PRODUCT INFORMATION

FTMg

FLOW SENSOR WITH LEAKAGE DETECTION

Flow sensors

SICK
Sensor Intelligence.

A SMALL FLOW SENSOR ENSURES GREAT EFFICIENCY

Compressed air one of the most expensive types of energy, which is why energy efficiency and energy transparency are playing an increasingly important role in factory automation. The investment costs, for example for procuring powerful compressors, are enormous. To save money, you must ensure loss-free operation. The FTMg (abbreviation for Flow Thermal Meter for gases) thermal flowmeter detects leaks in the compressed air system early on and stands for efficient energy management in accordance with DIN EN ISO 50001.

SAVING CONSIDERABLE COSTS WITH DATA TRANSPARENCY

Optimizing energy efficiency with reliable leak monitoring of compressed air systems

Through integrated data monitoring and automated storage of data from the last seven days in the sensor, the FTMg reliably detects changes and fluctuations in energy consumption. With this data transparency, the sensor provides efficient assistance in finding leaks in the compressed air system and helps minimize energy loss as well as save money.

Quickly identification of changes with high measuring dynamics

Mechanical component wear or defects result in changes to the consumption system. The FTMg detects these deviations with its high measuring dynamics, making it possible to initiate maintenance or repair work early on.

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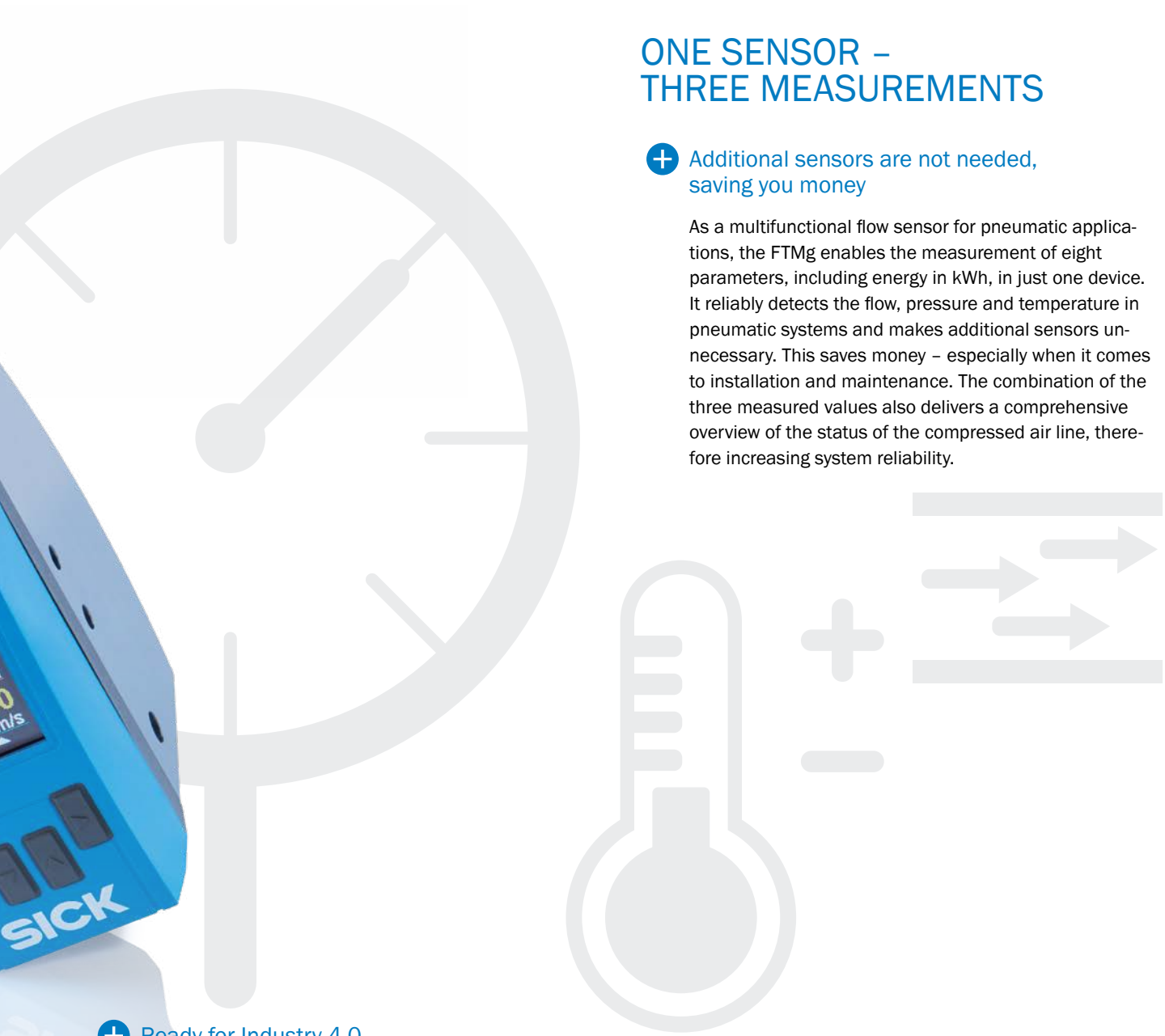


ONE SENSOR – THREE MEASUREMENTS

Additional sensors are not needed, saving you money

As a multifunctional flow sensor for pneumatic applications, the FTMg enables the measurement of eight parameters, including energy in kWh, in just one device. It reliably detects the flow, pressure and temperature in pneumatic systems and makes additional sensors unnecessary. This saves money – especially when it comes to installation and maintenance. The combination of the three measured values also delivers a comprehensive overview of the status of the compressed air line, therefore increasing system reliability.

Ready for Industry 4.0

The FTMg not only has digital and analog outputs, but can also transmit measurement data to the PLC via IO-Link. It also features variants with Power over Ethernet (PoE) via an integrated web server. The sensor can be accessed via the network using a computer, tablet or smartphone. This makes it possible to analyze consumption and plan maintenance intervals regardless of the location. The FTMg is therefore perfectly suited for condition monitoring and predictive maintenance. The integrated MQTT and OPC UA communication interfaces also ensure optimal cloud connectivity.

