PRODUCT CATALOG 2013/2014

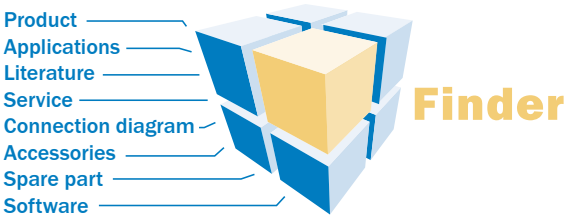
Magnetic Cylinder Sensors

Analog positioning sensors
Sensors for T-slot cylinders
Sensors for C-slot cylinders
Sensor adapters for other cylinder types

SICK
Sensor Intelligence.

www.mysick.com – select and order online

Search online quickly and safely – with the SICK “Finders”

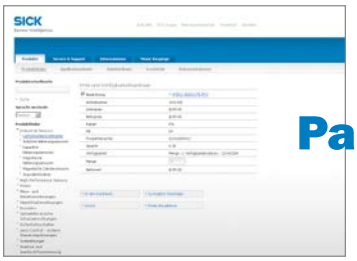


Product Finder: We can help you to quickly target the product that best matches your application.

Applications Finder: Select the application description on the basis of the challenge posed, industrial sector, or product group.

Literature Finder: Go directly to the operating instructions, technical information, and other literature on all aspects of SICK products.

Efficiency – with the e-commerce tools from SICK



Partner Portal
www.mysick.com

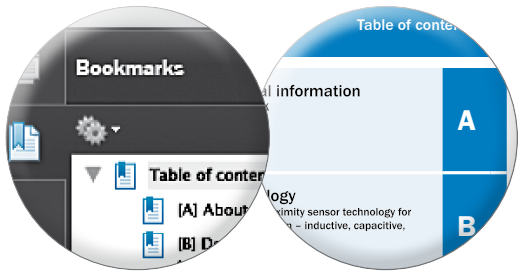
Find out prices and availability: Determine the price and possible delivery date of your desired product simply and quickly at any time.

Request or view a quote: You can have a quote generated online here. Every quote is confirmed to you via e-mail.

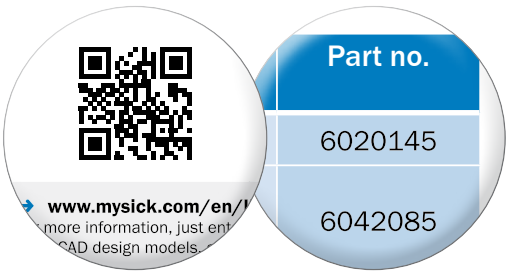
Order online: You can go through the ordering process in just a few steps.

Navigation in the PDF document – Links to online ordering system

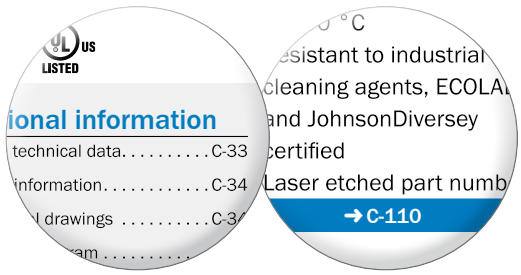
By bookmarks and tables of contents

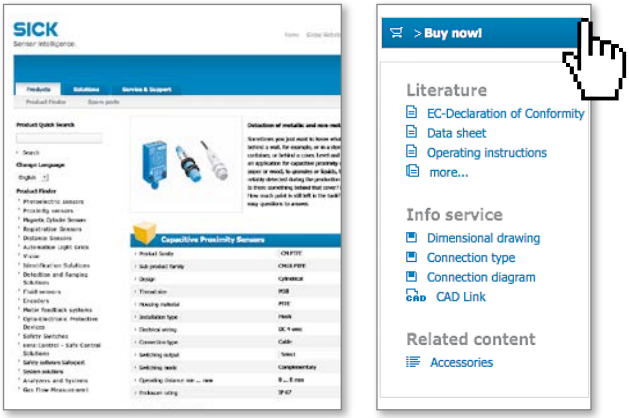


By links, QR codes and part numbers



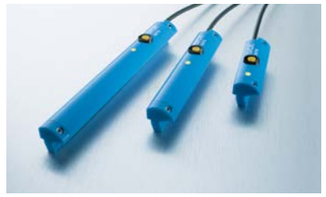
By page references





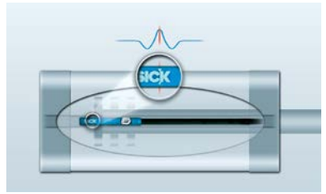
A powerful product portfolio with excellent features

Precise, non-contact position detection



Analog position sensors supply continuous feedback and are used primarily with pneumatic and electric cylinders, grippers and slides for non-contact, linear path measurement.

Accuracy without multiple switching



The combination of patented GMR technology and ASIC from SICK allows the piston position to be detected, even with weak magnets.

As rigid and resistant as steel

Unique and extremely rugged – due to the VISTAL® housing, these magnetic cylinder sensors exhibit excellent durability.

Two adjustable switching points – with only one slot

Minimum assembly area and low cabling effort with maximum performance: two adjustable switching points allow end position definition and intermediate position detection on pneumatic cylinders with only one slot occupied.

Easily installed and quickly secured

Easy installation via drop-in mounting and only a one quarter turn for rock-solid locking – with the innovative housing from SICK that includes a captive eccentric screw.

Refer to Chapter B “Key features” from page B-20 for more information.

	C	D							E		
	Analog positioning sensors	Sensors for T-slot cylinders							Sensors for C-slot cylinders		
	MPS	MPA	MZ2Q-T	MZT8	MZT6	MZT1	RZT6	RZT1	MZU2	MZ2Q-C	MZC1	RZC1
Page	C-26	C-34	D-48	D-56	D-62	D-74	D-80	D-86	D-92	E-102	E-110	E-116
Principle of operation												
Measuring	●	●										
Detecting	●	●	●	●	●	●	●	●	●	●	●	●
Direct connection												
T-slot	●		●	●	●	●	●	●				
C-slot										●	●	●
Connection via adapter												
T-slot		●							●			
Round body cylinder	●	●	●	●	●	●	●	●				
Dove-tail groove cylinder	●		●	●	●	●	●	●				
Profile cylinder			●	●	●	●	●	●	●			
Tie-rod cylinder		●	●	●	●	●	●	●	●			
SMC rail (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2	SMC (E)CDQ2

A

We deliver “Sensor Intelligence.”

SICK sensor solutions for industrial automation are the result of exceptional dedication and experience. From development all the way to service: The people at SICK are committed to investing all their expertise in providing with the very best sensors and system solutions possible.

A company with a culture of success

Over 6,000 people are on staff, with products and services available to help SICK sensor technology users increase their productivity and reduce their costs. Founded in 1946 and headquartered in Waldkirch, Germany, SICK is a global sensor specialist with more than 40 subsidiaries and representations worldwide. Our exemplary corporate culture fosters an optimum work-life balance, thus attracting the best employees from all over the world. SICK is one of the best employers – we have been among the winners of the prestigious German “Great Place to Work” award for many years in succession.

A

Innovation for the leading edge

SICK sensor systems simplify and optimize processes and allow for sustainable production. SICK operates at many research and development centers all over the world. Co-designed with customers and universities, our innovative sensor products and solutions are made to give a decisive edge. With an impressive track record of innovation, we take the key parameters of modern production to new levels: reliable process control, safety of people and environmental protection.

A corporate culture for sustainable excellence

SICK is backed by a holistic, homogeneous corporate culture. We are an independent company. And our sensor technology is open to all system environments. The power of innovation has made SICK one of the technology and market leaders – sensor technology that is successful in the long term.

A

"Sensor Intelligence." for all requirements

SICK is a renowned expert in many industries, and is entirely familiar with the critical challenges they face. While speed, accuracy and availability take center stage in all industries, technical implementations vary greatly. SICK puts its vast experience to use to provide with precisely the solution you need.

For applications worldwide

Hundreds of thousands of installations and applications go to prove that SICK knows the different industries and their processes inside out. This tradition of uncompromising expertise is ongoing: As we move into the future, we will continue to design, implement and optimize customized solutions in our application centers in Europe, Asia and North America. You can count on SICK as a reliable supplier and development partner.

8016544/2013-09-10
Subject to change without notice

A

For your specific industry

With a track record of proven expertise in a great variety of industries, SICK has taken quality and productivity to new heights. The automotive, pharmaceutical, electronics and solar industries are just a few examples of sectors that benefit from our know-how. In addition to increasing speed and improving traceability in warehouses and distribution centers, SICK solutions provide accident protection for automated guided vehicles. SICK system solutions for analysis and flow measurement of gases and liquids enable environmental protection and sustainability in, for example, energy production, cement production or waste incineration plants.

For performance across the board

SICK provides the right technology to respond to the tasks involved in industrial automation: measuring, detecting, monitoring and controlling, protecting, networking and integrating, identifying, positioning. Our development and industry experts continually create groundbreaking innovations to solve these tasks.

www.sick.com/industries

A

For safety and productivity: SICK LifeTime Services

SICK LifeTime Services is a comprehensive set of high-quality services provided to support the entire life cycle of products and applications from plant walk-through all the way to upgrades. These services increase the safety of people, boost the productivity of machines and serve as the basis for our customers' sustainable business success.

The benefit of SICK services

Each of our products and solutions is accompanied by a comprehensive range of services tuned precisely to the requirements of the product or solution – along its entire life cycle. Backed by extensive industry expertise and more than 60 years of experience, LifeTime Services stand for maximum availability and an exceptional service life of our products and solutions.

8016544/2013-09-10
Subject to change without notice

A

Consulting & Design

- Plant walk-through
- Risk assessment
- Safety concept
- Feasibility studies
- Software and hardware design

Verification & Optimization

- Inspection
- Maintenance
- Barcode checks
- Accident investigation
- Stoptime measurement
- Machine safety inspection

Training & Education

- User training
- Seminars
- WebTraining

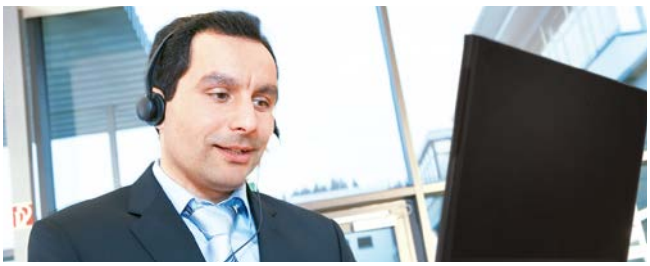
Product & System Support

- Commissioning
- Exchange units and repairs
- Remote support
- Hotline

Upgrade & Retrofits

- Machine conversion
- Sensor upgrades
- Retrofitting of technology

www.sick.com/services



A

Versatile product range for industrial automation

From the simple acquisition task to the key sensor technology in a complex production process: With every product from its broad portfolio, SICK offers a sensor solution that best combines cost effectiveness and safety.

www.sick.com/products

Photoelectric sensors

- Miniature photoelectric sensors
- Small photoelectric sensors
- Compact photoelectric sensors
- Fiber-optic sensors and fibers
- Cylindrical photoelectric sensors
- MutliTask photoelectric sensors

Proximity sensors

- Inductive proximity sensors
- Capacitive proximity sensors
- Magnetic proximity sensors

Magnetic cylinder sensors

- Analog positioning sensors
- Sensors for T-slot cylinders
- Sensors for C-slot cylinders
- Sensor adapters for other cylinder types

Identification solutions

- Bar code scanners
- Image-based code readers
- Hand-held scanners
- RFID

8016544/2013-09-10
Subject to change without notice

A

Detection and ranging solutions

- Laser measurement technology

System solutions

- Volume measurement systems
- Code reading systems
- Dimension weighing scanning systems
- Vision systems

Fluid sensors

- Level sensors
- Pressure sensors
- Flow sensors
- Temperature sensors

Registration sensors

- Contrast sensors
- Color sensors
- Luminescence sensors
- Fork sensors
- Array sensors
- Register sensors
- Markless sensors

Distance sensors

- Short range distance sensors (displacement)
- Mid range distance sensors
- Long range distance sensors
- Linear measurement sensors
- Ultrasonic sensors
- Double sheet detector
- Optical data transmission
- Position finders

A

Automation light grids

- Advanced automation light grids
- Standard automation light grids
- Smart light grids

Vision

- Vision sensors
- Smart cameras
- 3D cameras

Opto-electronic protective devices

- Safety laser scanners
- Safety camera systems
- Safety light curtains
- Multiple light beam safety devices
- Single-beam photoelectric safety switches
- Mirror and device columns
- Upgrade kits

Safety switches

- Electro-mechanical safety switches
- Non-contact safety switches
- Safety command devices

sens:Control – safe control solutions

- Safety relays
- Safety controllers
- Network solutions

8016544/2013-09-10
Subject to change without notice

A

Motor feedback systems

- Interfaces: incremental, HIPERFACE® and HIPERFACE DSL®
- Safety motor feedback systems
- Rotary and linear motor feedback systems for asynchronous, synchronous motors and linear motors

Encoders

- Absolute encoders
- Incremental encoders
- Linear encoders
- Wire draw encoders

Analyzers and systems

- Gas analyzers
- Dust measuring devices
- Analyzer systems
- Liquid analyzers
- Data acquisition systems
- Tunnel sensors

Gas flow measuring devices

- Gas flow meters
- Mass flow meters
- Volume flow measuring devices

Software

- Safexpert® safety software

B

Trend-setting position detection

The key for fast, accurate detection of piston positions in pneumatic actuators: high-performance, efficient solutions. A wide variety of cylinder types, grippers or slides and diverse slot geometries initially appear to demand a large range of sensors – or even a sophisticated sensor concept to accommodate all the differences. However, innovative magnetic cylinder sensors from SICK enable direct mounting in pneumatic actuators with T- or C-slots and utilize effective adapter solutions to expand the application potential of many machines and production plants.

8016544/2013-09-10
Subject to change without notice

Magnetic cylinder sensors

Analog positioning sensors

High-resolution position detection for pneumatic cylinders

Chapter C, from page C-23

Sensors for T-slot cylinders

Precision and power: equipped for all installation locations and conditions

Chapter D, from page D-41

Sensors for C-slot cylinders

Reliable, powerful, rugged: ideal for use in short-stroke cylinders, linear slides and grippers

Chapter E, from page E-97

The magnetic cylinder sensors are connected using adapters

Sensor adapters for other cylinder types

Fewer product variants, identical standards: thanks to intelligent and tailored mounting systems that are compatible with the sensors from SICK

Chapter F, from page F-123

Tailored solutions

Tailored solutions

For individual solutions and special mounting situations

Chapter G, from page G-132

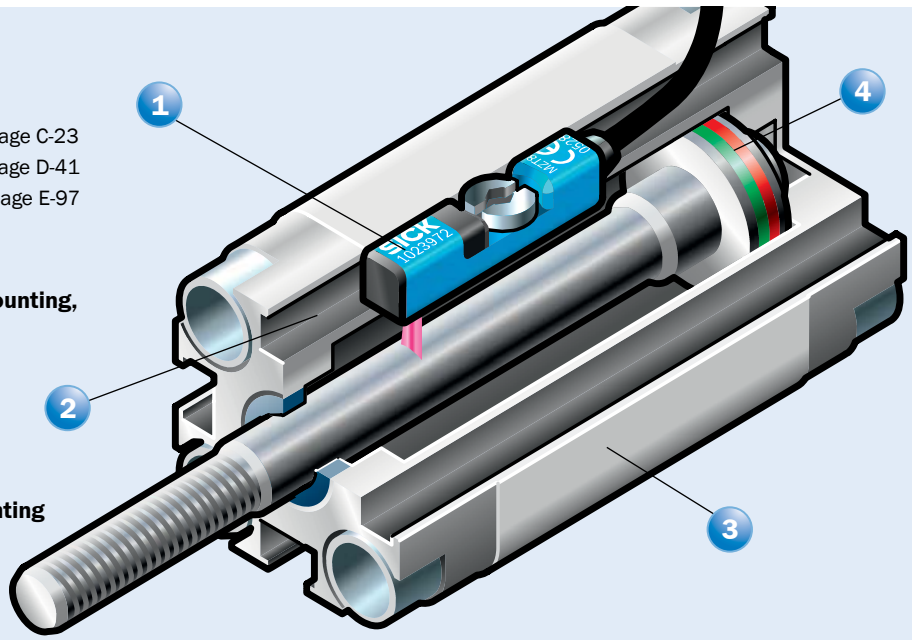
Components in the system

Magnetic cylinder sensors are used in pneumatic actuators. In addition to the cylinders, these also include the grippers and slides.

System construction

B

Cylinders



1 **Magnetic cylinder sensor**
Analog positioning sensors from page C-23
Sensors for T-slot cylinders from page D-41
Sensors for C-slot cylinders from page E-97

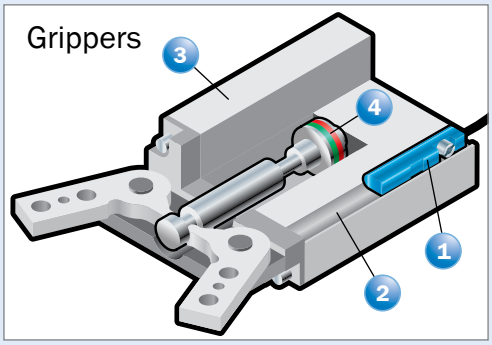
2 **With sensor slot for direct mounting, e.g.:**
- T-slot
- C-slot

Without sensor slot, for mounting using adapters, e.g.:
- Dove-tail groove
- Round body cylinder
- Profile cylinder
- Tie-rod cylinder

3 **Housing made of non-ferro-magnetic material**

4 **Permanent magnet**

Grippers



To cover the highest number of installation situations using as few product variants as possible, SICK offers versatile mounting adapters for a wide range of cylinder and slot types.

Direct mounting in the slot

Mounting via adapter

SMC (E)CDQ2

One decisive component in these pneumatic actuators is the permanent magnet. It is fastened to the piston, which performs the stroke in the non-ferromagnetic housing.

Task and operating principle of magnetic cylinder sensors

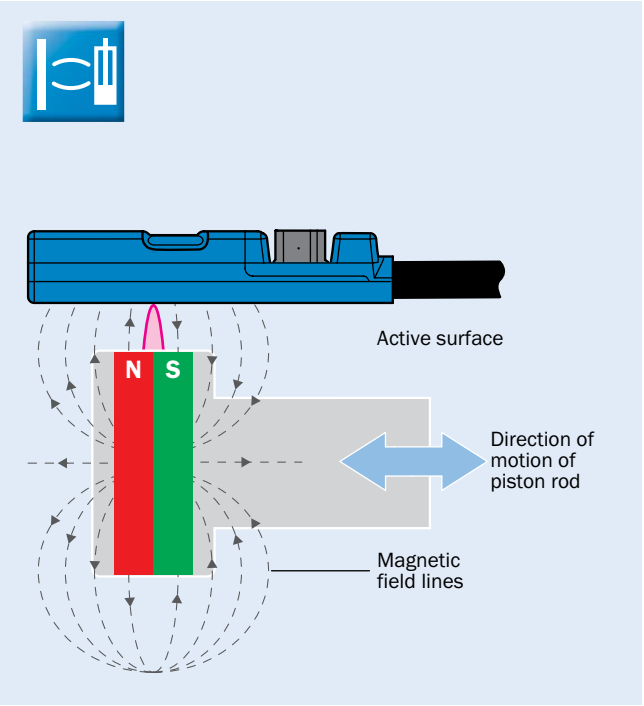
The task of magnetic cylinder sensors is to **measure** or **detect** the magnetic field of permanent magnets, which are integrated in the piston of the cylinder. The sensing element detects the magnetic field. A signal is produced to notify the user of the piston position.

Influencing factors

When you consider the system layout and operational principle of magnetic cylinder sensors, the decisive criteria that affect the quality of the output signal include the following:

- Strength of the magnetic field (type of magnet used)
- Distance between the sensor and magnet
- Geometry and tolerance of the installation slot

The universal, intelligent housing design of SICK magnetic cylinder sensors allows them to be mounted in all slot types, regardless of the cylinder manufacturer. The ASIC from SICK suppresses the side lobes of the magnetic field, which prevents multiple switching. The sensitivity can be set five times more accurately than the settings in conventional cylinder sensors.



Fields of application

Typical fields and applications for the use of magnetic cylinder sensors

- Electronics industry
- Mechanical engineering
- Mounting and handling
- Food industry
- Pneumatics industry
- Process control and quality control
- Robotics industry
- Packaging industry




Analog positioning sensors

In many tasks with pneumatic cylinders, it is no longer sufficient to detect the positions of individual pistons. This is where the MPA and MPS analog positioning sensors are important: the piston position of the cylinder is detected continuously and output via a current or a voltage output with a high resolution.

B

Functionality

Signal sensing

Analog positioning sensors use a row of Hall sensors to determine the position of the piston magnet; these sensors send their signals to a high-performance microprocessor via a switching matrix. The microprocessor uses an intelligent algorithm to calculate the correct position.

Signal processing

The algorithm implemented in the microprocessor linearizes the Hall voltages received and can adapt to a wide variety of magnets. Adaptation to the magnets is carried out automatically and therefore does not interfere with ongoing operation. Drift effects that can occur when magnets age or temperature fluctuations occur are quickly corrected.

Output stage

The corrected position signal is output by a 12-bit digital/analog transducer. The position is output via the analog output, optionally as a voltage signal of 0 to 10 V or as a current signal of 4 to 20 mA.

Advantages:

- Power consumption is independent of the stroke length
- External fields are suppressed
- It is possible to use weak ferrite magnets or strong iron neodymium boron magnets
- The output signal is linear and repeatable for a wide range of magnets and temperature fluctuations

Solution

From a certain measuring range onwards, the resolution can be increased by reducing this measuring range. Refer to Chapter I, “Appendix/Glossary” from page I-150 for more information about the topic “Resolution” (including calculation examples).

Highest precision – optimum values for resolution, linearity, and repeatability

SICK's analog positioning sensors provide a solution for the use of efficient, low-cost pneumatic cylinders. Applications that once required costly linear drives can now use low-cost, pneumatic solutions. The integrated **IO-Link interface** (see below) also offers the highest level of flexibility in selecting the output signal and can be easily matched to the higher-level controller.

Advantages:
Continuous feedback, which allows the handling of complex automation tasks, e.g., pallet and magazine centering or optimization of welding processes.

A further benefit: the numerous practical sizes and their flexible measuring ranges make analog positioning sensors from SICK ideal for a wide range of cylinder sizes.

