PRODUCT INFORMATION

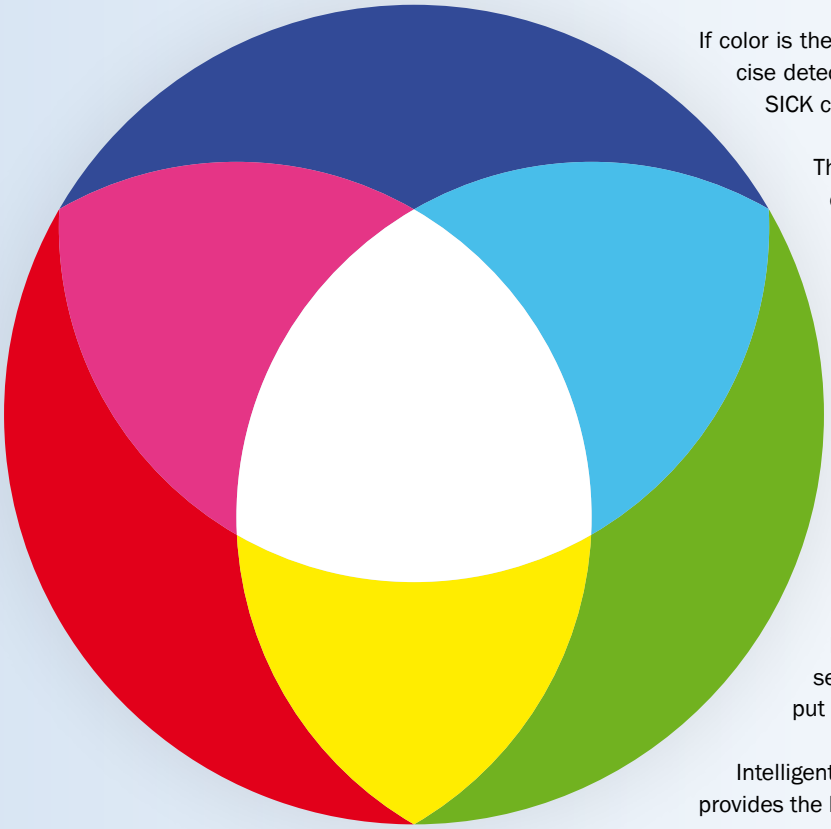
CSM

MINI, EASY, SMART

Color sensors

SICK
Sensor Intelligence.

CSM: THE NEW FORMAT FOR COLOR DETECTION – MINI, EASY, SMART



If color is the most important criterion for precise detection, checking, and sorting, then SICK color sensors are the right choice.

Thanks to additive color mixing, the color sensors are able to generate white light with three single-colored light emitting diodes (●●● = RGB).

This light is transmitted to the object to be tested. The sensors calculate the chromaticity coordinates from the reflected beam and compare these with the previously stored reference tristimulus values.

If the color values are within the set tolerance band, a switching output is activated.

Intelligent evaluation in the sensor provides the basis for reliable operation.

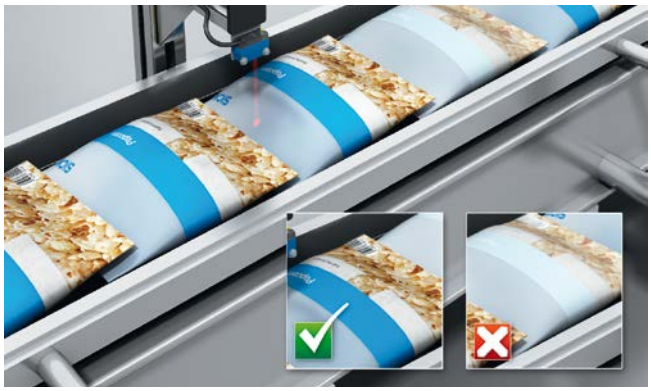
Reliability where space is at a premium: compared with its predecessor, the CSM color sensor, which is configured by completing a straightforward teach-in operation, is able to detect objects on the basis of their color with even higher levels of reliability. Improved detection, higher switching frequency, and the new IO-Link function make this possible.

Compatible with its predecessor

The IO-Link function supports straightforward format changeover as well as remote control and rapid diagnostics in equal measure, making it ideal for all processes for which accurate color detection is a fundamental requirement. Compatibility with the predecessor CSM color sensor from SICK is assured thanks to a cable with M12 male connector and matching holders.