INDUSTRY 4.0 READY

MQTT.ORG

IO-Link

OPC UA

SMALL AND CLEVER DESIGN – HIGH EFFICIENCY

Flexible installation – even in tight spaces

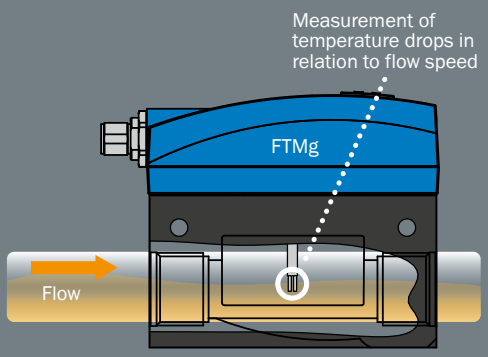
The FTMg is characterized by its light and compact construction. This means it is easy to install, even in tight spaces. With its rotatable display, it can be installed in any position – upside down, on the side or at an angle.

Nearly loss-free operation

Thanks to its straight measurement channel, the flow sensor minimizes pressure loss in the pneumatic system caused by the measurement technology.

The calorimetric principle of operation

The sensor probe is heated up with the calorimetric principle of operation. The medium flowing by the sensor cools the probe during operation. The drop in temperature is proportional to the flow speed, meaning it is higher the faster the medium flows. The sensor evaluates the detected temperature difference and calculates the values for flow monitoring.



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CLEAR CONDITIONS FOR HANDLING AND OPERATION

Flexible configuration

Different reference standards in accordance with DIN or ISO can be selected easily using the FTMg. Even individually defined reference values are easy to set using the device. Configurable outputs also allow for simple adaptation to the desired application.

Clear overview with OLED display

The large, contrast-rich OLED display enables intuitive operation thanks to the plain text messages, saving time and money during commissioning. With high resolution, up to six different measured values can be shown as text and progress diagrams.

Easy operation thanks to integrated web server

The integrated web server shows the data logging of all eight parameters from the last seven days and enables a clear view of the measured values and simple operation via PC or a mobile end device. This makes it easy to identify if the system is running without faults or if leaks are present.

RELIABLE LEAK MONITORING IN COMPRESSED AIR SYSTEMS

Even the smallest leaks in a compressed air system can result in high costs. The typical sources of leaks are leaky or defective lines, hoses, couplings, valves and screw or flange connections, to name a few examples.

If leaks in these areas remain undetected or ignored for long periods of time, the operator suffers from a reduction in economic efficiency and financial losses. The following applies: The larger the leak, the higher the costs threaten to be. The FTMg helps reliably detect leaks, saving valuable energy and unnecessary expenses.

Example calculation

The following table shows the expected costs per year caused by leaks, assuming the following:

- 8,760 operating hours per year (24 h, 365 days)
- Compressed air costs = 1.7 cents/standard cubic meter(Nm^3)

Leak area		Leaks per year	Cost per year (€)
Surface area (original size)	Hole diameter	At 6 bar (relative)	
·	0.5 mm	8,410 Nm^3	€143
•	1.0 mm	33,112 Nm^3	€563
•	1.5 mm	74,635 Nm^3	€1,269
●	2.0 mm	132,976 Nm^3	€2,261
●	3.0 mm	299,066 Nm^3	€5,084

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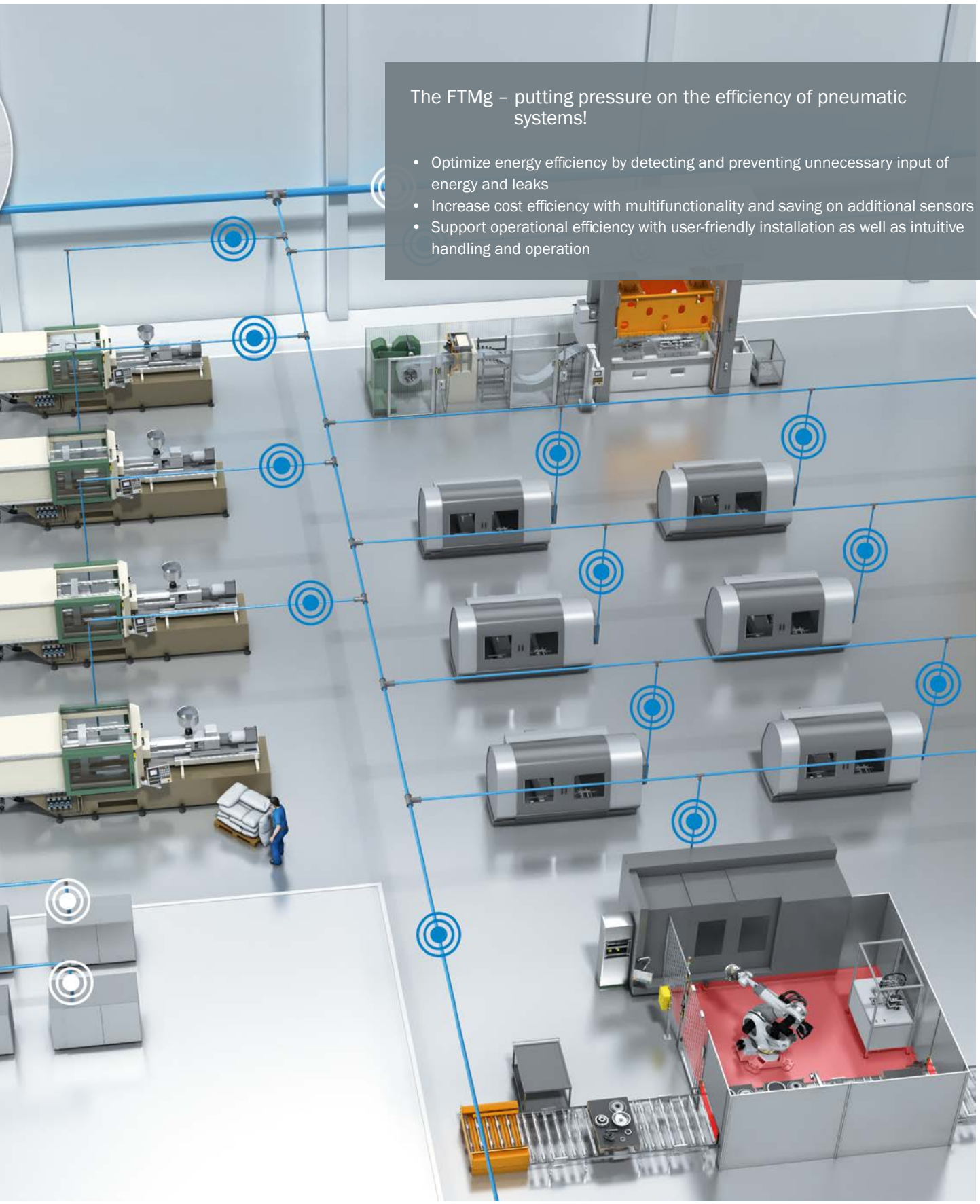

