERIES FIELD OF VIEW qHD /2 MP (H in mm)

working distance (mm)	4 mm	6 mm	8 mm	12 mm	16 mm	25 mm	35 mm
50	121	81	67	47	-	-	-
100	188	126	100	69	-	-	-
200	323	216	167	114	89	55	39
300	457	305	234	159	123	77	54
400	591	395	302	203	156	98	69
500	726	484	369	248	190	120	85
600	860	574	436	293	233	141	100
700	995	664	503	338	257	163	115
800	1129	753	570	383	291	184	131
900	1263	843	638	427	324	206	146
1000	1398	932	705	472	358	227	162
1100	-	1022	772	517	391	249	177
1200	-	1112	839	562	425	270	192
1300	-	1201	906	606	459	292	208
1400	-	1291	974	651	492	313	223
1500	-	1380	1041	696	526	335	238
1600	-	-	-	741	559	356	254
1700	-	-	-	786	593	378	269
1800	-	-	-	830	627	399	284
1900	-	-	-	875	660	421	300
2000	-	-	-	920	694	442	315
2500	-	-	-	-	862	550	392

DATASENSING
easing automation challenges

IP67

NEW!

WEBSITE

P3x
SMART CAMERA

High-end smart camera providing state of the art computing performance. With resolutions up to 5 MP, P3x enables high-accuracy quality inspection and measurement applications.

- qHD (960 x 540), 2MP (1920 x 1080) and 5MP (2560 x 1936) resolution imager options both available in monochrome and color
- Field interchangeable lenses, illuminators and filters
- Two embedded illuminator sizes: 14-LED compact and 36-LED high power both integrating TIR lenses to deliver maximum brightness onto the field of view available in 4 different colors (white, blue, red and IR)
- Lens options: Micro-video (6, 8, 12.5 and 17.5 mm) or C-Mount Innovative 360° software configurable visual feedback
- Top industrial grade: -10 to 50 °C / 14 to 122 °F operating temperature, IP65/67 rating
- Powered by IMPACT software suite with 100+ inspection tools
- Add-on licenses to run even the most advanced Datasensing algorithms

CE UK CA

CODE DESCRIPTION

P3 2 M - 0 0 0 - 0 0 0 - ML

series	**P3**	Smart camera
resolution	**0**	qHD (960 x 540 pixels)
	2	2 MP (1920 x 1080 pixels)
	5	5 MP (2560 x 1936 pixels)
mono / color	**M**	Monochrome
	C	Color
imager type	**0**	qHD (960 x 540 pixels) color
	1	qHD (960 x 540 pixels) mono
	6	2 MP (1920 X 1080 pixels) color
	7	2 MP (1920 X 1080 pixels) mono
	8	5 MP (2560 x 1936 pixels) mono
	9	5 MP (2560 x 1936 pixels) color
lens mount type	**ML**	Micro Video lens
	CM	C-Mount lens

TECHNICAL SPECIFICATIONS

	P30M/*00-000-**	P32M/*00-000-**	P35M/*00-000-**
GENERAL DATA			
Description	P30M 100-000 CM, P30M 100-000 ML	P32M 700-000 CM, P32M 700-000 ML	P35M 800-000 CM
Storage	1400 MB		
System Memory	2 GB		
Illuminator type	Illuminator colors: White, Red, Infrared, Blue Illuminator power: High Power 14 LEDs, Very High Power 36 LEDs		
Ethernet	1000 Mbit/s supports application protocols: TCP/IP, EtherNet/IP, Profinet IO, Modbus TCP, MC protocol		
RS232	2400 to 115200 bit/s		
DETECTION CAPABILITIES			
Resolution	960 x 540 pixels	1920 x 1080 pixels	2560 x 1936 pixels
Frame rate (FPS)	120 fps	60 fps	26 fps
Imager	1/2.8 " CMOS		1/1.8 " CMOS
Mono / Color	Monochrome		
Pixel size	5.6 µm square	2.8 µm square	
Shutter	Global		
INPUT/OUTPUT			
I/O	2 IN / 3 OUT		
COMMUNICATION			
Connectivity	Supports EtherNet/IP, Profinet, Modbus TCP		
Serial Communications	1x RS-232 serial port		
Network Interface	1000 Mbit/s Ethernet		
ELECTRICAL DATA			
Supply voltage	24 Vdc ±10%		
MECHANICAL DATA			
Dimensions	14 LEDs illuminator: 109x54x56 (4.3x2.1x2.2in.) 36 LEDs illuminator: 116x126x70 (4.6x4.9x2.8in.)		
Material	Aluminum (housing) and plastic (front head)		
Weight	300 g – C-Mount w/o ill. 900 g – C-Mount 36L ill., 380 g – Micro-video Lens 14L ill. 640 g - Micro-video Lens 36L ill.		300 g – C-Mount w/o ill. 900 g – C-Mount 36L ill.
led safety	According to EN 62471		
Lens mount	C-Mount or Micro Video Lens options: 4 mm / 6 mm / 8 mm / 12 mm / 16 mm / 25 mm / 35 mm / 50 mm Lens focusing: manual		C-Mount Lens options: 4 mm / 6 mm / 8 mm / 12 mm / 16 mm / 25 mm / 35 mm / 50 mm Lens focusing: manual
Filters	Bandpass (red, blue, IR), YAG cut, IR cut, UV cut		
Polarizing filter	With dedicated polarizer front cover accessory		
ENVIRONMENTAL DATA			
Operating Temperature	-10 ... 50 °C		
Mechanical Protection	IP65 / IP67		
Shocks and vibrations	Vibration IEC 60068-2-6 / Shock IEC 60068-2-27		
Humidity	90 % no condensation		

TECHNICAL SPECIFICATIONS

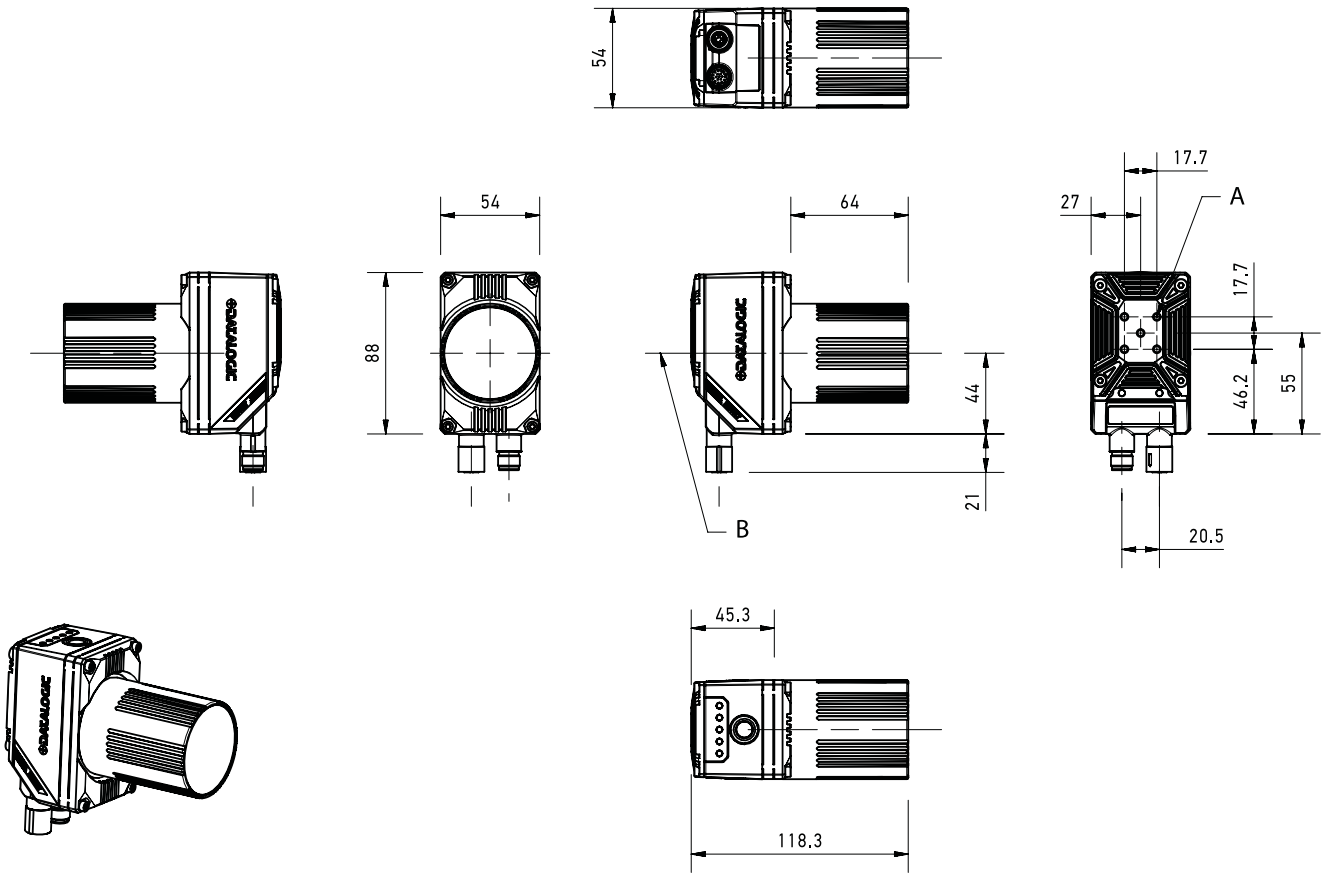
	P30C/*00-000-**	P32C/*00-000-**	P35C/*00-000-**
GENERAL DATA			
Description	P30C 000-000 CM, P30C 000-000 ML	P32C 600-000 CM, P32C 600-000 ML	P35C 900-000 CM
Storage	1400 MB		
System Memory	2 GB		
Illuminator type	Illuminator colors: White, Red, Infrared, Blue Illuminator power: High Power 14 LEDs, Very High Power 36 LEDs		
Ethernet	1000 Mbit/s supports application protocols: TCP/IP, EtherNet/IP, Profinet IO, Modbus TCP, MC protocol		
RS232	2400 to 115200 bit/s		
DETECTION CAPABILITIES			
Resolution	960 x 540 pixels	1920 x 1080 pixels	2560 x 1936 pixels
Frame rate (FPS)	30 fps		13 fps
Imager	1/2.8 " CMOS		1/1.8 " CMOS
Mono / Color	Color		
Pixel size	5.6 µm square	2.8 µm square	
Shutter	Global		
INPUT/OUTPUT			
I/O	2 IN / 3 OUT		
COMMUNICATION			
Connectivity	Supports EtherNet/IP, Profinet, Modbus TCP		
Serial Communications	1x RS-232 serial port		
Network Interface	1000 Mbit/s Ethernet		
ELECTRICAL DATA			
Supply voltage	24 Vdc ±10%		
MECHANICAL DATA			
Dimensions	14 LEDs illuminator: 109x54x56 (4.3x2.1x2.2in.) 36 LEDs illuminator: 116x126x70 (4.6x4.9x2.8in.)		
Material	Aluminum (housing) and plastic (front head)		
Weight	300 g – C-Mount w/o ill. 900 g – C-Mount 36L ill., 380 g – Micro-video Lens 14L ill. 640 g - Micro-video Lens 36L ill.		300 g – C-Mount w/o ill. 900 g – C-Mount 36L ill.
led safety	According to EN 62471		
Lens mount	C-Mount or Micro Video Lens options: 4 mm / 6 mm / 8 mm / 12 mm / 16 mm / 25 mm / 35 mm / 50 mm Lens focusing: manual		C-Mount Lens options: 4 mm / 6 mm / 8 mm / 12 mm / 16 mm / 25 mm / 35 mm / 50 mm Lens focusing: manual
Filters	Bandpass (red, blue, IR), YAG cut, IR cut, UV cut		
Polarizing filter	With dedicated polarizer front cover accessory		
ENVIRONMENTAL DATA			
Operating Temperature	-10 ... 50 °C		
Mechanical Protection	IP65 / IP67		
Shocks and vibrations	Vibration IEC 60068-2-6 / Shock IEC 60068-2-27		
Humidity	90 % no condensation		

AVAILABLE MODELS

Resolution	Mono / Color	Lens mount	Frame rate (FPS)	Model
960 x 540 pixels	Color	C-Mount	30 fps	**P30C 000-000 CM** (937710039)
		Micro Video		**P30C 000-000 CM**
	Monochrome	C-Mount	120 fps	**P30M 100-000 CM** (937710038)
		Micro Video		**P30M 100-000 ML** (937710034)
1920 x 1080 pixels	Color	C-Mount	30 fps	**P32C 600-000 CM** (937710041)
		Micro Video		**P32C 600-000 ML** (937710037)
	Monochrome	C-Mount	60 fps	**P32M 700-000 CM** (937710040)
		Micro Video		**P32M 700-000 ML** (937710036)
2560 x 1936 pixels	Color	C-Mount	13 fps	**P35C 900-000 CM** (937710033)
	Monochrome		26 fps	**P35M 800-000 CM** (937710032)

MECHANICAL DRAWINGS

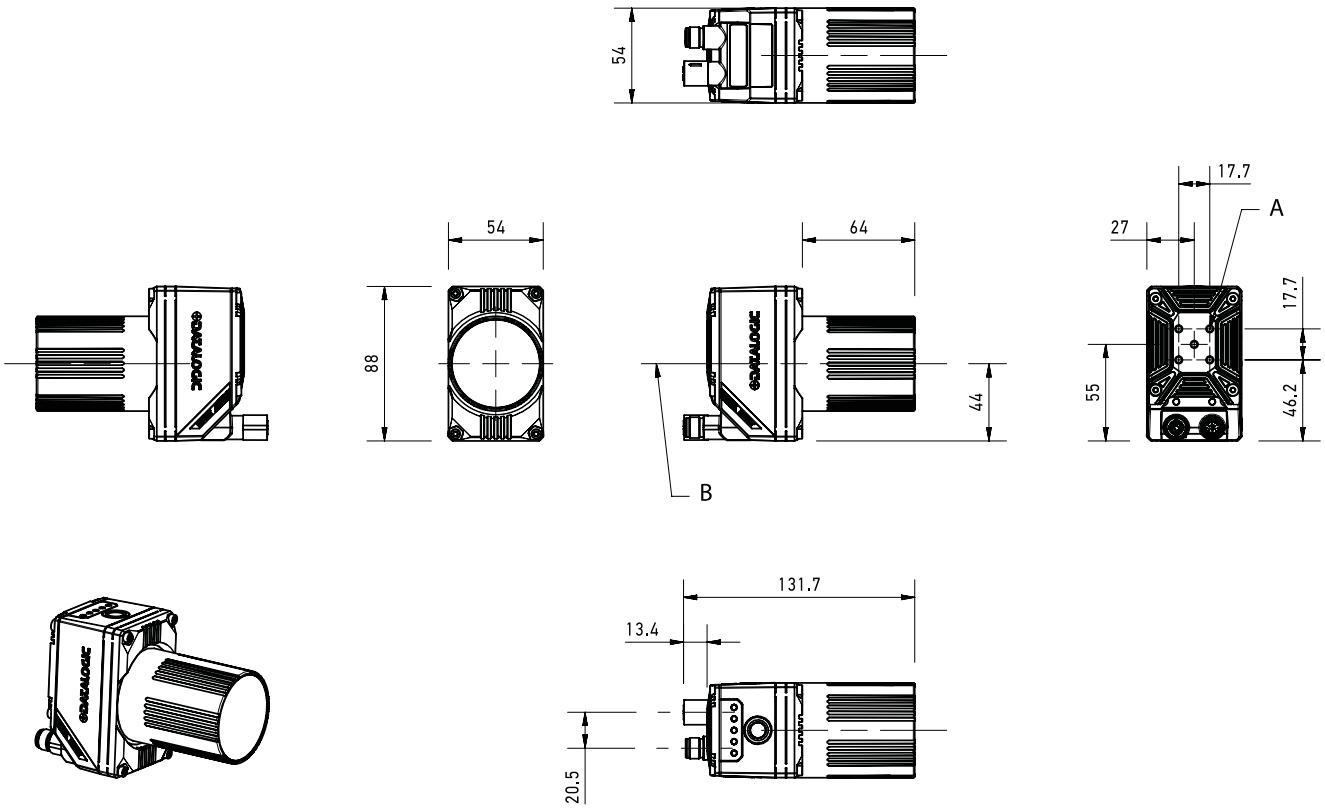
P3X-SERIES C-MOUNT NO ILLUMINATOR Long cover (0° connection)



