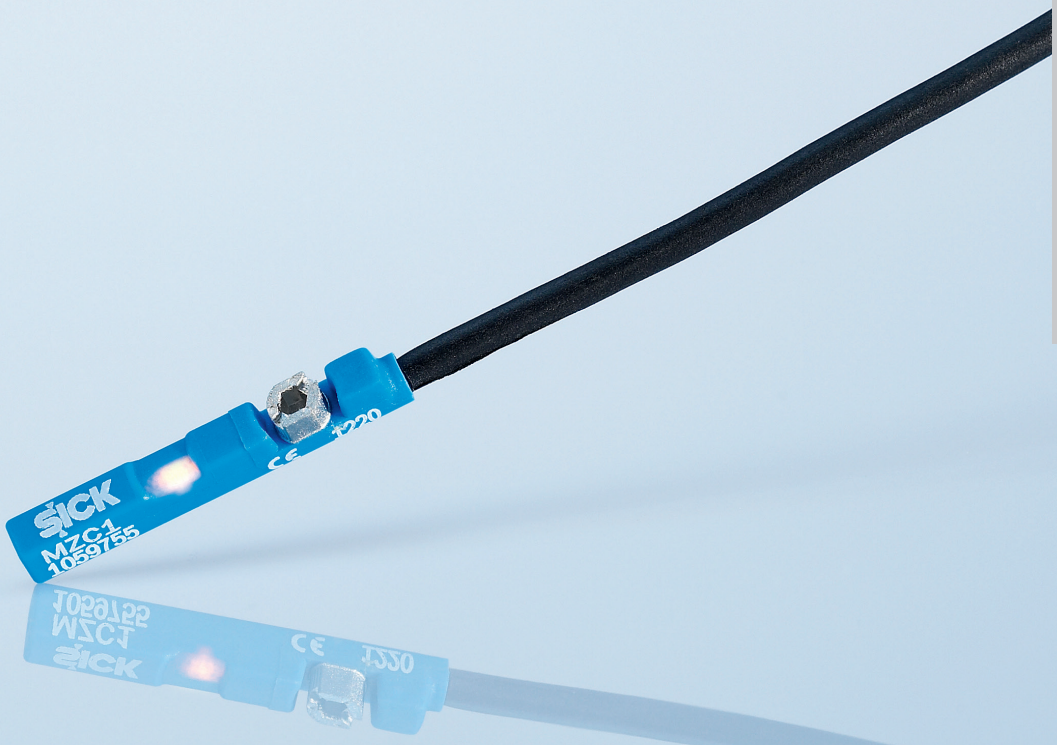
PRODUCT INFORMATION



MZC1 and RZC1
Magnetic sensors for C-slot cylinders

Drop-in, install, done

SICK
Sensor Intelligence.

MZC1/RZC1 magnetic cylinder sensor: suitable for all C-slots

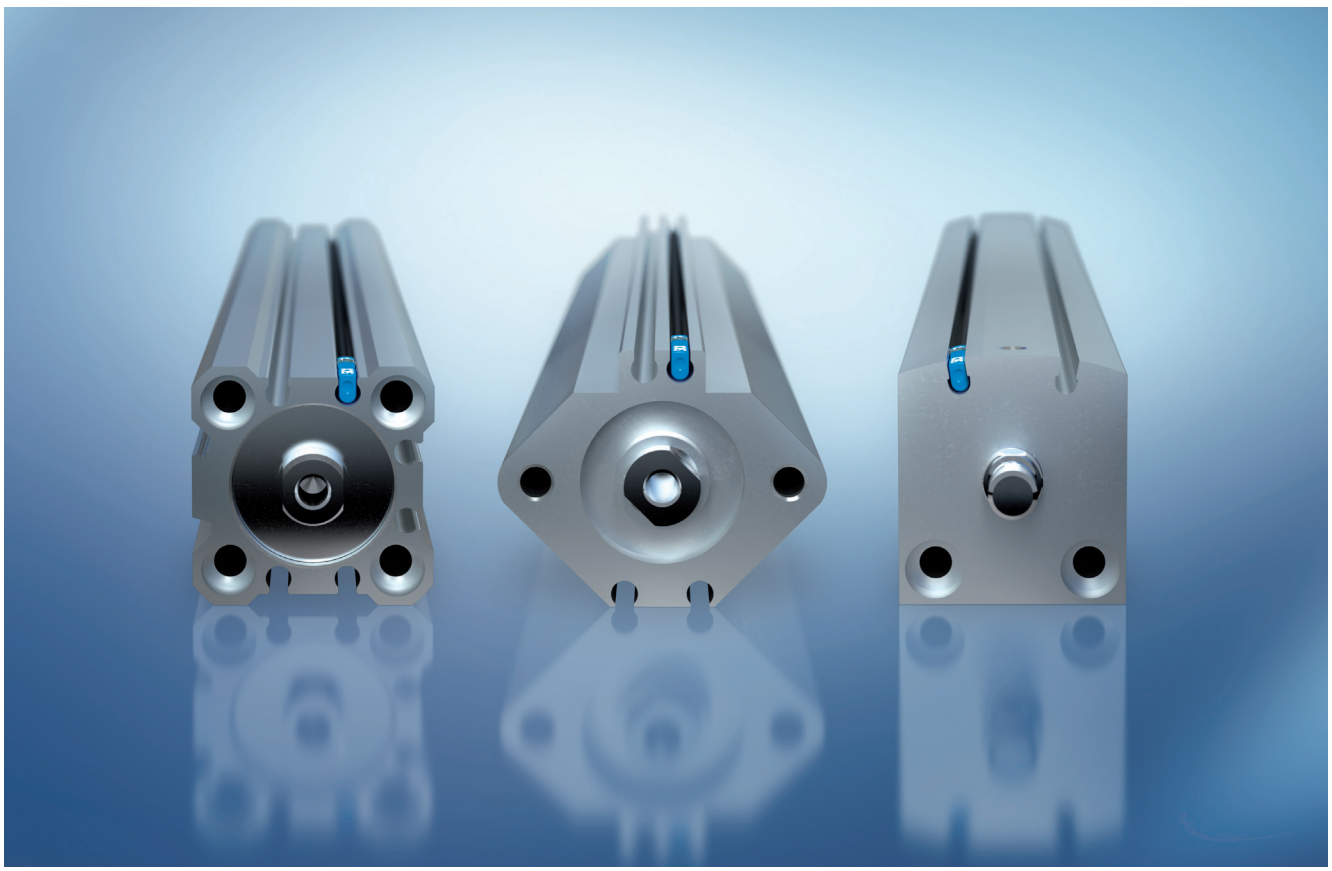
With its new housing concept, the new magnetic cylinder sensor is the perfect option for almost all C-slot pneumatic actuators currently available on the market. Simply insert and fasten and the sensor will sit perfectly – the captive screw makes this possible.