- With measuring ranges from 32 to 256 mm (in increments of 32 mm), the **MPS product family** (from page C-26) is characterized by its compact size and capability to be directly mounted in the T-slot
- The **MPA product family** (from page C-34) covers measuring lengths from 107 to 1,007 mm (in increments of 36 mm) and offers the right position sensor for any application. The universal housing allows any position sensor to be mounted directly on the widest range of pneumatic drives using mounting adapters.

The product families have one thing in common: they aim to minimize the blind zones at the cable exits and the head of the housing to achieve high efficiency during measurement. Even extremely confined mounting situations are no obstacle.

B

The effective application solution – thanks to IO-Link

IO-Link is the global communication standard for setting parameters and performing configuration for simple switching or analog sensors and actuators. It provides every automation system with easy and fully integrated access to analog or digital sensor data. By seamlessly integrating sensors into an automation network, you can not only access new ways to increase flexibility, reliability, and efficiency, but also reduce the costs of a machine.

- Reduced machine downtime and changeover times by easily replacing the sensors
- Flexible and user-friendly creation and storage of parameters
- Reduced maintenance costs through proactive, problem-oriented diagnostics
- Electronic documentation and automatic detection of IO-Link sensors of a machine
- Visualization of sensor-specific data at the PC

Refer to the special information brochure “Smart Sensor Solutions powered by IO-Link” (8011727) for more information.

Further application examples for analog positioning sensors

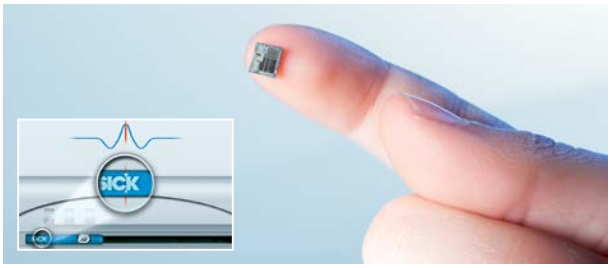
- **Precise control of joining and separation processes**
  In screw-driving systems, the analog values of the sensor are used to set and regulate the zero position, the feed rate, and the maximum screw depth.
- **Analog piston polling for uniform and machining processes**
  Analog measured values allow precise feed motion for grinding, punching, bending and pressing.
- **Improved product control and process quality**
  Monitor and regulate sagging and tension for strip and web materials in packaging machines.

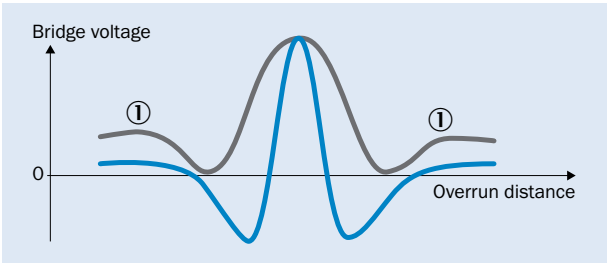
Technological leadership

Measuring, detecting, positioning, checking – the tasks in industrial automation are numerous and challenging. The sensors used are becoming smaller and at the same time are exhibiting striking properties.

B

Switching accuracy without multiple switching: ASIC from SICK





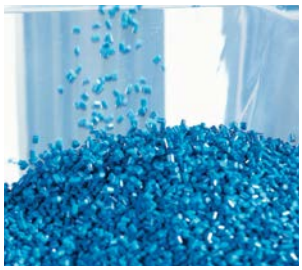
The combination of patented GMR technology and **ASIC developed by SICK** allows the the piston position to be detected, even with weak magnets. This intelligent technology suppresses the side lobes of the magnetic field and, in doing so, prevents multiple switching ①.

Furthermore, ASIC from SICK enables accurate sensitivity settings to be made; in fact, these are five times more accurate than the settings in conventional cylinder sensors. These minimal tolerances for sensitivity ensure high-precision position detection for the piston using the magnetic cylinder sensor.

— Conventional magnetic cylinder sensor
— Magnetic cylinder sensor with GMR technology and ASIC from SICK

▸ **Result:** Maximum reliability and precise switching points for any pneumatic actuator

Hard as steel: housing made of VISTAL®



SICK is the only sensor manufacturer that uses the extremely rugged **VISTAL®** housing material.

VISTAL® is a highly rigid fiber-glass reinforced synthetic material that is characterized by significantly enhanced mechanical properties rather than standard synthetic materials (e. g., + 900 % E modulus in accordance with ISO 527, or + 400% Brinell hardness in accordance with ISO 2039-1). This results in a highly rigid sensor housing.

Another benefit of VISTAL®: the material is resistant to chemicals and therefore does not react adversely to cleaning agents and production chemicals.

▸ **Result:** excellent durability and resistance

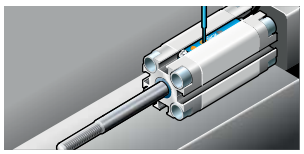
SICK is contributing significantly to expanding the application fields for pneumatic actuators and utilizing new potential with its innovative solutions and developments.

B

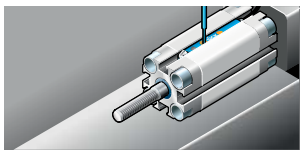
Astonishingly efficient: 2-point teach

A trend-setting principle for C- and T-slot sensors in the MZ2Q product family (see pages D-48 or E-102): they have **two switching points (2-point teach)** – and occupy only one slot.

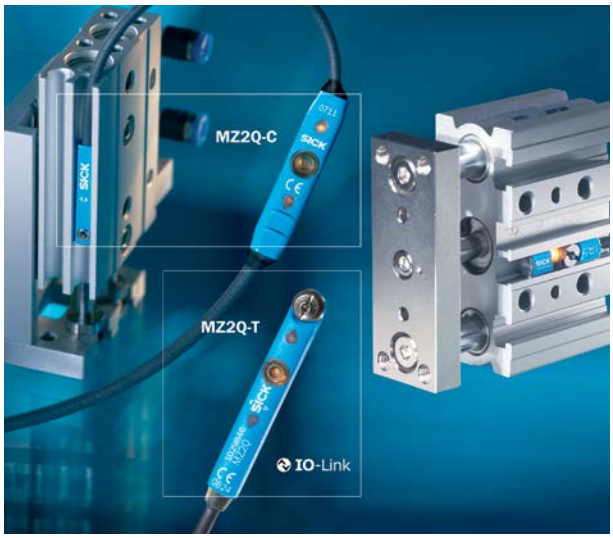
These sensors were developed for quicker and more economical end position definition and intermediate position detection on pneumatic cylinders and grippers. Since these sensors only occupy one slot, they can also be used in confined installation situations.



First teach:
Bring the piston to the desired position 1 and press the teach button for the first time



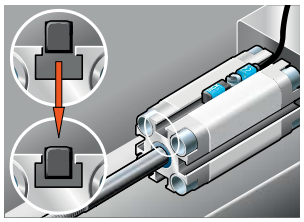
Second teach:
Bring the piston to the desired position 2 and press the teach button again



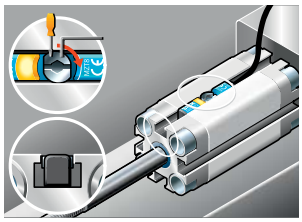
▸ **Result:** Savings on installation space, cabling work, time and costs

Installed and secured in no time at all: Drop-in and combination screw

Thanks to the innovative housing design, sensors from SICK can be easily inserted into any conventional slot from above (**drop-in**). The patented mounting with its **captive eccentric screw (combination screw)** enables quick installation, and prevents the sensor from slipping in the slot during strong vibrations, while the alignment of the screw in the middle of the sensor prevents loss of stroke. A flat head screwdriver will tighten as well as any Allen key in the universal head of the rugged stainless steel screw. It locks the sensor with only one quarter turn and provides mechanical stability, even when tolerances apply to the slot dimensions. The captive eccentric screw makes installation easier than with many other sensors – in any position, even overhead.



Inserting:
Simply insert the sensor into the slot from above and turn



Positioning:
Find the switching point and mount the sensor

▸ **Result:** easy to mount and fits securely into the slot: no slip, no wandering of the switching points

C

Flexible, precise, superior – analog positioning sensors from SICK

For many tasks that use pneumatic cylinders, it is important to determine more than just the individual piston positions. As a result, there is an increasing demand for sensors that provide continuous feedback. This allows challenging automation tasks to be solved without having to use expensive linear motors. SICK is able to meet these demands with its analog positioning sensors. These sensors, which provide a measuring range of up to 1,007 mm, combine flexibility, simple operation and high precision.

- Flexibility thanks to measuring lengths from 32 mm to 1,007 mm
- Excellent resolution, repeat accuracy, linearity, and sampling rate
- Increased machine performance thanks to the sensor's minimal blind zones
- Flexibility and fewer variants due to output signals from 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Easy and time-saving commissioning thanks to the teach-in button
- Flexible sensor settings, accurate monitoring, advanced diagnostics, and visualization thanks to IO-Link

8016544/2013-09-10

C

Analog positioning sensors

C

Overview of analog position sensors

	Cylinder type						Housing material		Special features				Page
	T-slot	T-slot	Round body	Dove-tail groove	Tie-rod	SMC rail (E)CDQ2	Plastic	Aluminum	IO-Link	Analog output	Teach-in	For short-stroke cylinders	
MPS													
MPS with analog output	■		■	■		■	■			■	■	■	C-26
MPS with IO-Link	■		■	■		■	■		■		■	■	C-26
MPA													
MPA		■	■		■			■	■	■	■		C-34

Measuring ranges

	Measuring range (mm)	Page
MPS		
MPS with analog output	32 mm ... 256 mm (in 32-mm increments)	C-26
MPS with IO-Link	32 mm ... 256 mm (in 32-mm increments)	C-26
MPA		
MPA	107 mm ... 1,007 mm (in 36-mm increments)	C-34

Product family overview

	 **MPS**	 **MPA**
	The superior analog sensor for the T-slot	Precision and versatility up to 1,007 millimeters
Technical data overview		
Output function	Analog, IO-Link	Analog, IO-Link
IO-Link	✔	✔
Teach-in	✔	✔
Cylinder types with adapter	Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	Round body cylinders Tie-rod cylinders T-slot
Measuring range	32 mm ... 256 mm	107 mm ... 1,007 mm
Housing length	45 mm ... 269 mm	109 mm ... 1,009 mm
Supply voltage	15 V DC ... 30 V DC	15 V DC ... 30 V DC
At a glance		
	• Analog positioning sensor for pneumatic and hydraulic cylinders with T-slot • Measuring lengths from 32 mm to 256 mm in 32 mm steps • Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor • Superior precision: 0.05 mm resolution typ., 0.1 mm repeatability typ., 0.3 mm linearity typ., 1 ms measurement rate typ. • Electric setting of zero point and end point via teach-in button (optional)	• Analog positioning sensor that can be mounted with adapters on various cylinders thanks to its universal housing, e.g., cylinders with T-slot, round and tie-rod cylinders • Measuring lengths from 107 mm to 1,007 mm in 36 mm steps • Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor • Linearity of 0.5 mm at a sample rate of 1.15 ms and an resolution of 0.06 mm • Electric setting of zero point and end point via teach-in button • IP 67 enclosure rating
Detailed information	→ C-26	→ C-34

C

The superior analog sensor for the T-slot

C

Product description

The MPS analog positioning sensors expand the available functionality for pneumatic and hydraulic cylinders. The wide spectrum of measuring ranges – from 32 mm to 256 mm – allows different cylinder lengths to be used. Output function, switching and measuring performance, and teaching functionalities open up a wide range of new applications that were previously not possible – or only available with cost-intensive systems.

At a glance

- Analog positioning sensor for pneumatic and hydraulic cylinders with T-slot
- Measuring lengths from 32 mm to 256 mm in 32 mm steps
- Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Superior precision: 0.05 mm resolution typ., 0.1 mm repeatability typ., 0.3 mm linearity typ., 1 ms measurement rate typ.
- Electric setting of zero point and end point via teach-in button (optional)

Your benefits

- Convenient installation and sensor replacement due to drop-in installation
- Maximum flexibility through measuring ranges from 32 mm to 256 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Easy analog output setup: adjustable zero and end point can be taught via single button
- Selectable installation direction to optimize cabling
- Simple commissioning due to "in-range" indicator
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link save time and money

IO-Link

Additional information

→ **www.mysick.com/en/MPS**

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.

Detailed technical data

Features

	MPS with analog output	MPS with IO-Link
Cylinder type	T-slot	
Cylinder types with adapter	Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	
Measuring range [1]	32 mm ... 256 mm (depending on type)	
Housing length	45 mm ... 269 mm (depending on type)	
Output function	Analog	IO-Link
Analog output (voltage)	0 V ... 10 V	–
Analog output (current)	4 mA ... 20 mA	–
Teach-in	✔ (depending on type)	✔
Enclosure rating [2]	IP 67	

[1] ± 1 mm.

[2] According to EN 60529.

Mechanics/electronics

	MPS with analog output	MPS with IO-Link
Supply voltage	15 V DC ... 30 V DC	
Load resistance, max. [1]	500 Ω	
Min. load resistance [2]	2 kΩ	
Protection class	III	
Magnetic field sensitivity, typ.	3 mT	
Resolution typ. [3]	0.03 % FSR (≥ 0.05 mm)	
Linearity typ.	0.3 mm	
Repeat accuracy typ [3]	0.06 % FSR (≥ 0.1 mm)	
Sampling rate	1 ms	
IO-Link	–	✔
Output indicator	✔	
Reverse polarity protection	✔	
Short-circuit protection	✔	
Ambient operating temperature	–20 °C ... +70 °C	
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm	
EMC [4]	According to EN 60947-5-2	
Housing material	Plastic	
Cable material	PUR	
Conductor cross-section	0.14 mm²	

[1] Power output.

[2] Input current.

[3] FSR: Full Scale Range; max. measuring range.

[4] The analog measured value can deviate under transient conditions.

C

Ordering information

MPS with analog output

- **Output function:** analog
- **Cable material:** PUR
- **Connection diagram:** cd-034

Measuring range [1]	Housing length	Teach-in	Connection [2]	Model name	Part no.
32 mm	45 mm	✔	Cable, 2 m	MPS-032TSTU0	1045667
			Cable with connector M8, 4-pin, 0.3 m	MPS-032TSTP0	1045666
		–	Cable, 2 m	MPS-032TSNU0	1050918
			Cable with connector M8, 4-pin, 0.3 m	MPS-032TSNP0	1053835
64 mm	77 mm	✔	Cable, 2 m	MPS-064TSTU0	1045669
			Cable with connector M8, 4-pin, 0.3 m	MPS-064TSTP0	1045668
		–	Cable, 2 m	MPS-064TSNU0	1050919
			Cable with connector M8, 4-pin, 0.3 m	MPS-064TSNP0	1053836
96 mm	109 mm	✔	Cable, 2 m	MPS-096TSTU0	1045671
			Cable with connector M8, 4-pin, 0.3 m	MPS-096TSTP0	1045670
		–	Cable, 2 m	MPS-096TSNU0	1050920
			Cable with connector M8, 4-pin, 0.3 m	MPS-096TSNP0	1053837
128 mm	141 mm	✔	Cable, 2 m	MPS-128TSTU0	1045673
			Cable with connector M8, 4-pin, 0.3 m	MPS-128TSTP0	1045672
		–	Cable, 2 m	MPS-128TSNU0	1050921
			Cable with connector M8, 4-pin, 0.3 m	MPS-128TSNP0	1053838
160 mm	173 mm	✔	Cable, 2 m	MPS-160TSTU0	1050740
			Cable with connector M8, 4-pin, 0.3 m	MPS-160TSTP0	1050685
		–	Cable, 2 m	MPS-160TSNU0	1050922
			Cable with connector M8, 4-pin, 0.3 m	MPS-160TSNP0	1053839
192 mm	205 mm	✔	Cable, 2 m	MPS-192TSTU0	1050738
			Cable with connector M8, 4-pin, 0.3 m	MPS-192TSTP0	1047728
		–	Cable, 2 m	MPS-192TSNU0	1050923
			Cable with connector M8, 4-pin, 0.3 m	MPS-192TSNP0	1053840
224 mm	237 mm	✔	Cable, 2 m	MPS-224TSTU0	1050741
			Cable with connector M8, 4-pin, 0.3 m	MPS-224TSTP0	1050686
		–	Cable, 2 m	MPS-224TSNU0	1050924
			Cable with connector M8, 4-pin, 0.3 m	MPS-224TSNP0	1053841
256 mm	269 mm	✔	Cable, 2 m	MPS-256TSTU0	1050739
			Cable with connector M8, 4-pin, 0.3 m	MPS-256TSTP0	1050551
		–	Cable, 2 m	MPS-256TSNU0	1050925
			Cable with connector M8, 4-pin, 0.3 m	MPS-256TSNP0	1053842

[1] ± 1 mm.

[2] Do not bend below 0 °C.

C

MPS with IO-Link

- **Output function:** IO-Link
- **Cable material:** PUR
- **Connection diagram:** cd-179

Measuring range [1]	Housing length	Teach-in	Connection [2]	Model name	Part no.
32 mm	45 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-032TLTQ0	1062506
64 mm	77 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-064TLTQ0	1062507
96 mm	109 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-096TLTQ0	1062508
128 mm	141 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-128TLTQ0	1062518
160 mm	173 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-160TLTQ0	1062521
192 mm	205 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-192TLTQ0	1062519
224 mm	237 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-224TLTQ0	1062522
256 mm	237 mm	✔	Cable with connector M12, 4-pin, 0.3 m	MPS-256TLTQ0	1062520

[1] ± 1 mm.

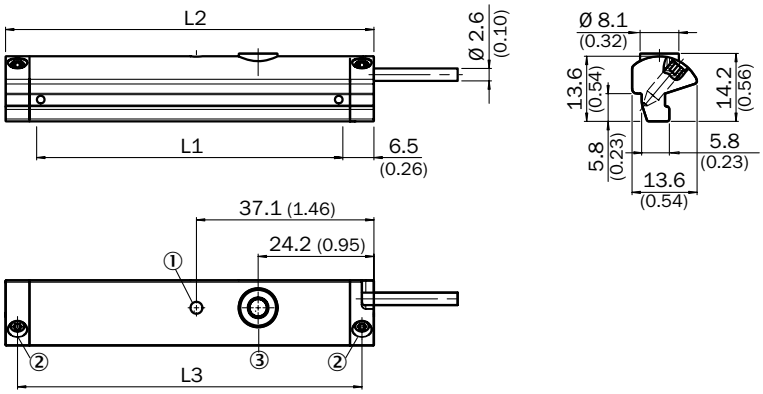
[2] Do not bend below 0 °C.

C

Dimensional drawing

Dimensions in mm (inch)

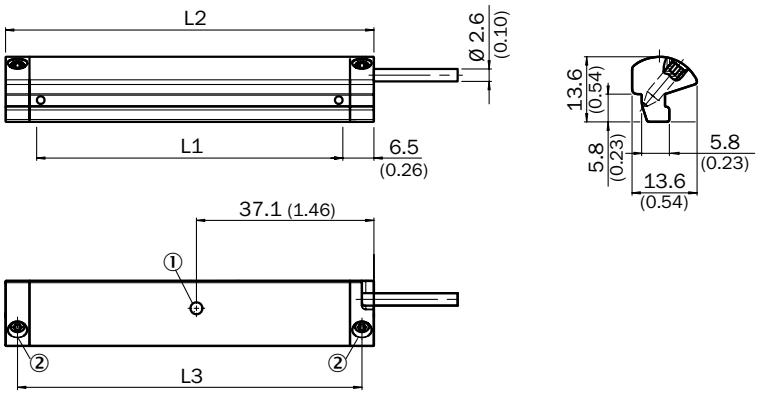
Teach-in



	Total length (L1) mm	Measuring range (L2) mm	Distance mounting screws (L3) mm
MPS-32	45	32	40
MPS-64	77	64	72
MPS-96	109	96	104
MPS-128	141	128	136
MPS-160	173	160	168
MPS-192	205	192	200
MPS-224	237	224	232
MPS-256	269	256	264

① Function signal indicator
② Fixing screw
③ Teach-in button

Without teach-in

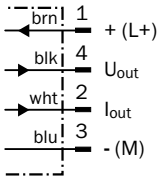


	Total length (L1) mm	Measuring range (L2) mm	Distance mounting screws (L3) mm
MPS-32	45	32	40
MPS-64	77	64	72
MPS-96	109	96	104
MPS-128	141	128	136
MPS-160	173	160	168
MPS-192	205	192	200
MPS-224	237	224	232
MPS-256	269	256	264

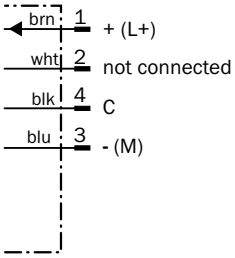
① Function signal indicator
② Fixing screw

Connection diagram

Cd-034



Cd-179



C

Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25 [1]	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63 [1]	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130 [1]	5311506

[1] Two adapters are recommended.

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2 (for C-slot)	BEF-KHZ-CT45 [1]	2061698
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2 [2] [3]	2046440

[1] Only for MPS-32.

[2] Two adapters are recommended.

[3] For lengths longer than MPS-160 at least three adapters are recommended.

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1 [1] [2]	2046439

[1] Two adapters are recommended.

[2] For lengths longer than MPS-160 at least three adapters are recommended.

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1 [1] [2]	2022703

[1] Two adapters are recommended.

[2] For lengths longer than MPS-160 at least three adapters are recommended.

C

Plug connectors and cables

Connecting cable (female connector-open)

M8, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** PVC
- **Locking nut material:** stainless steel (V4A/1.4404/316L)

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-0804-G02M	6009870
			5 m, 4-wire	DOL-0804-G05M	6009872
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-0804-W02M	6009871
			5 m, 4-wire	DOL-0804-W05M	6009873

C

M12, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02M	6009382
			5 m, 4-wire	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled, with 3 LED's	Cable, open conductor heads	2 m, 4-wire	DOL-1204-L02M	6027945
			5 m, 4-wire	DOL-1204-L05M	6027944
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02M	6009383
			5 m, 4-wire	DOL-1204-W05M	6009867

Female connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 4-pin, straight	Screw-type terminals	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Screw-type terminals	DOS-0804-W	6009975

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

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

Male connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 4-pin, straight	Screw-type terminals	STE-0804-G	6037323

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M12, 4-pin, straight	Screw-type terminals	STE-1204-G	6009932
	Connector, M12, 4-pin, angled	Screw-type terminals	STE-1204-W	6022084

For additional accessories including dimensional drawings, please see page F-123/H-137.