The FTMg – putting pressure on the efficiency of pneumatic systems!

- Optimize energy efficiency by detecting and preventing unnecessary input of energy and leaks
- Increase cost efficiency with multifunctionality and saving on additional sensors
- Support operational efficiency with user-friendly installation as well as intuitive handling and operation

FLOW SENSOR WITH LEAKAGE DETECTION

Product description

The FTMg thermal flowmeter measures gas flow and temperature as well as the process pressure, making it a cost-saving multi-talent. With high measurement dynamics and low pressure loss, it measures non-corrosive gases with extreme efficiency. The contrast-rich color display enables easy operation of the FTMg and allows for representation of several measured values as a process diagram.

Internal data logging over seven days and integrated static evaluation helps detect even the smallest leaks in a pneumatic systems. PoE also enables simple web-based connection to a PC or a cloud to make energy consumption more transparent. All measurement data can be transmitted via IO-Link or with switching and analog signals.

At a glance

- Measures compressed air and non-corrosive gases such as argon, helium, carbon dioxide and nitrogen
- Calorimetric measurement principle with a measurement accuracy of ± 3% M.V. and ± 0.3% M.E.V.
- Measurement of gas flow and temperature as well as process pressure and energy consumption with only one sensor
- Low pressure loss
- High measurement dynamics for cylinder and leakage monitoring

Your benefits

- Transparent compressed air consumption measurement according to DIN EN 50001
- Complete overview of the flow, pressure and temperature of gases increases system reliability
- IO-Link or Ethernet interfaces (communication with OPC UA) for simple system integration and data availability
- Cost savings thanks to reduced energy consumption and increase in production efficiency
- Intuitive configuration with large, contrast-rich OLED display saves time and money during commissioning
- Only one installation and commissioning process for the collection of flow, pressure and temperature data

Additional information

→ www.sick.com/FTMg

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

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Detailed technical data

Features

	DN 15	DN 20	DN 25
Measurement principle	Calorimetric (flow, temperature), piezoresistive (pressure)		
Medium	Compressed air (air quality ISO 8573-1:2010 [3:4:4]), helium, argon, nitrogen, carbon dioxide		
Nominal width measuring tube	DN 15	DN 20	DN 25
Measuring range [1]	5.3 l/min ... 1,060.3 l/min, standard measuring range 1,060.3 l/min ... 1,590.4 l/min, extended measuring range	9.4 l/min ... 1,884.9 l/min, standard measuring range 1,884.9 l/min ... 2,827.4 l/min, extended measuring range	14.7 l/min ... 2,945.2 l/min, standard measuring range 2,945.2 l/min ... 4,417.9 l/min, extended measuring range
Process temperature	–20 °C ... +60 °C		
Process pressure	0 bar ... 16 bar		
Communication interface	IO-Link V1.1 Ethernet (depending on type)		
Temperature measurement	✔		
Pressure measurement	✔		
Indication	✔ 128 x 128 pixels, adjustable rotary OLED display (90° steps) and 4 pushbuttons		

[1] Reference conditions according to DIN 1343 (atmospheric pressure 1,013 mbar, compressed air temperature 0 °C).

Performance

Minimum flow velocity	≥ 0.5 m/s
Maximum flow velocity	≤ 150 m/s
Accuracy of sensor element	± 3 % from measured value + 0.3 % of the measuring range end value (standard measuring range) according to ISO 8573-1:2010 [3:4:4] ± 8 % from measured value + 1 % of the measuring range end value (extended measuring range)
Reproducibility	± 1.5 % from measured value
Response time	< 0.3 s
Temperature measurement	
Accuracy (temperature)	± +2 °C
Reproducibility (temperature)	± +0.5 °C
Pressure measurement	
Accuracy (pressure)	± 1.5 % from measuring range
Non-linearity (pressure)	± 0.5 % from measuring range
Reproducibility (pressure)	± 0.2 % from measuring range

Mechanics

	DN 15	DN 20	DN 25
Process connection	G ½ (according to DIN ISO 228-1)	G ¾ (according to DIN ISO 228-1)	G 1 (according to DIN ISO 228-1)
Wetted parts	Stainless steel 1.4305, PA6, Viton®, aluminum		
Housing material	PC+ABS, PA66+PA6I GF50, PC, TPE, stainless steel 1.4301		
Enclosure rating	IP65/IP67 (according to IEC 60529)		
Weight	Approx. 805 g	Approx. 755 g	Approx. 685 g