One design for all C-slots

To reliably monitor the piston position in pneumatic actuators with a C-slot, one single sensor is now all you need: the universal MZC1/RZC1 from SICK. Its new housing ensures a perfect fit in any C-slot currently available, regardless of the variant or the mechanical tolerances of the cylinder manufacturer.

Firm hold for safer switching

The patented mounting with its captive screw enables you to install the MZC1/RZC1 quickly. It is also a reliable mechanism when it comes to preventing the sensor from slipping in the slot during strong vibrations, while the alignment of the screw in the middle of the sensor prevents strokes from being lost. Its VISTAL™ housing ensures even safer switching with enclosure ratings up to IP 69K.

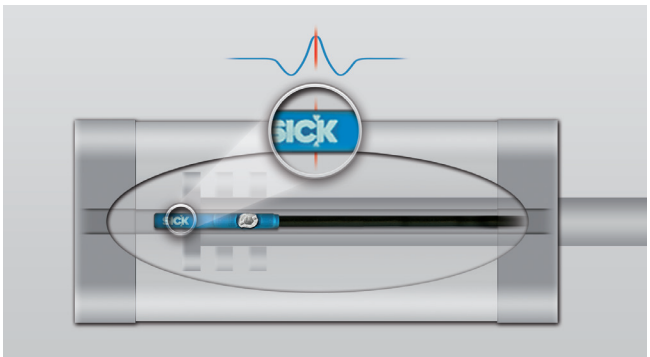


One single sensor for all C-slots currently available also means that you spend less time selecting a product and don‘t need to keep as many models in storage.

Accurate and reliable – for maximum process safety

Accuracy without multiple switching

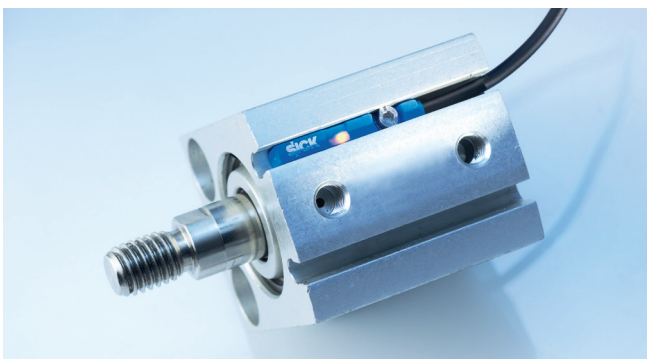
The combination of patented GMR technology and the ASIC technology developed by SICK ensures the piston position is clearly recognized even when cylinders have high secondary peak values. Intelligent SICK technology suppresses these secondary peaks of the magnetic field and, in doing so, prevents multiple switching. As a result, you eliminate false signals and increase productivity.



SICK GMR technology prevents multiple switching of the sensor from occurring.

Minimal tolerances for accurate switching points

ASIC technology from SICK enables accurate sensitivity settings to be made; in fact, these are five times more precise than the settings in conventional cylinder sensors. These minimal tolerances for responsiveness ensure high-precision magnetic piston detection with the MZC1 magnetic cylinder sensor. As a result, the switching points are highly accurate.



By pinpointing the position, the MZC1 is suitable for short stroke cylinders in particular.

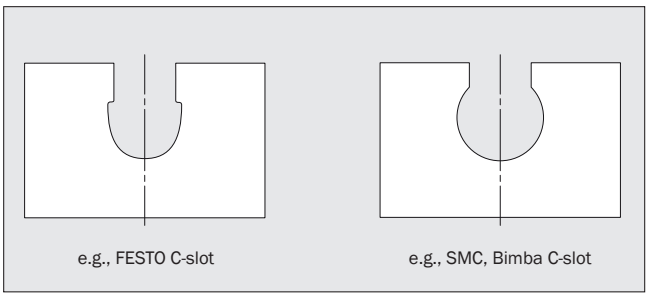
Hard as steel: housing made of VISTAL™

SICK is the only sensor manufacturer that uses the extremely rugged VISTAL™ housing material; it was developed and patented by SICK after all. This provides a very sturdy, damage-proof sensor housing for the MZC1/RZC1 cylinder sensor. Another benefit of VISTAL™ as a material is that it is resistant to chemicals and therefore does not react adversely to cleaning agents and production chemicals. As a result, durability is guaranteed.

The VISTAL™ housing material makes the MZC1/RZC1 cylinder sensor extremely rugged.