(mm)

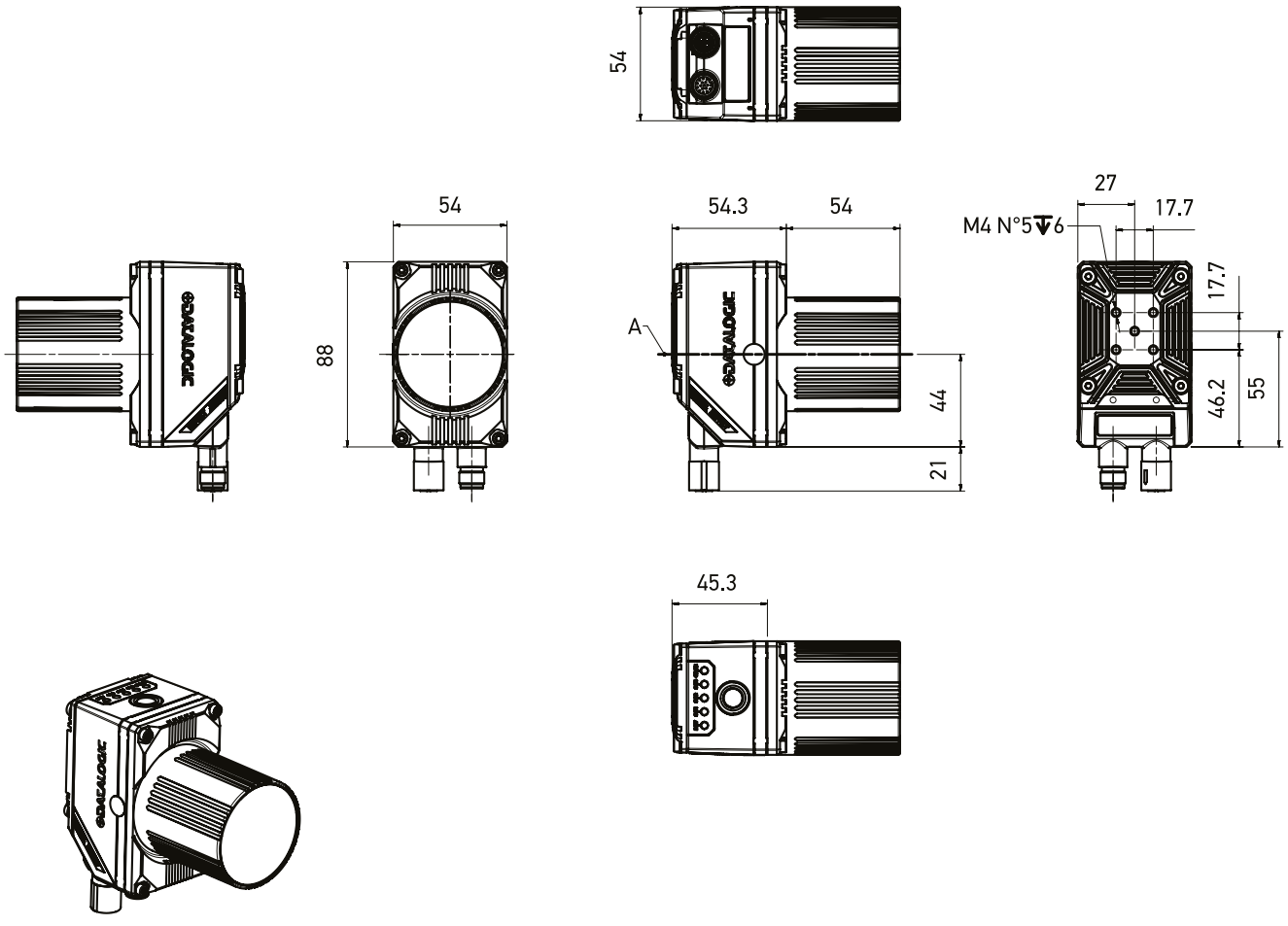
MECHANICAL DRAWINGS

P3X-SERIES C-MOUNT NO ILLUMINATOR Long cover (90° connection)



(mm)

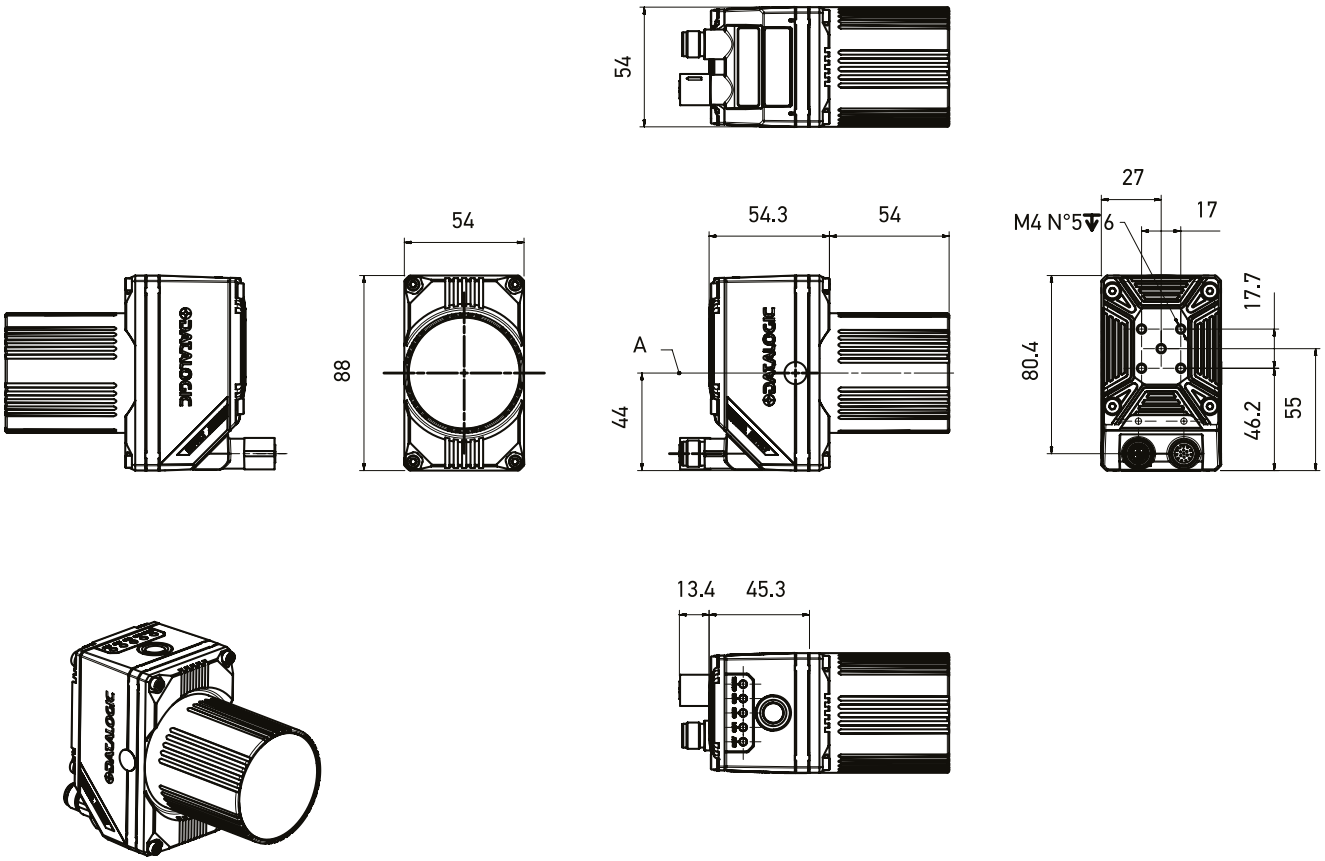
P3X-SERIES C-MOUNT NO ILLUMINATOR Short cover (0° connection)



(mm)

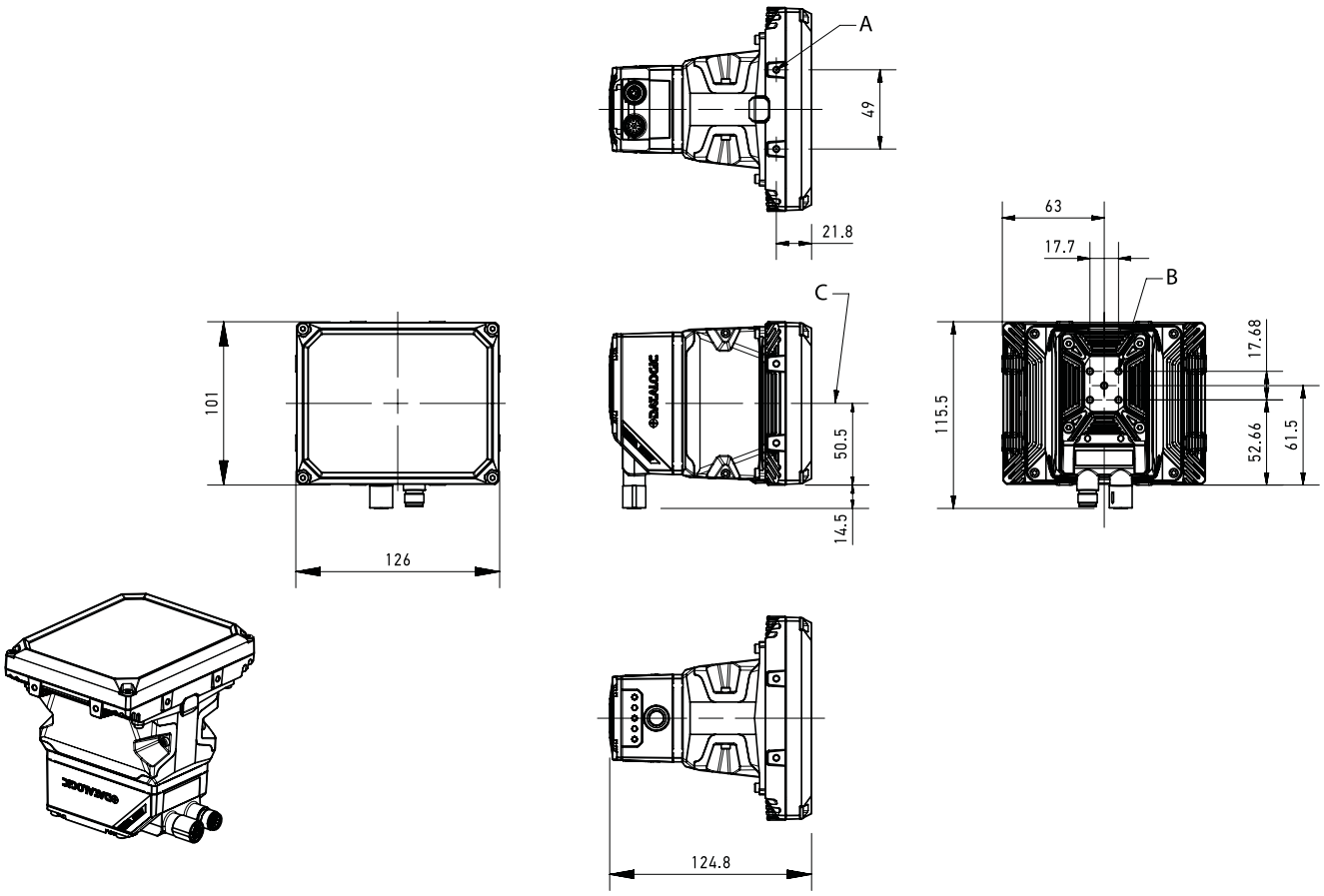
MECHANICAL DRAWINGS

P3X-SERIES C-MOUNT NO ILLUMINATOR Short cover (90° connection)



(mm)

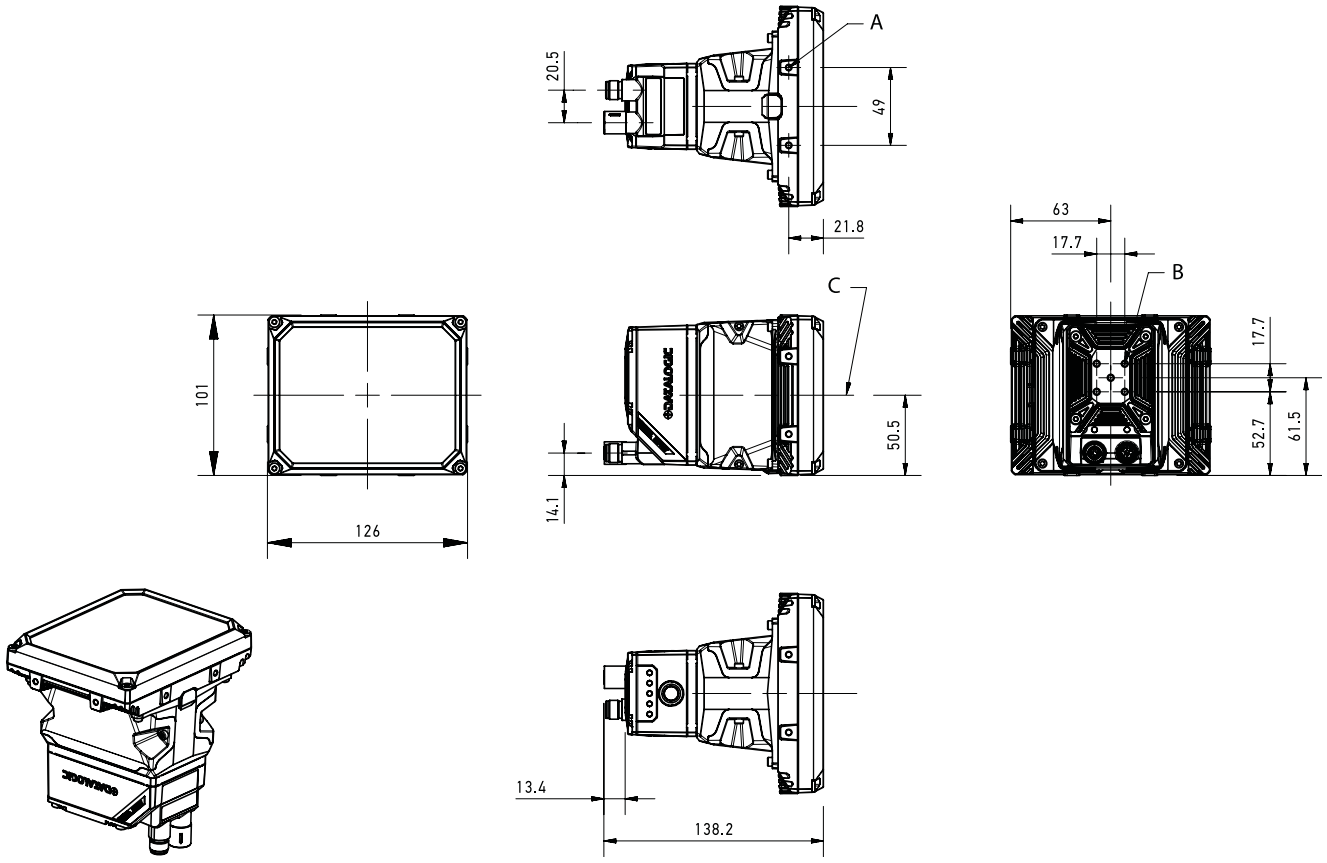
P3X-SERIES C-MOUNT, ILLUMINATOR 36 LED (0° connection)