C

Precision and versatility up to 1,007 millimeters

C

Product description

The MPA is a precision magnetic positioning sensor with analog output, offering an economical alternative to potentiometers or other displacement sensors. Firstly, MPA saves significant installation time compared to other measurement sensors. The MPA is available for 107 mm to 1,007 mm measurement and can be directly mounted on electrical and pneumatic drives. Also, MPA can be used with external magnets instead of actuators thanks to its universal housing with mounting adapters. An intuitive, capacitive Teach Pad as well as the 4-color LED display means the sensor can be commissioned quickly and easily.

At a glance

- Analog positioning sensor that can be mounted with adapters on various cylinders thanks to its universal housing, e.g., cylinders with T-slot, round and tie-rod cylinders
- Measuring lengths from 107 mm to 1,007 mm in 36 mm steps
- Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Linearity of 0.5 mm at a sample rate of 1.15 ms and an resolution of 0.06 mm
- Electric setting of zero point and end point via teach-in button
- IP 67 enclosure rating

Your benefits

- Maximum flexibility through measuring ranges from 107 mm to 1,007 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Saves time due to configurable start and end points via intelligent Teach Pad
- A rugged aluminum housing, the capacitive Teach Pad and the anti-kink cable guarantees a long operational lifetime of the sensor and reduces maintenance costs
- Time savings through simple commissioning and diagnostics thanks to a 4-color LED display
- Analog power, voltage signal and IO-Link in a single sensor reduces the range of variants and thereby lowers warehousing costs
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link save time and money

c UL US LISTED Ind. Con. Eq. 4R97

IO-Link

Additional information

→ **www.mysick.com/en/MPA**

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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

Cylinder types with adapter	Round body cylinders Tie-rod cylinders T-slot
Measuring range [1]	107 mm ... 1,007 mm (depending on type)
Housing length	109 mm ... 1,009 mm (depending on type)
Output function	Analog, IO-Link
Analog output (voltage)	0 V ... 10 V
Analog output (current)	4 mA ... 20 mA
Teach-in	✔
Enclosure rating [2]	IP 65, IP 67

[1] ± 1 mm.

[2] According to EN 60529.

C

Mechanics/electronics

Supply voltage	15 V DC ... 30 V DC
Load resistance, max. [1]	500 Ω
Min. load resistance [2]	2 kΩ
Protection class	III
Magnetic field sensitivity, typ.	2 mT
Resolution typ. [3]	0.03 % FSR (≥ 0.06 mm)
Linearity typ.	0.5 mm
Repeat accuracy typ [3]	0.06 % FSR (≥ 0.1 mm)
Sampling rate	1.15 ms
IO-Link	✔
Output indicator	✔
Reverse polarity protection	✔
Short-circuit protection	✔
Ambient operating temperature	–20 °C ... +70 °C
Shock/vibration	30 g, 11 ms/10 Hz ... 55 Hz, 1 mm
EMC [4]	According to EN 60947-5-7
Housing material	Aluminium
Housing cap material	PA, strengthened
Cable material	PUR
Conductor cross-section	0.14 mm²

[1] Power output.

[2] Voltage output.

[3] FSR: Full Scale Range; max. measuring range.

[4] The analog measured value can deviate under transient conditions.

Ordering information

- **Output function:** Analog, IO-Link
- **Teach-in:** ✔
- **Cable material:** PUR
- **Connection diagram:** cd-230

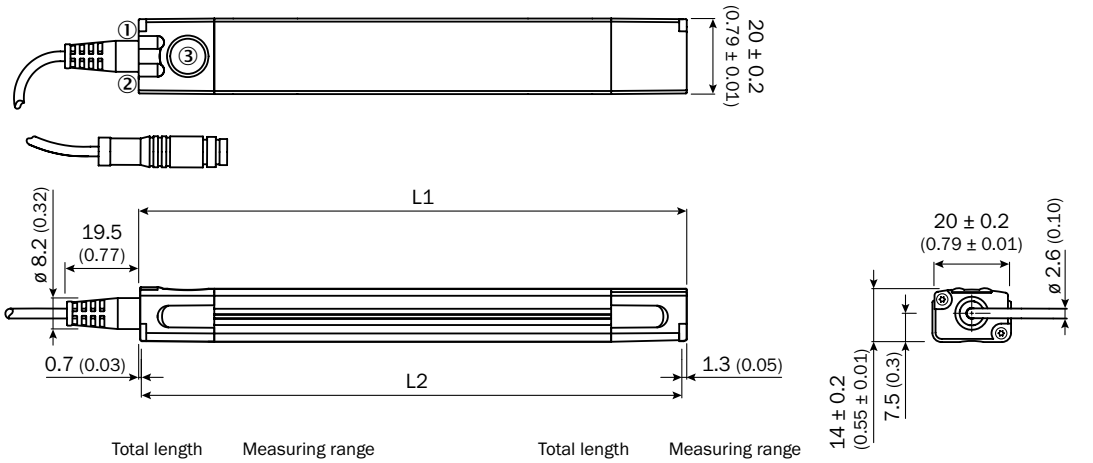
Measuring range [1]	Housing length	Connection [2]	Model name	Part no.
107 mm	109 mm	Cable, 2 m	MPA-107THTU0	1059443
		Cable with connector M8, 4-pin, 0.3 m	MPA-107THTP0	1059442
143 mm	145 mm	Cable, 2 m	MPA-143THTU0	1059445
		Cable with connector M8, 4-pin, 0.3 m	MPA-143THTP0	1059444
179 mm	181 mm	Cable, 2 m	MPA-179THTU0	1059447
		Cable with connector M8, 4-pin, 0.3 m	MPA-179THTP0	1059446
215 mm	217 mm	Cable, 2 m	MPA-215THTU0	1059449
		Cable with connector M8, 4-pin, 0.3 m	MPA-215THTP0	1059448
251 mm	253 mm	Cable, 2 m	MPA-251THTU0	1059451
		Cable with connector M8, 4-pin, 0.3 m	MPA-251THTP0	1059450
287 mm	289 mm	Cable, 2 m	MPA-287THTU0	1059453
		Cable with connector M8, 4-pin, 0.3 m	MPA-287THTP0	1059452
323 mm	325 mm	Cable, 2 m	MPA-323THTU0	1059455
		Cable with connector M8, 4-pin, 0.3 m	MPA-323THTP0	1059454
359 mm	361 mm	Cable, 2 m	MPA-359THTU0	1059457
		Cable with connector M8, 4-pin, 0.3 m	MPA-359THTP0	1059456
395 mm	397 mm	Cable, 2 m	MPA-395THTU0	1059459
		Cable with connector M8, 4-pin, 0.3 m	MPA-395THTP0	1059458
431 mm	433 mm	Cable, 2 m	MPA-431THTU0	1059461
		Cable with connector M8, 4-pin, 0.3 m	MPA-431THTP0	1059460
467 mm	469 mm	Cable, 2 m	MPA-467THTU0	1059463
		Cable with connector M8, 4-pin, 0.3 m	MPA-467THTP0	1059462
503 mm	505 mm	Cable, 2 m	MPA-503THTU0	1059465
		Cable with connector M8, 4-pin, 0.3 m	MPA-503THTP0	1059464
539 mm	541 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-539THTP0	1059466
575 mm	577 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-575THTP0	1059467
611 mm	613 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-611THTP0	1059468
647 mm	649 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-647THTP0	1059469
683 mm	685 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-683THTP0	1059470
719 mm	721 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-719THTP0	1059471
755 mm	757 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-755THTP0	1059472
791 mm	793 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-791THTP0	1059473
827 mm	829 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-827THTP0	1059474
863 mm	865 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-863THTP0	1059475
899 mm	901 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-899THTP0	1059476
935 mm	937 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-935THTP0	1059477
971 mm	973 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-971THTP0	1059478
1,007 mm	1,009 mm	Cable with connector M8, 4-pin, 0.3 m	MPA-1007THTP0	1059479

[1] ± 1 mm.

[2] Do not bend below 0 °C.

Dimensional drawing

Dimensions in mm (inch)



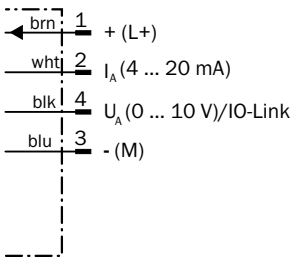
	Total length (L1) mm	Measuring range (L2) mm
MPA-107	109	107
MPA-143	145	143
MPA-179	181	179
MPA-215	217	215
MPA-251	253	251
MPA-287	289	287
MPA-323	325	323
MPA-359	361	359
MPA-395	397	395
MPA-431	433	431
MPA-467	469	467
MPA-503	505	503
MPA-539	541	539

	Total length (L1) mm	Measuring range (L2) mm
MPA-575	577	575
MPA-611	613	611
MPA-647	649	647
MPA-683	685	683
MPA-719	721	719
MPA-755	757	755
MPA-791	793	791
MPA-827	829	827
MPA-863	865	863
MPA-899	901	899
MPA-935	937	935
MPA-971	973	971
MPA-1007	1,009	1,007

① Function signal indicator 1
② Function signal indicator 2
③ Teach-Pad

Connection diagram

Cd-230



Recommended accessories

Brackets for cylinder sensors

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Measuring range sensor (amount of required brackets)	Model name	Part no.
	Aluminum alloy (adapter), Stainless steel V2A (mounting-/ fixing screw)	For tie-rod cylinders (diameter tie-rod max. 18 mm)	107 mm ... 251 mm (2 pcs.) 287 mm ... 431 mm (3 pcs.) 467 mm ... 647 mm (4 pcs.) 683 mm ... 791 mm (5 pcs.) 827 mm ... 1,007 mm (6 pcs.)	BEF-KHZPZ1MPA	2065578

For round body cylinders

C

Figure	Material	Description	Measuring range sensor (amount of required brackets)	Model name	Part no.
	Stainless steel V2A	For round body cylinders with diameter up to 85 mm	107 mm ... 359 mm (2 pcs.) 395 mm ... 647 mm (3 pcs.) 683 mm ... 935 mm (4 pcs.) 971 mm ... 1,007 mm (5 pcs.)	BEF-KHZR085MPA	2066626
		For round body cylinders with diameter up to 135 mm	107 mm ... 359 mm (2 pcs.) 395 mm ... 647 mm (3 pcs.) 683 mm ... 935 mm (4 pcs.) 971 mm ... 1,007 mm (5 pcs.)	BEF-KHZR135MPA	2066627
		For round body cylinders with diameter up to 210 mm	107 mm ... 359 mm (2 pcs.) 395 mm ... 647 mm (3 pcs.) 683 mm ... 935 mm (4 pcs.) 971 mm ... 1,007 mm (5 pcs.)	BEF-KHZR210MPA	2066628

For T-slot cylinders

Figure	Material	Description	Measuring range sensor (amount of required brackets)	Model name	Part no.
	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw/sliding nut)	For T-slot cylinders	107 mm ... 251 mm (2 pcs.) 287 mm ... 431 mm (3 pcs.) 467 mm ... 647 mm (4 pcs.) 683 mm ... 791 mm (5 pcs.) 827 mm ... 1,007 mm (6 pcs.)	BEF-KHZT01MPA	2065575

Mounting brackets/plates

Mounting brackets [1)]

Figure	Material	Description	Measuring range sensor (amount of required brackets)	Model name	Part no.
	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw)	Braket for low mounting	107 mm ... 251 mm (2 pcs.) 287 mm ... 431 mm (3 pcs.) 467 mm ... 647 mm (4 pcs.) 683 mm ... 791 mm (5 pcs.) 827 mm ... 1,007 mm (6 pcs.)	BEF-WNL01MPA	2065973
	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw)	Braket for lateral mounting	107 mm ... 251 mm (2 pcs.) 287 mm ... 431 mm (3 pcs.) 467 mm ... 647 mm (4 pcs.) 683 mm ... 791 mm (5 pcs.) 827 mm ... 1,007 mm (6 pcs.)	BEF-WNZ01MPA	2065577

[1)] For measuring application with separate encoder (e.g. magnet).

Magnets

Figure	Dimensions	Model name	Part no.
	3.2 mm x 6 mm x 15.2 mm	Magnet	5327349

Plug connectors and cables

Connecting cable (female connector-open)

M8, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** PVC
- **Locking nut material:** stainless steel (V4A/1.4404/316L)

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-0804-G02M	6009870
			5 m, 4-wire	DOL-0804-G05M	6009872
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-0804-W02M	6009871
			5 m, 4-wire	DOL-0804-W05M	6009873

Female connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 4-pin, straight	Screw-type terminals	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Screw-type terminals	DOS-0804-W	6009975

Male connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 4-pin, straight	Screw-type terminals	STE-0804-G	6037323

For additional accessories including dimensional drawings, please see page F-123/H-137.

C

D

Reliable, high-performance, rugged – magnetic cylinder sensors from SICK for the T-slot

Magnetic cylinder sensors from SICK offer the perfect option for all conventional pneumatic actuators with T-slots. They are precisely tailored for the different nut tolerances. Thanks to the huge range of magnetic cylinder sensors to choose from, we can meet your every need. Drop-in mounting, short, compact design with enormous retaining force, combination bolt, safe switching point detection, sensors with two switching points, and universal mounting options using an adapter make it clear: Magnetic cylinder sensors from SICK are prepared for all installation sites and situations.

- Simple adjustment in nearly all conventional pneumatic cylinders, linear slides, and grippers with T-slots
- Time-saving mounting thanks to innovative and user-friendly mounting equipment
- Increased sensor service life due to enclosure rating up to IP 69K
- Simple and time-saving installation and replacement due to drop-in mounting. It is not necessary to remove the end caps.
- Maximum diversity in supply: PNP/NPN, reed 3-wire, reed 2-wire, reed for high-voltage applications, sensors with two switching points in one housing, variants with ATEX 3D/3G, and weld immune sensors

8016544/2013-09-10

D

Sensors for T-slot cylinders

Overview of sensors for T-slot cylinders

	Cylinder type							Housing material		
	T-slot	T-slot	Round body	Dove-tail groove	Tie-rod	Profile	SMC rail (E)CDQ2 (T-slot)	Plastic	PTFE/teflon	Metal
MZ2Q-T										
MZ2Q-T	■		■	■	■	■	■	■		
MZ2Q-T with IO-Link	■		■	■	■	■	■	■		
MZT8										
MZT8	■		■	■	■	■	■	■		
MZT6										
MZT6 – short stroke	■		■	■	■	■	■	■		
MZT6 ATEX										
MZT6 ATEX	■		■	■	■	■	■	■		
MZT1										
MZT1	■		■	■	■	■	■			
RZT6										
RZT6 – AC/DC 3-wire	■		■	■	■	■	■	■		
RZT6 – AC/DC 2-wire	■		■	■	■	■	■	■		
RZT1										
RZT1 – AC/DC 3-wire	■		■	■	■	■	■	■		
RZT1 – AC/DC 2-wire	■		■	■	■	■	■	■		
MZU2										
MZU2		■			■	■			■	■

D

	Switching output/analog output					Special features								Page
	PNP (Current sourcing output)	NPN (Current sinking output)	Reed	Normally closed	Normally open	IO-Link	IP 69K	Teach-in	ASIC from SICK	Combination screw	2 programmable switching points	Weld immune	ATEX applications	
	■	■			■			■			■			D-48
	■				■	■		■			■			D-48
	■	■		■	■		■		■	■				D-56
	■	■		■	■				■	■				D-62
	■				■				■	■			■	D-68
	■	■		■	■									D-74
			■		■									D-80
			■		■									D-80
			■		■									D-86
			■	■	■									D-86
	■				■							■		D-92

D

Product family overview

			
	MZ2Q-T	**MZT8**	
	Magnetic cylinder sensors with two individually adjustable switching points	Compact, resistant, easily installed	
Technical data overview			
Output function	NO	NO / NC	
IO-Link	✔	–	
Teach-in	✔	–	
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	
Housing length	40 mm	24 mm	
Supply voltage	12 V DC ... 30 V DC	10 V DC ... 30 V DC	
At a glance			
	• Magnetic cylinder sensor for all conventional pneumatic cylinders, linear slides, and grippers with T-slots • Easy adjustment of two switching points via teach-in pushbutton • Detection range up to 50 mm stroke • Drop-in mounting from above simplifies handling and assembly	• Fits into all commonly used cylinders, linear slides and grippers with T-slots and it can be also applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets • Complete range with PNP/ NPN, PUR and PVC cable , M8 and M12 connector • Combined Allen and flathead installation screw • Very short sensor housing to install on short stroke cylinders • LED function indicator	
Detailed information	➜ D-48	➜ D-56	

D

	 **MZT6**	 **MZT6 ATEX**
	Widest portfolio for versatile tasks	The ATEX solution for the T-slot
	NO / NC	NO
	–	–
	–	–
	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2
	31.5 mm	31.5 mm
	10 V DC ... 30 V DC	18 V DC ... 30 V DC
	• Compact housing design • Combined Allen and flathead installation screw • LED function indicator • For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets	• ATEX 3D / 3G and ATEX 3G • Compact housing design • Combined Allen and flathead installation screw • LED function indicator • For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets
	→ D-62	→ D-68

D

Product family overview

			
	MZT1	**RZT6**	
	The economical solution for pneumatic cylinders with T-slot	Widest portfolio for versatile tasks	
Technical data overview			
Output function	NO / NC	NO	
IO-Link	–	–	
Teach-in	–	–	
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	
Housing length	30.5 mm	31.5 mm	
Supply voltage	10 V DC ... 30 V DC	10 V AC/DC ... 30 V AC/DC 10 V AC/DC ... 120 V AC/DC	
At a glance			
	• Compact housing design • Complete range with PNP / NPN, PUR and PVC cable , M8 and M12 connector • LED function indicator • For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets	• Compact housing design • Combined Allen and flathead installation screw • LED function indicator • For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets	
Detailed information	➜ D-74	➜ D-80	

D

		
	RZT1	**MZU2**
	The economical solution for pneumatic cylinders with T-slot	The weld-field immune cylinder sensor
	NO / NC	NC
	–	–
	–	–
	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	Profile cylinders Tie-rod cylinders T-slot
	30.5 mm	48 mm
	10 V AC/DC ... 30 V AC/DC 10 V AC/DC ... 120 V AC/DC 10 V AC/DC ... 230 V AC/DC	10 V DC ... 30 V DC
	• Compact housing design • Complete range with Reed 3-wire, Reed 2-wire, and Reed 230 V version • LED function indicator • For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets	• Immune to all welding electrical fields: AC, DC, medium frequency (1,000 Hz) • Output state is maintained during the welding process; sensor is switchable again once welding is completed • 2 LEDs: yellow status indicator, green status indicator • Flexible mounting options for various cylinder types due to mounting adapters: tie-rod and integrated profile cylinders, T-slot and short-stroke cylinders
	→ D-86	→ D-92

D

Magnetic cylinder sensors with two individually adjustable switching points

Product description

The MZ2Q-T magnetic cylinder sensors from SICK make it possible to detect two end positions or intermediary positions on pneumatic cylinders, grippers, or slides using just one sensor. This is achieved by using two individually adjustable switching points in one sensor housing. Unlike conventional solutions, this is easier, quicker, and more economical, since only one slot is occupied. This reduces the mounting and cabling effort by half while providing an efficient application solution.

At a glance

- Magnetic cylinder sensor for all conventional pneumatic cylinders, linear slides, and grippers with T-slots
- Easy adjustment of two switching points via teach-in pushbutton
- Detection range up to 50 mm stroke
- Drop-in mounting from above simplifies handling and assembly

Your benefits

- One sensor with two adjustable switching points reduces installation time and costs
- Highest levels of flexibility thanks to a detection range up to 50 mm
- Reliable solution for precise pneumatic applications due to intuitive and accurate definition of two switching points
- Convenient installation and sensor replacement due to drop-in installation
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

IO-Link

Additional information

→ **www.mysick.com/en/MZ2Q-T**
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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

Cylinder type	T-slot
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2
Housing length	40 mm
Output type	PNP / NPN (depending on type)
Output function	NO
Teach-in	✔
Enclosure rating [1]	IP 67

[1] According to EN 60529.

Mechanics/electronics

Detection area	0 mm ... 50 mm
Supply voltage	12 V DC ... 30 V DC (depending on type)
Power consumption [1]	≤ 15 mA
Voltage drop	≤ 2.2 V
Output current I_a	≤ 100 mA
Protection class	III
Magnetic field sensitivity, typ. [2]	Adjustable
Hysteresis typ.	1 mT
Repeatability [3]	≤ 0.1 mT
IO-Link	✔ (depending on type)
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–20 °C ... +75 °C
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Thread size	M8 / M12 (depending on type)
Cable material	PUR
Conductor cross-section	0.08 mm²

[1] Without load.

[2] Two switching points; up to 40 mT.

[3] Ub and Ta constant.