Easily installed and quickly secured – in no time at all

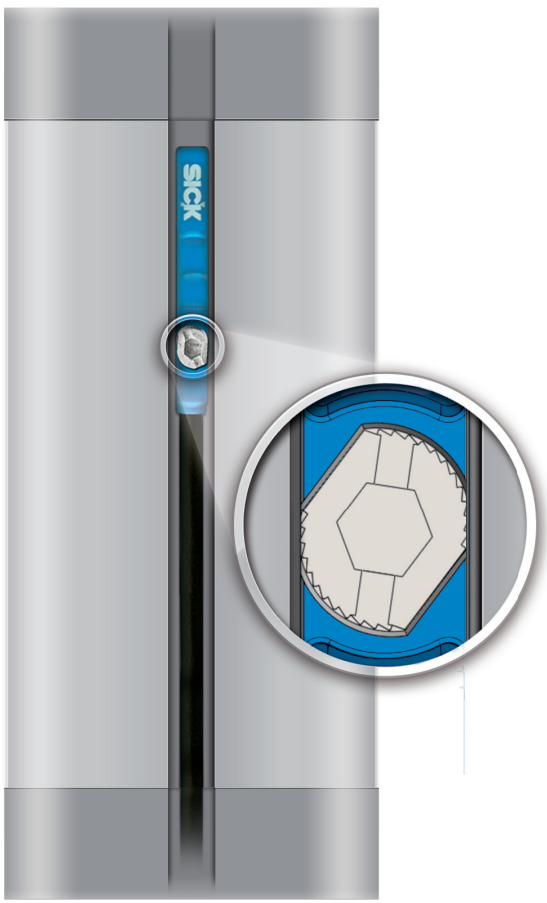
Simple to insert and quick to install, the new housing concept used in the MZC1/RZC1 covers all options. A quarter-turn of the retainer screw will be enough to get the sensor secured firmly in place, with no slipping or shifting of the switching point.



The MZC1/RZC1 sensor will fit perfectly into all C-slots currently available provided that the shoulder of the slot is no more than 3.2 mm wide.

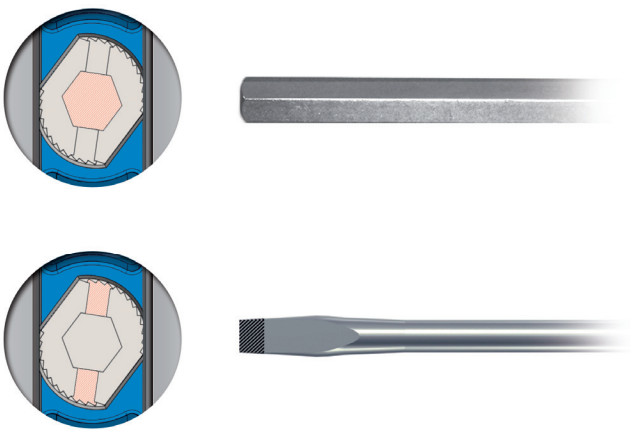
Easy drop-in mounting

The MZC1/RZC1 cylinder sensor is designed so that the sensor can be inserted easily from above into any C-slot currently available and then locked safely, regardless of the cylinder manufacturer slot type.



Optimal captive screw

Like the housing, the mounting on the MZC1/RZC1 has also been optimized. A slotted screwdriver will fit as neatly into place as any Allen wrench in the universal head of the rugged stainless steel screw. Turn and tighten the retainer screw a mere 45 degrees and its head will lock the sensor in place in the C-slot, ensuring mechanical stability even with tolerances.



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A multitude of options – simply choose the one you need

A wide variety of connection solutions

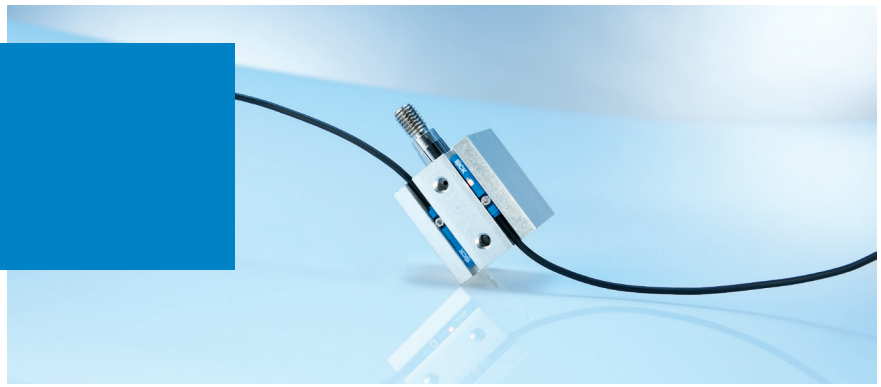
The protective jacket on the MZC1/RZC1 connecting cables is available as a resilient PUR version or a budget-friendly PVC version, with different lengths to choose from; the PUR version also comes with optional M8 or M12 connectors.

Universal: solid state and Reed sensors

With such a large number of different variants available, the new magnetic cylinder sensor is a helpful option in virtually all areas of application. The solid state version MZC1 comes with optional PNP and NPN output type. For use on pneumatic drives with greater end position tolerances, there are also versions with an extended overrun distance available. The Reed technology RZC1 is available too, with 2-wire or 3-wire options. In terms of supply voltage, you can choose either the standard variant or variants with up to 120 V.

Output type	Overrun distance	Operating voltage	Connections
PNP/NPN	Typ. 4 mm	10 V DC ... 30 V DC	PUR PVC M8-connector M12-connector
Reed-3-wire	Typ. 7 mm	5 V AC/DC ... 30 V AC/DC	
Reed-2-wire		5 V AC/DC ... 120 V AC/DC	

Drop-in, install, done



Product description

The MZC1 magnetic cylinder sensor from SICK is a flexible solution for piston position detection in pneumatic and electric actuators. Due to easy mounting and installation via drop-in and combined Allen and flathead screw, the new C-slot sensor is perfectly suited for use in all commonly used cylinders, linear slides and grippers with C-slots. SICK' s proprietary GMR (giant magneto resistive) and ASIC (application specific integrated circuit) technology guarantees precise one-time switching while eliminating false signals leading to increased machine throughput. Depending on type, the MZC1 comes with IP 67, IP 68 or IP 69K enclosure rating. Its resistance against shock, vibration and chemicals reduces maintenance costs. The very short sensor housing makes it easy to install the MZC1 on short stroke cylinders.