(mm)

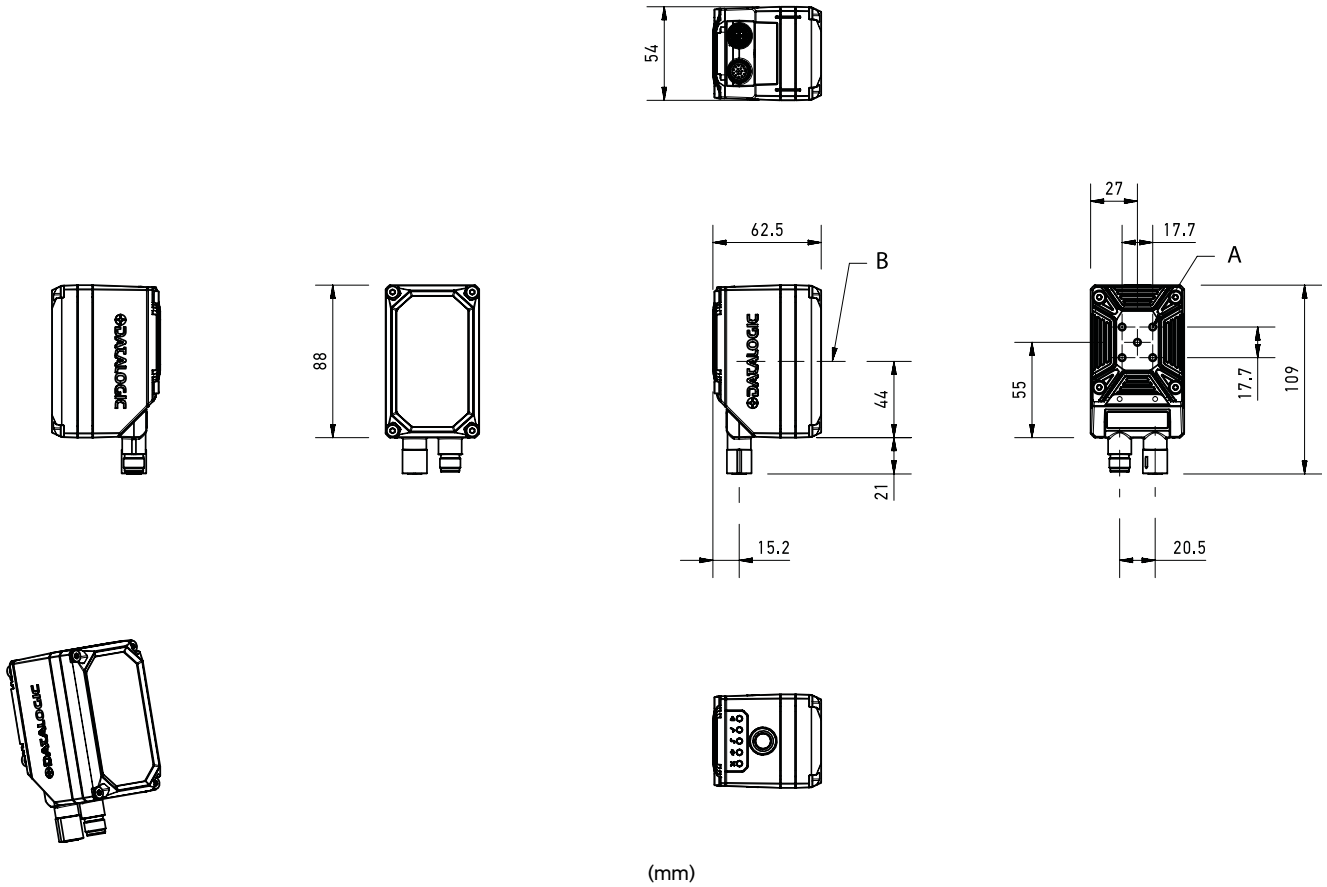
MECHANICAL DRAWINGS

P3X-SERIES C-MOUNT, ILLUMINATOR 36 LED (90° connection)



(mm)

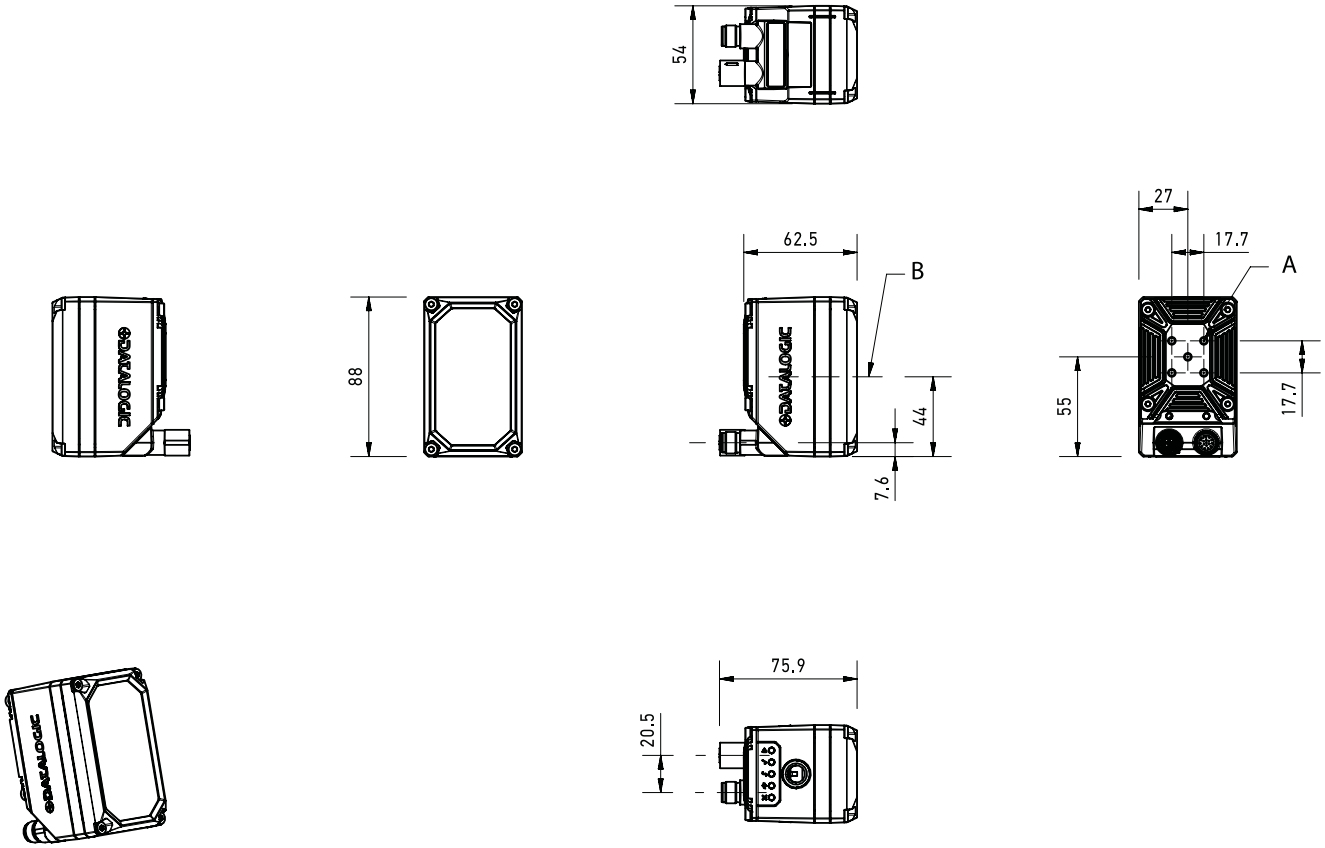
P3X-SERIES MICRO LENS, ILLUMINATOR 14 LED or no illuminator (0° connection)



(mm)

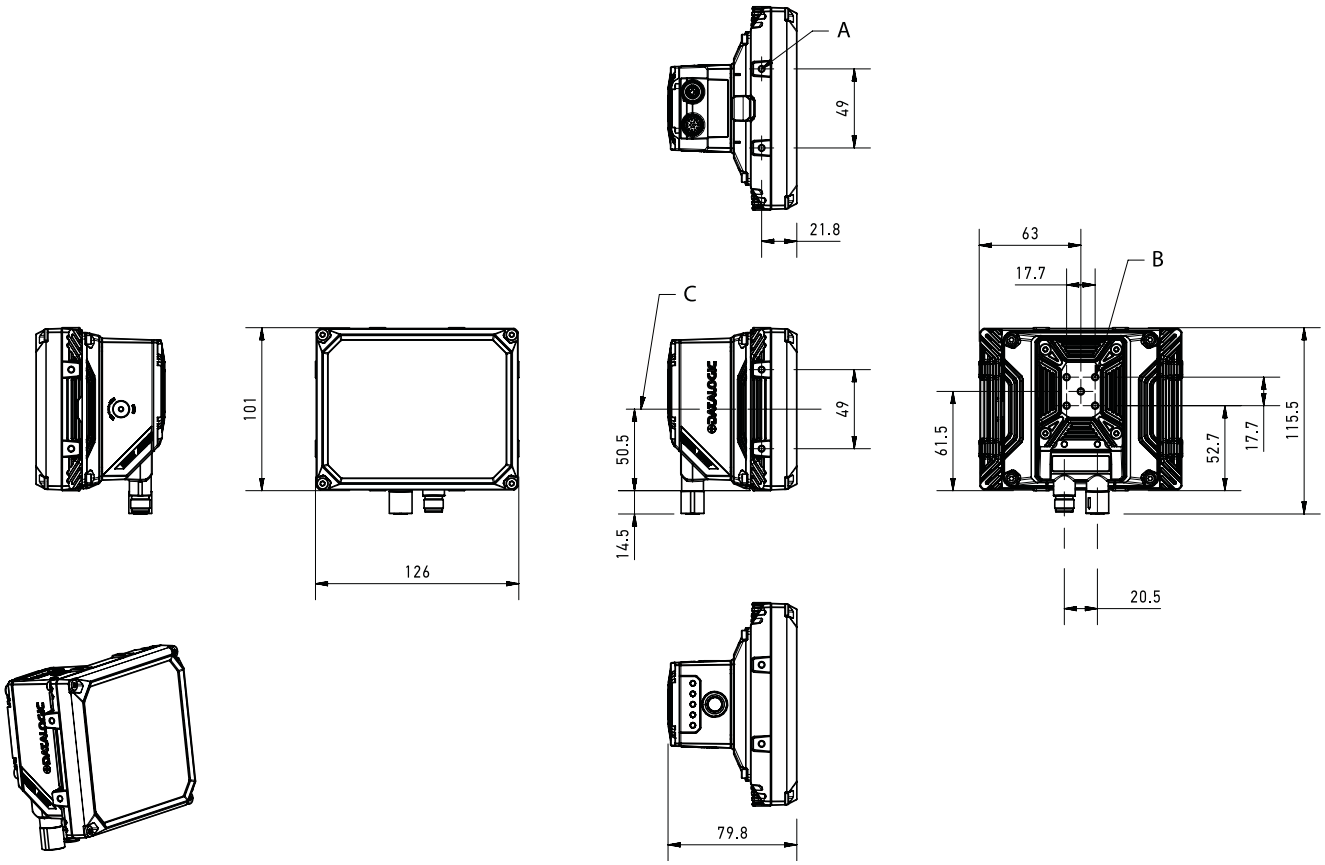
MECHANICAL DRAWINGS

P3X-SERIES MICRO LENS, ILLUMINATOR 14 LED (90° connection)



(mm)

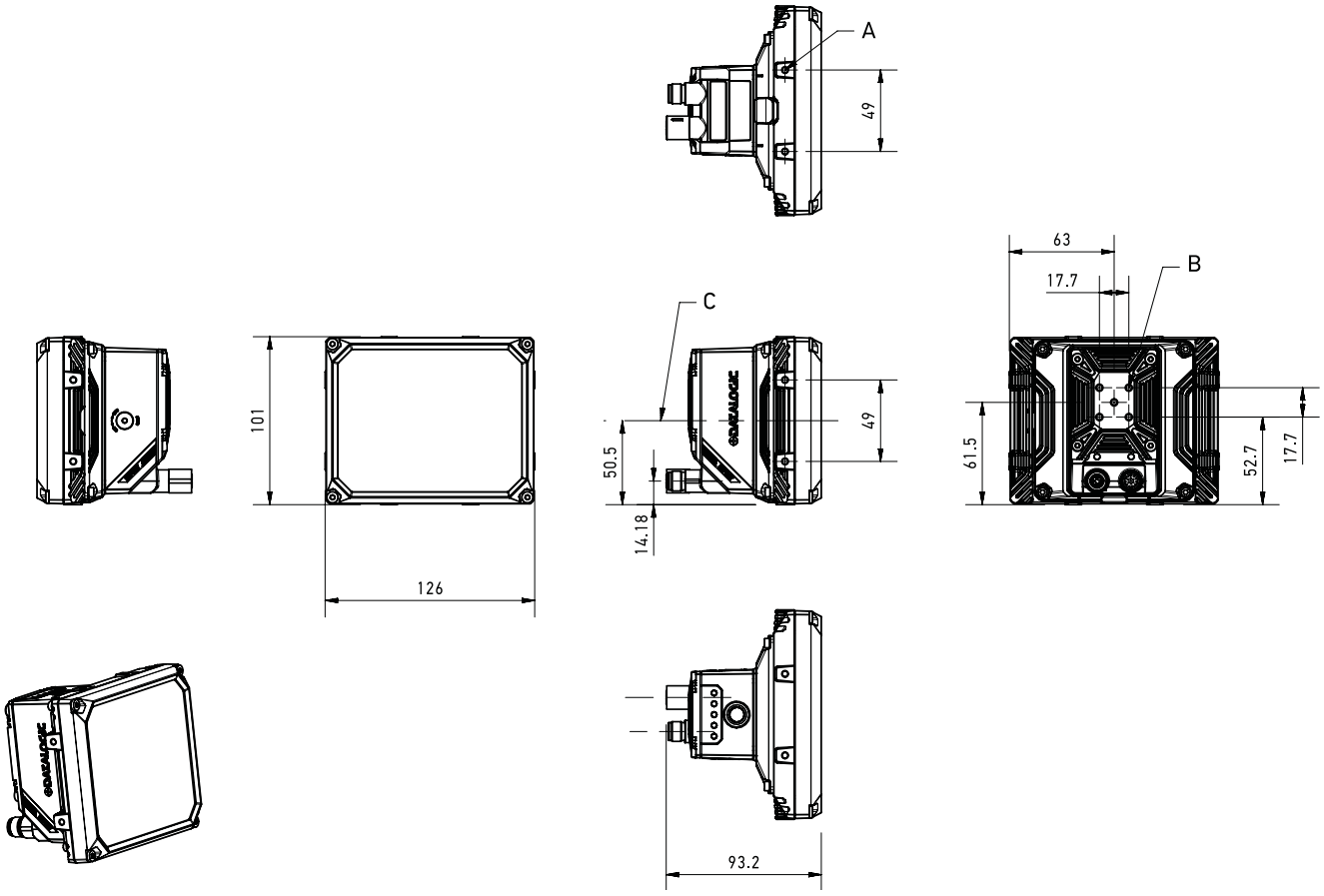
P3X-SERIES MICRO LENS, ILLUMINATOR 36 LED (0° connection)