D

Ordering information

MZ2Q-T

- **IO-Link:** –
- **Supply voltage:** 12 V DC ... 30 V DC
- **Output function:** NO

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable, 4-wire, 2 m	Cd-033	MZ2Q-FTZPS-KU0	1029845
	Cable, 4-wire, 5 m	Cd-033	MZ2Q-FTZPS-KUB	1045267
	Cable with connector M8, 4-pin, 0.3 m	Cd-032	MZ2Q-FTZPS-KP0	1029846
	Cable with connector M8, 4-pin, with knurled nuts, 0.5 m	Cd-032	MZ2Q-FTZPS-KR0	1041322
	Cable with connector M12, 4-pin, with knurled nuts, 0.3 m	Cd-032	MZ2Q-FTZPS-KQ0	1041323
NPN	Cable, 4-wire, 2 m	Cd-033	MZ2Q-FTZNS-KU0	1048103

MZ2Q-T with IO-Link

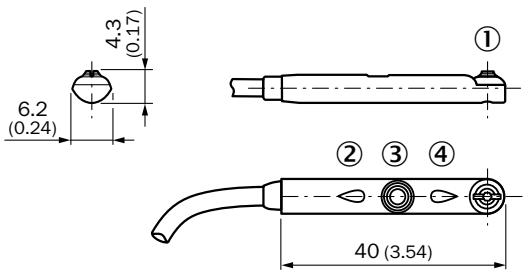
- **IO-Link:** ✔
- **Supply voltage:** 15 V DC ... 30 V DC
- **Output function:** NO

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable with connector M12, 4-pin, 0.3 m	Cd-032	MZ2Q-TSLPS-KQ0	1042228

Dimensional drawings

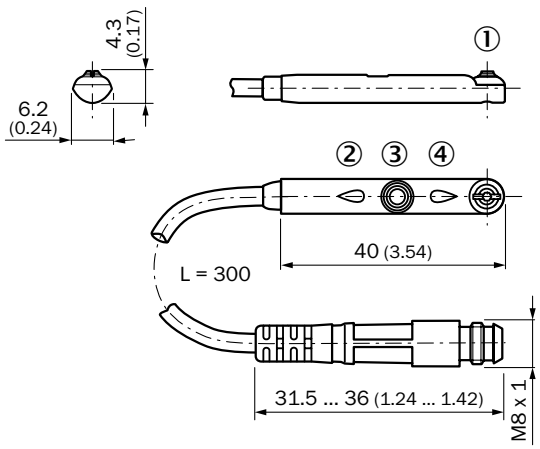
Dimensions in mm (inch)

Cable



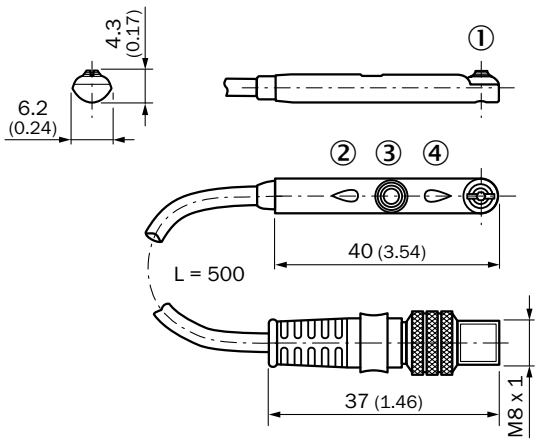
① Fixing screw
② LED indicator
③ Teach-in button
④ LED indicator

Cable with connector M8



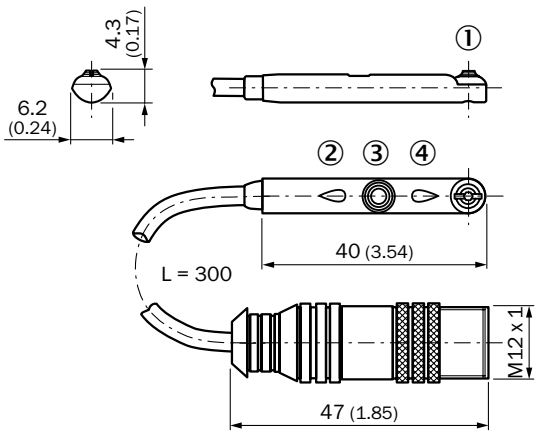
① Fixing screw
② LED indicator
③ Teach-in button
④ LED indicator

Cable with connector M8, with knurled nuts



① Fixing screw
② LED indicator
③ Teach-in button
④ LED indicator

Cable with connector M12, with knurled nuts

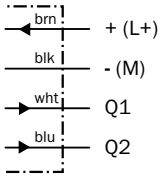


① Fixing screw
② LED indicator
③ Teach-in button
④ LED indicator

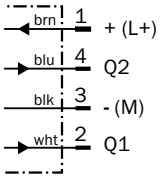
Connection diagram

D

Cd-033



Cd-032



Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

D

Plug connectors and cables

Connecting cable (female connector-open)

M8, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** PVC
- **Locking nut material:** stainless steel (V4A/1.4404/316L)

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-0804-G02M	6009870
			5 m, 4-wire	DOL-0804-G05M	6009872
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-0804-W02M	6009871
			5 m, 4-wire	DOL-0804-W05M	6009873

M12, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02M	6009382
			5 m, 4-wire	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled, with 3 LED's	Cable, open conductor heads	2 m, 4-wire	DOL-1204-L02M	6027945
			5 m, 4-wire	DOL-1204-L05M	6027944
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02M	6009383
			5 m, 4-wire	DOL-1204-W05M	6009867

D

Female connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 4-pin, straight	Screw-type terminals	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Screw-type terminals	DOS-0804-W	6009975

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

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

Male connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 4-pin, straight	Screw-type terminals	STE-0804-G	6037323

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M12, 4-pin, straight	Screw-type terminals	STE-1204-G	6009932
	Connector, M12, 4-pin, angled	Screw-type terminals	STE-1204-W	6022084

D

For additional accessories including dimensional drawings, please see page F-123/H-137.

D

Compact, resistant, easily installed

D

Product description

The MZT8 magnetic cylinder sensor from SICK is a flexible solution for piston position detection in pneumatic actuators. Due to easy mounting and installation via drop-in and a combined Allen and flathead screw, the new T-slot sensor is ideal for all commonly used cylinders, linear slides and grippers with T-slots. SICK' s proprietary GMR technology (giant magneto resistive) as well as the SICK-ASIC (application specific integrated circuit) guarantee precise one-time switching while eliminating false signals which leads to an increased machine throughput. Depending on the version, the MZT8 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 also install the MZT8 on short stroke cylinders.

At a glance

- Fits into all commonly used cylinders, linear slides and grippers with T-slots and it can be also applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets
- Complete range with PNP/ NPN, PUR and PVC cable , M8 and M12 connector
- Combined Allen and flathead installation screw
- Very short sensor housing to install on short stroke cylinders
- LED function indicator
- IP 67 / IP 68 / IP 69K enclosure rating (depending on type)

Your benefits

- Best-in-class switching performance for precise piston position
- Reduced maintenance cost as the sensor keeps its position under shock and vibration and does not move out
- Increased machine throughput thanks to SICK' s proprietary GMR technology (giant magneto resistive) as well as the SICK-ASIC (application specific integrated circuit) that ensure 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.
- Extremely rugged housing – rated for IP 67 respectively IP 68 and IP 69K, enlarging sensor life time

→ **www.mysick.com/en/MZT8**

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.

Additional information

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

Cylinder type	T-slot
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2
Housing length	24 mm
Output type	PNP / NPN (depending on type)
Switching frequency typ.	1,000 Hz
Output function	NO / NC (depending on type)
Enclosure rating	IP 67 [1] IP 68 [1] IP 68, IP 69K [1], [2] (depending on type)

[1] According to EN 60529 (IP 67/IP 68)

[2] According to DIN 40050 (IP 69K)

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC
Power consumption [1]	≤ 10 mA
Voltage drop	≤ 2.2 V
Output current I_a	≤ 200 mA
Overrun distance typ.	3 mm / 9 mm (depending on type)
Protection class	III
Magnetic field sensitivity, typ.	2.6 mT / 2.8 mT (depending on type)
Hysteresis typ.	≤ 0.5 mT
Repeatability [2]	≤ 0.1 mT
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–30 °C ... +80 °C
Shock/vibration	30 g, 11 ms / 10 ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Housing cap material	PA12
Thread size	M8 / M12 (depending on type)
Cable material	PVC / PUR (depending on type)
Conductor cross-section	0.12 mm² / 0.14 mm² (depending on type)

[1] Without load.

[2] Ub and Ta constant.

D

Ordering information

MZT8 – overrun distance short

- **Overrun distance typ.:** 3 mm
- **Magnetic field sensitivity, typ.:** 2.6 mT

Output type	Output function	Connection type	Cable material	Enclosure rating	Connection diagram	Model name	Part no.
PNP	NO	Cable, 3-wire, 2 m	PVC	IP 67 [1], IP 69K [2]	Cd-001	MZT8-03VPS-KW0	1044349
			PUR	IP 68 [1], IP 69K [2]	Cd-001	MZT8-03VPS-KU0	1044469
		Cable, 3-wire, 3 m	PUR	IP 68 [1], IP 69K [2]	Cd-001	MZT8-03VPS-KUA	1044466
		Cable, 3-wire, 5 m	PVC	IP 67 [1], IP 69K [2]	Cd-001	MZT8-03VPS-KWB	1048314
			PUR	IP 68 [1], IP 69K [2]	Cd-001	MZT8-03VPS-KUB	1044470
		Cable, 3-wire, 10 m	PUR	IP 68 [1], IP 69K [2]	Cd-001	MZT8-03VPS-KUD	1054051
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KP0	1044458
		Cable with connector M8, 3-pin, 0.75 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KPD	1044461
		Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KRD	1044464
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KR0	1044459
		Cable with connector M8, 3-pin, with knurled nuts, 5 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KRB	1044463
		Cable with connector M12, 3-pin, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KQ0	1044460
		Cable with connector M12, 3-pin, 1 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPS-KQD	1058317
	NC	Cable, 3-wire, 2 m	PUR	IP 68 [1], IP 69K [2]	Cd-003	MZT8-03VPO-KU0	1044931
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-03VPO-KP0	1044930
NPN	NO	Cable, 3-wire, 2 m	PVC	IP 68 [1], IP 69K [2]	Cd-001	MZT8-03VNS-KW0	1044468
			PUR	IP 68 [1], IP 69K [2]	Cd-001	MZT8-03VNS-KU0	1044934
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-03VNS-KP0	1044932
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	IP 68 [1]	Cd-002	MZT8-03VNS-KR0	1044935

[1] According to EN 60529 (IP 67/IP 68).

[2] According to DIN 40050 (IP 69K).

MZT8 – overrun distance long

- **Overrun distance typ.:** 9 mm
- **Magnetic field sensitivity, typ.:** 2.8 mT

Output type	Output function	Connection type	Cable material	Enclosure rating	Connection diagram	Model name	Part no.
PNP	NO	Cable, 3-wire, 2 m	PUR	IP 68 [1], IP 69K [2]	Cd-001	MZT8-28VPS-KU0	1048049
		Cable, 3-wire, 5 m	PVC	IP 67 [1], IP 69K [2]	Cd-001	MZT8-28VPS-KWB	1057030
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-28VPS-KP0	1048048
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	IP 68 [1]	Cd-002	MZT8-28VPS-KR0	1048050
		Cable with connector M12, 3-pin, 0.3 m	PUR	IP 68 [1]	Cd-002	MZT8-28VPS-KQ0	1048051
		Cable with connector M12, 3-pin, 0.5 m	PUR	IP 68 [1]	Cd-002	MZT8-28VPS-KQD	1058311

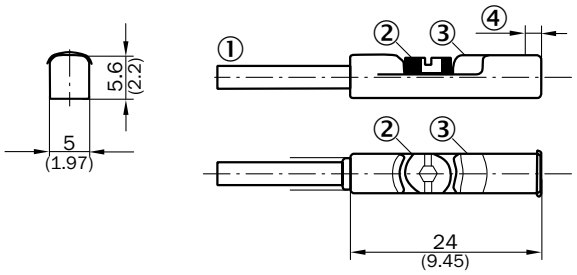
[1] According to EN 60529 (IP 67/IP 68).

[2] According to DIN 40050 (IP 69K).

Dimensional drawings

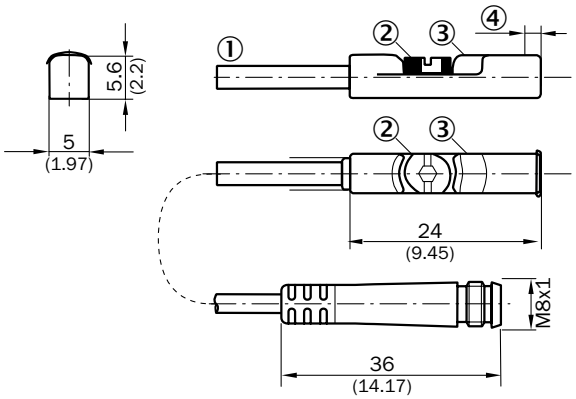
Dimensions in mm (inch)

Cable



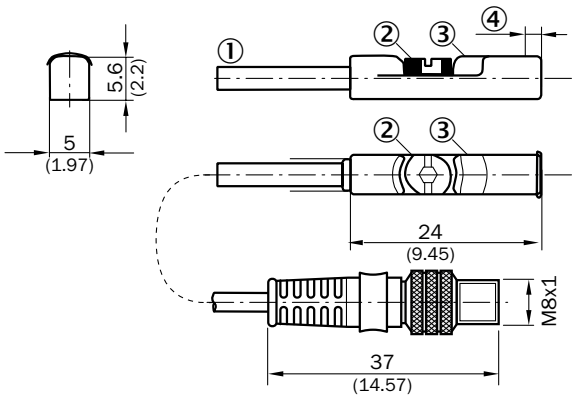
① Connection
② Fixing screw
③ LED indicator
④ Position sensor element
Overrun distance short: 2 mm
Overrun distance long: 1.7 mm

Cable with connector M8



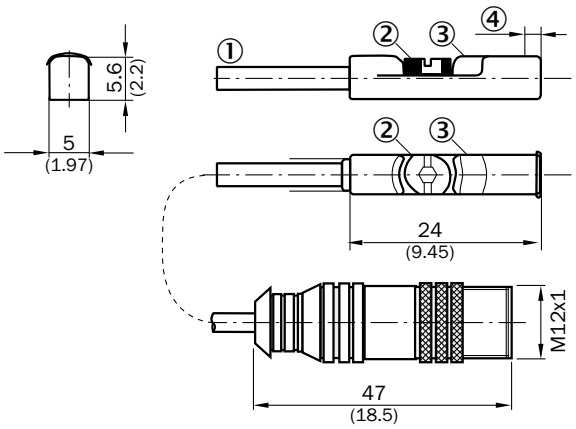
① Connection
② Fixing screw
③ LED indicator
④ Position sensor element
Overrun distance short: 2 mm
Overrun distance long: 1.7 mm

Cable with connector M8, with knurled nuts



① Connection
② Fixing screw
③ LED indicator
④ Position sensor element
Overrun distance short: 2 mm
Overrun distance long: 1.7 mm

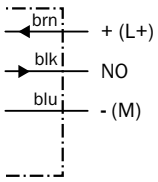
Cable with connector M12



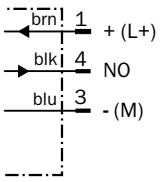
① Connection
② Fixing screw
③ LED indicator
④ Position sensor element
Overrun distance short: 2 mm
Overrun distance long: 1.7 mm

Connection diagram

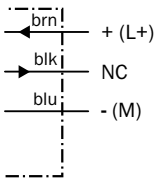
Cd-001



Cd-002



Cd-003



Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

D

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

D

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

Widest portfolio for versatile tasks

D

Product description

The MZT6 magnetic cylinder sensor is used for determining the positions of pistons in pneumatic cylinders. The MZT6 can be mounted by dropping it directly into the T-slot from above. With the patented GMR (giant magneto-resistive) technology from SICK and SICK ASIC (application-specific integrated circuit), the switching response of the MZT6 is unsurpassed. The MZT6 features a leakproof design that is highly resistant to shock, vibration and liquids, making it suitable for harsh environments.

At a glance

- Compact housing design
- Combined Allen and flathead installation screw
- LED function indicator
- For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets

Your benefits

- Reduced maintenance cost as the sensor keeps its position under shock and vibration and does not move out
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement.
- Flexible installation via Allen wrench or flathead screwdriver
- Leakproof design with high resistance to liquids increases application reliability

Additional information

→ **www.mysick.com/en/MZT6**

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.

Detailed technical data

Features

Cylinder type	T-slot
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2
Housing length	31.5 mm
Output type	PNP / NPN (depending on type)
Switching frequency typ.	1,000 Hz
Output function	NO / NC (depending on type)
Enclosure rating	IP 67 [1]

[1] According to EN 60529.

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC
Power consumption [1]	≤ 10 mA
Voltage drop	≤ 2.2 V
Output current I_a	≤ 200 mA
Overrun distance typ.	3 mm
Protection class	III
Magnetic field sensitivity, typ.	2.6 mT
Hysteresis typ.	≤ 0.5 mT
Repeatability [2]	≤ 0.1 mT
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–30 °C ... +100 °C (depending on type)
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Thread size	M8 / M12 (depending on type)
Cable material	PVC / PUR (depending on type)
Conductor cross-section	0.12 mm² / 0.14 mm² (depending on type)

[1] Without load.

[2] Ub and Ta constant.

D

Ordering information

MZT6 – overrun distance short

- **Overrun distance typ.:** 3 mm
- **Magnetic field sensitivity, typ.:** 2.6 mT

Output type	Output function	Connection type	Cable material	Enclosure rating [1]	Connection diagram	Model name	Part no.
PNP	NO	Cable, 3-wire, 2 m	PUR	IP 67	Cd-001	MZT6-03VPS-KU0	1043369
			PVC	IP 67	Cd-001	MZT6-03VPS-KW0	1023970
		Cable, 3-wire, 5 m	PVC	IP 67	Cd-001	MZT6-03VPS-KWB	1025809
			PUR	IP 67	Cd-001	MZT6-03VPS-KUB	1043407
		Cable, 3-wire, 10 m	PVC	IP 67	Cd-001	MZT6-03VPS-KWD	1026246
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 67	Cd-002	MZT6-03VPS-KP0	1023971
		Cable with connector M8, 3-pin, 0.75 m	PUR	IP 67	Cd-002	MZT6-03VPS-KPD	1025642
		Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	PUR	IP 67	Cd-002	MZT6-03VPS-KRD	1025872
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	IP 67	Cd-002	MZT6-03VPS-KR0	1023972
		Cable with connector M8, 3-pin, with knurled nuts, 5 m	PUR	IP 67	Cd-002	MZT6-03VPS-KRB	1027089
		Cable with connector M12, 3-pin, 0.3 m	PUR	IP 67	Cd-002	MZT6-03VPS-KQ0	1025550
	NC	Cable, 3-wire, 10 m	PVC	IP 67	Cd-003	MZT6-03VPO-KWD	1029639
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 67	Cd-004	MZT6-03VPO-KP0	1028741
		Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	PUR	IP 67	Cd-004	MZT6-03VPO-KRD	1048294
NPN	NO	Cable, 3-wire, 2 m	PVC	IP 67	Cd-001	MZT6-03VNS-KW0	1029401
		Cable with connector M8, 3-pin, 0.3 m	PUR	IP 67	Cd-002	MZT6-03VNS-KP0	1029402

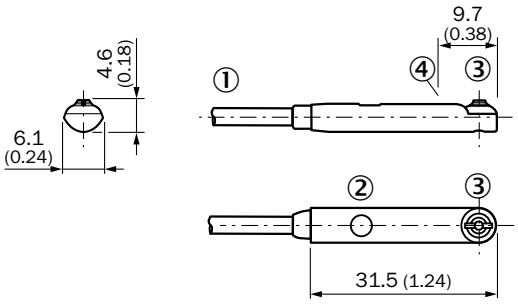
[1] According to EN 60529.

D

Dimensional drawings

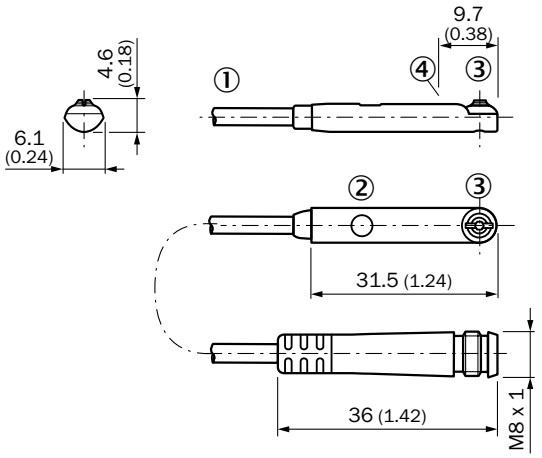
Dimensions in mm (inch)

Cable



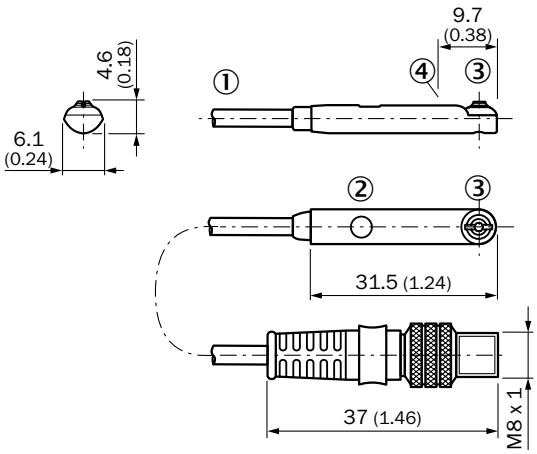
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8



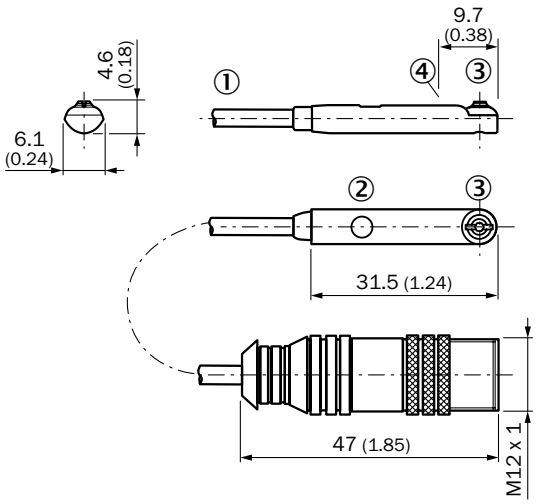
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8, with knurled nuts



① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M12

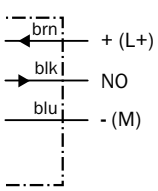


① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

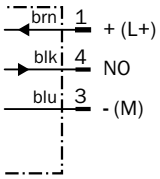
D

Connection diagram

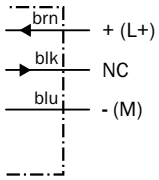
Cd-001



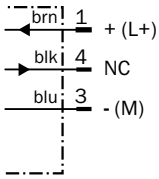
Cd-002



Cd-003



Cd-004



Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

D

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

D

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

The ATEX solution for the T-slot

D

Additional information

Product description

The MZT6 ATEX magnetic cylinder sensor is used for determining the positions of pistons in pneumatic cylinders in explosive environments. Like the MZT6, the MZT6 ATEX can be dropped into the T-slot from above. With SICK's GMR-ASIC technology, the switching response of the MZT6 ATEX is unsurpassed. The MZT6 ATEX features a leakproof design that is highly resistant to shock, vibration and liquids, making it suitable for harsh environments.

At a glance

- ATEX 3D / 3G and ATEX 3G
- Compact housing design
- Combined Allen and flathead installation screw
- LED function indicator
- For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets

Your benefits

- High switching performance for machine environments in explosion areas
- Highly resistant to shock and vibration enlarging sensor life time
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement.
- Flexible installation via Allen wrench or flathead screwdriver
- Leakproof design with high resistance to liquids increases application reliability

→ **www.mysick.com/en/MZT6_ATEX**
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.

Detailed technical data

Features

Cylinder type	T-slot
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2
Housing length	31.5 mm
Output type	PNP
Switching frequency typ.	1,000 Hz
Output function	NO
Enclosure rating	IP 67 [1]

[1] According to EN 60529.