At a glance

- Fits into all commonly used cylinders, linear slides and grippers with C-slots, such as, Festo or SMC
- Complete range with PNP/ NPN, PUR and PVC cable, M8 and M12 connector
- Combined Allen and flathead installation screw
- Very short sensor housing, making it easier to install on short stroke cylinders
- Operating display LED
- IP 67 / IP 68 / IP 69K enclosure rating (depending on type)

Your benefits

- Reduced maintenance cost as the sensor keeps its position under shock and vibration and does not move out
- Increased machine throughput via SICK' s proprietary GMR (giant magneto resistive) and ASIC (application specific integrated circuit) technology that ensures precise one-time switching while eliminating false signals
- Flexible installation via Allen wrench or flathead screwdriver
- Time saving single-hand mounting with ¼-turn installation.
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement.

Additional information

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Dimensional drawing 8
Connection diagram 8
Accessories 9

→ **www.mysick.com/en/MZC1**
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

Switching mode	NO
Switching frequency typ.	1,000 Hz
Switching output	NPN / PNP (depending on type)
Output function	NO
Sensing face	Front

Mechanics/electronics

Cylinder types	C-slot
Housing length	23.7 mm
Supply voltage	10 V DC ... 30 V DC
Power consumption [1]	≤ 8 mA
Voltage drop	≤ 2.5 V
Output current I_a	≤ 100 mA
Hysteresis	≤ 0.8 mT
EMC	According to EN 60947-5-2
Cable material	PUR / PVC (depending on type)
Conductor cross-section	0.09 mm²
Reverse polarity protection	✔
Short-circuit protection	✔
Housing material	Plastic
Housing cap material	PA strengthened
Sensing face material	PA strengthened
Enclosure rating	IP 67 [2] [3] IP 67, IP 68 [2] [3] IP 67, IP 68, IP 69K [2] [3] (depending on type)
Time delay before availability	≤ 30 ms
Repeatability [4]	≤ 0.1 mT
Overrun distance typ.	4 mm / 7 mm (depending on type)
Shock/vibration	30 g, 11 ms / 10 ... 55 Hz, 1 mm
Ambient operating temperature	–30 °C ... +80 °C

[1] Without load.

[2] According to EN 60529 (IP67/IP68)

[3] According to DIN 40050 (IP69K)

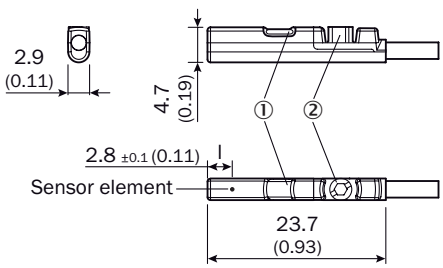
[4] Ub and Ta constant.

Ordering information

- **Output function:** NO

Overrun distance typ.	Switching mode	Connection	Enclosure rating	Connection diagram	Model name	Part no.
4 mm	NPN	Cable with plug, M8, 3-pin, with knurled screws, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-2V2NS-KR0	1059742
		Cable, 3-wire, 2 m, PUR	IP 67, IP 68, IP 69K	Cd-001	MZC1-2V2NS-KU0	1059743
		Cable with plug, M8, 3-pin, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-2V2NS-KP0	1059744
	PNP	Cable with plug, M8, 3-pin, with knurled screws, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-2V2PS-KR0	1059737
		Cable with plug, M8, 3-pin, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-2V2PS-KP0	1059735
		Cable with plug, M12, 3-pin, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-2V2PS-KQ0	1059736
		Cable, 3-wire, 2 m, PUR	IP 67, IP 68, IP 69K	Cd-001	MZC1-2V2PS-KU0	1059738
		Cable, 3-wire, 2 m, PVC	IP 67, IP 68, IP 69K	Cd-001	MZC1-2V2PS-KW0	1059740
		Cable, 3-wire, 5 m, PUR	IP 67, IP 68, IP 69K	Cd-001	MZC1-2V2PS-KUB	1059739
		Cable with plug, M8, 3-pin, with knurled screws, 0.5 m, PUR	IP 67, IP 68	Cd-002	MZC1-2V2PS-KRD	1060129
		Cable, 3-wire, 5 m, PVC	IP 67, IP 68, IP 69K	Cd-001	MZC1-2V2PS-KWB	1059741
7 mm	NPN	Cable, 3-wire, 2 m, PUR	IP 67, IP 68, IP 69K	Cd-001	MZC1-4V3NS-KU0	1059756
		Cable with plug, M8, 3-pin, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-4V3NS-KP0	1059757
	PNP	Cable with plug, M8, 3-pin, with knurled screws, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-4V3PS-KR0	1059753
		Cable with plug, M8, 3-pin, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-4V3PS-KP0	1059752
		Cable with plug, M12, 3-pin, 0.3 m, PUR	IP 67, IP 68	Cd-002	MZC1-4V3PS-KQ0	1059754
		Cable, 3-wire, 2 m, PUR	IP 67, IP 68, IP 69K	Cd-001	MZC1-4V3PS-KU0	1059755