(mm)

MECHANICAL DRAWINGS

P3X-SERIES MICRO LENS, ILLUMINATOR 36 LED (90° connection)



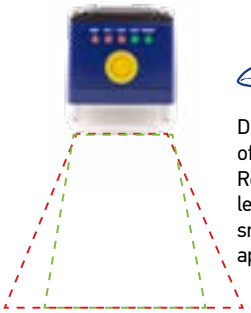
(mm)

	A	B	C
P*x CM long 0	5x M4 depth 7	Optical Axis	-
P*x CM long 90			
P*x CM short 0	Optical Axis	-	
P*x CM short 90			
P*x/CM-36LED-0-LANDSCAPE	8x M4 Depth 7	5x M4 depth 7	Optical axis
P*x/CM-36LED-90-LANDSCAPE			-
P*x ML 14 LED	Optical Axis		
P*x ML 14led 90°			
P*x/ML-36LED-LANDSCAPE	8x M4 Depth 7		Optical axis
P3x/ML-36LED-LANDSCAPE-90			-

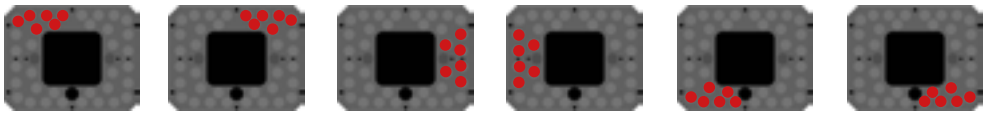
ACCESSORIES TO BE ORDERED SEPARATELY

Mounting brackets	
Description	**Article code**
BK-32-000 STD FIX BRACKET M320/P2 BODY	93ACC0282
BK-32-010 PIVOT FIX BRACKET M320/P2 BODY	93ACC0283
Software	
Description	**Article code**
LICENSE, ENHANCED, SMART CAMERA	95A900008
LICENSE, PRO, SMART CAMERA	95A900009

ACCESSORIES TO BE ORDERED SEPARATELY



Different options of Total Internal Reflection (TIR) Led lenses to match smart camera lens aperture



Software configurable lighting segments to optimize image brightness on the Field-of-View

Illuminators	
Description	**Article code**
LTP 110-003 SN14L 90D IR 850nm NL	95A900043
LTP 110-350 SN14L 35D RED 625nm	95A900026
LTP 110-351 SN14L 35D WHT white	95A900027
LTP 110-352 SN14L 35D BLU 475nm	95A900028
LTP 110-353 SN14L 35D IR 850nm	95A900044
LTP 110-600 SN14L 60D RED 625nm	95A900023
LTP 110-601 SN14L 60D WHT white	95A900024
LTP 110-602 SN14L 60D BLU 475nm	95A900025
LTP 112-000 SN36L 120D RED 625nm NL	95A900045
LTP 112-001 SN36L 120D WHT white NL	95A900046
LTP 112-002 SN36L 120D BLU 475nm NL	95A900047
LTP 112-003 SN36L 90D IR 850nm NL	95A900048
LTP 112-350 SN36L 35D RED 625nm	95A900034
LTP 112-351 SN36L 35D WHT white	95A900035
LTP 112-352 SN36L 35D BLU 475nm	95A900036
LTP 112-353 SN36L 35D IR 850nm	95A900049
LTP 112-600 SN36L 60D RED 625nm	95A900031
LTP 112-601 SN36L 60D WHT white	95A900032
LTP 112-602 SN36L 60D BLU 475nm	95A900033
Adapter LL ML LT 36L M320/P2	95A900038
Adapter CM LT 36L P2/P3	95A900029

Cables	
Description	**Article code**
CAB-DS01-S M12-IP67 TO CBX 1M	93A050058
CAB-DS03-S M12-IP67 TO CBX 3M	93A050059
CAB-DS05-S M12-IP67 TO CBX 5M	93A050060
CAB-DS10-S M12-IP67 TO CBX 10M	93A051390
CV-A1-30-F-05 M12 12p, High-Flex, 5m	95A900061
CV-A1-30-F-10 M12 12p, High-Flex, 10m	95A900062
CV-A1-30-F-15 M12 12p, High-Flex, 15m	95A900063
CV-N1-48-F-05 GigETH-X, High-Flex, 5m	95A900058
CV-N1-48-F-10 GigETH-X, High-Flex, 10m	95A900059
CV-N1-48-F-15 GigETH-X, High-Flex, 15m	95A900060
CAB-ETH-X-M01 M12-IP67 GETH-X CAB 1 m	93A050122
CAB-ETH-X-M03 M12-IP67 GETH-X CAB 3 m	93A050123
CAB-ETH-X-M05 M12-IP67 GETH-X CAB 5 m	93A050124
CAB-ETH-X-M10 M12-IP67 GETH-X CAB 10M	93A050140

ACCESSORIES TO BE ORDERED SEPARATELY

Red bandpass | Blue bandpass | UV-cut | IR bandpass | YAG-cut | IR-cut

Filters	
Description	**Article code**
Filter IR Cut LT 14L M320/P2	95A900064
Filter IR Cut LT 36L M320/P2	95A900065
Filter RED Bandpass 625 nm LT 14L P2x/P3x	95A900015
Filter BLU Bandpass 475 nm LT 14L P2x/P3x	95A900016
Filter IR Bandpass 850 nm LT 14L P2x/P3x	95A900017
Filter YAG Cut LT 14L P2x/P3x	95A900018
Filter UV Cut Longpass 415 LT 14L P2x/P3x	95A900039
Filter RED Bandpass 625 nm LT 36L P2x/P3x	95A900019
Filter BLU Bandpass 475 nm LT 36L P2x/P3x	95A900020
Filter IR Bandpass 850 nm LT 36L P2x/P3x	95A900021
Filter YAG Cut LT 36L P2x/P3x	95A900022
Filter UV Cut Longpass415 LT 36L P2x/P3x	95A900040

STANDARD | ESD | POLARIZED | HARSH ENVIRONMENT

Covers	
Description	**Article code**
Cover ESD LT 14L P2x/P3x	93ACC0278
Cover LT 14L P2x/P3x	93ACC0323
Cover LT 36L P2x/P3x	93ACC0324
Cover Polarizer LT 14L P2x/P3x	93ACC0273
Cover Polarizer LT 36L P2x/P3x	93ACC0274
Cover STD LT 14L P2x/P3x	93ACC0271
Cover STD LT 36L P2x/P3x	93ACC0272
C-Mount lens standard cover P2x	937710025
C-Mount lens long cover P2x/P3x	937710026

P3X-SERIES FIELD OF VIEW qHD /2 MP (H x V in mm)

operating distance (mm)	6 mm	8 mm	12.5 mm	17.5 mm
50	67 x 37	46 x 26	24 x 13	-
100	117 x 66	82 x 46	46 x 25	31 x 17
200	218 x 122	155 x 87	90 x 49	62 x 35
300	318 x 179	227 x 128	133 x 73	93 x 52
400	419 x 236	300 x 169	177 x 96	124 x 70
500	519 x 292	373 x 209	220 x 120	155 x 87
600	620 x 349	445 x 250	263 x 144	185 x 104
700	720 x 405	518 x 291	307 x 167	216 x 121
800	821 x 462	590 x 332	350 x 191	247 x 139
900	921 x 518	663 x 373	394 x 214	277 x 156
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1200	-	880 x 495	524 x 285	369 x 208
1300	-	-	567 x 309	400 x 225
1400	-	-	611 x 333	431 x 242
1500	-	-	654 x 357	461 x 259

ACCESSORIES TO BE ORDERED SEPARATELY

P3X-SERIES FIELD OF VIEW qHD /2 MP (H in mm)

working distance (mm)	4 mm	6 mm	8 mm	12 mm	16 mm	25 mm	35 mm
50	121	81	67	47	-	-	-
100	188	126	100	69	-	-	-
200	323	216	167	114	89	55	39
300	457	305	234	159	123	77	54
400	591	395	302	203	156	98	69
500	726	484	369	248	190	120	85
600	860	574	436	293	233	141	100
700	995	664	503	338	257	163	115
800	1129	753	570	383	291	184	131
900	1263	843	638	427	324	206	146
1000	1398	932	705	472	358	227	162
1100	-	1022	772	517	391	249	177
1200	-	1112	839	562	425	270	192
1300	-	1201	906	606	459	292	208
1400	-	1291	974	651	492	313	223
1500	-	1380	1041	696	526	335	238
1600	-	-	-	741	559	356	254
1700	-	-	-	786	593	378	269
1800	-	-	-	830	627	399	284
1900	-	-	-	875	660	421	300
2000	-	-	-	920	694	442	315
2500	-	-	-	-	862	550	392

P3X-SERIES FIELD OF VIEW 5 MP (H in mm)

working distance (mm)	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm
100	141	92	-	-	-	-
200	233	153	116	72	46	-
300	326	214	160	100	66	47
400	418	275	205	129	87	61
500	511	335	249	158	107	76
600	603	396	294	186	128	90
700	695	457	338	215	148	105
800	788	518	383	244	169	119
900	880	578	427	272	189	134
1000	973	639	472	301	210	148
1100	1065	700	516	330	230	163
1200	1157	761	561	358	251	177
1300	1250	821	605	387	271	192
1400	1342	882	650	415	292	206
1500	1435	943	694	444	312	221
1600	-	1004	739	473	333	236
1700	-	1064	783	501	353	250
1800	-	1125	828	530	374	265
1900	-	1186	872	559	394	279
2000	-	1247	917	587	415	294
2100	-	-	961	616	435	308
2200	-	-	1006	645	456	323
2300	-	-	1050	673	476	337
2400	-	-	1095	702	497	352
2500	-	-	1140	731	517	366

DATASENSING
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VISION PROCESSORS

MX-E

VISION PROCESSOR

Rugged Industrial Machine Vision Processors providing the highest performance in image processing with unmatched flexibility through Ethernet (GigE Vision) connectivity and multi-camera support.

- State-of-the-art processors and the highest-quality, industry leading hardware components
- Running IMPACT (rule-based) machine vision software
- Compatible with a wide range of cameras from VGA up to very high resolution,
- Grayscale and Color, Area Scan and Line Scan cameras
- Supporting up to eight Power over Ethernet (PoE) camera ports – PoE compliant Integrated PROFINET, Ethernet IP and modbus industrial fieldbus
- 16 IN + 16 OUT software configurable digital I/Os that can work either PNP or NPN mode
- State-of-the-art processors and the highest-quality, industry leading hardware components
- Three models for different performance levels
- Long-term product availability

- Electronics
- Robot Guidance
- Packaging machinery

MX-G

VISION PROCESSOR

The MX-G2000 provides the highest computing power to run both PEKAT VISION deep learning and IMPACT rule-based algorithms.

- Rugged, industrial, GPU-powered vision processor
- Running both PEKAT VISION (deep learning) and IMPACT (rule-based) machine vision software
- Training and inference on the edge, no need of additional PC, Server or Cloud computing
- Compatible with a wide range of cameras from VGA up to very high resolution
- Supporting up to four Power over Ethernet (PoE) camera ports – PoE compliant cameras
- Integrated Profinet and Ethernet/IP industrial fieldbus
- 16 IN + 16 OUT software configurable digital I/Os that can work either PNP or NPN mode

- Electronics
- Robot Guidance
- Packaging machinery

DATASENSING
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EtherNet/IP PROFINET

WEBSITE

MX-E
VISION PROCESSOR

Rugged Industrial Machine Vision Processors providing the highest performance in image processing with unmatched flexibility through Ethernet (GigE Vision) connectivity and multi-camera support.

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- 16 IN + 16 OUT software configurable digital I/Os that can work either PNP or NPN mode
- State-of-the-art processors and the highest-quality, industry leading hardware components
- Three models for different performance levels
- Long-term product availability

CE UKCA UL

CODE DESCRIPTION

MX-E - 25 - 2 - P - 2

series	**MX-E**	Vision Processor
processor	**25**	Intel Celeron 1.7 GHz
	45	Intel Celeron 2.4 GHz
	90	Intel® Core i7-7700T
ports	**2**	2 ports
	4	4 ports
	8	8 ports
PNP/NPN	**P**	PNP
	N	NPN
	B	PNP/NPN
O.S.	**2**	Windows 10