Mechanics/electronics

Supply voltage	18 V DC ... 30 V DC
Power consumption [1]	≤ 10 mA
Voltage drop	≤ 2.2 V
Output current I_a	≤ 70 mA
Hazardous area category	3G / 3D / 3G (depending on type)
ATEX marking	Ex II 3G EEx nA II T4 X / Ex II 3D T100 °C IP 67 / Ex II 3G EEx nA II T4 X (depending on type)
Overrun distance typ.	3 mm
Protection class	III
Magnetic field sensitivity, typ.	2.6 mT
Hysteresis typ.	≤ 0.5 mT
Repeatability [2]	≤ 0.1 mT
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–20 °C ... +45 °C
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Thread size	M12 / M8 (depending on type)
Cable material	PVC / PUR (depending on type)
Conductor cross-section	0.14 mm² / 0.12 mm² (depending on type)
Special features	2x plug removal fuses

[1] Without load.

[2] Ub and Ta constant.

D

Ordering information

- **Overrun distance typ.:** 3 mm
- **Magnetic field sensitivity, typ.:** 2.6 mT
- **Switching output:** PNP
- **Output function:** NO

Hazardous area category	ATEX marking	Connection type	Cable material	Enclosure rating	Connection diagram	Model name	Part no.
3G, 3D	Ex II 3G EEx nA II T4 X, Ex II 3D T100 °C IP 67	Cable, 3-wire, 2 m	PVC	IP 67	Cd-001	MZT6-03VPS-KWX	1025827
		Cable with connector M12, 3-pin, 0.3 m	PVC	IP 67	Cd-002	MZT6-03VPS-KQX	1029161
3G	Ex II 3G EEx nA II T4 X	Cable with connector M8, 3-pin, 0.3 m	PUR	IP 67	Cd-002	MZT6-03VPS-KPX	1028629

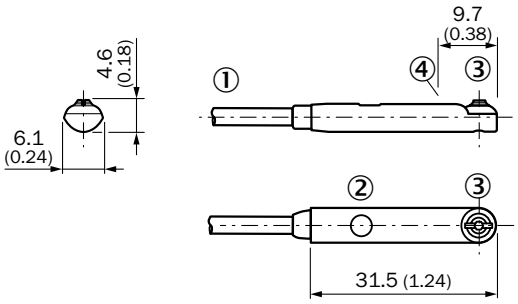
[1] According to EN 60529.

D

Dimensional drawings

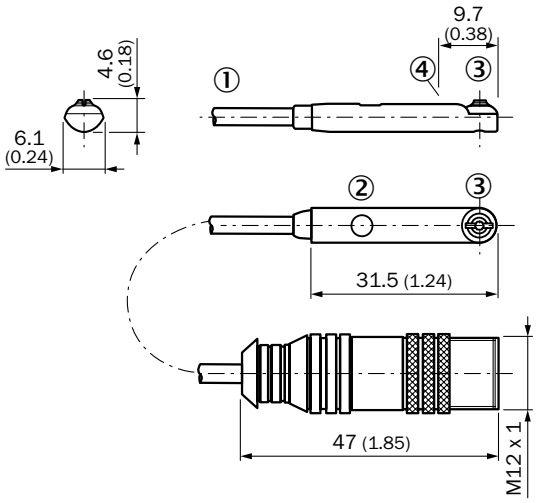
Dimensions in mm (inch)

Cable



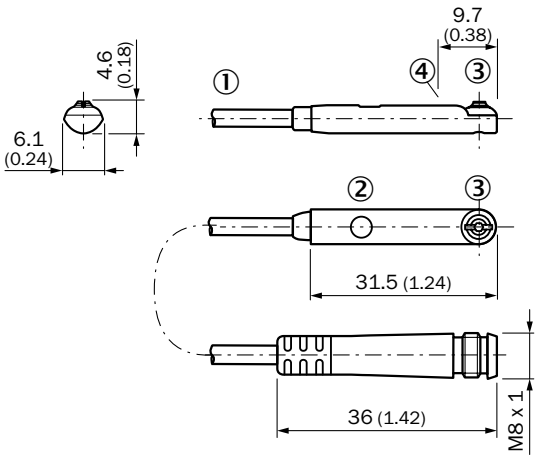
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M12



① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

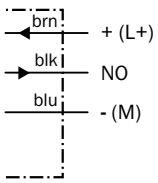
Cable with connector M8



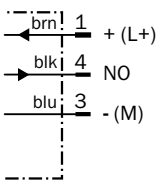
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Connection diagram

Cd-001



Cd-002



D

Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

D

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

D

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

The economical solution for pneumatic cylinders with T-slot

D

Additional information

Product description

The MZT1 magnetic cylinder sensor is used for determining the positions of pistons in pneumatic cylinders. The MZT1 is a rugged IP 67-rated sensor that can be mounted directly into the T-slot from above. MZT1 sensors are resistant to liquids and provide a reliable and economical solution for a variety of pneumatic applications.

At a glance

- Compact housing design
- Complete range with PNP / NPN, PUR and PVC cable , M8 and M12 connector
- LED function indicator
- For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets

Your benefits

- Economic solution providing reliable switching performance
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement.
- Resistant to shock, vibration and liquids, enlarging sensor life time

→ **www.mysick.com/en/MZT1**

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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

Cylinder type	T-slot
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2
Housing length	30.5 mm
Output type	PNP / NPN (depending on type)
Switching frequency typ.	5,000 Hz
Output function	NO / NC (depending on type)
Enclosure rating [1]	IP 67

[1] According to EN 60529.

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC
Power consumption [1]	≤ 10 mA
Voltage drop [2]	≤ 2 V
Output current I_a	≤ 100 mA
Overrun distance typ.	9 mm
Protection class	III
Magnetic field sensitivity, typ.	2.8 mT
Hysteresis typ.	≤ 0.5 mT
Repeatability [3]	≤ 0.1 mT
Output indicator	✔
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–25 °C ... +75 °C
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Thread size	M8 / M12 (depending on type)
Cable material	PUR / PVC (depending on type)
Conductor cross-section	0.14 mm² / 0.12 mm² (depending on type)

[1] Without load.
[2] At I_a max.
[3] Ub and Ta constant.

D

Ordering information

- **Overrun distance typ.:** 9 mm
- **Magnetic field sensitivity, typ.:** 2.8 mT

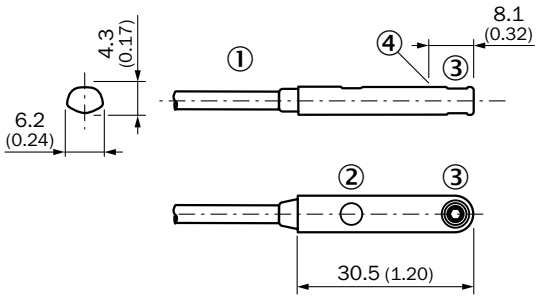
Output type	Output function	Connection type	Cable material	Connection diagram	Model name	Part no.
PNP	NO	Cable, 3-wire, 2 m	PUR	Cd-001	MZT1-03VPS-KU0	1027621
			PVC	Cd-001	MZT1-03VPS-KW0	1016809
		Cable, 3-wire, 5 m	PUR	Cd-001	MZT1-03VPS-KUB	1018999
		Cable with connector M8, 3-pin, 0.3 m	PUR	Cd-002	MZT1-03VPS-KP0	1016910
		Cable with connector M12, 3-pin, 0.3 m	PUR	Cd-002	MZT1-03VPS-KQ0	1022188
		Cable with connector M12, 3-pin, 0.6 m	PUR	Cd-002	MZT1-03VPS-KQD	1029649
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	Cd-002	MZT1-03VPS-KR0	1019005
		Cable with connector M8, 3-pin, with knurled nuts, 3 m	PUR	Cd-002	MZT1-03VPS-KRA	1043063
NPN	NO	Cable, 3-wire, 2 m	PUR	Cd-001	MZT1-03VNS-KU0	1023009
		Cable with connector M8, 3-pin, 0.3 m	PUR	Cd-002	MZT1-03VNS-KP0	1017851
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	Cd-002	MZT1-03VNS-KR0	1027577
	NC	Cable, 3-wire, 2 m	PVC	Cd-003	MZT1-03VNO-KW0	1048285

D

Dimensional drawings

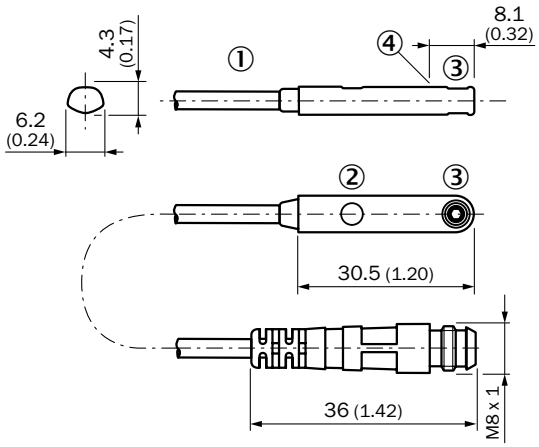
Dimensions in mm (inch)

Cable



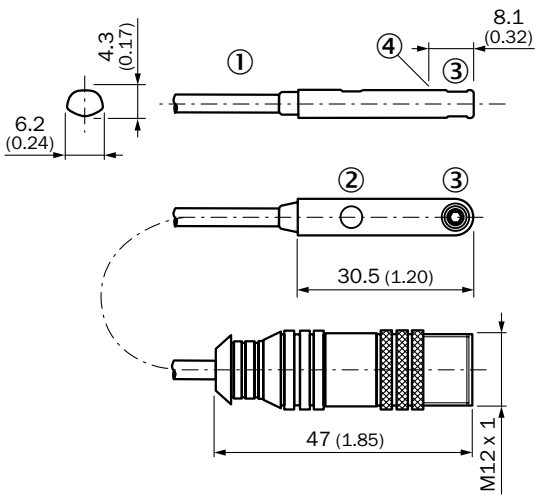
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8



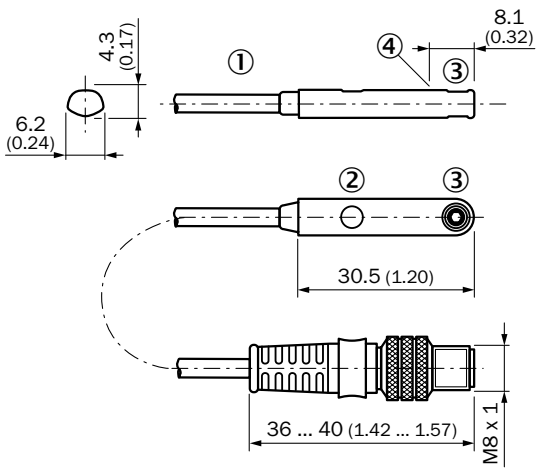
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M12



① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8, with knurled nuts

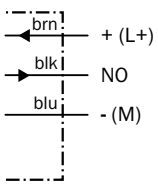


① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

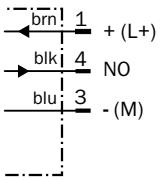
D

Connection diagram

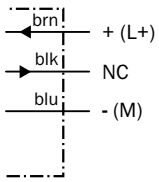
Cd-001



Cd-002



Cd-003



Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

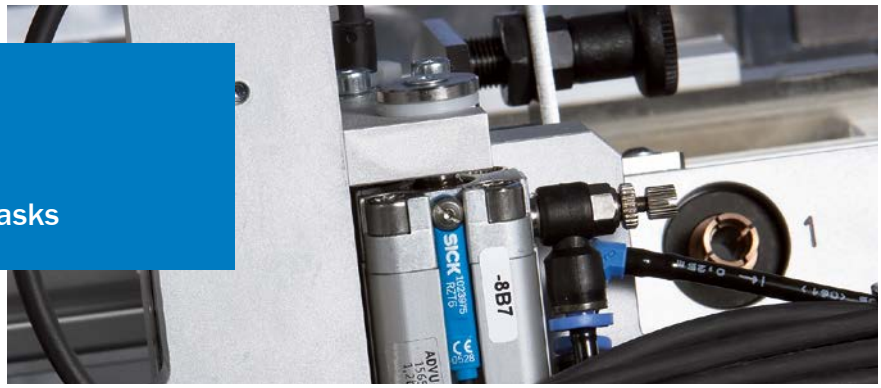
- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

D

Widest portfolio for versatile tasks



D

Product description

The RZT6 magnetic cylinder sensor is used for detecting the position of pistons in pneumatic cylinders. The RZT6 Reed sensor can be mounted directly into the T-slot from above via drop-in mounting. The RZT6's high resistance to shock, vibration and liquids makes it suitable for harsh environments.

At a glance

- Compact housing design
- Combined Allen and flathead fixing screw
- LED function indicator
- For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets

Your benefits

- High resistance to shock, vibration and liquids
- Drop-in T-slot mounting from above makes assembly easy
- Easy installation with Allen wrench or flat head screwdriver

Additional information

→ **www.mysick.com/en/RZT6**

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.

Detailed technical data

Features

	AC/DC 3-wire	AC/DC 2-wire
Cylinder type	T-slot	
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2	
Housing length	31.5 mm	
Output type	Reed	
Switching frequency typ.	400 Hz	
Output function	NO	
Enclosure rating	IP 67 [1]	

[1] According to EN 60529.

Mechanics/electronics

	AC/DC 3-wire	AC/DC 2-wire
Supply voltage	10 V AC/DC ... 30 V AC/DC	10 V AC/DC ... 120 V AC/DC
Power consumption	≤ 10 mA [1]	–
Voltage drop	≤ 0.1 V	≤ 3,5 V
Output current I_a	≤ 500 mA	≤ 100 mA
Switching power	≤ 6 W	
Overrun distance typ.	9 mm	
Protection class	III	II [2], [3], [4]
Magnetic field sensitivity, typ.	3 mT	
Hysteresis typ.	≤ 0.5 mT	
Repeatability [2]	≤ 0.1 mT	
Ambient operating temperature	–30 °C ... +80 °C	
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm	
EMC	According to EN 60947-5-2	
Housing material	Plastic	
Thread size	M8 / M12 (depending on type)	–
Cable material	PVC / PUR (depending on type)	PVC
Conductor cross-section	0.14 mm²	0.12 mm²

[1] Without load.

[2] Rated voltage AC (effective) / DC 120 V.

[3] Sensor may only be mounted as a complete unit in the slot.

[4] Overvoltage category II.

[5] Ub and Ta constant.

D

Ordering information

RZT6 – AC/DC 3-wire

- **Overrun distance typ.:** 9 mm
- **Magnetic field sensitivity, typ.:** 3 mT
- **Supply voltage:** 10 V AC/DC ... 30 V AC/DC
- **Output current I_a:** ≤ 500 mA
- **Output function:** NO

Connection	Cable material	Enclosure rating [1]	Connection diagram	Model name	Part no.
Cable, 3-wire, 2 m	PVC	IP 67	Cd-035	RZT6-03ZRS-KW0	1023974
Cable, 3-wire, 5 m	PVC	IP 67	Cd-035	RZT6-03ZRS-KWB	1025830
Cable, 3-wire, 10 m	PVC	IP 67	Cd-035	RZT6-03ZRS-KWD	1026752
Cable with connector M8, 3-pin, 0.3 m	PUR	IP 67	Cd-036	RZT6-03ZRS-KP0	1023973
Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	IP 67	Cd-036	RZT6-03ZRS-KR0	1023975
Cable with connector M8, 3-pin, with knurled nuts, 4 m	PUR	IP 67	Cd-036	RZT6-03ZRS-KRD	1028403
Cable with connector M12, 3-pin, 0.3 m	PUR	IP 67	Cd-036	RZT6-03ZRS-KQ0	1025549

[1] According to EN 60529.

D

RZT6 – AC/DC 2-wire

- **Overrun distance typ.:** 9 mm
- **Magnetic field sensitivity, typ.:** 3 mT
- **Supply voltage:** 10 V AC/DC ... 120 V AC/DC
- **Output current I_a:** ≤ 100 mA
- **Output function:** NO

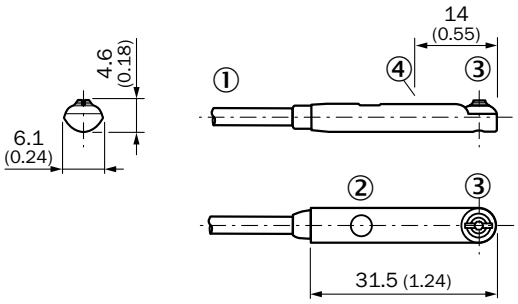
Connection	Cable material	Enclosure rating [1]	Connection diagram	Model name	Part no.
Cable, 2-wire, 2 m	PVC	IP 67	Cd-037	RZT6-03ZUS-KW0	1025522

[1] According to EN 60529.

Dimensional drawings

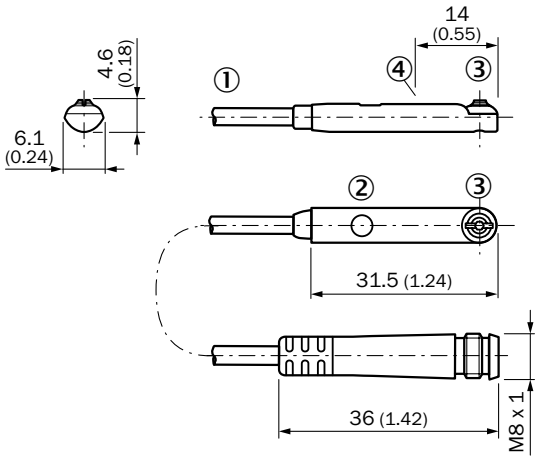
Dimensions in mm (inch)

Cable



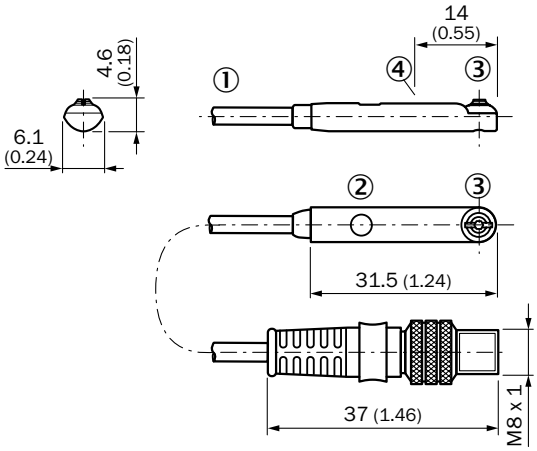
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8



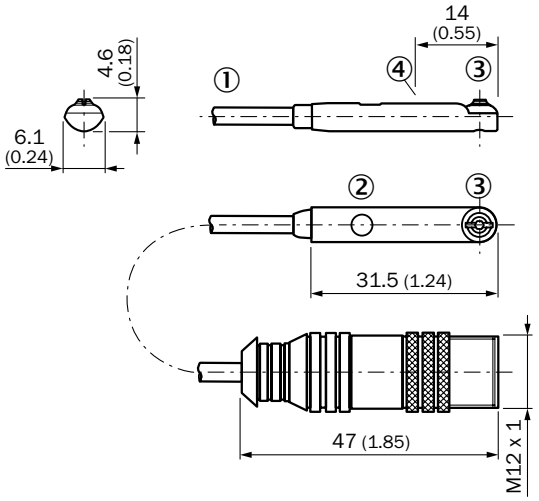
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8, with knurled nuts



① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M12

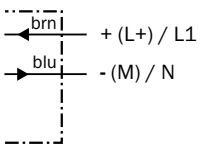


① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

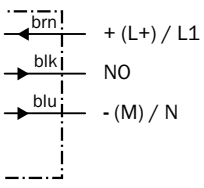
D

Connection diagram

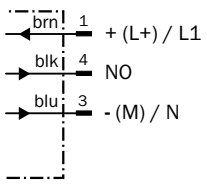
Cd-037



Cd-035



Cd-036



Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

D

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

D

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

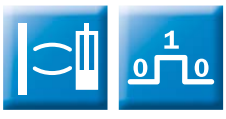
M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

The economical solution for pneumatic cylinders with T-slot



D

Additional information

Product description

The RZT1 magnetic cylinder sensor is used for determining the positions of pistons in pneumatic cylinders. The RZT1 s a rugged IP 67-rated reed sensor that is resistant to liquids. RZT1 sensors, which can be mounted directly into the T-slot from above, are a reliable and economical sensor solution for pneumatic cylinders.

At a glance

- Compact housing design
- Complete range with Reed 3-wire, Reed 2-wire, and Reed 230 V version
- LED function indicator
- For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets

Your benefits

- Drop-in T-slot mounting from above makes assembly easy
- Easy installation with Allen wrench
- Resistant to shock, vibration and liquids, enlarging sensor life time

→ **www.mysick.com/en/RZT1**

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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

	AC/DC 3-wire	AC/DC 2-wire – NC	AC/DC 2-wire – NO
Cylinder type	T-slot		
Cylinder types with adapter	Profile cylinders Tie-rod cylinders Round body cylinders Cylinders with dove-tail slot SMC rails CDQ2 SMC rails ECDQ2		
Housing length	30.5 mm		
Output type	Reed		
Switching frequency typ.	400 Hz		
Output function	NO		NC
Enclosure rating [1]	IP 67		

[1] According to EN 40050.

Mechanics/electronics

	AC/DC 3-wire	AC/DC 2-wire – NC	AC/DC 2-wire – NO
Supply voltage	10 V AC/DC ... 30 V AC/DC	10 V DC ... 30 V AC/DC 10 V DC ... 120 V AC/DC 10 V DC ... 230 V AC/DC (depending on type)	10 V AC/DC ... 120 V AC/DC
Voltage drop	≤ 0.1 V	≤ 3.5 V	
Output current I_a	≤ 500 mA	≤ 100 mA	
Switching power	≤ 6 W		
Overrun distance typ.	9 mm		
Protection class	III	II [1), 2), 3), 4)]/III (depending on type)	II [1), 2), 3)]
Magnetic field sensitivity, typ.	3 mT		
Hysteresis typ.	≤ 1.5 mT		
Repeatability [5]	≤ 0.2 mm	≤ 0.1 mm	
Output indicator	✔		–
Ambient operating temperature	–25 °C ... +75 °C		
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm		
EMC	According to EN 60947-5-2		
Housing material	Plastic		
Thread size	M8		–
Cable material	PVC / PUR (depending on type)		PVC
Conductor cross-section	0.14 mm²	0.12 mm²	

[1] Rated voltage AC (effective) / DC 120 V.

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

[3] Overvoltage category II.

[4] Rated voltage AC (effective) / DC 230 V.

[5] Ub and Ta constant.