Electronics

Industrial version

Supply voltage	17 V DC ... 30 V DC [1]
Power consumption	< 12 W at 24 V DC without output load
Initialization time	≤ 10 s
Protection class	III
Connection type	Round connector M12 x 1, 5-pin
Output signal	1 analog output 4 mA ... 20 mA +1 digital/analog output (PNP, NPN, push-pull, 4 mA ... 20 mA / switchable) +1 digital output (PNP, NPN, push-pull, switchable), IO-Link V1.1 (COM3 / 230K4 baud) / ethernet IP, OPC UA, MQTT, integrated web server (depending on type)
Output load	4 mA ... 20 mA, max. 500 ohm at Uv > 15 V
Lower signal level	3.5 mA ... 3.8 mA
Upper signal level	20.5 mA ... 21.5 mA
Digital output	≤ 100 mA
Signal voltage HIGH	> Uv - 2 V
Signal voltage LOW	≤ 2 V
Inductive load	≤ 1 H
Capacitive load	≤ 100 nF (2.5 nF, IO-Link mode)

[1] All connections are reverse polarity and overload protected. Q1 and Q2 are short-circuit protected.

Ethernet version

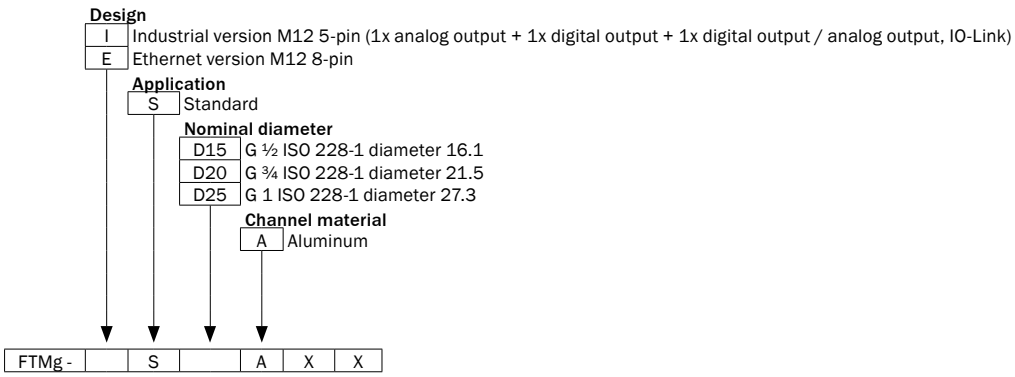
Power consumption	< 5 W
Connection type	1 x M12 round connector, 8-pin, x-coded
Standard communication	IEEE802.3 Clause 25 (100BaseTx); 100 Mbit/sec
Standard supply	Power over Ethernet according to IEEE802.3af
Performance class	Class 0; acc. IEEE802.3af Powered Device < 13 W
Power supply mode	Mode A and Mode B

[1] All connections are reverse polarity and overload protected. Q1 and Q2 are short-circuit protected.

Ambient data

Ambient operating temperature	–20 °C ... +60 °C
Ambient storage temperature	–40 °C ... +85 °C
Max. rel. humidity (not condensing)	90 %

Type code



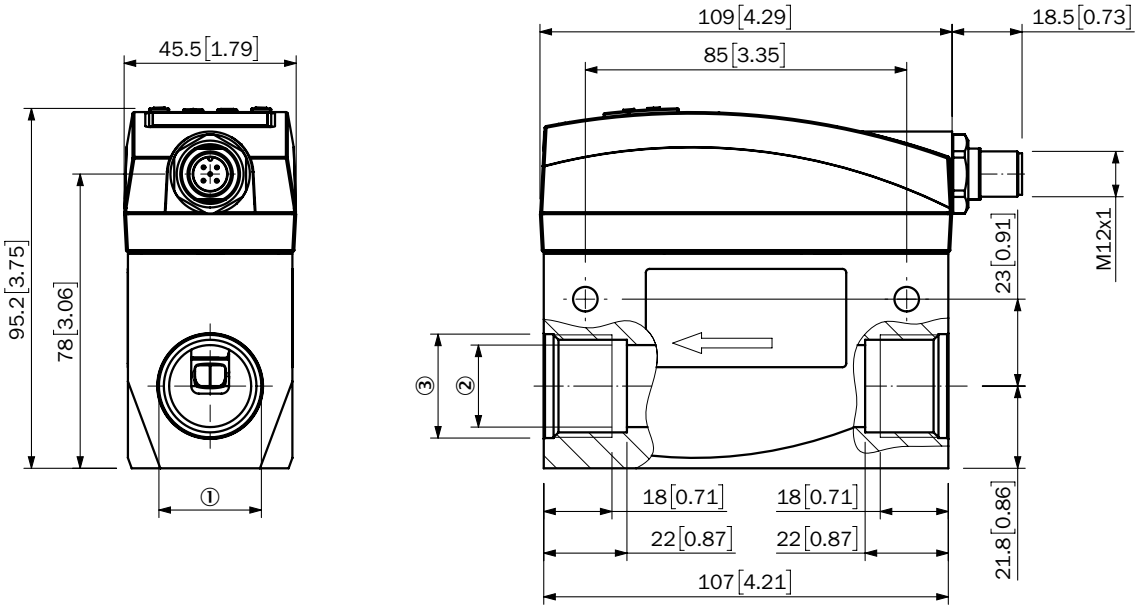
Not all variants of the type code can be combined!