Controlling the cycle on a packaging machine

For aesthetic reasons, manufacturers do not want print marks or the associated reading lines to be visible on the back of packaging. The color sensor controls the packaging process solely on the basis of a color element in the print image. This is made possible through straightforward once-only teach-in of the CSM. With the small, precise light spot, the CSM scans the sheet and switches whenever it detects the taught color. Print marks are, therefore, no longer necessary.



Food industry

In the food industry, CSM color sensors are used to detect print errors on packaging. So that packages with incorrect printing can be taken out of the process, the correct color or color scheme is taught in on the color sensor through a simple teach-in operation and the tolerance is set. It is on this basis that faulty packages can be detected and removed.

Benefit for miniature housings

Even if mounting space is limited, the CSM color sensor can be used very easily. Performed either via the control panel at the sensor or conveniently via IO-Link, static or automatic teach-in is a very straightforward operation.

MINI, EASY, SMART

Product description

Enhanced color detection performance: The new CSM color sensor from SICK offers improved gloss behavior combined with an IO-Link function and a miniature housing. The CSM is ideal for applications where color characteristics need to be detected reliably and installation space is at a premium. The sensor detects and monitors objects on the basis of their color. The small CSM color sensor can be set using a simple teach-in method, while the new IO-Link function enables intelligent diagnostics, visualization of sensor parameters, and straightforward format changes. Thanks to a switching frequency of up to 1.7 kHz, the CSM is also suitable for use with high-speed machines and manufacturing processes.

At a glance

- Color sensor in a new miniature housing
- Static and automatic teach-in method using control panel or IO-Link. Over IO-Link up to 8 colors teachable.
- Improved gloss behavior
- Switching frequency of 1.7 kHz
- 12.5 mm (± 3 mm) sensing distance
- RGB light source
- Remote monitoring and rapid diagnostics using IO-Link
- Compatibility with older color sensors thanks to M12 pigtail

Your benefits

- Fast, seamless integration into existing applications thanks to a new miniature housing, saving time and money
- Increased switching frequency for improved machine productivity
- Enhanced process reliability thanks to gloss suppression and improved color resolution
- Flexible application possibilities thanks to a wide range of color tolerances
- Enhanced, intelligent diagnostics and visualization, as well as quick and easy format changes, thanks to IO-Link function
- Improved tolerance range for sensing distance
- Simple, static teach-in method cuts down on installation time
- Rapid conversion thanks to mounting brackets available

IO-Link

Additional information

→ www.mysick.com/en/CSM

For more information, just 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

Dimensions (L x W x H)	22 mm x 12 mm x 32 mm
Light source [1) 2)]	LED red, green, blue
Adjustment	Static teach-in

[1)] Average service life of 100,000 h at T_A = +25 °C.
[2)] Wave length: 470 nm, 525 nm, 640 nm.

Mechanics/electronics

Supply voltage V_S [1)]	DC 12 V ... 24 V
Ripple [2)]	< 5 V_{pp}
Power consumption [3)]	< 50 mA
Switching frequency [4)]	1.7 kHz
Response time [5)]	300 µs
Switching output	PNP: HIGH = V_S– ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output (channel)	1 color
Output current $I_{max.}$ [6)]	< 100 mA
Jitter	150 µs
Input, teach-in (ET)	PNP Teach: U = 10 V ... < U_V Run: U < 2 V or open NPN Teach: U < 2 V Run: U = 10 V ... < U_V or open
Connection type	Male connector M12, 4-pin
Protection class	III
Circuit protection	V_S connections reverse-polarity protected Output Q short-circuit protected Interference suppression
Enclosure rating	IP 67
Weight	Approx. 70 g
Housing material	ABS

[1)] Limit values: DC 12 V (–10 %) ... DC 24 V (+20 %). Operation in short-circuit protected network max. 8 A.
[2)] May not exceed or fall short of V_S tolerances.
[3)] Without load.
[4)] With light/dark ratio 1:1.
[5)] Signal transit time with resistive load.
[6)] At supply voltage > 24 V, I_{max} = 30 mA. I_{max} is consumption count of all Q_n.