D

Ordering information

RZT1 – AC/DC 3-wire

- **Overrun distance typ.:** 9 mm
- **Magnetic field sensitivity, typ.:** 3 mT
- **Repeatability:** ≤ 0.2 mm (Ub and Ta constant.)
- **Voltage drop:** ≤ 0.1 V
- **Output current I_a:** ≤ 500 mA

Output function	Protection class	Supply voltage	Connection	Cable material	Connection diagram	Model name	Part no.
NO	III	10 V AC/DC ... 30 V AC/DC	Cable, 3-wire, 2 m	PVC	Cd-035	RZT1-03ZRS-KW0	1016911
			Cable, 3-wire, 3 m	PVC	Cd-035	RZT1-03ZRS-KWA	1028079
			Cable, 3-wire, 5 m	PVC	Cd-035	RZT1-03ZRS-KWB	1018579
			Cable, 3-wire, 10 m	PVC	Cd-035	RZT1-03ZRS-KWD	1022786
			Cable with connector M8, 3-pin, 0.3 m	PUR	Cd-036	RZT1-03ZRS-KP0	1016912
			Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	PUR	Cd-036	RZT1-03ZRS-KR0	1019698

RZT1 – AC/DC 2-wire – NC

D

- **Overrun distance typ.:** 9 mm
- **Magnetic field sensitivity, typ.:** 3 mT
- **Repeatability:** ≤ 0.1 mm (Ub and Ta constant.)
- **Voltage drop:** ≤ 3.5 V
- **Output current I_a:** ≤ 100 mA

Output function	Protection class	Supply voltage	Connection	Cable material	Connection diagram	Model name	Part no.
NO	II [2), 3), 4)]	10 V AC/DC ... 230 V AC/DC	Cable, 2-wire, 2 m	PVC	Cd-037	RZT1-03ZUS-KW0	1046001
	II [1), 2), 3)]	10 V AC/DC ... 120 V AC/DC	Cable, 2-wire, 2 m	PUR	Cd-037	RZT1-03ZUS-KU0	1043567
			Cable, 2-wire, 2.5 m	PVC	Cd-037	RZT1-03ZUS-KWD	1025380
			Cable, 2-wire, 5 m	PVC	Cd-037	RZT1-03ZUS-KWB	1029602
	III	10 V AC/DC ... 30 V AC/DC	Cable with connector M8, 2-pin, 0.3 m	PUR	Cd-038	RZT1-03ZUS-KP0	1025381
NC	II [1), 2), 3)]	10 V AC/DC ... 120 V AC/DC	Cable, 2-wire, 2 m	PVC	Cd-037	RZT1-03ZU0-KW0	1026469

[1)] Rated voltage AC (effective) / DC 120 V.

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

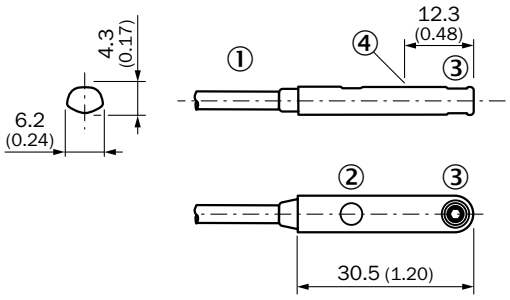
[3)] Overvoltage category II.

[4)] Rated voltage AC (effective) / DC 230 V.

Dimensional drawings

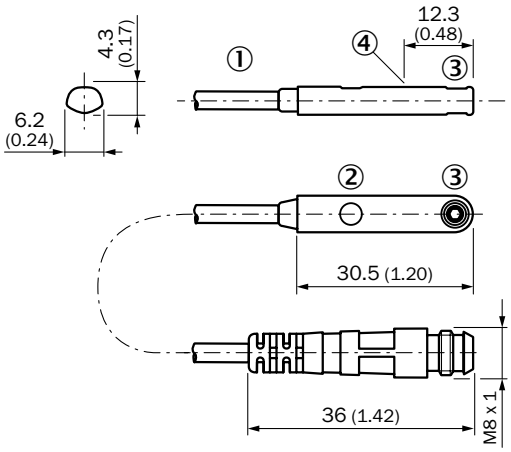
Dimensions in mm (inch)

Cable



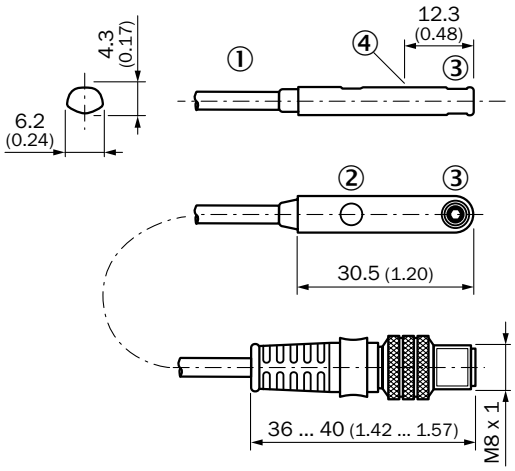
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Cable with connector M8



① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

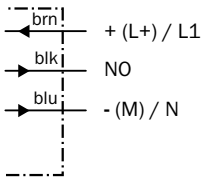
Cable with connector M8, with knurled nuts



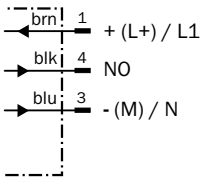
① Connection
② LED indicator
③ Fixing screw
④ Position sensor element

Connection diagram

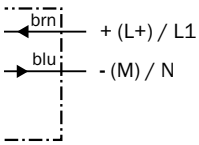
Cd-035



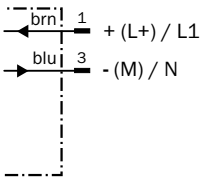
Cd-036



Cd-037



Cd-038



Recommended accessories

Brackets for cylinder sensors

For round body cylinders

Figure	Material	Description	Model name	Part no.
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25	5311171
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63	5311172
		Mounting bracket on round body cylinders with diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130	5311506

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2	2046440

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1	2046439

For cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1	2022703

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702

D

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

D

The weld-field immune cylinder sensor

D

Product description

The MZU2 magnetic cylinder sensor is specially designed for detecting the piston position of pneumatic cylinders in welding applications. The MZU2's rugged die-cast metal housing withstands harsh welding conditions. The MZU2 is immune to all electrical welding processes, including AC, DC, and medium frequency.

At a glance

- Immune to all welding electrical fields: AC, DC, medium frequency (1,000 Hz)
- Output state is maintained during the welding process; sensor is switchable again once welding is completed
- 2 LEDs: yellow status indicator, green status indicator
- Flexible mounting options for various cylinder types due to mounting adapters: tie-rod and integrated profile cylinders, T-slot and short-stroke cylinders

Your benefits

- Reliable cylinder position detection in welding environments that increases uptime
- Increased sensor life reduces maintenance costs due to tough metal housing with optional weld slag-immune Teflon™ coating
- Special weld-field immunity (WFI) sensor is immune to all electrical welding processes (AC, DC or medium frequency), which increases sensor life and reduces false signals

Additional information

→ **www.mysick.com/en/MZU2**

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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

Cylinder types with adapter	T-slot Tie-rod cylinder Profile cylinder
Output type	PNP
Switching frequency typ.	40 Hz
Output function	NO
Enclosure rating [1]	IP 67

[1] According to EN 60529.

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC
Power consumption [1]	≤ 18 mA
Voltage drop	≤ 2 V
Output current I_a	≤ 300 mA
Time delay before availability	≤ 20 ms
Dimensions (W x H x D)	18 mm x 48 mm x 28 mm
Protection class	III
Magnetic field sensitivity, typ.	3 mT
Repeatability [2]	≤ 0.1 mm
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–25 °C ... +75 °C
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Metal, Zinc diecast Metal, Zinc diecast, teflon coated (depending on type)
Sensing face material	Metal
Thread size	M12

[1] Without load.

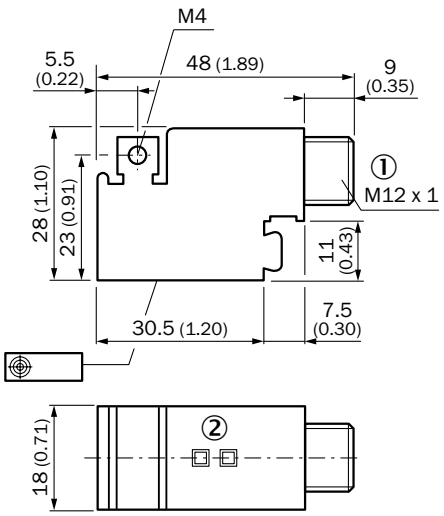
[2] Ub and Ta constant.

Ordering information

Electrical wiring	Connection	Housing material	Connection diagram	Model name	Part no.
DC 3-wire	Connector M12, 4-pin	Metal, Zinc diecast	Cd-007	MZU2-03VPS-DCM	1017450
		Metal, Zinc diecast, teflon coated	Cd-007	MZU2-03VPS-TCM	1017451

Dimensional drawing

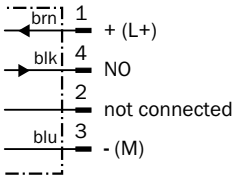
Dimensions in mm (inch)



① Connection
② LED indicator

Connection diagram

Cd-007



D

Recommended accessories

Brackets for cylinder sensors

For profile cylinders/tie-rod cylinders

Figure	Material	Description	Model name	Part no.
	Aluminum	Clamp piece for integrated profile cylinders up to 13 mm wide	BEF-KS-U2-P1	2019824
		Clamp piece for integrated profile cylinders up to 18 mm wide	BEF-KS-U2-P2	2019823
	Zinc diecast	Clamp piece for tie-rod cylinders	BEF-KS-U2-S1	4030922
	Zinc die-cast with teflon coating	Clamp piece for tie-rod cylinders	BEF-KS-U2-S1T	4031632
	Aluminum	Clamp piece for cylinders with T-slot or dove-tail slot	BEF-KS-U2-T1	2019822

Plug connectors and cables

Connecting cable (female connector-open)

M12, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02M	6009382
			5 m, 4-wire	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled, with 3 LED's	Cable, open conductor heads	2 m, 4-wire	DOL-1204-L02M	6027945
			5 m, 4-wire	DOL-1204-L05M	6027944
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02M	6009383
			5 m, 4-wire	DOL-1204-W05M	6009867

Female connector (ready to assemble)

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

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

Male connector (ready to assemble)

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M12, 4-pin, straight	Screw-type terminals	STE-1204-G	6009932
	Connector, M12, 4-pin, angled	Screw-type terminals	STE-1204-W	6022084

For additional accessories including dimensional drawings, please see page F-123/H-137.

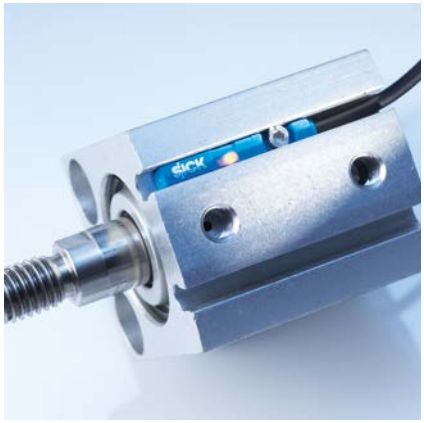
D

E

Reliable, high-performance, rugged – magnetic cylinder sensors from SICK for the C-slot

Magnetic cylinder sensors from SICK offer the perfect option for all conventional pneumatic actuators with C-slots. They are precisely tailored for different slot forms.
SICK offers a wide range of magnetic cylinder sensors to meet a variety of applications. Drop-in mounting, a short, compact and rugged design with strong retaining force, a combination screw, safe switching point detection, and an enclosure rating up to IP 69K make these magnetic cylinder sensors easy to install in nearly all installation sites and situations.

- Can be adjusted in all conventional pneumatic cylinders, linear slides, and grippers with C-slots
- Time-saving sensor mounting thanks to innovative and user-friendly mounting equipment
- Very short sensor housing means it can even be used in short-stroke cylinders
- Increased sensor service life due to enclosure rating up to IP 69K
- Simple and time-saving installation and replacement due to drop-in mounting. It is not necessary to remove the end caps.
- Maximum diversity in supply: PNP/NPN, reed 3-wire, reed 2-wire, reed for high-voltage applications, sensors with two switching points in one housing, and variants with an extremely rugged VISTAL® housing



8016544/2013-09-10
Subject to change without notice

Sensors for C-slot cylinders

E

Overview of sensors for C-slot cylinders

Sensors for C-slot cylinders	Cylinder type		Switching output/analog output				
	C-slot	SMC rail (E)CDQ2	PNP (Current sourcing output)	NPN (Current sinking output)	Reed	Normally open	
MZ2Q-C							
MZ2Q-C SMC	■	■	■	■		■	
MZ2Q-C Festo	■		■			■	
MZ2Q-C SMC IO-Link	■	■	■			■	
MZ2Q-C Festo IO-Link	■		■			■	
MZC1							
MZC1	■	■	■	■		■	
RZC1							
RZC1 – AC/DC 3-wire	■	■			■	■	
RZC1 – AC/DC 2-wire	■	■			■	■	

[1] Dependent on type.

E

	Special features								Page
	IO-Link	VISTAL®	IP 69K [1]	Teach-in	ASIC from SICK	Combination screw	2 programmable switching points	For short-stroke cylinders	
				■			■	■	E-102
				■			■	■	E-102
	■			■			■	■	E-102
	■			■			■	■	E-102
		■	■		■	■		■	E-110
		■	■		■	■		■	E-116
		■			■	■		■	E-116

E

Product family overview

MZ2Q-C

Magnetic cylinder sensors with two individually adjustable switching points

Technical data overview	
Output function	NO
IO-Link	✔
Teach-in	✔
Cylinder types with adapter	SMC rails CDQ2 SMC rails ECDQ2
Housing length	19.5 mm
Supply voltage	12 V DC ... 30 V DC

At a glance

- Magnetic cylinder sensor for all conventional pneumatic cylinders, linear slides, and grippers with C-slots
- Easy adjustment of two switching points via teach-in pushbutton
- Detection range up to 50 mm stroke
- Drop-in mounting from above simplifies handling and assembly

Detailed information ➜ E-102

E

		
	MZC1	**RZC1**
	Drop-in, install, done	Drop-in, install, done
	NO	NO
	–	–
	–	–
	SMC rails CDQ2 SMC rails ECDQ2	SMC rails CDQ2 SMC rails ECDQ2
	23.7 mm	26.3 mm
	10 V DC ... 30 V DC	5 V AC/DC ... 30 V AC/DC 5 V AC/DC ... 120 V AC/DC
	• 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 • LED function indicator • IP 67 / IP 68 / IP 69K enclosure rating (depending on type)	• 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 120 V version • Combined Allen and flathead installation screw • Very short sensor housing, making it easier to install on short stroke cylinders • LED function indicator • IP 67 / IP 68 / IP 69K enclosure rating (depending on type)
	➜ E-110	➜ E-116

E

Magnetic cylinder sensors with two individually adjustable switching points

Product description

The MZ2Q-C magnetic cylinder sensors from SICK make it possible to detect two end positions or intermediary positions on pneumatic cylinders, grippers, or slides using just one sensor. This is achieved by using two individually adjustable switching points in one sensor housing. Unlike conventional solutions, this is easier, quicker, and more economical, since only one slot is occupied. This reduces the mounting and cabling effort by half while providing an efficient application solution.

At a glance

- Magnetic cylinder sensor for all conventional pneumatic cylinders, linear slides, and grippers with C-slots
- Easy adjustment of two switching points via teach-in pushbutton
- Detection range up to 50 mm stroke
- Drop-in mounting from above simplifies handling and assembly

Your benefits

- One sensor with two adjustable switching points reduces installation time and costs
- Highest levels of flexibility thanks to a detection zone up to 50 mm
- Reliable solution for precise pneumatic applications due to intuitive and accurate definition of two switching points
- Convenient installation and sensor replacement due to drop-in installation
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

IO-Link

Additional information

→ **www.mysick.com/en/MZ2Q-C**
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.

Detailed technical data

Features

Cylinder type	C-slot
Cylinder types with adapter	SMC rails CDQ2 SMC rails ECDQ2
Housing length	19.5 mm
Output type	PNP / NPN (depending on type)
Output function	NO
Teach-in	✔
Enclosure rating [1]	IP 67

[1] According to EN 60529.

Mechanics/electronics

Detection area	0 mm ... 50 mm
Supply voltage	12 V DC ... 30 V DC
Power consumption [1]	≤ 15 mA
Voltage drop	≤ 2.2 V
Output current I_a	≤ 100 mA
Protection class	III
Magnetic field sensitivity, typ. [2]	Adjustable
Hysteresis typ.	1 mT
Repeatability [3]	≤ 0.1 mT
IO-Link	✔ (depending on type)
Reverse polarity protection	✔
Short-circuit protection	✔
Power-up pulse protection	✔
Ambient operating temperature	–20 °C ... +75 °C
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Sensing face material	Plastic
Thread size	M8 / M12 (depending on type)
Cable material	PUR
Conductor cross-section	0.08 mm²

[1] Without load.

[2] Two switching points; up to 40 mT.

[3] Ub and Ta constant.

E

Ordering information

MZ2Q-C for SMC-C-slot

- **IO-Link:** –
- **Output function:** NO

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable, 4-wire, 2 m	Cd-033	MZ2Q-CSSPSKU0	1042237
	Cable with connector M8, 4-pin, 0.3 m	Cd-032	MZ2Q-CSSPSKP0	1042238
	Cable with connector M8, 4-pin, with knurled nuts, 0.5 m	Cd-032	MZ2Q-CSSPSKR0	1042239
	Cable with connector M12, 4-pin, 0.3 m	Cd-032	MZ2Q-CSSPSKQ0	1042240
NPN	Cable, 4-wire, 3 m	Cd-033	MZ2Q-CSSNSKUA	1046234

MZ2Q-C for Festo-C-slot

- **IO-Link:** –
- **Output function:** NO

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable, 4-wire, 2 m	Cd-033	MZ2Q-CFSPSKU0	1042241
	Cable with connector M8, 4-pin, 0.3 m	Cd-032	MZ2Q-CFSPSKP0	1042242
	Cable with connector M12, 4-pin, 0.3 m	Cd-032	MZ2Q-CFSPSKQ0	1042244
	Cable with connector M8, 4-pin, with knurled nuts, 0.5 m	Cd-032	MZ2Q-CFSPSKR0	1042243

MZ2Q-C for SMC-C-slot with IO-Link output

- **IO-Link:** ✔
- **Output function:** NO

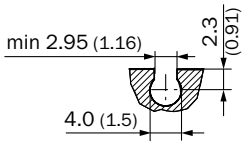
Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable with connector M12, 4-pin, 0.3 m	Cd-032	MZ2Q-CSLPSKQ0	1043696

MZ2Q-C for Festo-C-slot with IO-Link output

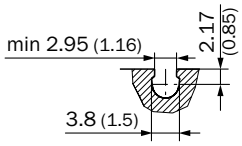
- **IO-Link:** ✔
- **Output function:** NO

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable with connector M12, 4-pin, 0.3 m	Cd-032	MZ2Q-CFLPSKQ0	1043697

SMC C-Nut



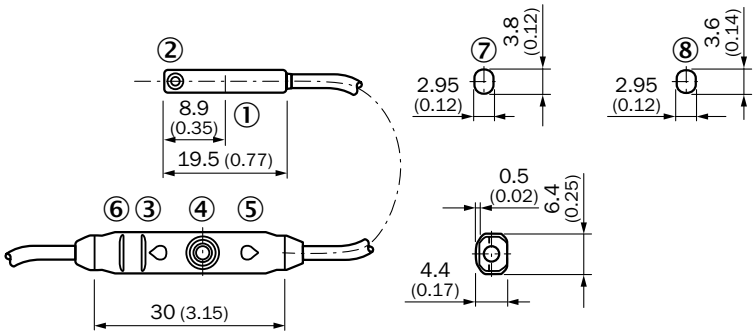
Festo C-Nut



Dimensional drawings

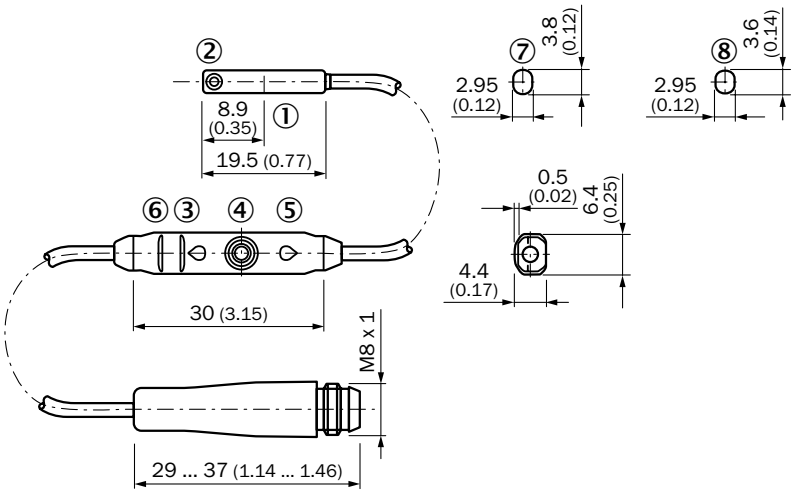
Dimensions in mm (inch)

Cable



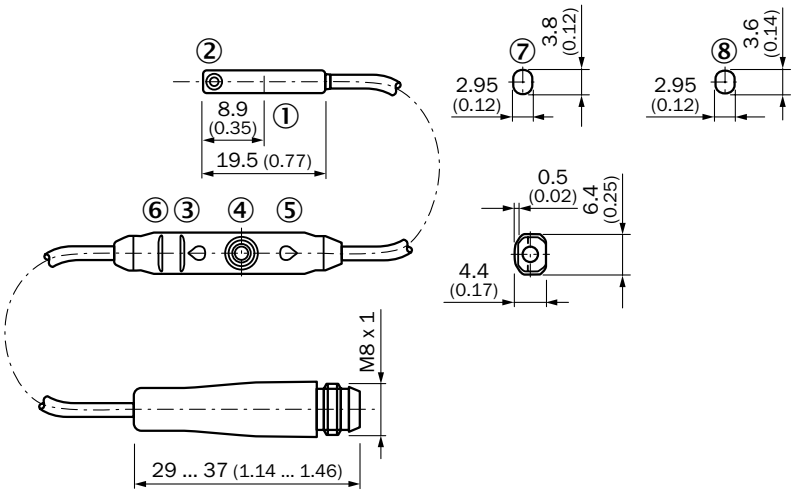
① Centre of sensor element
② Fixing screw
③ LED indicator
④ Teach-in button
⑤ LED indicator
⑥ Fixing for cable binding
⑦ For SMC/ Bimba cylinder
⑧ For festo cylinder

Cable with connector M8



① Centre of sensor element
② Fixing screw
③ LED indicator
④ Teach-in button
⑤ LED indicator
⑥ Fixing for cable binding
⑦ For SMC/ Bimba cylinder
⑧ For festo cylinder