Ordering information

Communication interface	Nominal width measuring tube	Process connection	Connection type	Type	Part no.
IO-Link	DN 15	G ½ (according to DIN ISO 228-1)	Round connector M12 x 1, 5-pin	FTMG-ISD15AXO	1100211
	DN 20	G ¾ (according to DIN ISO 228-1)	Round connector M12 x 1, 5-pin	FTMG-ISD20AXO	1100212
	DN 25	G 1 (according to DIN ISO 228-1)	Round connector M12 x 1, 5-pin	FTMG-ISD25AXO	1100213
Ethernet	DN 15	G ½ (according to DIN ISO 228-1)	1 x M12 round connector, 8-pin, x-coded	FTMG-ESD15AXO	1100214
	DN 20	G ¾ (according to DIN ISO 228-1)	1 x M12 round connector, 8-pin, x-coded	FTMG-ESD20AXO	1100215
	DN 25	G 1 (according to DIN ISO 228-1)	1 x M12 round connector, 8-pin, x-coded	FTMG-ESD25AXO	1100216

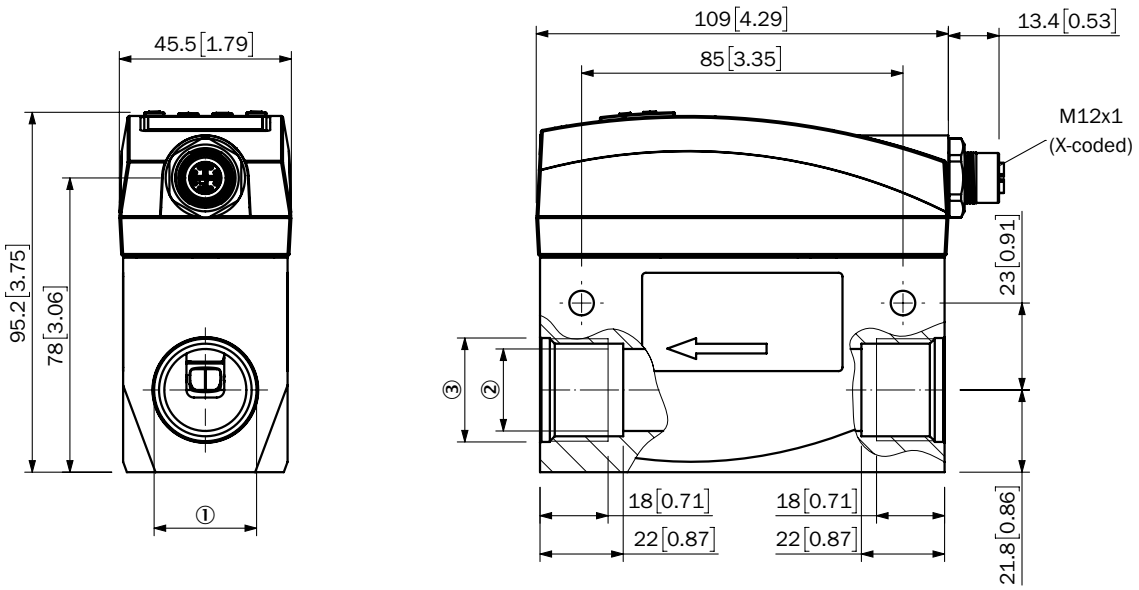
Dimensional drawings (Dimensions in mm (inch))

Industrial version, unit: mm (inch), decimal separator: period



Type	DN	1	2	3
FTMG-ISD15AXX	15	G 1/2	Ø 16.1	Ø 22
FTMG-ISD20AXX	20	G 3/4	Ø 21.7	Ø 27.5
FTMG-ISD25AXX	25	G1	Ø 27.3	Ø 33.5

Ethernet version, unit: mm (inch), decimal separator: period



Type	DN	1	2	3
FTMG-ESD15AXX	15	G 1/2	Ø 16.1	Ø 22
FTMG-ESD20AXX	20	G 3/4	Ø 21.7	Ø 27.5
FTMG-ESD25AXX	25	G 1	Ø 27.3	Ø 33.5

Accessories

Mounting systems

Other mounting accessories

Others

Brief description	Type	Part no.
One discharge pipe set for FTMg (FTMG-xxx25xxx) with process connection G1 in 1.4305	BEF-EL-G10D25-FTMG	2111054
One discharge pipe set for FTMg (FTMG-xxx15xxx) with process connection G1/2 in 1.4305	BEF-EL-G12D15-FTMG	2111050
One discharge pipe set for FTMg (FTMG-xxx20xxx) with process connection G3/4 in 1.4305	BEF-EL-G34D20-FTMG	2111052
One discharge pipe set for FTMg (FTMG-xxx25xxx) with process connection 1” NPT in 1.4305	BEF-EL-N10D25-FTMG	2111055
One discharge pipe set for FTMg (FTMG-xxx15xxx) with process connection 1/2” NPT in 1.4305	BEF-EL-N12D15-FTMG	2111051
One discharge pipe set for FTMg (FTMG-xxx20xxx) with process connection 3/4” NPT in 1.4305	BEF-EL-N34D20-FTMG	2111053

Connection systems

Power supply units and power supply cables

	Brief description	Type	Part no.
	Power supply DC 24 V / 2,1 A, adjustment range 24 V ... 28 V, input current typ. 0.77 A/ 0.44 A, mains frequency 50 Hz ... 60 Hz	Power supply unit	6022427