Ambient data

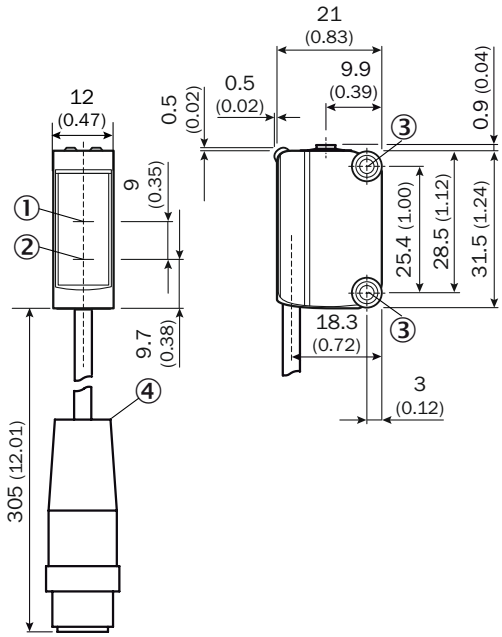
Ambient temperature	Operation: –10 °C ... +55 °C Storage: –20 °C ... +75 °C
Shock load	According to IEC 60068
UL File No.	NRKH.E181493 & NRKH7.E181493

Ordering information

Sensing distance [1)]	Sensing distance tolerance	Light spot size	Light spot direction	Switching output	Type	Part no.
12.5 mm	± 3 mm	1.5 mm x 6.5 mm	Vertical	PNP	CSM-WP11122P	1067291
				NPN	CSM-WN11122P	1067293
				PNP, IO-Link	CSM-WP117A2P	1067294

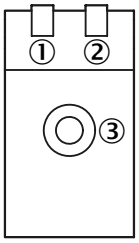
[1)] From front edge of lens.

Dimensional drawings (Dimensions in mm (inch))



① Optical axis receiver
② Optical axis sender
③ Fixing hole M3
④ Pigtail

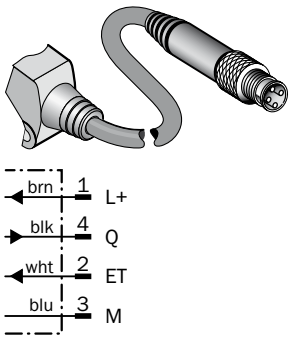
Adjustments



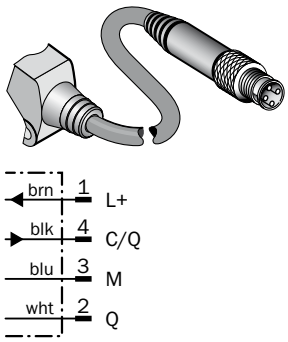
① Status indicator LED, yellow: Status switching output Q
② Status indicator LED green: supply voltage on
③ Teach-in button

Connection type and diagram

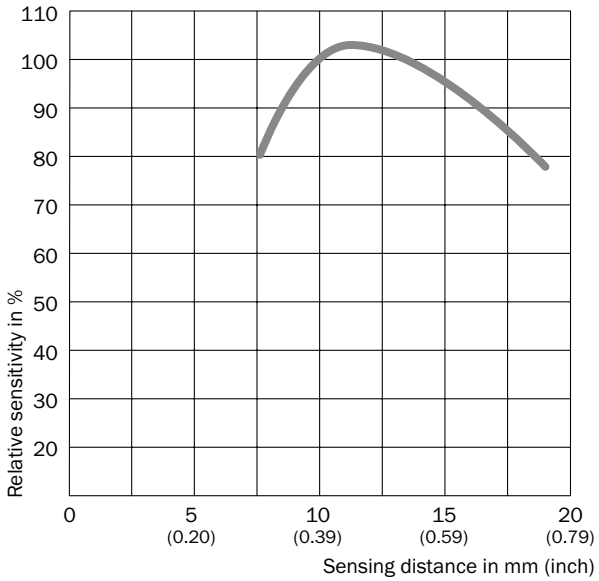
Cable with connector M12, 4-pin



Cable with connector M12, 4-pin, IO-Link

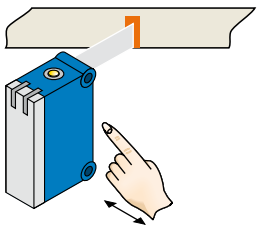


Sensing distance



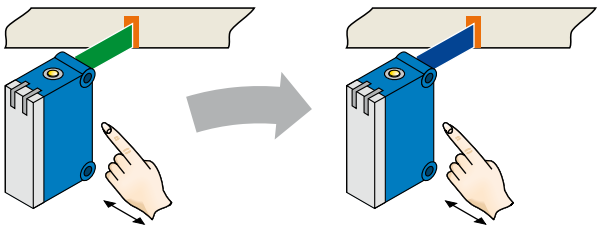
Setting the switching threshold via teach-in