TECHNICAL SPECIFICATIONS

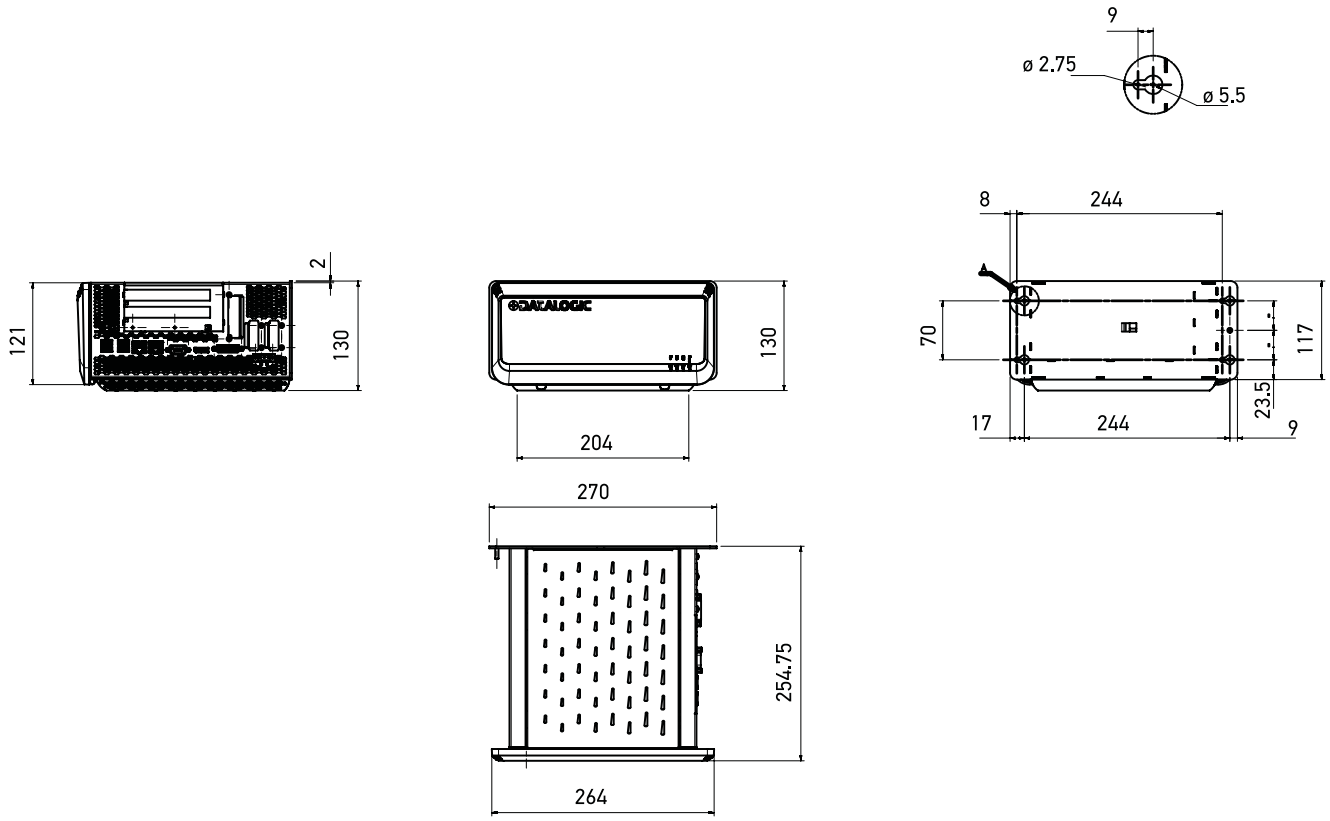
	MX-E25-*-*-2	MX-E45-*-*-2	MX-E90-*-*-2
GENERAL DATA			
Description	MX-E25-2-P-2, 2 ports, PNP, WIN10, MX-E25-2-N-2, 2 ports, NPN, WIN10	MX-E45-2-P-2, 2 ports, PNP, WIN10, MX-E45-2-N-2, 2 ports, NPN, WIN10, MX-E45-4-P-2, 4 ports, PNP, WIN10, MX-E45-4-N-2, 4 ports, NPN, WIN10	MX-E90-4-B-2, 4 GIG-E, PNP/NPN, WIN10, MX-E90-8-B-2, 8 GIG-E, PNP/NPN, WIN10, MX-E90-2-B-2, 2 GIG-E, PNP/NPN, WIN10
CPU	Intel Celeron 1.7 GHz - dual core	Intel Celeron 2.4 GHz – dual core	Intel Core i7 3.80 Ghz – quad core
Storage	128 GB (-40...+185 °F)		
System Memory	8 GB		32 GB
Operating System	Windows 10 IoT Enterprise		
Graphics	Intel® HD Graphics 510 (1920 x 1200 resolution) - DisplayPort, DVI		Intel® HD Graphics 630 (1920 x 1200 resolution) - VGA, DVI
Keyboard / Mouse	4x USB3.0 ports		8x USB 3.0 ports
INPUT/OUTPUT			
I/O	16 IN / 16 OUT PNP, 200 µs response time		16 IN / 16 OUT PNP or NPN, 200 µs response time
COMMUNICATION			
Connectivity	Supports EtherNet/IP, Profinet, Modbus TCP and OPC		
Serial Communications	1x RS-232 serial port		2x RS-232 serial port
Camera Interface	2	2, 4	2, 4, 8
Network Interface	2x LAN ports - 10/100/1000 Mbit/s Ethernet		
ELECTRICAL DATA			
Supply voltage	24 Vdc ±25%		
Power consumption	5.5 A 140 W maximum		9 A 220 W maximum
MECHANICAL DATA			
Dimensions	270 x 130 x 255 mm (10.6 x 5.1 x 10 in.)		145 x 192 x 230 mm (5.7 x 7.56 x 9.05 in.)
Weight	2.5 Kg		2.8 Kg
Camera Imager Limit	5 Mpix or lower (Area scan camera)	up to 20 Mpix (Area scan camera) up to 8 K (Line scan camera)	
CERTIFICATIONS			
Shocks	EMC: CE/FCC Class A		
ENVIRONMENTAL DATA			
Operating Temperature	-40 ... 50 °C (-40...+122 °F)		
Mechanical Protection	IP20		
Storage temperature max.	-40 ... 85 °C		
Humidity	5 ... 95 % no condensation		

AVAILABLE MODELS

CPU	System Memory	Storage	Camera Interface	Operating System	Model
Intel Celeron 1.7 GHz - dual core	8 GB	128 GB	2	Windows 10 IoT Enterprise	**MX-E25-2-P-2** (959912107)
					MX-E25-2-N-2 (959912108)
Intel Celeron 2.4 GHz – dual core					**MX-E45-2-P-2** (959914115)
					MX-E45-2-N-2 (959914116)
			4		**MX-E45-4-P-2** (959914117)
					MX-E45-4-N-2 (959914118)
Intel Core i7 3.80 Ghz – quad core	32 GB		2		**MX-E90-2-B-2** (959918118)
			4		**MX-E90-4-B-2** (959918112)
			8		**MX-E90-8-B-2** (959918113)

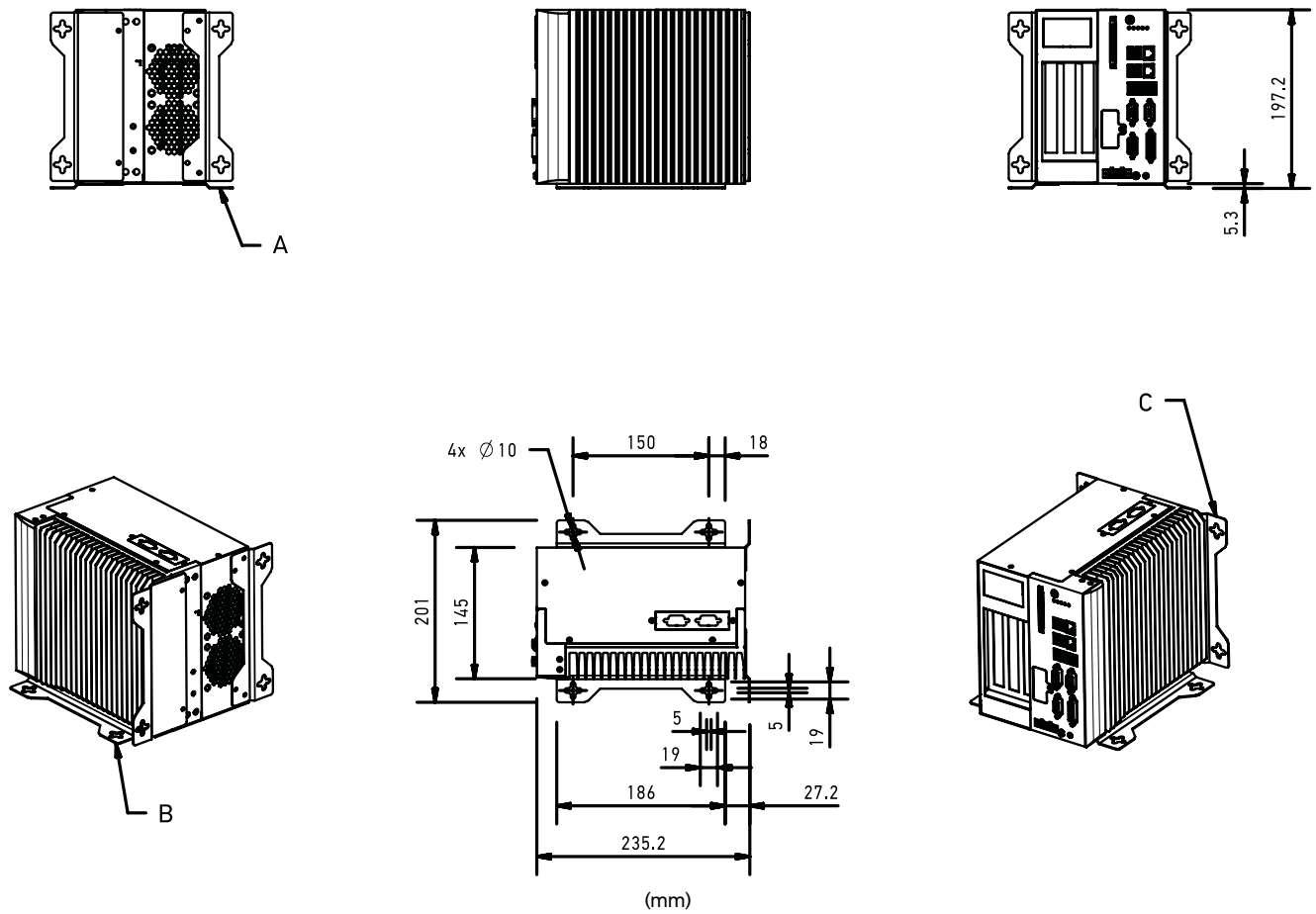
MECHANICAL DRAWINGS

MX-E25-*-*-2; MX-E45-*-*-2



(mm)

MX-E90-*-*-2



(mm)

	A	B	C
MX-E90-*-*-2	Mounting brackets	Mounting brackets on the bottom side	Mounting brackets on the rear side

ACCESSORIES TO BE ORDERED SEPARATELY

I/O board	
Description	**Article code**
I/O Board, MX-E and MX-U Series Processors, Female DB37, DIN Rail Mountable, no isolation	248-0110

Cables	
Description	**Article code**
Cable, Gig-E, CAT6, Horizontal Mold, 3 Meter	606-0677-M1-03
Cable, Gig-E, CAT6, Horizontal Mold, 5 Meter	606-0677-M1-05
Cable, Gig-E, CAT6, Horizontal Mold, 10 Meter	606-0677-M1-10
Cable, Gig-E, CAT6, 3 Meter	606-0677-03
Cable, Gig-E, CAT6, 5 Meter	606-0677-05
Cable, Gig-E, CAT6, 10 Meter	606-0677-10
Cable, I/O, MX-E and MX-U Series, Processor to Terminal Block, .75 Meter	606-0675-.75

Software	
Description	**Article code**
DONGLE, IMPACT	93ACC0185
DONGLE, IMPACT, ENHANCED	93ACC0236
DONGLE, IMPACT, ENHANCED, PST	93ACC0237
LICENSE, PRO, PROCESSOR	95A900041

DATASENSING
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PEKAT VISION on board

NEW!

WEBSITE

MX-G
VISION PROCESSOR

The MX-G2000 provides the highest computing power to run both PEKAT VISION deep learning and IMPACT rule-based algorithms.

- Rugged, industrial, GPU-powered vision processor
- Running both PEKAT VISION (deep learning) and IMPACT (rule-based) machine vision software
- Training and inference on the edge, no need of additional PC, Server or Cloud computing
- Compatible with a wide range of cameras from VGA up to very high resolution
- Supporting up to four Power over Ethernet (PoE) camera ports – PoE compliant cameras
- Integrated Profinet and Ethernet/IP industrial fieldbus
- 16 IN + 16 OUT software configurable digital I/Os that can work either PNP or NPN mode

CE UKCA UL

CODE DESCRIPTION

MX-G 2000 - 4 - B - 2

series	**MX-G**	Vision Processor
processor	**2000**	Intel Core i5-12500TE - RTX A4000 GPU
ports	**4**	4 ports
PNP/NPN	**B**	PNP/NPN
O.S.	**2**	Windows 10

TECHNICAL SPECIFICATIONS

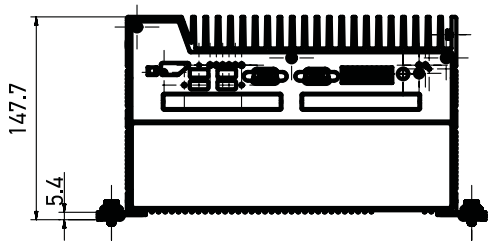
	MX-G2000-4-B-2
GENERAL DATA	
Description	MX-G2000-4-B-2, 4 GIG-E, PNP/NPN, WIN10
CPU	Intel Core i5-12500TE - 6-core
GPU	Nvidia RTX A4000 GPU - 16GB
Storage	512 GB M.2 NVMe SSD
System Memory	32 GB SO-DIMM DDR4 2666 MHz
Operating System	Windows 10 IOT Enterprise 2021 LTSC
Graphics	2x DisplayPort (Full-size, DP 1.4, DP++, HDMI 1.4)
Keyboard / Mouse	6x USB 3.2 Gen 2 Type-A
INPUT/OUTPUT	
I/O	16 IN / 16 OUT opto-isolated PNP or NPN, 200µs response time
COMMUNICATION	
Connectivity	Supports EtherNet/IP, Profinet, Modbus TCP, OPC and HTTP
Serial Communications	2x RS-232 serial port
Camera Interface	4x 1000 Mbps Base-T, PoE camera ports (Up to 15 W per channel)
Network Interface	2 x LAN ports - 2.5 Gbit/s Ethernet
ELECTRICAL DATA	
Supply voltage	12 ... 48 Vdc
Power consumption	100 W (typical, 480W maximum)
MECHANICAL DATA	
Dimensions	267 x 240 x 143 mm (10.5 x 9.45 x 5.60 in.)
Housing material	Aluminum-magnesium alloy housing
Weight	7.5 Kg
CERTIFICATIONS	
Shocks	k20G peak acceleration (11ms duration) with SSD (IEC60068-2-27 EMC: CE/FCC Class A)
Vibrations	5~500Hz, 1.5Grms@with SSD (IEC60068-2-64)
ENVIRONMENTAL DATA	
Operating Temperature	-40 ... 50 °C (-40...+122 °F)
Mechanical Protection	IP20
Storage temperature max.	-40 ... 85 °C (-40...+185 °F)
Humidity	10 ... 95 % non condensing

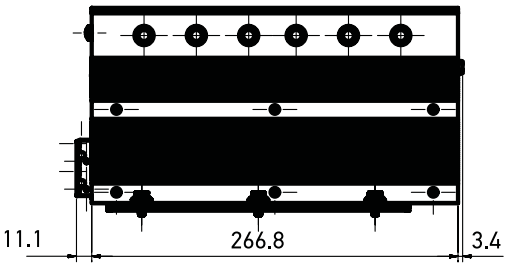
AVAILABLE MODELS

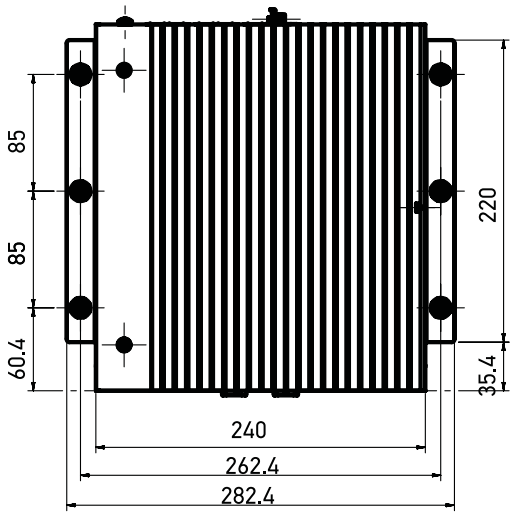
CPU	System Memory	Storage	Camera Interface	Operating System	Model
Intel Core i5-12500TE - 6-core	32 GB	512 GB	4x 1000 Mbps Base-T, PoE camera ports (Up to 15 W per channel)	Windows 10 IOT Enterprise 2021 LTSC	**MX-G2000-4-B-2** (959910007)

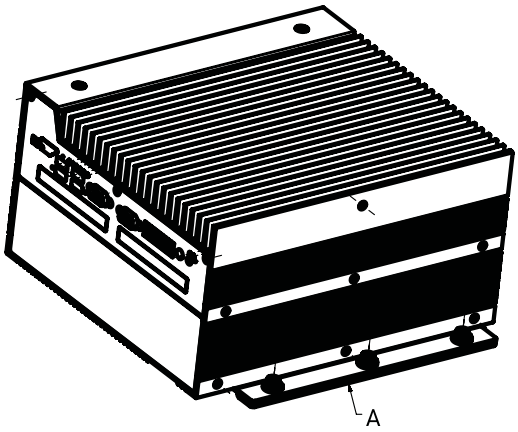
MECHANICAL DRAWINGS

MX-G2000-4-B-2 (With brackets)