Modules and gateways

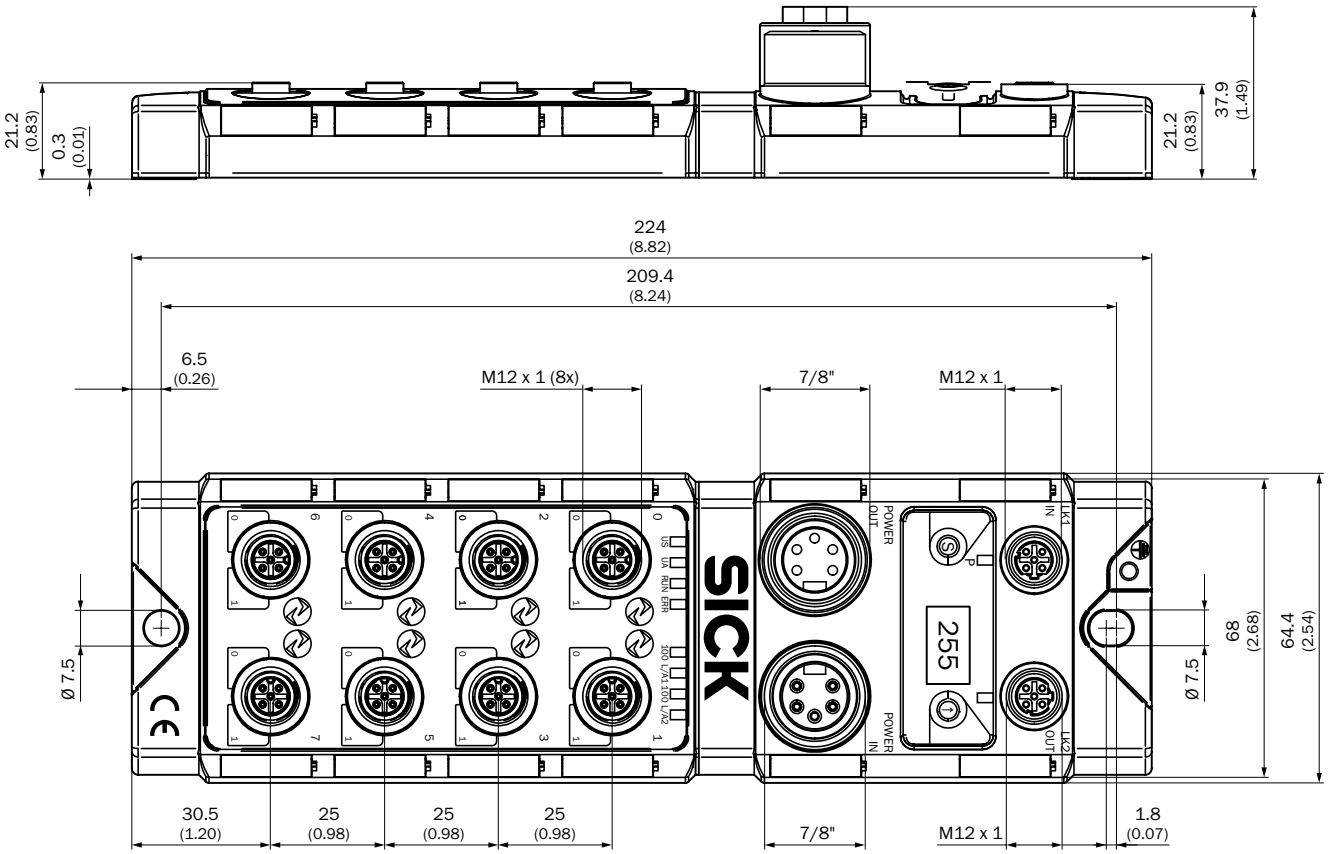
Connection modules

	Brief description	Type	Part no.
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	IOLA2US-01101 (SiLink2 Master)	1061790