Dimensional drawing

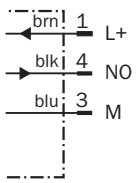


① LED indicator
② Fixing screw

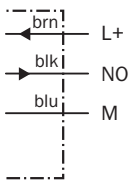
dimensions in mm

Connection diagram

Cd-002



Cd-001



Accessories

Plug connectors and cables

Connector M12, 3-pin

- **Connector type:** Female connector
- **Enclosure rating:** IP 68
- **Sheath material:** PUR

Flying leads	Cable length	Model name	Part no.
Straight	2 m	DOL-1203-G02MC	6039075
	5 m	DOL-1203-G05MC	6039076
	10 m	DOL-1203-G10MC	6039077
Angled	2 m	DOL-1203-W02MC	6039078
	5 m	DOL-1203-W05MC	6039079
	10 m	DOL-1203-W10MC	6036752
	15 m	DOL-1203-W15MC	6036753
	20 m	DOL-1203-W20MC	6036754

Connector M8, 3-pin

- **Connector type:** Female connector
- **Enclosure rating:** IP 67

Figure	Flying leads	Sheath material	Cable length	Model name	Part no.
	Straight	PVC	2 m	DOL-0803-G02M	6010785
			5 m	DOL-0803-G05M	6022009
		PUR halogen free	10 m	DOL-0803-G10MC	6025890
	Angled	PVC	2 m	DOL-0803-W02M	6008489
		PUR halogen free	2 m	DOL-0803-W02MC	6025891
		PVC	5 m	DOL-0803-W05M	6022010
		PUR halogen free	5 m	DOL-0803-W05MC	6025892
	Straight	PBT	–	DOS-0803-G	7902077
	Angled	PBT	–	DOS-0803-W	7902078

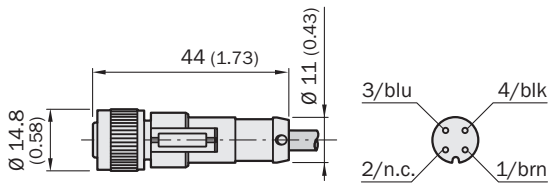
Brackets for cylinder sensors

- **Material:** Aluminum

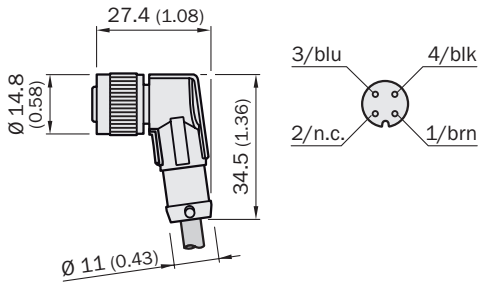
Figure	Accessory type	Model name	Part no.
	For SMC rails ECDQ2 (C-slot)	BEF-KHZ-TC1	2046441
	For SMC rails CDQ2 (C-slot)	BEF-KHZ-TC2	2046442