1. Trigger teach-in



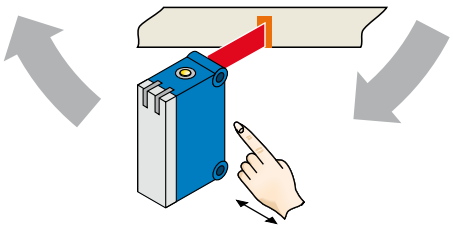
Position object in light field.
Press teach-in button > 1 s.

2. Select color tolerance



Press teach-in button when transmitted light is green
= tolerance medium
(standard setting).

Press teach-in button when transmitted light is blue
= tolerance precise.



Press teach-in button when transmitted light is red
= tolerance coarse.

Recommended accessories

Universal bar clamp systems

Figure	Material	Description	Model name	Part no.
	Steel, zinc coated	Universal clamp bracket for rod mounting	BEF-KHS-KH1	2022726
		Plate L for universal clamp bracket	BEF-KHS-L01	2023057
	Zinc plated steel (sheet), Diecast zinc (clamp)	Plate N08 for universal clamp bracket	BEF-KHS-N08	2051607
	Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)	Plate N08N for universal clamp bracket	BEF-KHS-N08N	2051616
	Steel, zinc coated	Mounting bar, straight, 200 mm	BEF-MS12G-A	4056054
		Mounting bar, straight, 300 mm	BEF-MS12G-B	4056055
		Mounting bar, L-shaped, 150 mm x 150 mm	BEF-MS12L-A	4056052
		Mounting bar, L-shaped, 250 x 250 mm	BEF-MS12L-B	4056053

Mounting brackets/plates

Mounting brackets

Figure	Material	Description	Model name	Part no.
	Stainless steel	Mounting bracket for wall mounting	BEF-W100-A	5311520
	Steel, zinc coated	Mounting bracket for floor mounting	BEF-W100-B	5311521
			BEF-WN-W100-S01	4073866

Mounting plates

Figure	Material	Description	Model name	Part no.
	Stainless steel	Adapter plate KT3 to KTM	BEF-AP-KTMS01	2068786

Plug connectors and cables

Connecting cable (female connector-open)

M12, 4-pin, PVC

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight, unshielded	Cable, open conductor heads	2 m, 4-pole	DOL-1204-G02M	6009382
			5 m, 4-pole	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled, unshielded	Cable, open conductor heads	2 m, 4-pole	DOL-1204-W02M	6009383
			5 m, 4-pole	DOL-1204-W05M	6009867

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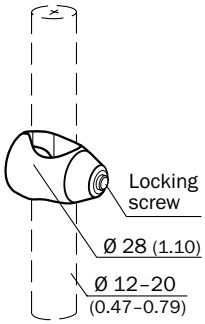
Female connector (ready to assemble)

M12, 4-pin

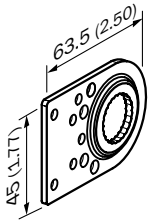
Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M12, 4-pin, straight, unshielded	Screw-type terminals	DOS-1204-G	6007302
	Female connector, M12, 4-pin, angled, unshielded	Screw-type terminals	DOS-1204-W	6007303