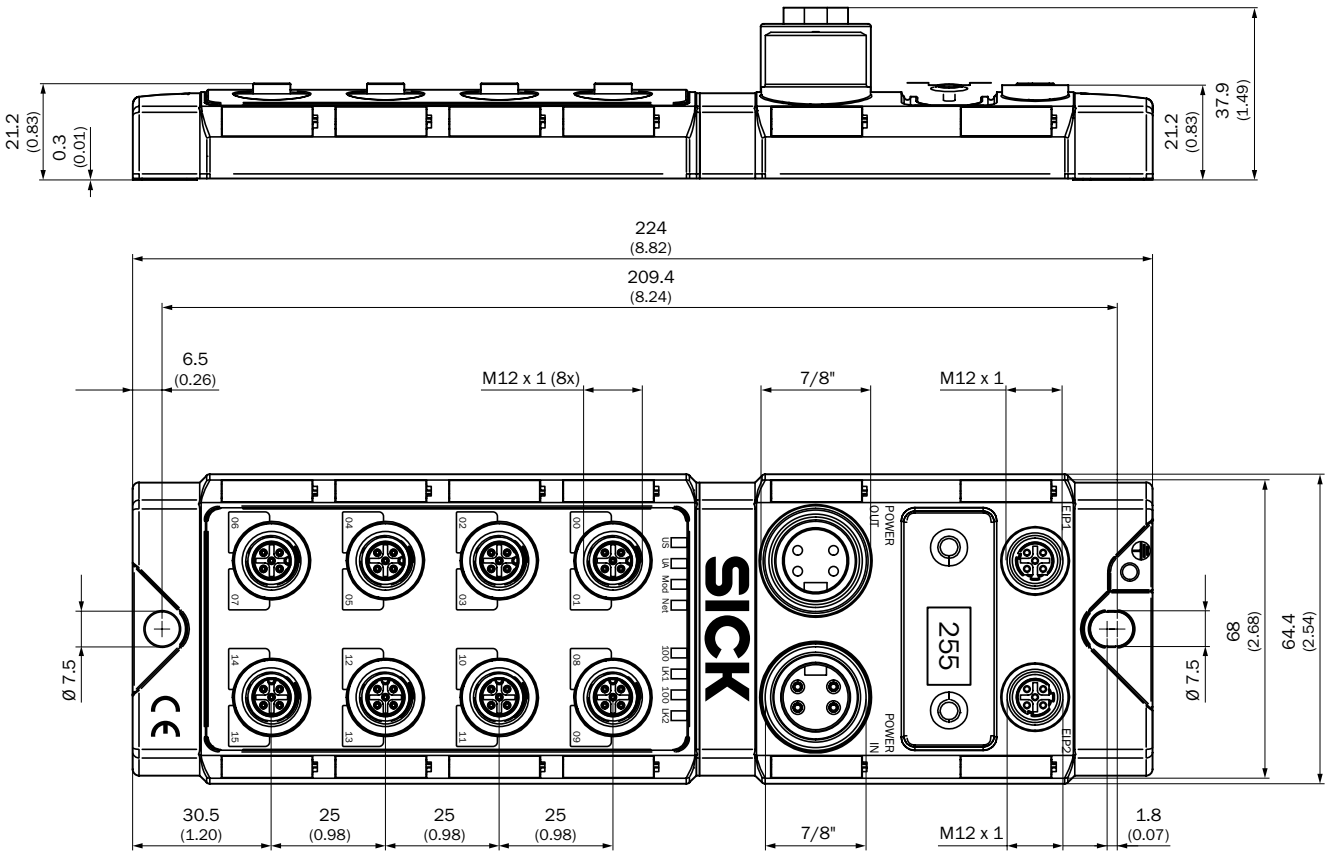
Fieldbus modules

	Brief description	Type	Part no.
 Illustration may differ	EtherCAT IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8'' cable 24 V / 8 A, fieldbus connection via M12 cable	IOLG2EC-03208R01 (IO-Link Master)	6053254
 Illustration may differ	EtherNet/IP IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8'' cable 24 V / 8 A, fieldbus connection via M12-cable	IOLG2EI-03208R01 (IO-Link Master)	6053255
	PROFINET IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8'' cable 24 V / 8 A, fieldbus connection via M12 cable	IOLG2PN-03208R01 (IO-Link Master)	6053253

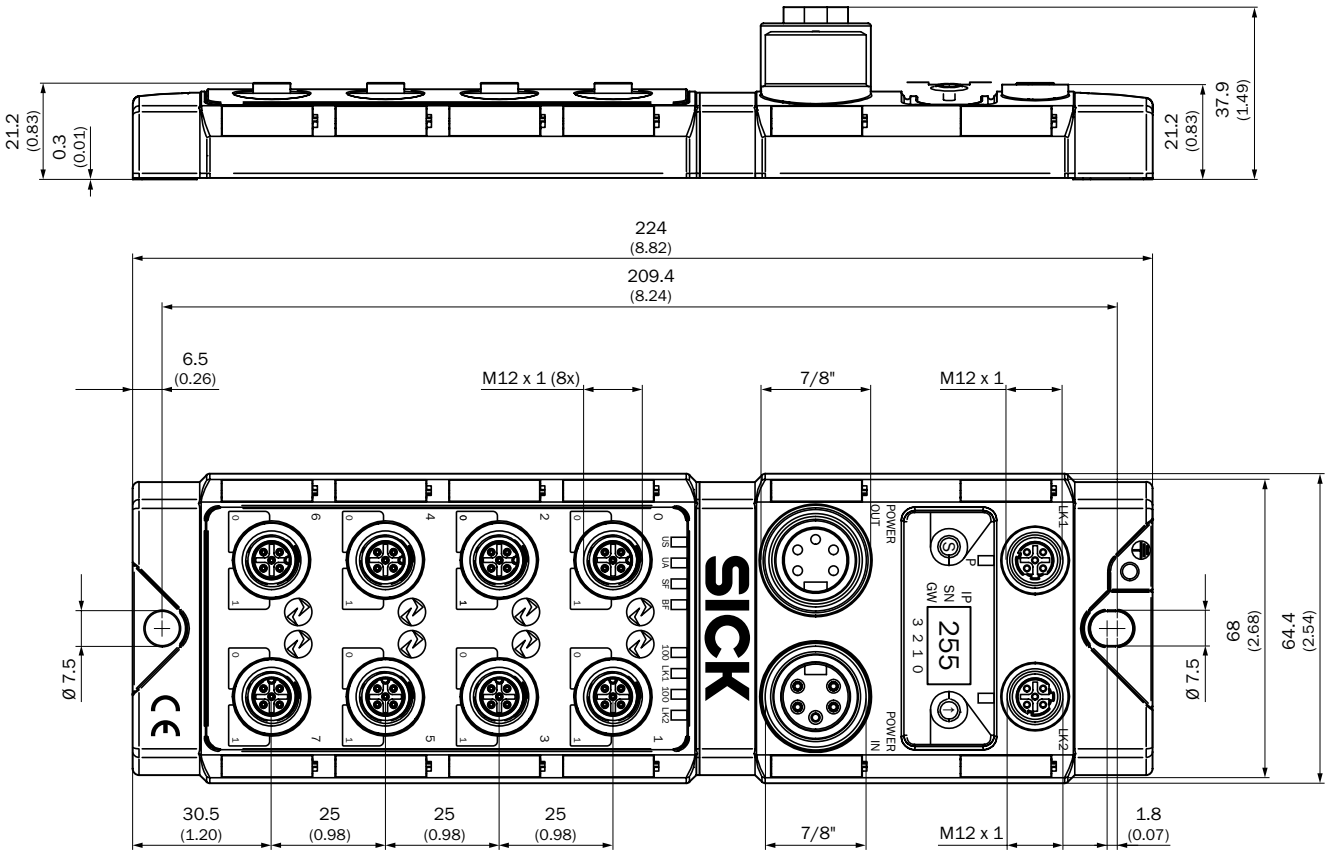
IOLG2EC-03208R01 (IO-Link Master)



IOLG2EI-03208R01 (IO-Link Master)



IOLG2PN-03208R01 (IO-Link Master)



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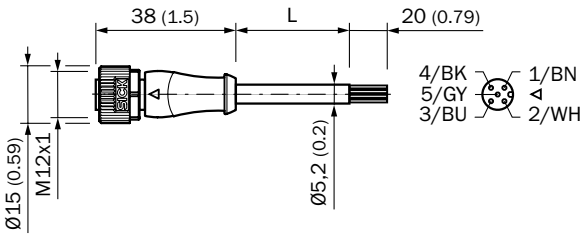
Plug connectors and cables