Dimensional drawings Plug connectors and cables Connector M12, 3-pin

DOL-1203-GxxMC



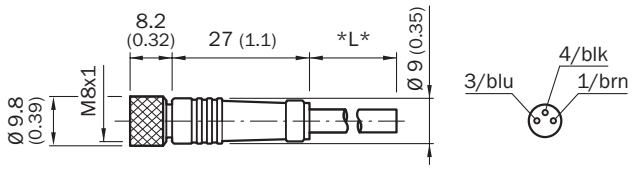
DOL-1203-WxxMC,



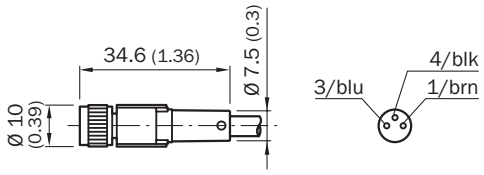
dimensions in mm

Dimensional drawings Plug connectors and cables Connector M8, 3-pin

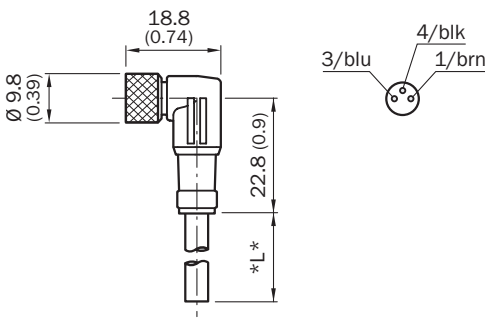
DOL-0803-G0xM



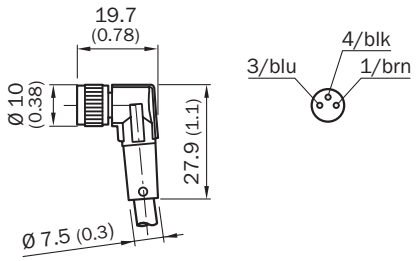
DOL-0803-G10MC



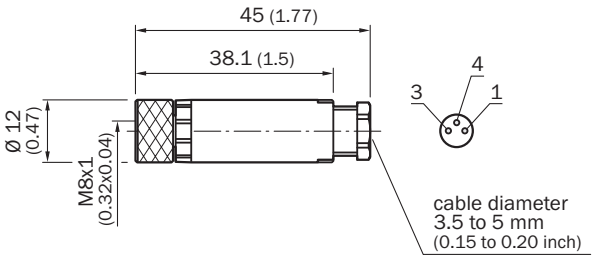
DOL-0803-W0xM



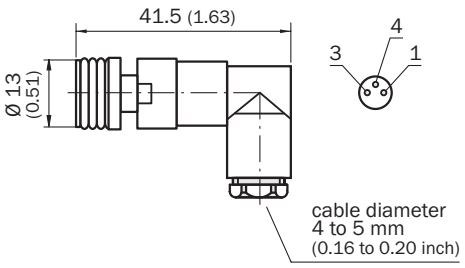
DOL-0803-W0xMC



DOS-0803-G



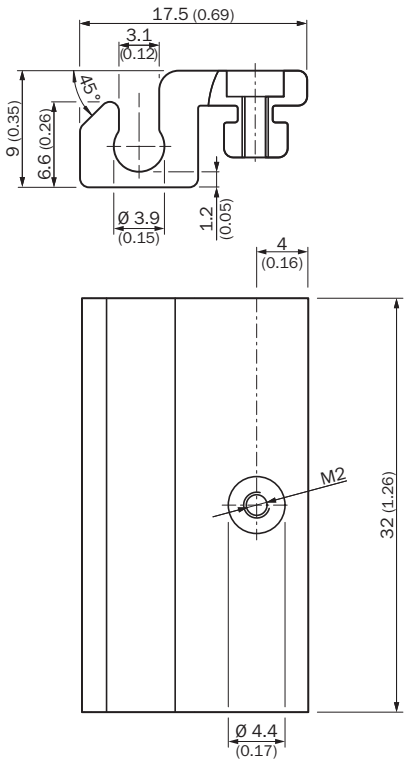
DOS-0803-W



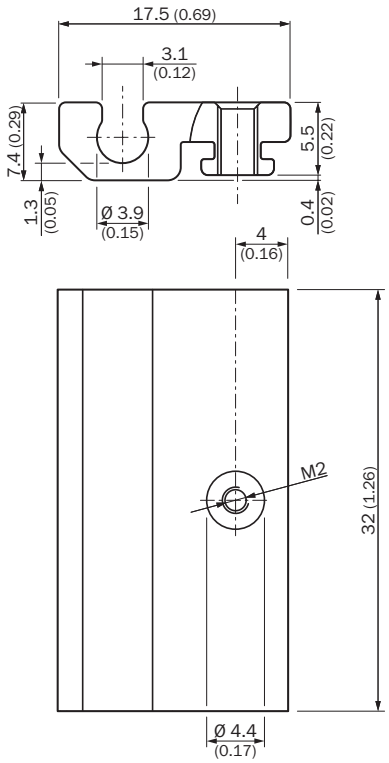
dimensions in mm

Dimensional drawings Brackets for cylinder sensors

BEF-KHZ-TC1



BEF-KHZ-TC2



dimensions in mm

Drop-in, install, done

Product description

The RZC1 magnetic cylinder sensor from SICK is a flexible solution for piston position detection in pneumatic and electric actuators. Due to easy mounting and installation via drop-in and combined Allen and flathead screw, the new C-slot sensor is perfectly suited for use in all commonly used cylinders, linear slides and grippers with C-slots. Depending on type, the RZC1 comes with IP 67, IP 68 or IP 69K enclosure rating. Its resistance against shock, vibration and chemicals reduces maintenance costs. The very short sensor housing makes it easy to install the RZC1 on short stroke cylinders.

At a glance

- Fits into all commonly used cylinders, linear slides and grippers with C-slots, such as, Festo or SMC
- Complete range with Reed 3-wire. Reed 2-wire, and Reed 120V version
- Combined Allen and flathead installation screw
- Very short sensor housing, making it easier to install on short stroke cylinders
- Operating display LED
- IP 67 / IP 68 / IP 69K enclosure rating (depending on type)

Your benefits

- Reduced maintenance cost as the sensor keeps its position under shock and vibration and does not move out
- Flexible installation via Allen wrench or flathead screwdriver
- Time saving single-hand mounting with ¼-turn installation
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement

Additional information

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Recommended accessories 15

→ **www.mysick.com/en/RZC1**
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

Switching mode	NO
Switching frequency	500 Hz
Switching output	Reed
Output function	NO

Mechanics/electronics

	AC/DC 3-wire	AC/DC 2-wire
Cylinder types	C-slot	
Housing length	26.3 mm	
Supply voltage	5 V AC/DC ... 30 V AC/DC	5 V AC/DC ... 120 V AC/DC (depending on type)
Power consumption [1]	5 mA	
Switching power	≤ 10 W	
Voltage drop	< 0.5 V	< 3,2 V
Output current I_a	≤ 500 mA	≤ 50 mA
EMC	According to EN 60947-5-2	
Cable material	PUR	
Conductor cross-section	0.09 mm²	
Protection class	–	II [2] [3]
Housing material	Plastic	
Housing cap material	PA strengthened	
Sensing face material	PA strengthened	
Enclosure rating	IP 67 [4] [5] IP 67, IP 68 [4] [5] IP 67, IP 68, IP 69K [4] [5] (depending on type)	IP 67 [4] [5]
Time delay before availability	Typ. 1 ms	Typ. 1 ms
Repeatability [6]	≤ 0.1 mT	
Overrun distance typ.	7 mm	
Shock/vibration	30 g, 11 ms / 10 ... 55 Hz, 1 mm	
Ambient operating temperature	–30 °C ... +80 °C	

[1] Without load.

[2] Sensor may only be mounted as a comlete unit in the slot.

[3] Overvoltage category II.

[4] According to EN 60529 (IP67/IP68)

[5] According to DIN 40050 (IP69K)

[6] Ub and Ta constant.