Universal bar clamp systems

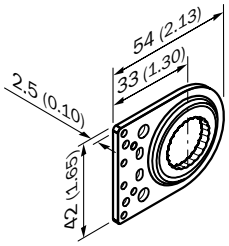
BEF-KHS-KH1



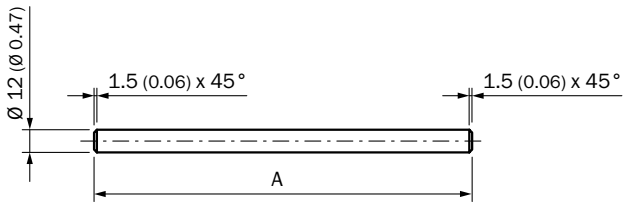
BEF-KHS-L01



BEF-KHS-N08 / BEF-KHS-N08N

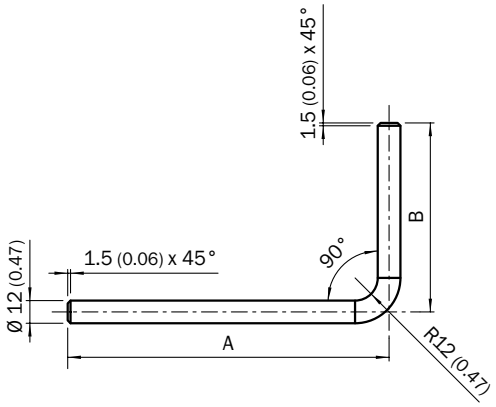


BEF-MS12G-A / BEF-MS12G-B



① BEF-MS12G-(N)A: A = 200 mm
② BEF-MS12G-(N)B: A = 300 mm

BEF-MS12L-A / BEF-MS12L-B

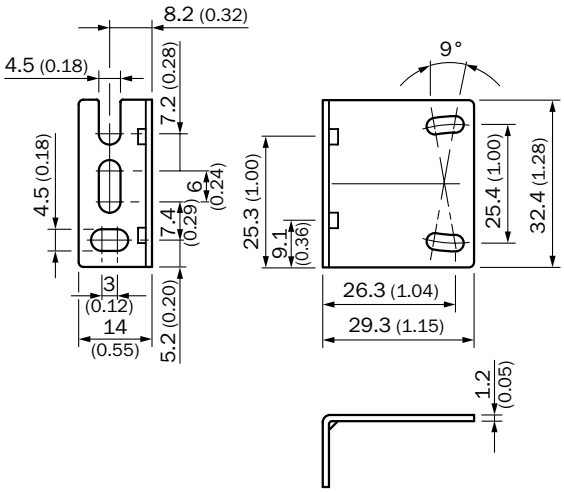


① BEF-MS12L-(N)A: A = 200 mm, B = 150 mm
② BEF-MS12L-(N)B: A = 250 mm, B = 250 mm