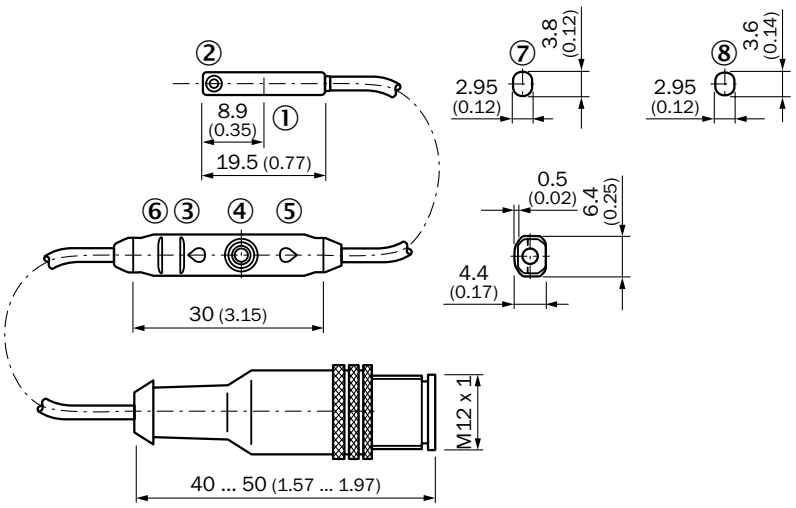
Cable with connector M8, with knurled nuts



① Centre of sensor element
② Fixing screw
③ LED indicator
④ Teach-in button
⑤ LED indicator
⑥ Fixing for cable binding
⑦ For SMC/ Bimba cylinder
⑧ For festo cylinder

E

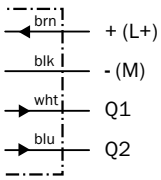
Cable with connector M12



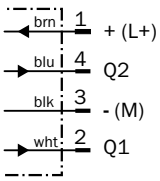
① Centre of sensor element
② Fixing screw
③ LED indicator
④ Teach-in button
⑤ LED indicator
⑥ Fixing for cable binding
⑦ For SMC/ Bimba cylinder
⑧ For festo cylinder

Connection diagram

Cd-033



Cd-032



E

Recommended accessories

Brackets for cylinder sensors

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TC2	2046442

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TC1	2046441

Plug connectors and cables

Connecting cable (female connector-open)

M8, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** PVC
- **Locking nut material:** stainless steel (V4A/1.4404/316L)

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-0804-G02M	6009870
			5 m, 4-wire	DOL-0804-G05M	6009872
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-0804-W02M	6009871
			5 m, 4-wire	DOL-0804-W05M	6009873

M12, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02M	6009382
			5 m, 4-wire	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled, with 3 LED's	Cable, open conductor heads	2 m, 4-wire	DOL-1204-L02M	6027945
			5 m, 4-wire	DOL-1204-L05M	6027944
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02M	6009383
			5 m, 4-wire	DOL-1204-W05M	6009867

E

Female connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 4-pin, straight	Screw-type terminals	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Screw-type terminals	DOS-0804-W	6009975

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

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

Male connector (ready to assemble)

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 4-pin, straight	Screw-type terminals	STE-0804-G	6037323

M12, 4-pin

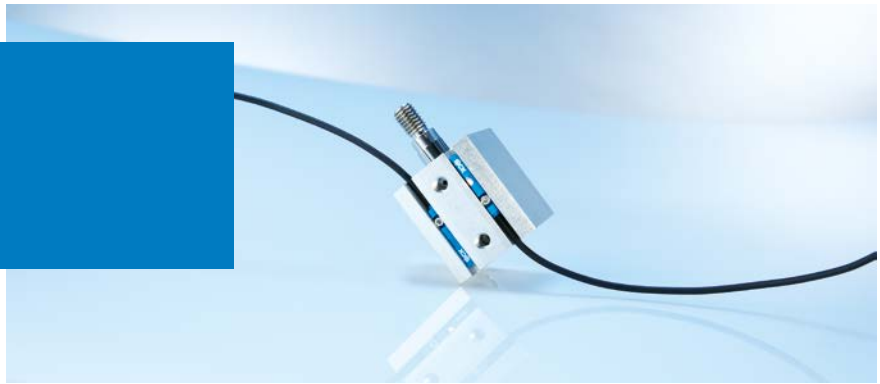
- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M12, 4-pin, straight	Screw-type terminals	STE-1204-G	6009932
	Connector, M12, 4-pin, angled	Screw-type terminals	STE-1204-W	6022084

For additional accessories including dimensional drawings, please see page F-123/H-137.

E

Drop-in, install, done



Additional information

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 the version, 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
- LED function indicator
- 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 thanks to SICK' s proprietary GMR technology (giant magneto resistive) as well as the SICK-ASIC (application specific integrated circuit) that ensure 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.
- Extremely rugged VISTAL® housing – rated for IP 67 respectively IP 68 and IP 69K, enlarging sensor life time

→ **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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

Cylinder type	C-slot
Cylinder types with adapter	SMC rails CDQ2 SMC rails ECDQ2
Housing length	23.7 mm
Output type	PNP / NPN (depending on type)
Switching frequency typ.	1,000 Hz
Output function	NO
Enclosure rating	IP 68 [1] IP 68, IP 69K [1, 2] (depending on type)

[1] According to EN 60529 (IP 67/IP 68)

[2] According to DIN 40050 (IP 69K)

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC
Power consumption [1]	≤ 8 mA
Voltage drop	≤ 2.5 V
Output current I_a	≤ 100 mA
Overrun distance typ.	4 mm / 7 mm (depending on type)
Protection class	III
Magnetic field sensitivity, typ.	2.2 mT / 4.25 mT (depending on type)
Hysteresis typ.	≤ 0.8 mT
Repeatability [2]	≤ 0.1 mT
Reverse polarity protection	✔
Short-circuit protection	✔
Ambient operating temperature	–30 °C ... +80 °C
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm
EMC	According to EN 60947-5-2
Housing material	Plastic
Thread size	M8 / M12 (depending on type)
Cable material	PUR / PVC (depending on type)
Conductor cross-section	0.09 mm²

[1] Without load.

[2] Ub and Ta constant.

E

Ordering information

MZC1 – short overrun distance

- **Overrun distance typ.:** 4 mm
- **Magnetic field sensitivity, typ.:** 2.2 mT
- **Output function:** NO

Output type	Connection type	Enclosure rating	Cable material	Connection diagram	Model name	Part no.
PNP	Cable, 3-wire, 2 m	IP 68 [1], IP 69K [2]	PUR	Cd-001	MZC1-2V2PS-KU0	1059738
			PVC	Cd-001	MZC1-2V2PS-KW0	1059740
	Cable, 3-wire, 5 m	IP 68 [1], IP 69K [2]	PUR	Cd-001	MZC1-2V2PS-KUB	1059739
			PVC	Cd-001	MZC1-2V2PS-KWB	1059741
	Cable with connector M8, 3-pin, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-2V2PS-KP0	1059735
	Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-2V2PS-KR0	1059737
	Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	IP 68 [1]	PUR	Cd-002	MZC1-2V2PS-KRD	1060129
	Cable with connector M12, 3-pin, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-2V2PS-KQ0	1059736
NPN	Cable, 3-wire, 2 m	IP 68 [1], IP 69K [2]	PUR	Cd-001	MZC1-2V2NS-KU0	1059743
	Cable with connector M8, 3-pin, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-2V2NS-KP0	1059744
	Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-2V2NS-KR0	1059742

[1] According to EN 60529.

[2] According to DIN 40050 (IP 69K).

MZC1 – long overrun distance

- **Overrun distance typ.:** 7 mm
- **Magnetic field sensitivity, typ.:** 4.25 mT
- **Output function:** NO

E

Output type	Connection type	Enclosure rating	Cable material	Connection diagram	Model name	Part no.
PNP	Cable, 3-wire, 2 m	IP 68 [1], IP 69K [2]	PUR	Cd-001	MZC1-4V3PS-KU0	1059755
	Cable with connector M8, 3-pin, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-4V3PS-KP0	1059752
	Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-4V3PS-KR0	1059753
	Cable with connector M12, 3-pin, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-4V3PS-KQ0	1059754
NPN	Cable, 3-wire, 2 m	IP 68 [1], IP 69K [2]	PUR	Cd-001	MZC1-4V3NS-KU0	1059756
	Cable with connector M8, 3-pin, 0.3 m	IP 68 [1]	PUR	Cd-002	MZC1-4V3NS-KP0	1059757

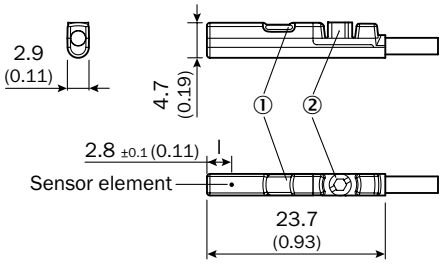
[1] According to EN 60529.

[2] According to DIN 40050 (IP 69K).

Dimensional drawings

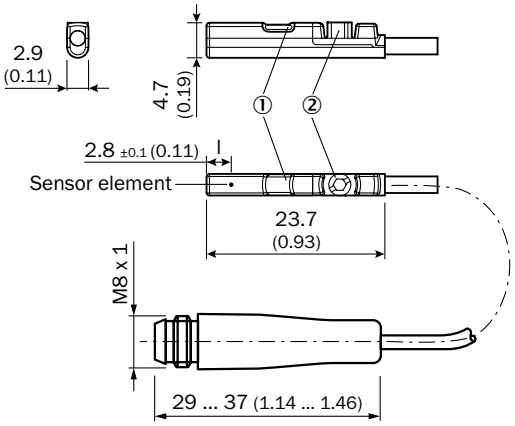
Dimensions in mm (inch)

Cable



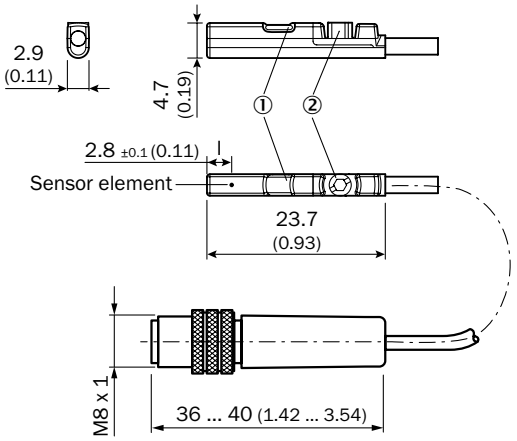
① LED indicator
② Fixing screw

Cable with connector M8



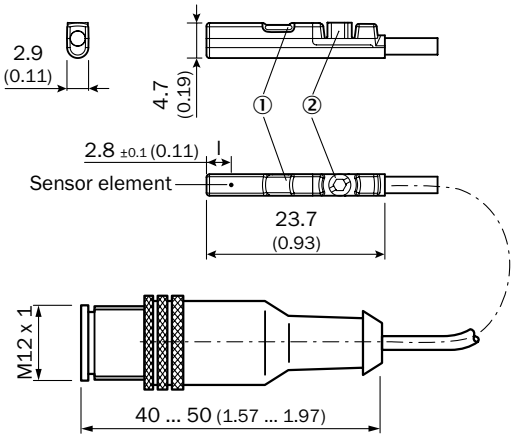
① LED indicator
② Fixing screw

Cable with connector M8, with knurled nuts



① LED indicator
② Fixing screw

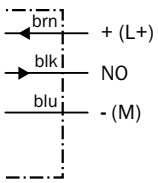
Cable with connector M12



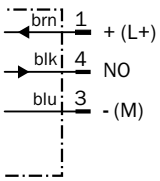
① LED indicator
② Fixing screw

Connection diagram

Cd-001



Cd-002



E

Recommended accessories

Brackets for cylinder sensors

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TC2	2046442

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TC1	2046441

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

E

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

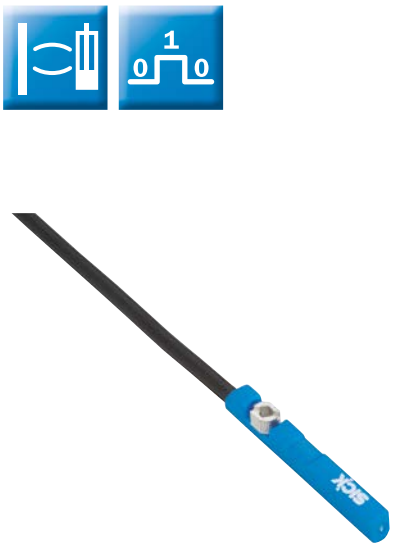
- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

E

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 the version, 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 120 V version
- Combined Allen and flathead installation screw
- Very short sensor housing, making it easier to install on short stroke cylinders
- LED function indicator
- 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
- Extremely rugged VISTAL® housing – rated for IP 67 respectively IP 68 and IP 69K, enlarging sensor life time

Additional information

→ **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.

8016544/2013-09-10
Subject to change without notice

Detailed technical data

Features

	AC/DC 3-wire	AC/DC 2-wire
Cylinder type	C-slot	
Cylinder types with adapter	SMC rails CDQ2 SMC rails ECDQ2	
Housing length	26.3 mm	
Output type	Reed	
Switching frequency typ.	± 500 Hz	
Output function	NO	
Enclosure rating	IP 67 [1] IP 68 [1] IP 68 [1], IP 69K [2] (depending on type)	IP 67 [1]

[1] According to EN 60529 (IP 67/IP 68).

[2] According to DIN 40050 (IP 69K).

Mechanics/electronics

	AC/DC 3-wire	AC/DC 2-wire
Supply voltage	5 V AC/DC ... 30 V AC/DC	5 V AC/DC ... 30 V AC/DC 5 V AC/DC ... 120 V AC/DC (depending on type)
Power consumption [1]	5 mA	
Voltage drop	< 0.5 V	< 3.2 V
Output current I_a	≤ 500 mA	≤ 50 mA
Switching power	≤ 10 W	≤ 1.5 W / ≤ 10 W (depending on type)
Protection class	III	II [2], [3], [4] / III (depending on type)
Overrun distance typ.	7 mm	
Magnetic field sensitivity, typ.	3.95 mT	
Repeatability [5]	≤ 0.1 mT	
Ambient operating temperature	–30 °C ... +80 °C	
Shock/vibration	30 g, 11 ms / 10 Hz ... 55 Hz, 1 mm	
EMC	According to EN 60947-5-2	
Housing material	Plastic	
Housing cap material	PA, strengthened	
Sensing face material	PA, strengthened	
Thread size	M8 / M12 (depending on type)	M8
Cable material	PUR	
Conductor cross-section	0.09 mm²	

[1] Without load.

[2] Rated voltage AC (effective) / DC 120 V.

[3] Sensor may only be mounted as a complete unit in the slot.

[4] Overvoltage category II.

[5] Ub and Ta constant.

E

Ordering information

RZC1 – AC/DC 3-wire

- **Overrun distance typ.:** 7 mm
- **Magnetic field sensitivity, typ.:** 3.95 mT
- **Voltage drop:** < 0.5 V
- **Output current I_a:** ≤ 500 mA
- **Output function:** NO

Supply voltage	Protection class	Connection	Enclosure rating	Connection diagram	Model name	Part no.
5 V AC/DC ... 30 V AC/DC	III	Cable, 3-wire, 2 m	IP 68 [1],IP 69K [2]	Cd-035	RZC1-04ZRS-KU0	1059746
		Cable, 3-wire, 5 m	IP 68 [1],IP 69K [2]	Cd-035	RZC1-04ZRS-KUB	1059749
		Cable with connector M8, 3-pin, 0.3 m	IP 67 [1]	Cd-036	RZC1-04ZRS-KP0	1059747
		Cable with connector M8, 3-pin, with knurled nuts, 0.3 m	IP 68 [1]	Cd-036	RZC1-04ZRS-KR0	1059748
		Cable with connector M8, 3-pin, with knurled nuts, 0.5 m	IP 68 [1]	Cd-036	RZC1-04ZRS-KRD	1060130
		Cable with connector M12, 3-pin, 0.3 m	IP 68 [1]	Cd-036	RZC1-04ZRS-KQ0	1059745

[1] According to EN 60529 (IP 67/IP 68).

[2] According to DIN 40050 (IP 69K).

RZC1 – AC/DC 2-wire

- **Overrun distance typ.:** 7 mm
- **Magnetic field sensitivity, typ.:** 3.95 mT
- **Voltage drop:** < 3.2 V
- **Output current I_a:** ≤ 50 mA
- **Output function:** NO

Supply voltage	Protection class	Connection	Enclosure rating [1]	Connection diagram	Model name	Part no.
5 V AC/DC ... 120 V AC/DC	II [2], [3], [4]	Cable, 2-wire, 2 m	IP 67	Cd-037	RZC1-04ZUS-KU0	1059750
5 V AC/DC ... 30 V AC/DC	III	Cable with connector M8, 2-pin, 0.3 m	IP 67	Cd-038	RZC1-04ZUS-KP0	1059751

[1] According to EN 60529.

[2] Rated voltage AC (effective) / DC 120 V.

[3] Sensor may only be mounted as a complete unit in the slot.

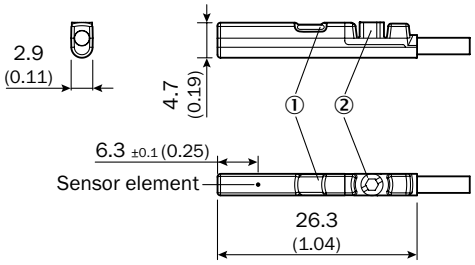
[4] Overvoltage category II.

E

Dimensional drawings

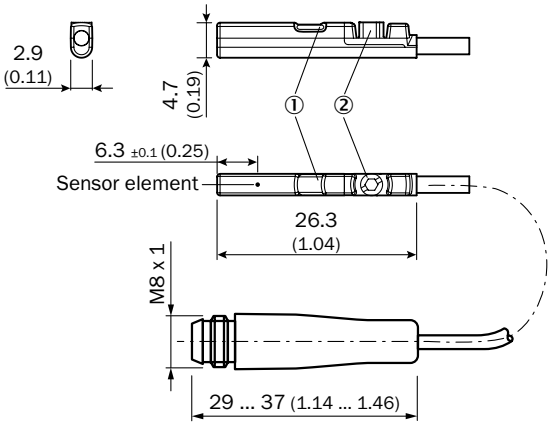
Dimensions in mm (inch)

Cable



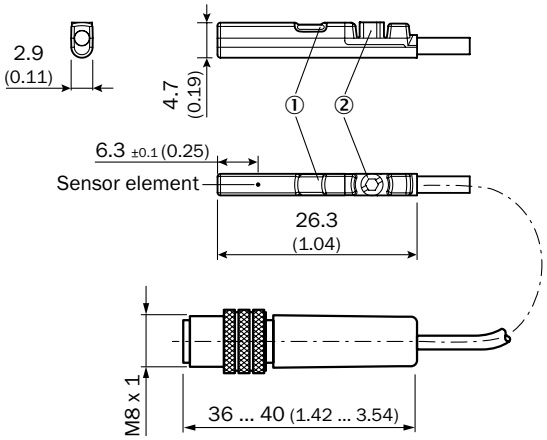
① LED indicator
② Fixing screw

Cable with connector M8



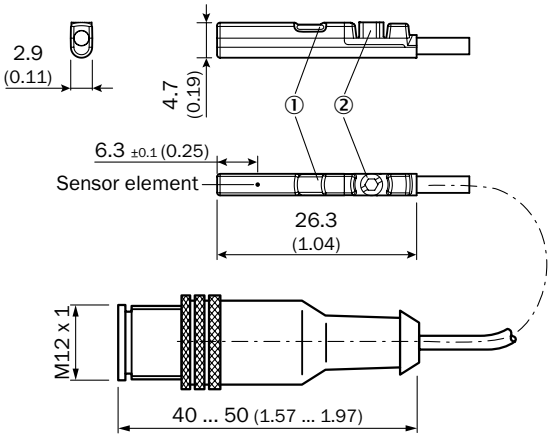
① LED indicator
② Fixing screw

Cable with connector M8, with knurled nuts



① LED indicator
② Fixing screw

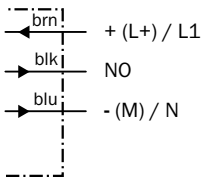
Cable with connector M12



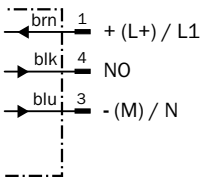
① LED indicator
② Fixing screw

Connection diagram

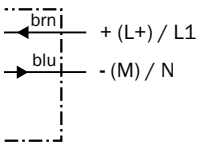
Cd-035



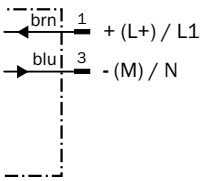
Cd-036



Cd-037



Cd-038



E

Recommended accessories

Brackets for cylinder sensors

For SMC rails CDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TC2	2046442

For SMC rails ECDQ2

Figure	Material	Description	Model name	Part no.
	Aluminum	Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TC1	2046441

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079

E

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

Male connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

For additional accessories including dimensional drawings, please see page F-123/H-137.

E

Flexible, user-friendly, suitable

To seamlessly integrate SICK magnetic cylinder sensors into a machine or system, mounting equipment tailored precisely to the pneumatic actuators and sensors is required. SICK offers reliable mounting accessories for all conventional round, tie-rod, profile and dove-tail groove cylinders.

SICK develops specifically-designed mounting elements suitable for special applications based on individual customer requirements. These mounting elements are delivered along with the sensor.

Sensor adapters for other cylinder types

F

Flexible, user-friendly, suitable

Product description

To seamlessly integrate SICK magnetic cylinder sensors into a machine or system, mounting equipment tailored precisely to the pneumatic actuators and sensors is required. SICK offers reliable mounting accessories for all conventional round, tie-rod, profile and dove-tail groove cylinders. SICK develops specifically-designed mounting elements suitable for special applications based on individual customer requirements. These mounting elements are delivered along with the sensor.

At a glance

- Mounting systems designed for SICK sensors
- Application-specific solutions available for sensor mounting

Your benefits

- Fast commissioning and maintenance of systems and machines due to simple, practical sensor mounting
- Optimum sensor alignment due to the user-friendly mounting adapter
- Enhanced system availability

Additional information

→ **www.sick.com/Sensor_adapters_for_other_cylinder_types**
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.

Ordering information

T-slot cylinders

Figure	Material	Description	Model name	Part no.	MPS	MPA	MZU2	T-slot	C-slot
	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw/sliding nut)	For T-slot cylinders	BEF-KHZT01MPA [1]	2065575	–	●	–	–	–

[1] Information for recommended order quantity you will find on page C-38.