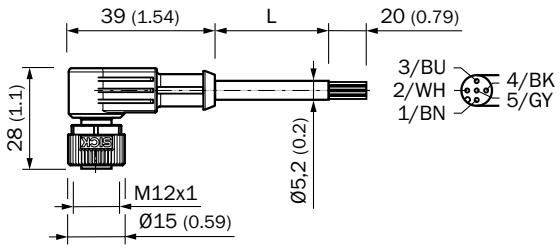
Connecting cables

	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm², 5.2 mm	2 m	YF2A15-020VB5X-LEAX	2096239
		5 m	YF2A15-050VB5X-LEAX	2096240
		10 m	YF2A15-100VB5X-LEAX	2096241
		15 m	YF2A15-150VB5X-LEAX	2096242
	Head A: female connector, M12, 5-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm², 5.2 mm	2 m	YG2A15-020VB5X-LEAX	2096215
		5 m	YG2A15-050VB5X-LEAX	2096216

YF2A15-020VB5XLEAX
YF2A15-050VB5XLEAX
YF2A15-100VB5XLEAX
YF2A15-150VB5XLEAX



YG2A15-020VB5XLEAX
YG2A15-050VB5XLEAX

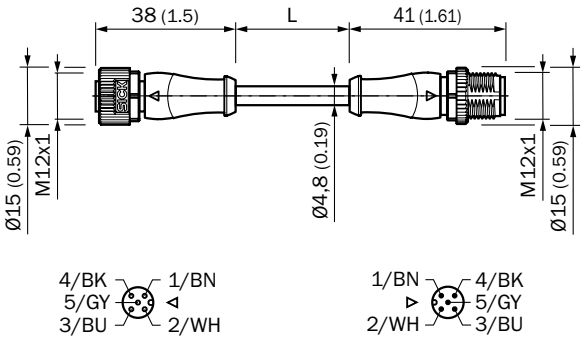


Connection cables

	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: male connector, M12, 5-pin, straight, A-coded Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm², 4.8 mm	1 m	YF2A15-010UB-5M2A15	2096007
		1.5 m	YF2A15-015UB-5M2A15	2096008
		2 m	YF2A15-020UB-5M2A15	2096009
		3 m	YF2A15-030UB-5M2A15	2104350
		5 m	YF2A15-050UB-5M2A15	2096010
		10 m	YF2A15-100UB-5M2A15	2096011
		15 m	YF2A15-150UB-5M2A15	2096171
		20 m	YF2A15-200UB-5M2A15	2095844
		30 m	YF2A15-300UB-5M2A15	2095845
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: male connector, M12, 5-pin, straight, A-coded Cable: digital I/Os, PUR, halogen-free, shielded, 5.3 mm	5 m	YF2A85-050UB-6M2A85	2096119
		10 m	YF2A85-100UB-6M2A85	2096120

	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 5-pin, angled with LED, A-coded Head B: male connector, M12, 5-pin, straight, A-coded Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm², 4.8 mm	2 m	YI2A15-020UB-5M2A15	2096138
	Head A: male connector, M12, 8-pin, straight, X-coded Head B: male connector, RJ45, 8-pin, straight Cable: Gigabit Ethernet, twisted pair, PUR, halogen-free, shielded, 4 x 2 x 0.14 mm², 6.4 mm, AWG26	1 m	YM2X18-010EG2M-RJA8	6049727
		2 m	YM2X18-020EG2M-RJA8	6049728
		5 m	YM2X18-050EG2M-RJA8	6049729
		10 m	YM2X18-100EG2M-RJA8	6049730

YF2A15-010UB5M2A15, YF2A15-015UB5M2A15, YF2A15-020UB5M2A15, YF2A15-030UB5M2A15, YF2A15-050UB5M2A15, YF2A15-100UB5M2A15, YF2A15-150UB5M2A15, YF2A15-200UB5M2A15, YF2A15-300UB5M2A15



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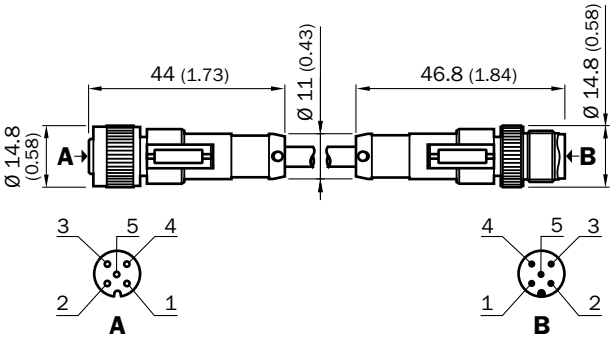
YF2A85-100UB6M2A85



① brn
② wht
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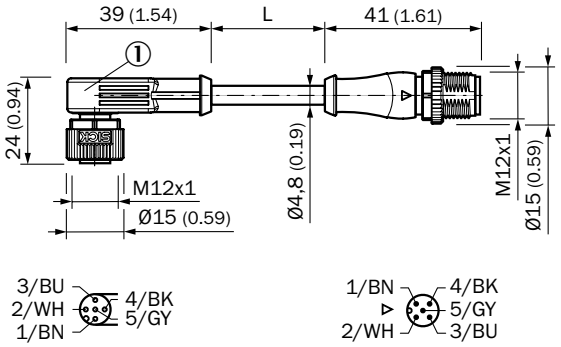
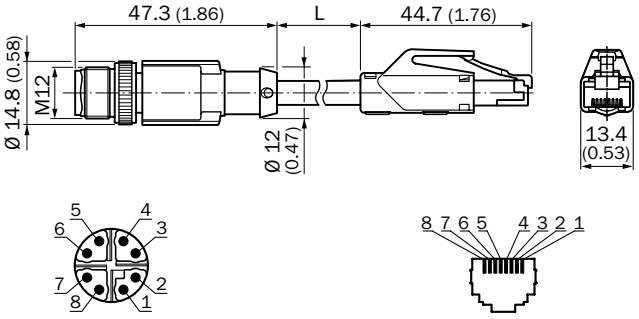
YI2A15-020UB5M2A15



YM2X18-010EG2MRJA8
YM2X18-020EG2MRJA8
YM2X18-050EG2MRJA8
YM2X18-100EG2MRJA8



① White-orange
② Orange
③ White-green
④ Green
⑤ White-brown
⑥ Brown
⑦ White-blue
⑧ Blue

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 10,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

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