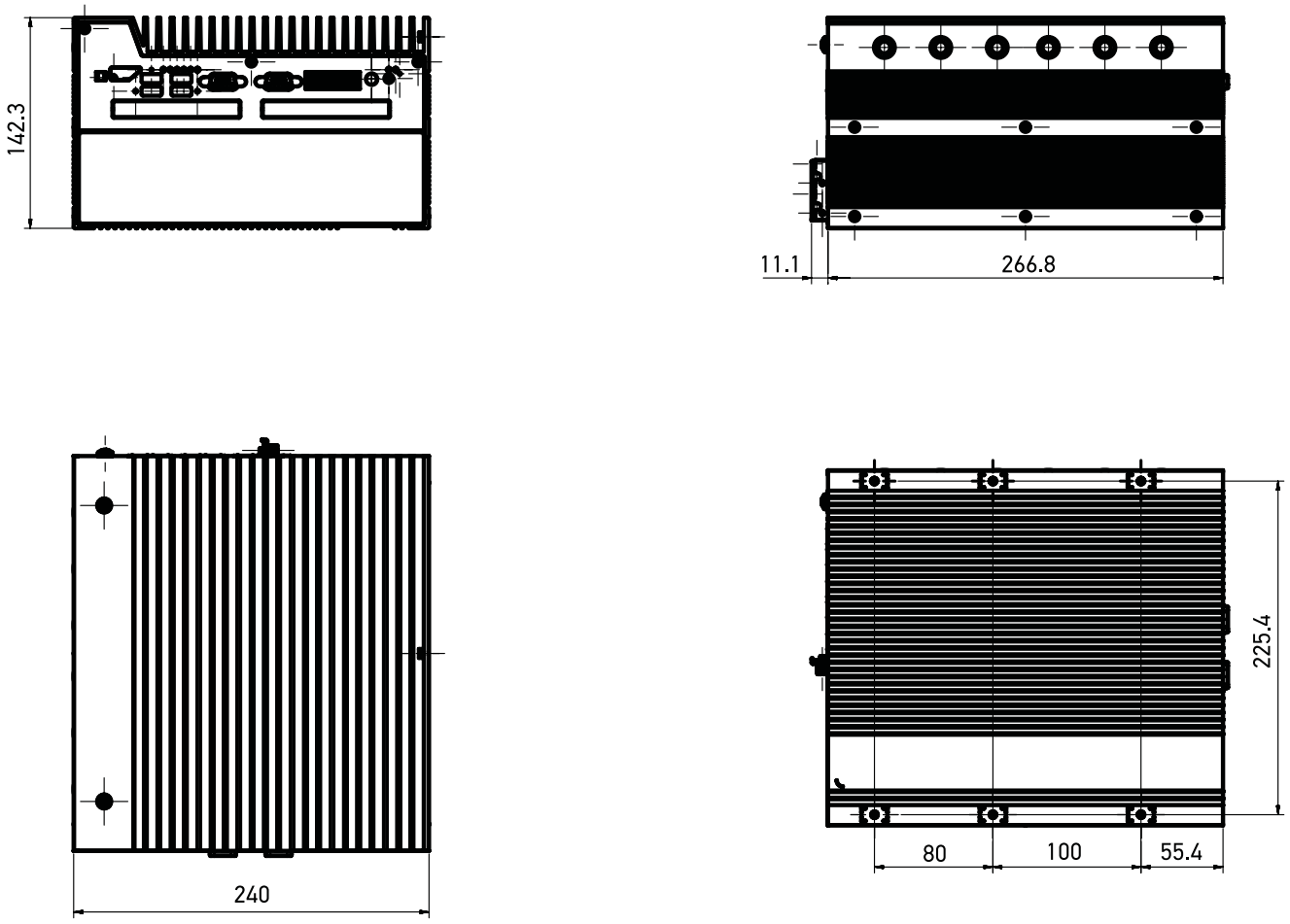


(mm)

	A
MX-G2000-4-B-2	Mounting brackets on the base

MECHANICAL DRAWINGS

MX-G2000-4-B-2 (Without brackets)



(mm)

ACCESSORIES TO BE ORDERED SEPARATELY

I/O board	
Description	**Article code**
I/O Board, MX-E and MX-U Series Processors, Female DB37, DIN Rail Mountable, no isolation	248-0110

Cables	
Description	**Article code**
Cable, Gig-E, CAT6, Horizontal Mold, 3 Meter	606-0677-M1-03
Cable, Gig-E, CAT6, Horizontal Mold, 5 Meter	606-0677-M1-05
Cable, Gig-E, CAT6, Horizontal Mold, 10 Meter	606-0677-M1-10
Cable, Gig-E, CAT6, 3 Meter	606-0677-03
Cable, Gig-E, CAT6, 5 Meter	606-0677-05
Cable, Gig-E, CAT6, 10 Meter	606-0677-10
Cable, I/O, MX-E and MX-U Series, Processor to Terminal Block, .75 Meter	606-0675-.75
Cable, M2xx, M3xx and M5xx Camera, Power and I/O, 12 pin, 10 Meter, Camera to Terminal Block	606-0673-10
Cable, M2xx, M3xx and M5xx Camera, Power and I/O, 12 pin, 3 Meter, Camera to Terminal Block	606-0673-03
Cable, M2xx, M3xx and M5xx Camera, Power and I/O, 12 pin, 5 Meter, Camera to Terminal Block	606-0673-05
Cable, M1xx, M5xx, U1xx and E1xx Camera, I/O, 6 pin, 10 Meter, pigtail	606-0672-10
Cable, M1xx, M5xx, U1xx and E1xx Camera, I/O, 6 pin, 10 Meter, Camera to Terminal Block	606-0674-10
Cable, M1xx, M5xx, U1xx and E1xx Camera, I/O, 6 pin, 3 Meter, Camera to Terminal Block	606-0674-03
Cable, M1xx, M5xx, U1xx and E1xx Camera, I/O, 6 pin, 5 Meter, pigtail	606-0672-05
Cable, M1xx, M5xx, U1xx and E1xx Camera, I/O, 6 pin, 5 Meter, Camera to Terminal Block	606-0674-05

Software	
Description	**Article code**
DONGLE, IMPACT GO, ENHANCED	93ACC0310
LICENSE, PEKAT, ADD 1 PORT, PROCESSOR	959910008

DATASENSING
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CAMERAS

Area-scan cameras

CAMERA

Area-scan cameras are grayscale and color cameras utilizing the GigE Vision standard. Thanks to their small housing, the cameras allow for easy installation in locations where space is constrained. The cameras are the ideal solution for fast embedded vision system integration and ensures an outstanding price/performance ratio. High resolution and frame rate guarantee superior image acquisition for tackling most complex machine vision applications.

- VGA to 5MP resolution, in both grayscale and color
- CMOS image sensors for high speed performance
- Power over Ethernet (PoE) guarantees minimum wiring and easy installati
- Compact housing (as small as 29 x 29 x 60 mm) enables mounting in space-constrained locations
- High Frame rates to keep up with high speed inspections
- Trigger and strobe I/O provide outstanding integration flexibility

- Electronics
- Robot Guidance
- Packaging machinery

Linescan cameras

CAMERA

Line scan cameras use the GigE Vision standard. These cameras are for applications that need high resolution and the object is very long or an endless web of material. The cameras are the ideal solution for printing machines to inspect printed images such as a continuous web or the printing around a circular object.

- Use with the MX-E45 and MX-E90
- Industrial
- 2K to 8K resolution in grayscale
- High quality images sensors for speed performance
- Compact housing enables mounting in space-constrained locations
- High line rate ensures images capture at rates for high speed applications

- Electronics
- Robot Guidance
- Packaging machinery

DATASENSING
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WEBSITE

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- Trigger and strobe I/O provide outstanding integration flexibility

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TECHNICAL SPECIFICATIONS

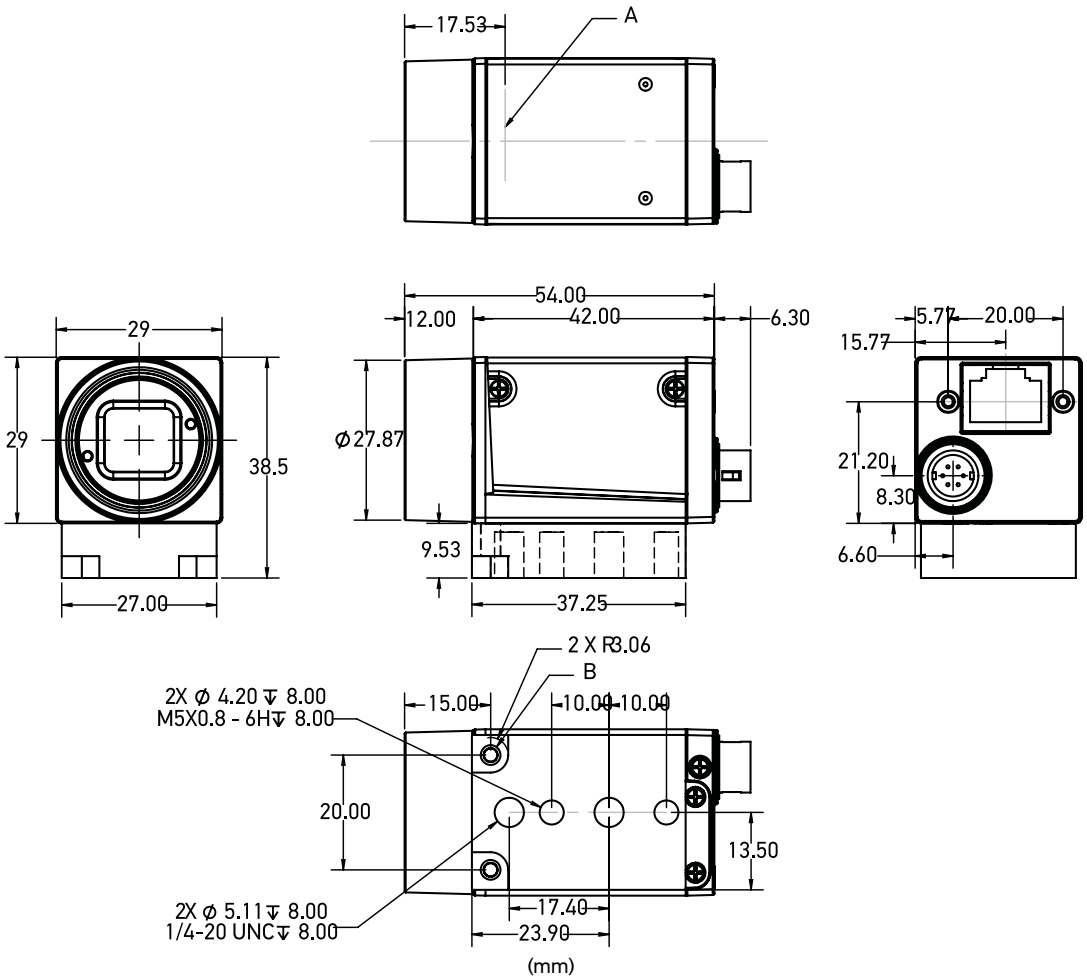
	Camera M*	Camera E*
COMMUNICATION		
PoE	Yes	
Camera Interface	GigE	
ELECTRICAL DATA		
Supply voltage	12 Vdc or PoE	0 ... 24 Vdc or PoE
MECHANICAL DATA		
Dimensions	42x29x29 mm	
Lens mount	C-Mount	
ENVIRONMENTAL DATA		
Operating Temperature	0 ... 50 °C	
Mechanical Protection	IP30	

AVAILABLE MODELS

Resolution	Mono / Color	Lens mount	Frame rate (FPS)	Model
659 x 480 pixels	Color	C-Mount	300 fps	**CAM-E101C-GE** (959933023)
	Monochrome			**CAM-E101-GE** (959933022)
1280 x 1024 pixels	Color		75 fps	**CAM-E151C-GE** (959933025)
	Monochrome			**CAM-E151-GE** (959933024)
1600 x 1200 pixels	Color		60 fps	**CAM-E182C-GE** (959933039)
	Monochrome			**CAM-E182-GE** (959933038)
1920 x 1200 pixels	Color		48 fps	**CAM-GE-1920X1200-48-C-E181C** (959933027)
	Monochrome			**CAM-GE-1920X1200-48-M-E181** (959933026)
2048 x 1088 pixels	Color		60 fps	**CAM-M190C-GE-2048x1088-50** (601-0455)
	Monochrome		50 fps	**CAM-M190-GE-2048x1088-50** (601-0454)
2048 x 1536 pixels	Color		35 fps	**CAM-GE-2048x1536-35-C-E193C** (959933043)
	Monochrome			**CAM-GE-2048x1536-35-M-E193** (959933042)
2048 x 2048 pixels	Color		25 fps	**CAM-M195C-GE-2048x2048-25** (601-0457)
	Monochrome			**CAM-M195-GE-2048x2048-25** (601-0456)
2448 x 2048 pixels	Color		20 fps	**CAM-GE-2448x2048-20-C-E198C** (959933045)
	Monochrome			**CAM-GE-2448x2048-20-M-E198** (959933044)
2592 x 1944 pixels	Color		14 fps	**CAM-M197C-GE-2592x1944-14** (959931011)
	Monochrome			**CAM-M197-GE-2592x1944-14** (959931010)

MECHANICAL DRAWINGS

CAM-****



	A	B
CAM-M1**	Photosensitive surface of the sensor	2 x ø 3.45 thru all

DATASENSING
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WEBSITE

Linescan cameras

CAMERA

Line scan cameras use the GigE Vision standard. These cameras are for applications that need high resolution and the object is very long or an endless web of material. The cameras are the ideal solution for printing machines to inspect printed images such as a continuous web or the printing around a circular object.