Ordering information

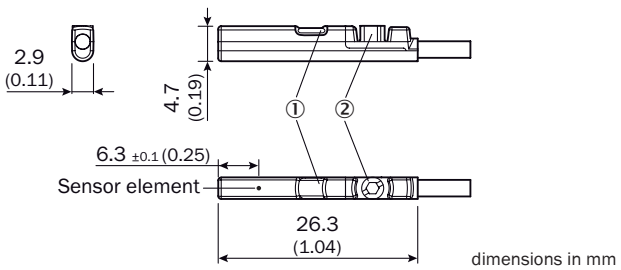
- **Output function:** NO

Electrical wiring	Supply voltage	Connection	Enclosure rating [1] [2]	Connection diagram	Model name	Part no.
AC/DC 3-wire	5 V AC/DC ... 30 V AC/DC	Cable with plug, M8, 3-pin, 0.3 m	IP 67, IP 68	Cd-036	RZC1-04ZRS-KP0	1059747
		Cable with plug, M12, 3-pin, 0.3 m	IP 67, IP 68	Cd-036	RZC1-04ZRS-KQ0	1059745
		Cable with plug, M8, 3-pin, with knurled screws, 0.5 m	IP 67, IP 68	Cd-036	RZC1-04ZRS-KRD	1060130
		Cable with plug, M8, 3-pin, with knurled screws, 0.3 m	IP 67, IP 68	Cd-036	RZC1-04ZRS-KR0	1059748
		Cable, 3-wire, 2 m	IP 67, IP 68, IP 69K	Cd-035	RZC1-04ZRS-KU0	1059746
		Cable, 3-wire, 5 m	IP 67, IP 68, IP 69K	Cd-035	RZC1-04ZRS-KUB	1059749
AC/DC 2-wire	5 V AC/DC ... 120 V AC/DC	Cable, 2-wire, 2 m	IP 67	Cd-217	RZC1-04ZUS-KU0	1059750
	5 V AC/DC ... 30 V AC/DC	Cable with plug, M8, 2-pin, 0.3 m	IP 67	Cd-041	RZC1-04ZUS-KP0	1059751

[1] According to EN 60529 (IP67/IP68)

[2] According to DIN 40050 (IP69K)

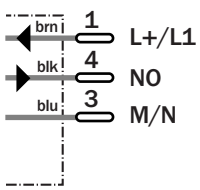
Dimensional drawing



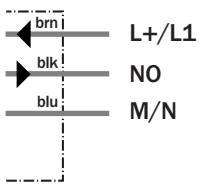
① LED indicator
② Fixing screw

Connection diagram

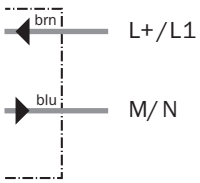
Cd-036



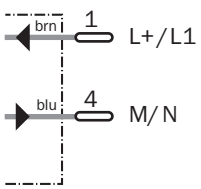
Cd-035



Cd-217



Cd-041



Recommended accessories

Plug connectors and cables

Connector M8, 3-pin

- **Connector type:** Female connector
- **Enclosure rating:** IP 67

Figure	Flying leads	Sheath material	Cable length	Model name	Part no.
	Straight	PVC	2 m	DOL-0803-G02M	6010785
			5 m	DOL-0803-G05M	6022009
		PUR halogen free	10 m	DOL-0803-G10MC	6025890
	Angled	PVC	2 m	DOL-0803-W02M	6008489
		PUR halogen free	2 m	DOL-0803-W02MC	6025891
		PVC	5 m	DOL-0803-W05M	6022010
		PUR halogen free	5 m	DOL-0803-W05MC	6025892
	Straight	PBT	–	DOS-0803-G	7902077
	Angled	PBT	–	DOS-0803-W	7902078

Brackets for cylinder sensors

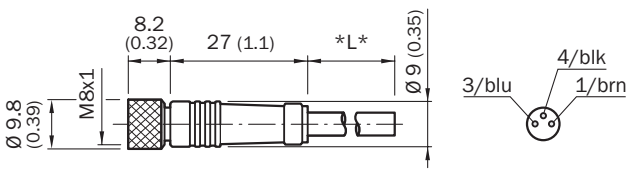
- **Material:** Aluminum

Figure	Accessory type	Model name	Part no.
	For SMC rails ECDQ2 (C-slot)	BEF-KHZ-TC1	2046441
	For SMC rails CDQ2 (C-slot)	BEF-KHZ-TC2	2046442

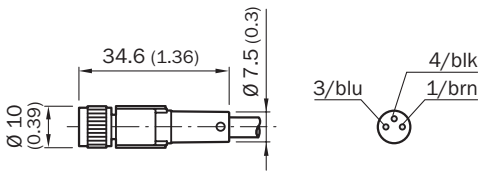
→ **For additional accessories, please see page X-0**