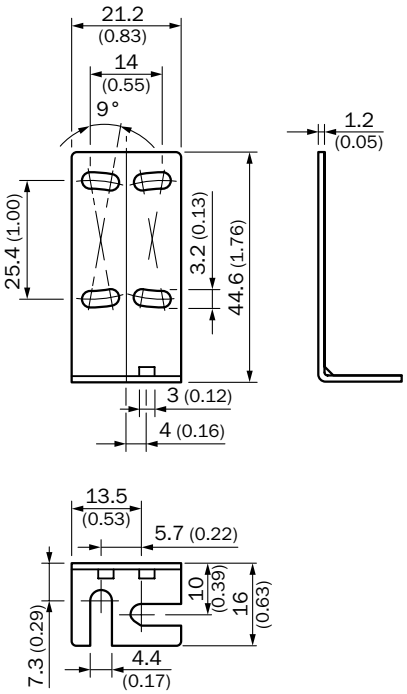
Mounting brackets/plates

Mounting brackets

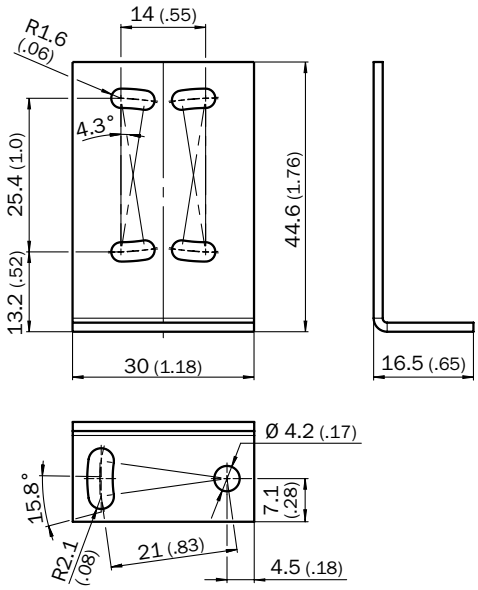
BEF-W100-A



BEF-W100-B



BEF-WN-W100-S01



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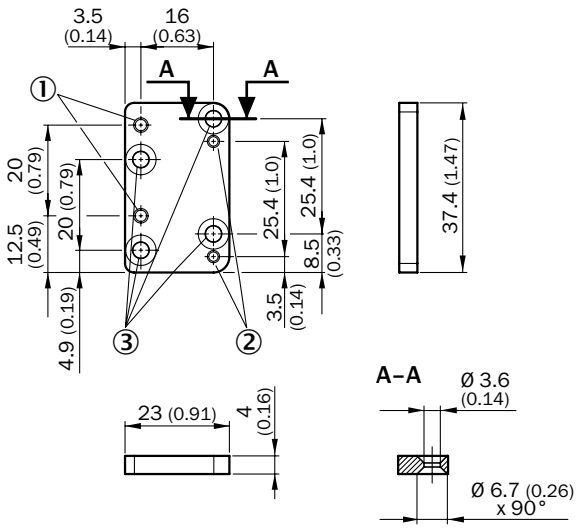
Mounting plates

BEF-AP-KTMS01



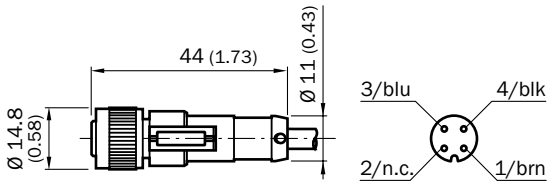
① Threaded mounting hole M3
② Threaded mounting hole M2.5
③ Fixing hole M3

Plug connectors and cables

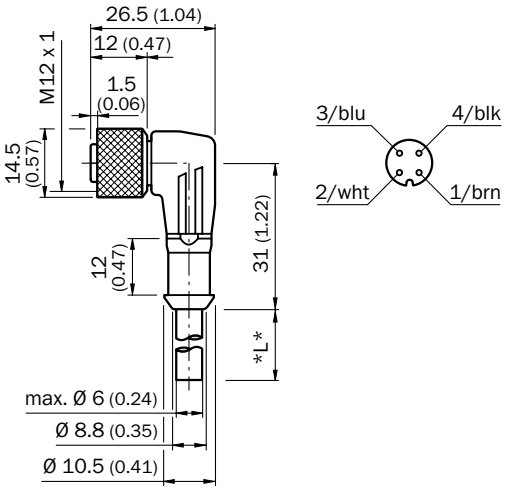
Connecting cable (female connector-open)

M12, 4-pin, PVC

DOL-1204-G02M / DOL-1204-G05M



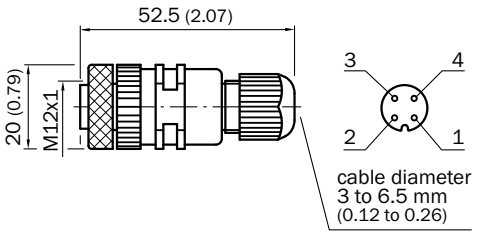
DOL-1204-W02M / DOL-1204-W05M



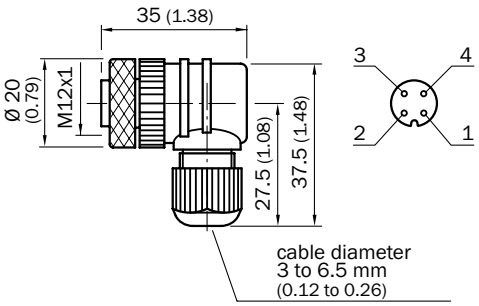
Female connector (ready to assemble)

M12, 4-pin

DOS-1204-G



DOS-1204-W



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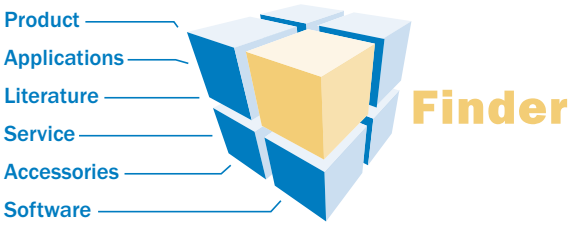

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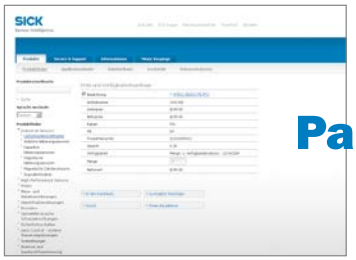

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 6,500 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our 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.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our 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 us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

Worldwide presence:

Australia, Austria, Belgium/Luxembourg, Brazil, Czech Republic, Canada, China, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Mexico, Netherlands, Norway, Poland, Romania, Russia, Singapore, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Turkey, United Arab Emirates, USA

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