- Use with the MX-E45 and MX-E90 Industrial
- 2K to 8K resolution in grayscale
- High quality images sensors for speed performance
- Compact housing enables mounting in space-constrained locations
- High line rate ensures images capture at rates for high speed applications

CE UK CA

TECHNICAL SPECIFICATIONS

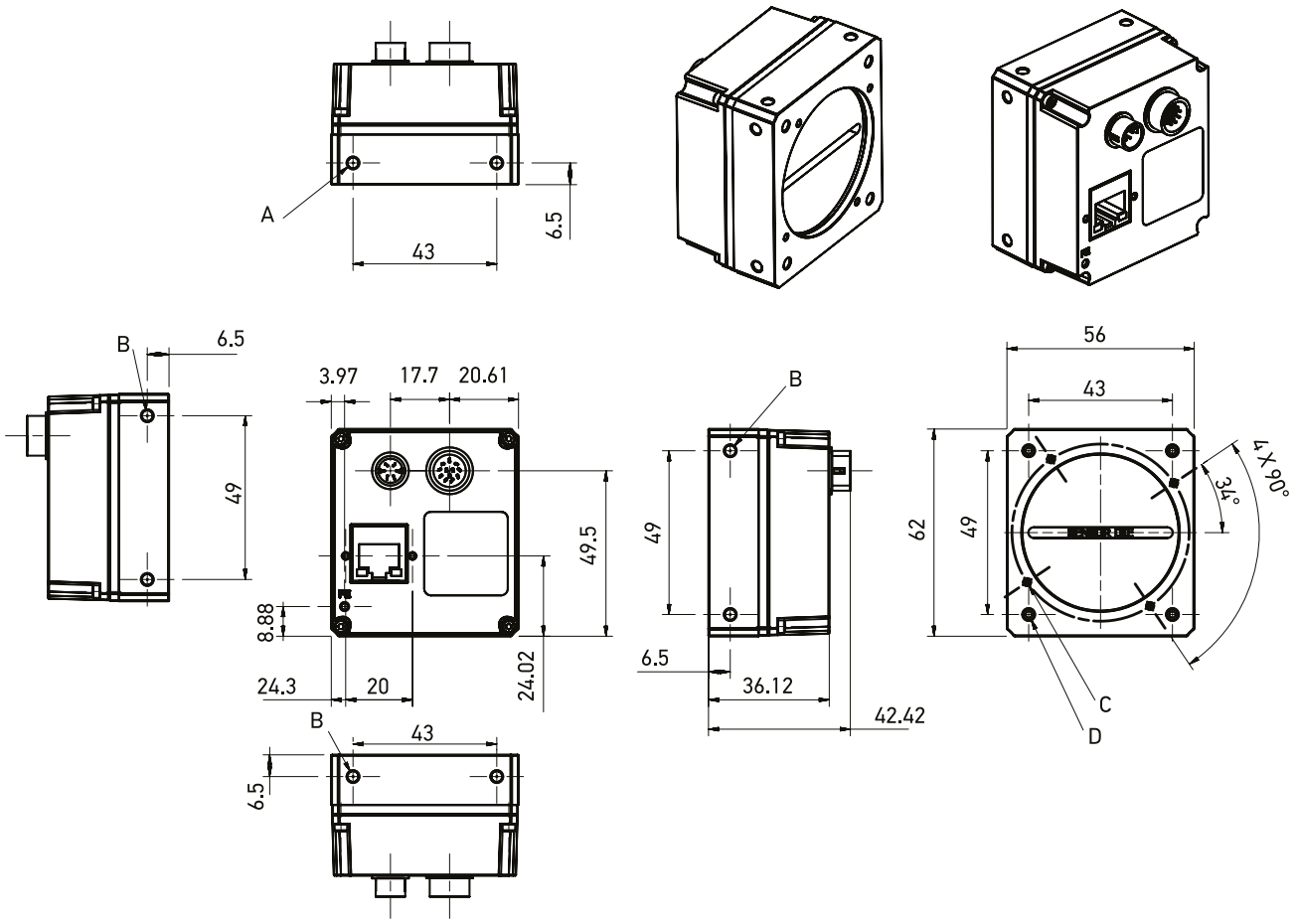
	Linear cameras
COMMUNICATION	
PoE	No
Camera Interface	GigE
ELECTRICAL DATA	
Supply voltage	12 ... 24 Vdc
MECHANICAL DATA	
Dimensions	36x56x62 mm
Lens mount	C/F/M42-Mount or F/M42-Mount
ENVIRONMENTAL DATA	
Operating Temperature	0 ... 50 °C
Mechanical Protection	IP30

AVAILABLE MODELS

Resolution	Mono / Color	Lens mount	Max line rate	Model
2048 pixels	Monochrome	C/F/M42-Mount	51 kHz	**CAM-M565-GE-2048** (959931002)
4096 pixels		F/M42-Mount	26 kHz	**CAM-M570-GE-4096** (959931003)
6144 pixels			17 kHz	**CAM-M575-GE-6144** (959933020)
8192 pixels			12 kHz	**CAM-M580-GE-8192** (959933021)

MECHANICAL DRAWINGS

CAM-M5-GE-****



(mm)

	A	B	C	D
CAM-M5**-GE-****	2 x M3 6.3 mm deep	2 x M4 6.3 mm deep	4 x M2.5 3.3 mm deep	4 x M4 6.3 mm deep

ACCESSORIES TO BE ORDERED SEPARATELY

Adapters	
Description	**Article code**
M42 x 0.75-mount Adapter, M5xx	95A906481
M42 x 1-mount Adapter, M5xx	95A906480
C-Mount Adapter, M565	95A906301
F-mount Adapter, M5xx	95A906302

DATASENSING

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SOFTWARE

Pekat

DEEP LEARNING SOFTWARE

PEKAT VISION is a state-of-the-art, deep-learning-based software solution designed specifically for industrial visual inspection and quality assurance. Utilizing its proprietary Focused-learning technology, PEKAT VISION offers unparalleled accuracy in distinguishing anomalies, identifying objects or defects, and recognizing characters, all while accommodating natural variations in complex patterns. The software comes equipped with a robust suite of deep-learning tools, including the Anomaly Detector, Surface Detector, Detector and Classifier, and OCR modules. These modules can be easily combined and enhanced with scripting to address a wide range of vision tasks in manufacturing, providing a highly adaptable and versatile solution. Designed to be user-friendly, PEKAT VISION requires no programming for most applications, as it already includes all the essential tools for industrial visual inspection. Its compatibility with various hardware platforms and its innovative approach make it a highly effective solution for automated visual inspection and quality assurance across multiple industries.

- Intuitive user Interface
- Fast integration
- Finds previously unseen defects
- Runs on Embedded Devices

Impact

SOFTWARE

IMPACT is an advanced software suite designed to support the development and management of machine vision programs. It is compatible with smart cameras and industrial vision processors. Its functionalities allow users to create, configure, and manage visual inspection programs, ensuring portability of configuration files across different hardware devices. The software is primarily composed of three key modules: Vision Program Manager (VPM), Control Panel Manager (CPM), and Software Development Kit (SDK), offering a comprehensive platform for creating, managing, and monitoring industrial vision applications.

- Multi-device Compatibility: IMPACT provides the same user experience across various hardware devices, from smart cameras to MX vision processors
- Portability: Configuration files are transferable between different Datasensing devices
- Remote Control: The SCM module allows remote monitoring of inspections via any web-connected device
- Blue Eye Tool: includes advanced tools like the Blue Eye Tool for pattern recognition, ensuring high performance

DATASENSING
easing automation challenges

PEKAT VISION
BRAIN BEHIND THE EYE

WEBSITE

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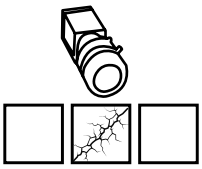
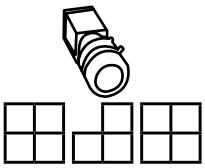
ANOMALY DETECTOR

The PEKAT VISION Anomaly Detector module is able to detect previously unseen or novel defects, greatly reducing training time and streamlining the deployment process. This makes it an ideal choice for industries that require quick, reliable, and efficient inspection solutions.The Anomaly Detector module identifies deviations from the OK state that indicate defets, useful particularly in applications where defects are rare and varied. Even when the shape, size, location, or type of defect is unpredictable, the Anomaly Detection module can easily detect these defects, ensuring comprehensive quality control even in complex and variabl conditions.

- **LEARNS FROM NORMAL (OK) IMAGES**
- **NO DEFECT ANNOTATION**
- **FAST TRAINING**

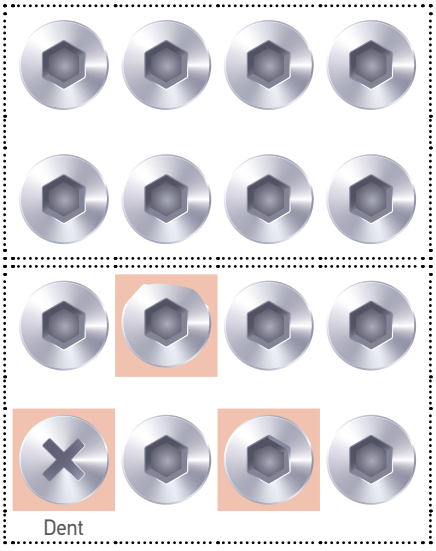


Defect detection



Completeness inspection

HOW IT WORKS



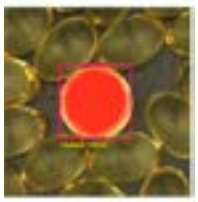
1 Training
(defect free Images only)

2 Inference
(defect identification)

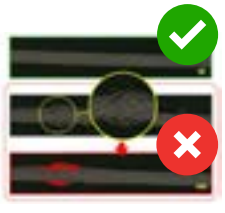
Metal chain inspection

Inspection of plastic parts

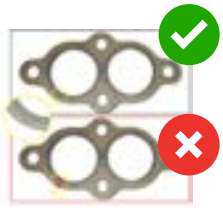
Denim fabric inspection



Contamination insection in pharma



Defect in shielding of a brided cable



Components inspection in automotive

PEKAT VISION
BRAIN BEHIND THE EYE

DETECTOR & CLASSIFIER

The PEKAT VISION Detector module stands out in identifying and optionally classifying a wide range of objects and defects under diverse conditions.
It's widely used for detecting defective parts, verifying the presence or absence of components, and sorting products.

- **OBJECT AND DEFECT DETECTION**
- **CLASSIFICATION**
- **PRECISE LOCATION**

PCB inspction

Completness inspection in automotive

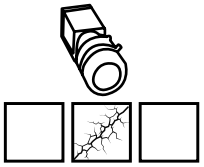
Pill sorting in pharma

For classifying the whole image or for objects retaining the same position in all imagies, the Classifier module alone is suitable.

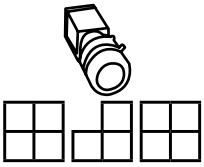
Liquid level inspection

Competness inspection in F&B

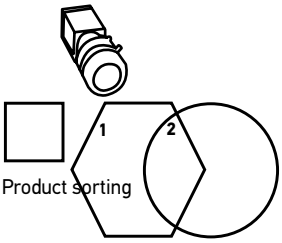
Assembly verification



Defect detection

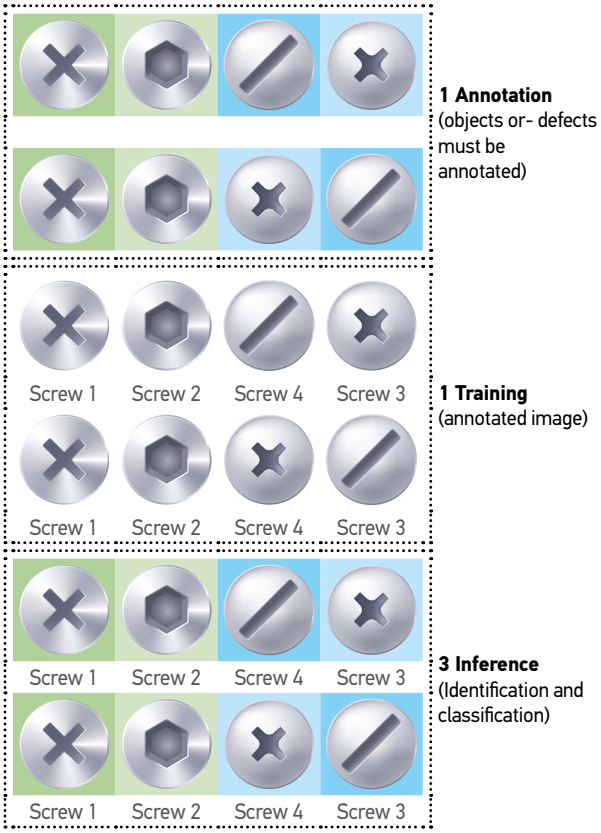


Completeness inspection



Product sorting

HOW IT WORKS



1 Annotation
(objects or- defects must be annotated)

1 Training
(annotated image)

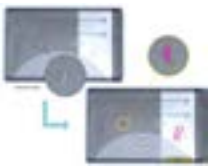
3 Inference
(Identification and classification)

SURFACE DETECTION

The PEKAT VISION Surface Detection module is designed to identify and classify complex surface anomalies that are challenging to detect with traditional methods. Ideal for industries where surface integrity is crucial, this module can be trained to recognize specific surfaces and detect a wide range of defects, such as scratches, cracks, and other imperfections, even on highly variable backgrounds.Capable of distinguishing between different types of surfaces, the Surface Detection module can classify these surfaces into distinct categories, similar to the functionality of the Classifier module. Its advanced capabilities make it particularly effective for detecting surface issues that are difficult to define with conventional rules-based systems, ensuring a higher level of accuracyand reliability in quality control processes.

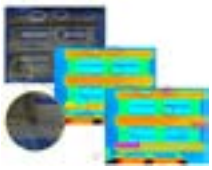
- **COMPLEX SURFACE DEFECT DETECTION**
- **CLASSIFICATION OF DEFECTS**
- **PRECIZE DEFECT SIZE AND LOCATION**

Surface defects on plastic components



Battery surface inspection

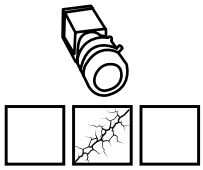
Inspection of body panels in automotive



Inspection of wooden palletes for recycling

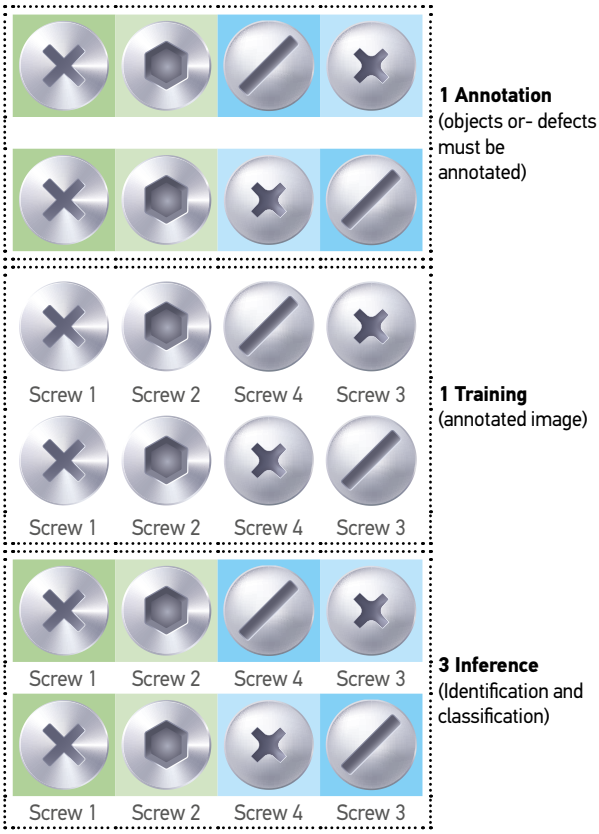
Indentification of surface scratches

Bearing elements inspected for surface defects



Defect detection

HOW IT WORKS



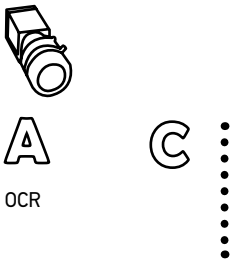
1 Annotation
(objects or- defects must be annotated)

1 Training
(annotated image)

3 Inference
(Identification and classification)

OCR

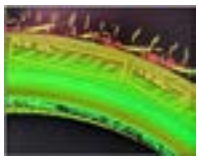
The PEKAT VISION OCR (Optical Character Recognition) module is designed to accurately detect and extract individual characters, words, and symbols from a wide range of surfaces. Whether dealing with flat, embossed, or even barely visible text, this module excels where general pre-trained OCR models fall short. Trainable to recognize special fonts and capable of handling rotated or skewed text, the PEKAT VISION OCR module offers superior performance, even on challenging and variable backgrounds. It is ideal for extracting critical information like stamped part numbers, serial numbers, batch codes, and more.



- **SUITABLE FOR A WIDE RANGE OF SURFACES**
- **RECOGNIZING SPECIAL FONTS**
- **SUPERIOR PERFORMANCE**

Reading embossed characters

Best berofe data reading



Text extraction using 3D scanner

OTHER FEATURES

Individual modules can be combined and extended with Python code to create custom and complex inspections.

PEKAT VISION can be fully implemented within the Impact suite.