Dimensional drawings Plug connectors and cables Connector M8, 3-pin

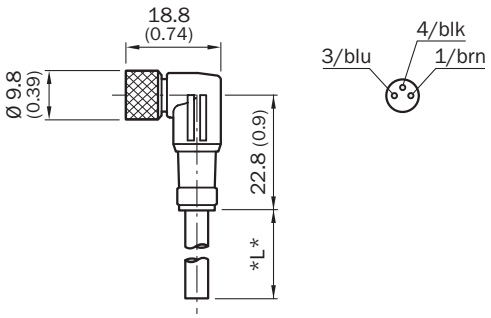
DOL-0803-G0xM



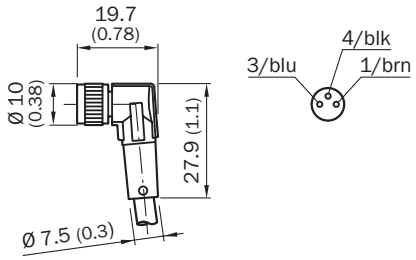
DOL-0803-G10MC



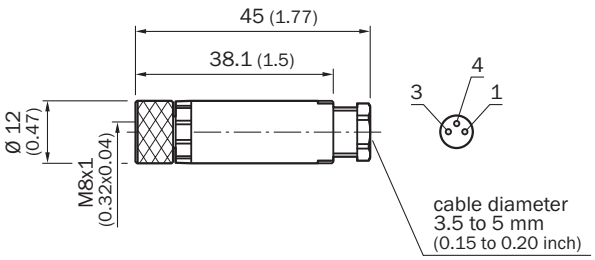
DOL-0803-W0xM



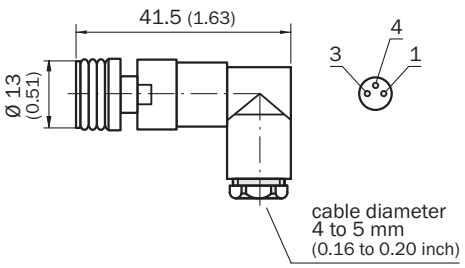
DOL-0803-W0xMC



DOS-0803-G

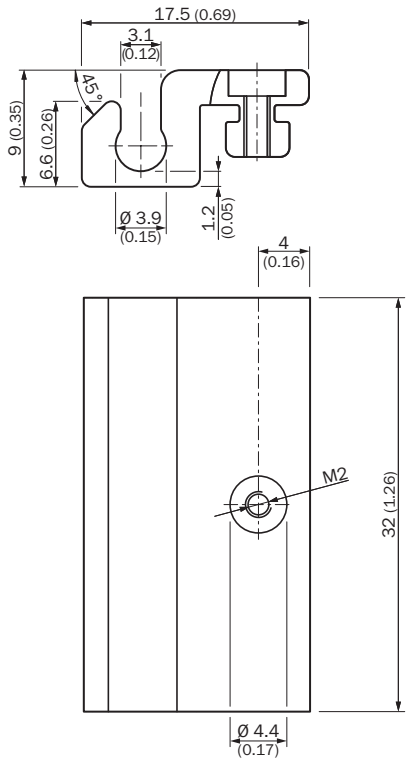


DOS-0803-W

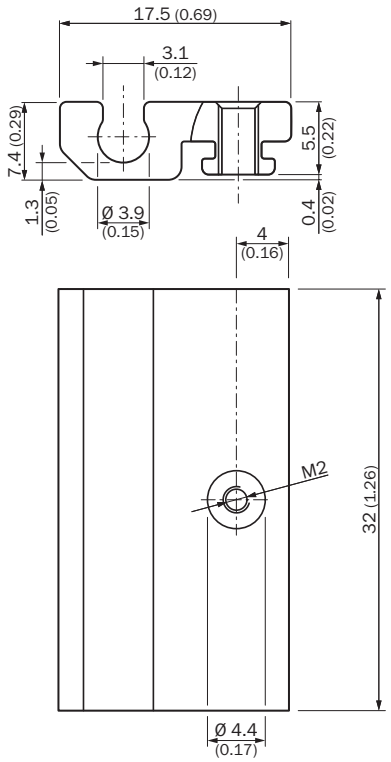


Dimensional drawings Brackets for cylinder sensors

BEF-KHZ-TC1



BEF-KHZ-TC2



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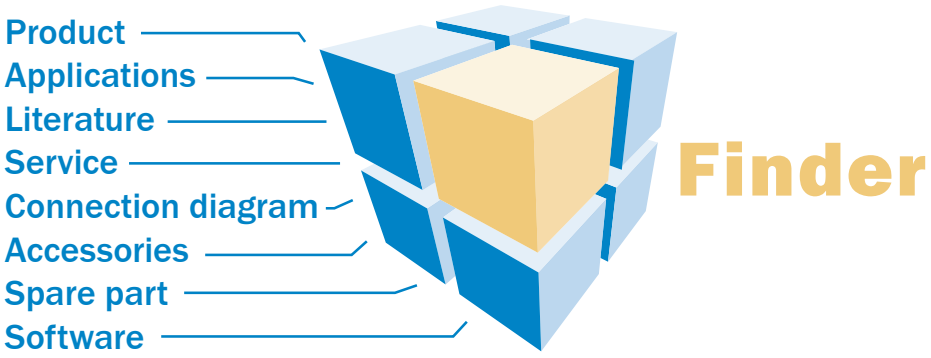

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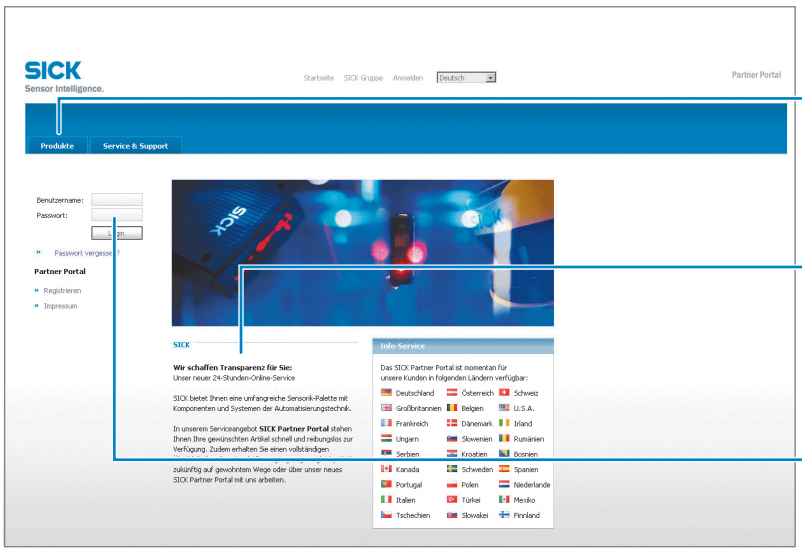

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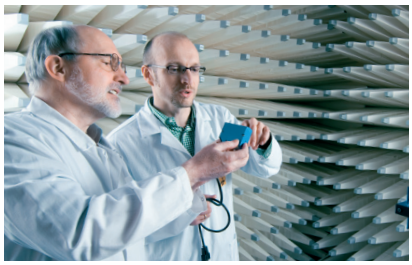
SICK at a glance



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