Editing and enhancement tools included in the package

LEARN MORE

DATASENSING
easing automation challenges

WEBSITE

IMPACT
SOFTWARE

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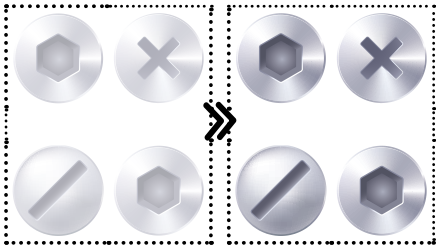
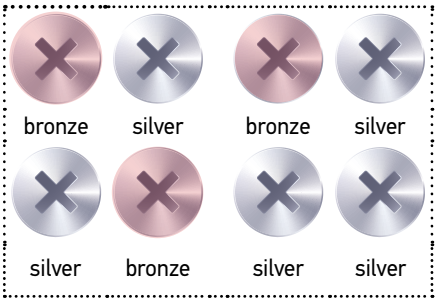
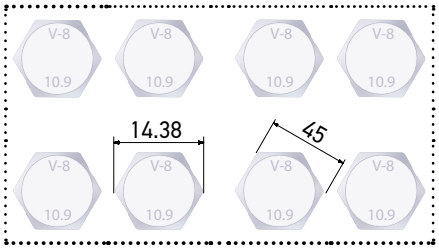
IMAGE FILTERING



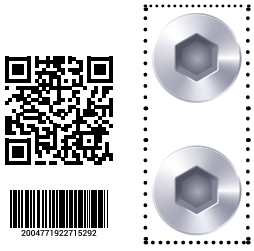
COLOR ANALYSIS



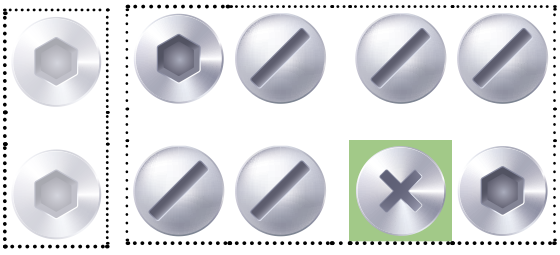
PRECISE MEASUREMENT



CODE READER & OCR/OCV



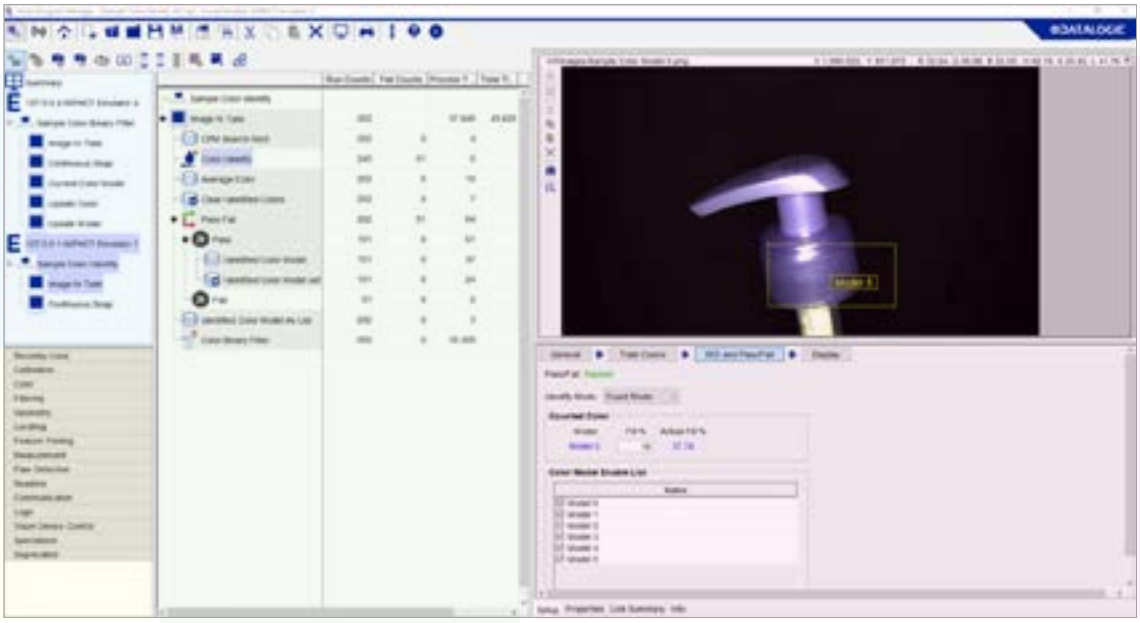
OBJECT LOCATION



VISION PROGRAM MANAGER

The Vision Program Manager (VPM) is the primary interface for creating and configuring machine vision programs. It enables users to develop visual inspection programs, organize tasks in program trees, and manage image acquisition and processing. With its intuitive interface and multiple configuration options, VPM simplifies programming even for complex applications.

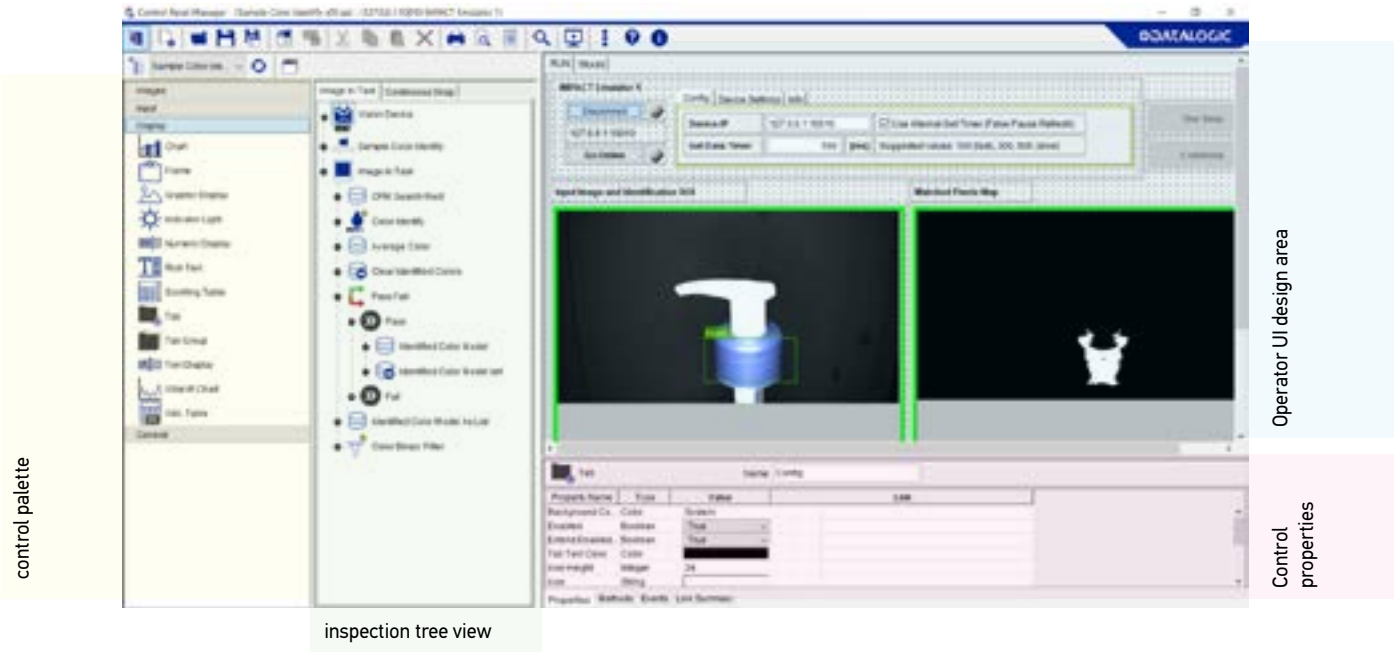
- **Intuitive Interface (No code oriented): Drag-and-drop and visual management of inspection tasks**
- **Multi-device Compatibility: Ability to connect and manage multiple vision devices**
- **Advanced Tools: Includes image analysis tools like pattern recognition and measurement.**



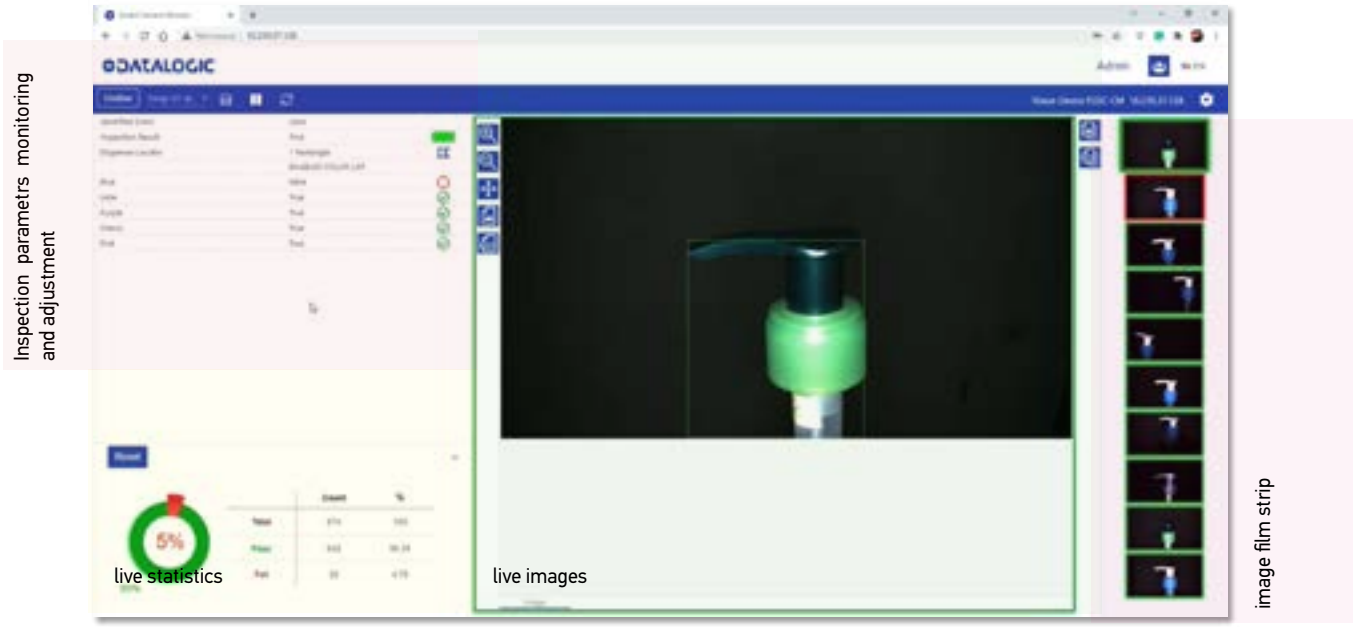
CONTROL PANEL MANAGER

The Control Panel Manager (CPM) allows users to create custom control panels to monitor and manage visual inspection programs in real time. The panels can contain various controls that exchange data with vision devices or emulators, enabling operators to monitor processes and intervene as needed.

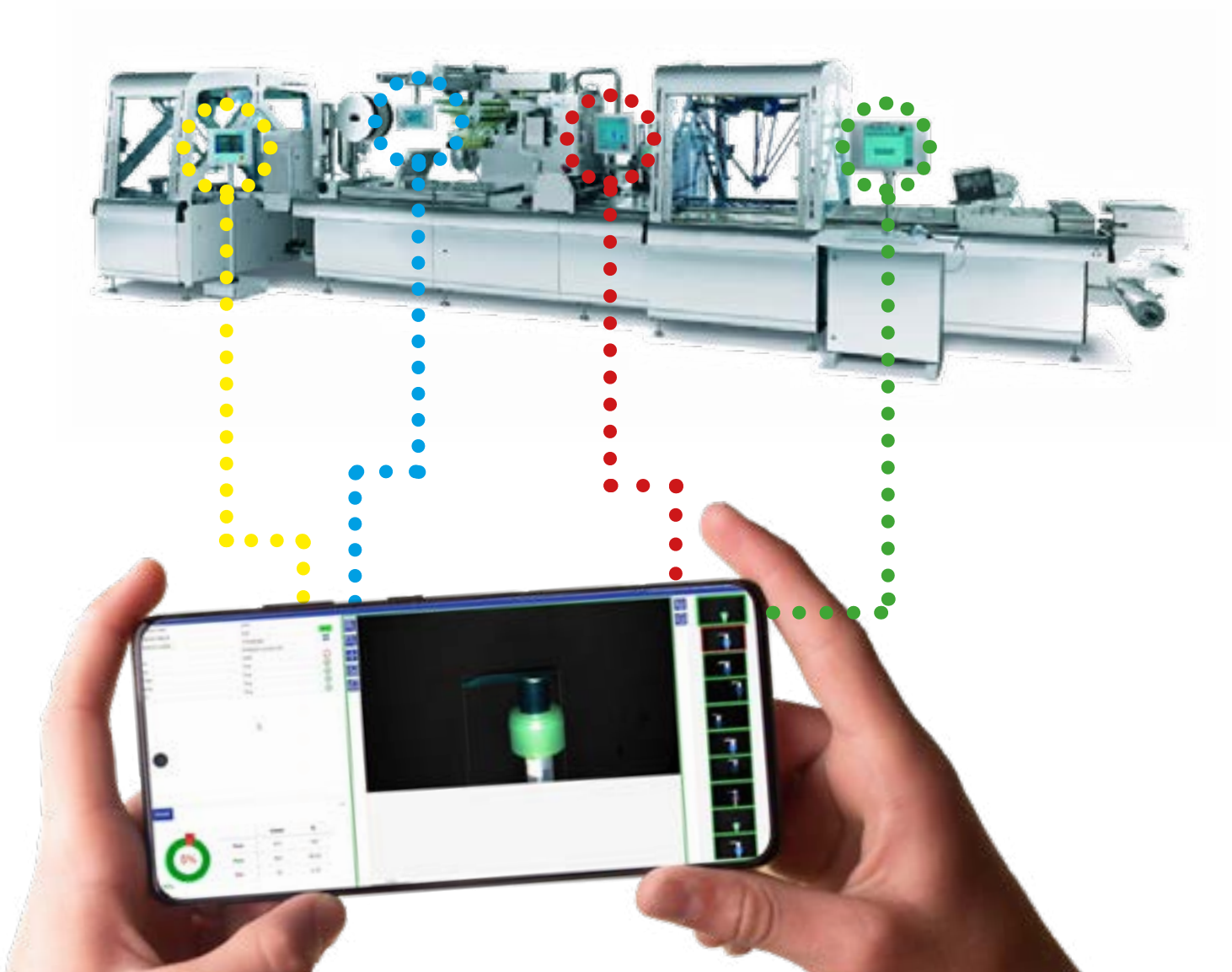
- **Customizable Panels: Create custom graphical interfaces for monitoring and control.**
- **Real-time Data Exchange: Panels can send commands and receive data from vision devices.**
- **Multi-panel Support: Multiple panels can be combined into a single control application.**



SMART CAMERA MONITOR



- **SCM is a web-based software HMI that comes pre-built into the device. Connect with any device able to run a web browser such as industrial panels, tablets, or smart phones to get immediate access to inspection results, statistics, parameters, image diagnostics, etc.**
- **The SCM supports several languages and can be customized defining multiple user access levels with password protection.**



SOFTWARE DEVELOPMENT KIT

The IMPACT Vision SDK (Software Development Kit) is a set of APIs (Application Program Interfaces) that allows access to and control of Datalogic vision devices using standard Microsoft® .NET languages. This SDK provides tools for developing custom machine vision applications, enabling C# programming to interact with vision devices, emulators, or smart cameras. The Vision SDK includes sample code and executable applications to help quickly develop custom industrial vision solutions.

- **Direct Integration with Datalogic Devices: Connect and manage cameras and vision devices through C#.**
- **Control and Automation: Full access to triggering, image acquisition, and vision program management functionalities**
- **Emulator: Allows application testing without physical devices.**
- **VPM Compatibility: Vision Program Manager can be used in combination with the SDK to emulate and test vision programs.**

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