Round body cylinders

Figure	Material	Description	Model name	Part no.	MPS	MPA	MZU2	T-slot	C-slot
	Plastic, nickel silver	Mounting bracket on round body cylinders with diameter of 8 mm to 25 mm	BEF-KHZ-RT1-25 [1]	5311171	●	–	–	●	–
		Mounting bracket on round body cylinders with diameter of 8 mm to 63 mm	BEF-KHZ-RT1-63 [1]	5311172	●	–	–	●	–
		Mounting bracket on round body cylinders with piston diameter of 8 mm to 130 mm	BEF-KHZ-RT1-130 [1]	5311506	●	–	–	●	–
	Stainless steel V2A	For round body cylinders with diameter up to 85 mm	BEF-KHZR085MPA [2]	2066626	–	●	–	–	–
		For round body cylinders with diameter up to 135 mm	BEF-KHZR135MPA [2]	2066627	–	●	–	–	–
		For round body cylinders with diameter up to 210 mm	BEF-KHZR210MPA [2]	2066628	–	●	–	–	–

[1] For MPS two adapters are recommended.

[2] Information for recommended order quantity you will find on page C-38.

Cylinders with dove-tail slot

Figure	Material	Description	Model name	Part no.	MPS	MPA	MZU2	T-slot	C-slot
	Aluminum	Mounting bracket for cylinders with dove-tail slot	BEF-KHZ-ST1 [1, 2]	2022703	●	–	–	●	–

[1] For MPS two adapters are recommended.

[2] For lengths longer than MPS-160 at least three adapters are recommended.

F

Profile-/tie-rod cylinders

Figure	Material	Description	Model name	Part no.	MPS	MPA	MZU2	T-slot	C-slot
	Zinc diecast	Mounting bracket for integrated profile cylinders/tie-rod cylinders	BEF-KHZ-PT1	2022702	–	–	–	●	–
	Aluminum alloy (adapter), Stainless steel V2A (mounting-/fixing screw)	For tie-rod cylinders (diameter tie-rod max. 18 mm)	BEF-KHZPZ1MPA [1]	2065578	–	●	–	–	–
	Aluminum	Clamp piece for integrated profile cylinders up to 13 mm wide	BEF-KS-U2-P1	2019824	–	–	●	–	–
		Clamp piece for integrated profile cylinders up to 18 mm wide	BEF-KS-U2-P2	2019823	–	–	●	–	–
	Zinc diecast	Clamp piece for tie-rod cylinders	BEF-KS-U2-S1	4030922	–	–	●	–	–
	Zinc die-cast with teflon coating	Clamp piece for tie-rod cylinders	BEF-KS-U2-S1T	4031632	–	–	●	–	–
	Aluminum	Clamp piece for cylinders with T-slot or dovetail slot	BEF-KS-U2-T1	2019822	–	–	●	–	–

[1] Information for recommended order quantity you will find on page C-38.

SMC rails (E)CDQ2

Figure	Material	Description	Model name	Part no.	MPS	MPA	MZU2	T-slot	C-slot
	Aluminum	Mounting bracket for mounting on SMC rails CDQ2 (for T-slot)	BEF-KHZ-CT45 [1]	2061698	●	–	–	–	–
		Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TC1	2046441	–	–	–	–	●
		Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TC2	2046442	–	–	–	–	●
		Mounting bracket for mounting on SMC rails ECDQ2	BEF-KHZ-TT1 [2], [3]	2046439	●	–	–	●	–
		Mounting bracket for mounting on SMC rails CDQ2	BEF-KHZ-TT2 [2], [3]	2046440	●	–	–	●	–

[1] Only for MPS-32.

[2] For MPS two adapters are recommended.

[3] For lengths longer than MPS-160 at least three adapters are recommended.

F

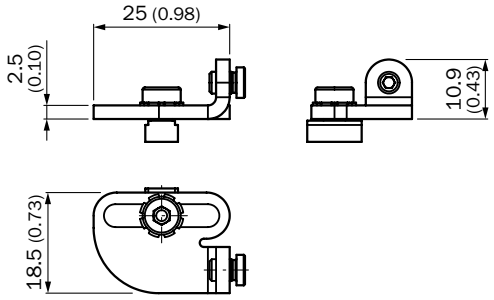
Dimensional drawings

dimensions in mm (inch)

Brackets for cylinder sensors

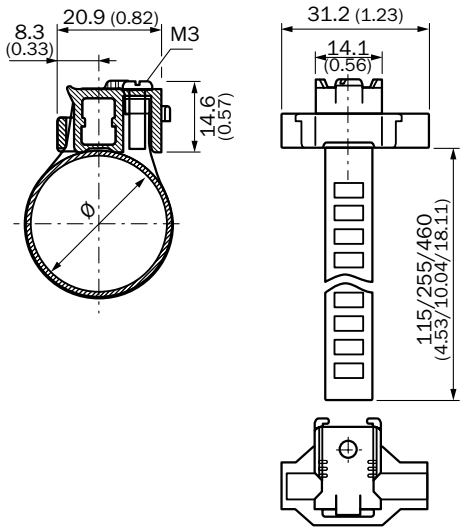
For T-slot cylinders

BEF-KHZT01MPA

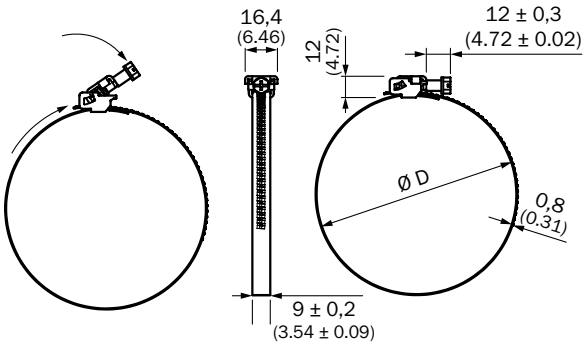


For round body cylinders

BEF-KHZ-RT1-130/25/63



BEF-KHZR085/135/210MPA

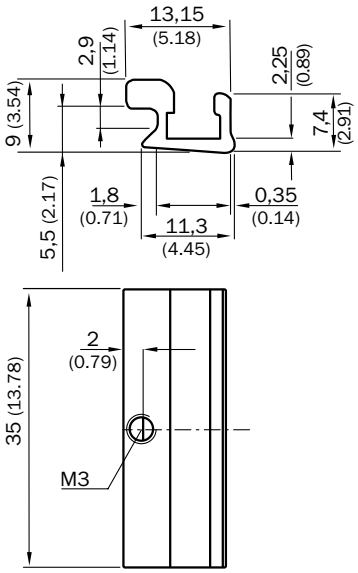


	Diameter (D) mm
BEF-KHZR085MPA	25 - 100
BEF-KHZR135MPA	25 - 150
BEF-KHZR210MPA	25 - 225

F

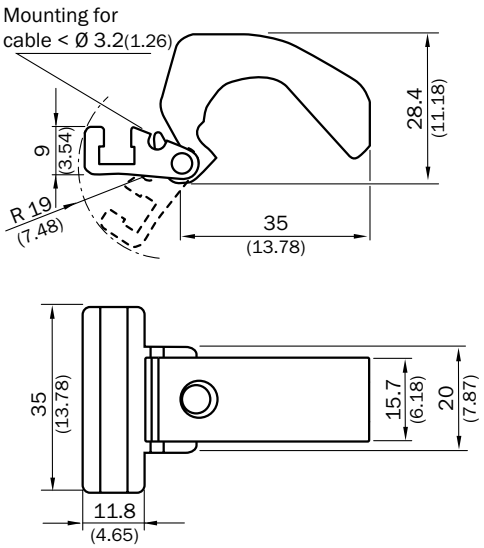
For cylinders with dove-tail slot

BEF-KHZ-ST1

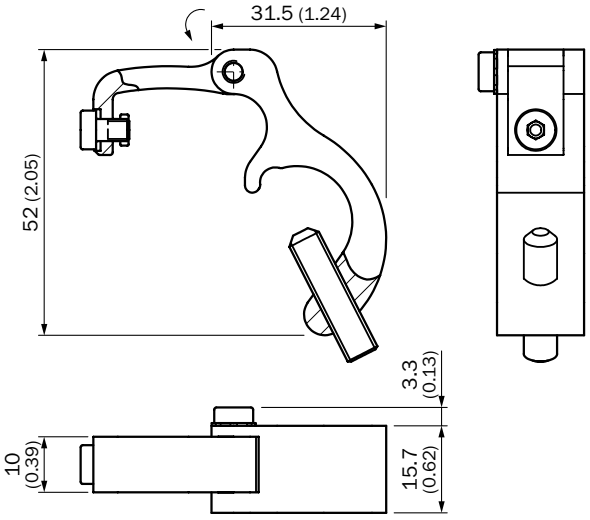


For profile cylinders/tie-rod cylinders

BEF-KHZ-PT1



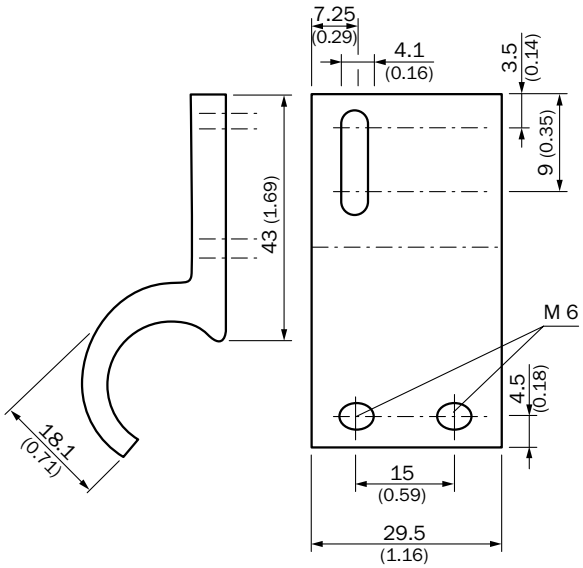
BEF-KHZPZ1MPA



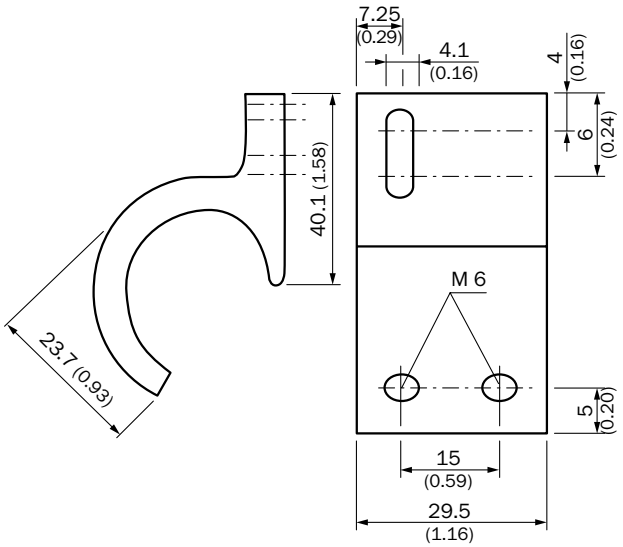
F

Sensor adapters for other cylinder types

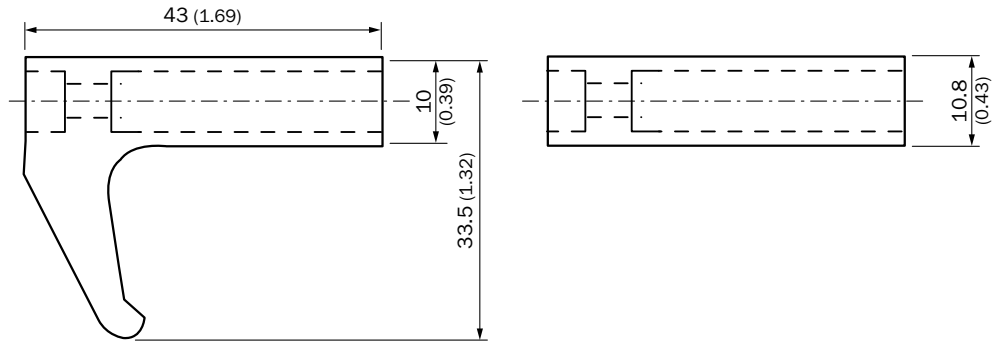
BEF-KS-U2-P1



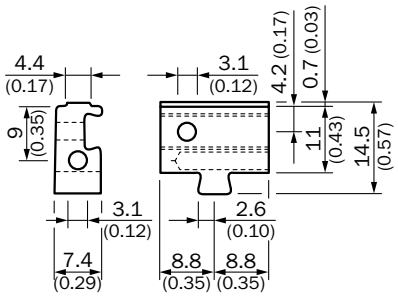
BEF-KS-U2-P2



BEF-KS-U2-S1(T)



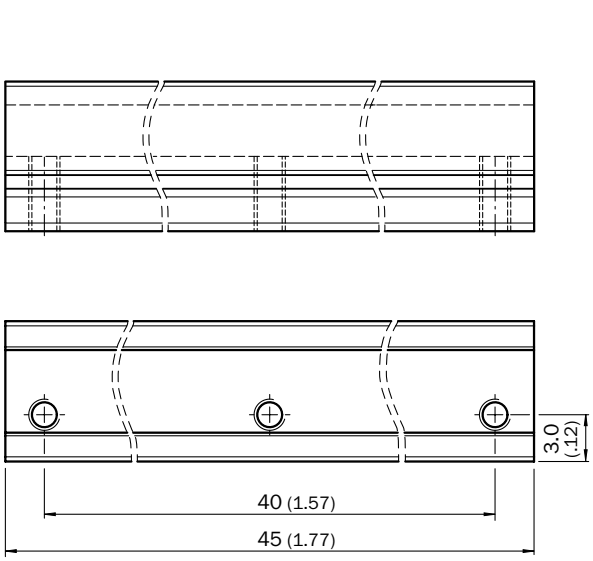
BEF-KS-U2-T1



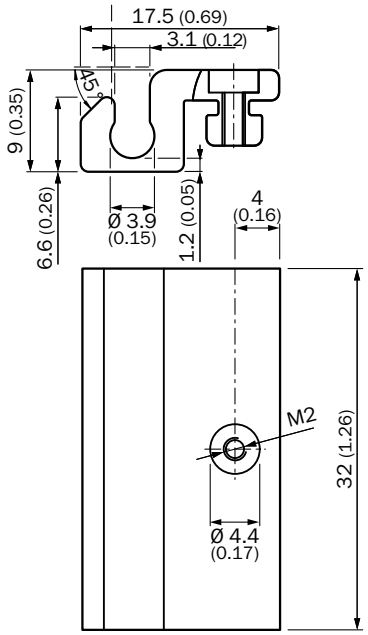
F

For SMC rails (E)CDQ2

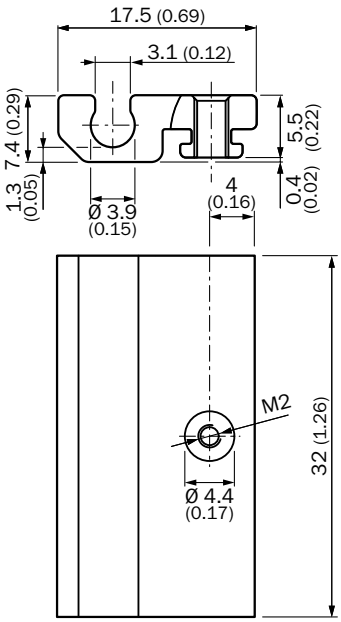
BEF-KHZ-CT45



BEF-KHZ-TC1



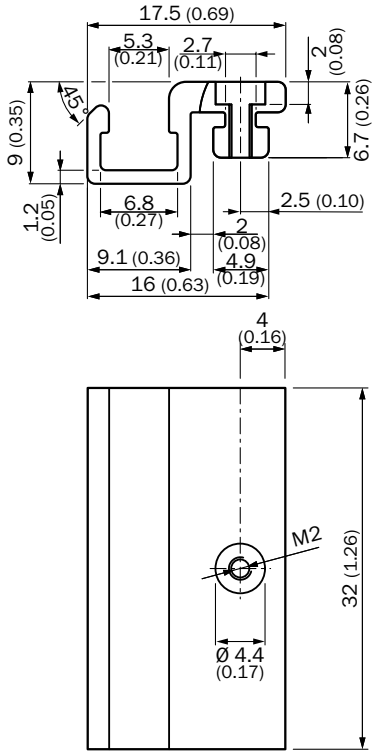
BEF-KHZ-TC2



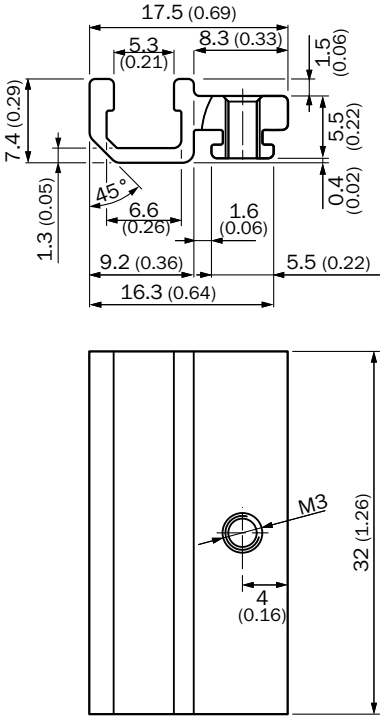
F

Sensor adapters for other cylinder types

BEF-KHZ-TT1



BEF-KHZ-TT2



F

Your order, please! Customizable solutions to fit your needs.

If you don't find the magnetic cylinder sensors in the SICK portfolio that meets your requirements, we can develop a sensor based on your specifications that fits your application.

Even with a wide range of standard offerings for magnetic cylinder sensors, individual and customized solutions are sometimes required to meet the specific requirements and application conditions in the automation industry. The dialog with our specialists for customized development begins here.

Whether small, but crucial adaptations to our standard components or comprehensive developments are required, our experts will find the optimal solution. We guarantee a structured project workflow from the start.

G

8016544/2013-09-10
Subject to change without notice

Tailored solutions

Design to implementation of a tailored solution is divided into three areas and six phases. During each phase of the project, you can rely on our support and expertise – anywhere in the world.

1 Application analysis
SICK provides you with onsite assistance by analyzing of your requirements for a customized sensor.

2 Assessment of requirements
All requirements are assessed and prioritized to produce a clear picture of which product adjustments are necessary.

3 Drawing up a specification
We work with you to draw up the specifications for your customized solution.

4 Prototyping
SICK can use the specifications to produce a fully functional prototype sensor.

5 Test installation
Test installations are carried out with the support of the SICK service team to ensure successful integration of the product.

6 Production and supply
Upon approval, SICK will supply the product with all SICK quality standards relating to final production and product quality.

G

Customizable solutions to fit your needs

SICK is on your side as an innovative, reliable and competent partner in evaluating and assessing all application requirements. After determining the necessary the necessary product adjustments, we define the specification for your customized solution in collaboration with you.

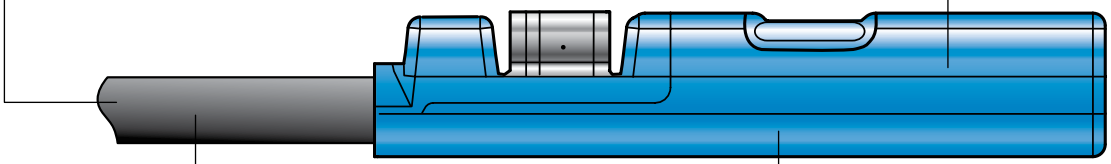
Compile your “wish list” from the following components:

Connection

- M8
- M12
- Special connector

Switching properties

- Hysteresis
- Switch on delay
- Magnetic field sensitivity



Cable

- Length
- Material
- Special features (e.g., oil resistant)

Electronics

- Output type (NPN/PNP)
- 2- and 3-wire
- Normally open / normally closed
- Pulse lengthening

Mounting adapters

- Customized mounting concept for quick and easy installation of the sensor onsite

G

my product

Your contacts at SICK are happy to advise you.

8016544/2013-09-10
Subject to change without notice

G

Perfect sensor integration made easy

Innovative sensor technology is only one side of the coin when talking about intelligent automation solutions. The picture is completed by matching accessories for professional and cost-effective integration. Whether electrical connection technology or mechanical mounting systems, only the right integrative system products lead to a high quality, highly available application solution. The advantage? Magnetic cylinder sensors from SICK and accessories work in conjunction to offer maximum operational safety.

In addition, the user is able to save additional costs for development, manufacture and procurement. A wide range of accessory components are always available on short-notice – convenient single-source availability in combination with sensors. And in the event that a custom solution is required, SICK is on your side as a reliable and competent partner. Tailored developments and adaptations can be implemented in just a short period of time.

Accessories from SICK – the solution for reliable sensor integration.

H

8016544/2013-09-10
Subject to change without notice

Accessories

H

Mounting systems

Product description

To integrate SICK sensors perfectly into a machine or system, mounting equipment tailored precisely to the sensors is required. Whether fine adjustment to precision equipment or protection against environmental conditions such as those in the lumber industry, SICK provides matching designs and products for installation, alignment and protection for its sensors. Customer- and system-specific mounting elements can also be developed and delivered together with the sensor for special applications in close collaboration with the customer.

Your benefits

- Fast commissioning and maintenance of systems and machines due to simple, practical sensor mounting
- Optimum alignment of the sensor to the object using the universal bar clamp system
- Enhanced system availability

At a glance

- Mounting systems designed for SICK sensors
- Application-specific solutions available for sensor mounting, alignment or protection

H

Passive connection technology

Product description

A wide range of terminal screwed male and female connectors allows the user to implement their own customized wiring solutions. Different lengths and qualities of cable can be combined to suit the application, quickly and smoothly. Connecting cables, having a molded round connector on one end and the other end open, offer maximum flexibility to wire sensors.

Your benefits

- Operational safety because the connection systems are designed for the sensors
- High quality components with long service life helps reduce costs
- Reliable signal transmission is critical to high productivity

At a glance

- Terminal screwed connectors with screw connection or push-in connection (M8 right angle)
- Connecting and extension cables with PUR jacket for flexible and demanding areas of application and in drag chains. Very high resistance to oils, lubricants and coolants.
- Connecting and extension cables with PVC jacket for use with medium mechanical stresses in dry zones, such as assembly lines, packaging and material handling. The cable jacket features good resistance to chemicals, where in contrast PVC has only limited resistance to lubricants and coolants.
- Connecting and extension cables of the IP 69K series are especially suitable for use in the food and beverage industry due to their high resistance to chemicals, acids, alkalies and cleaning agents.

H

Plug connectors and cables

Plug connectors and cables

Connecting cable (female connector-open)

M8, 3-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	5 m, 3-wire	DOL-0803-G05M	6022009
			10 m, 3-wire	DOL-0803-G10M	6022011
			15 m, 3-wire	DOL-0803-G15M	6036472
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02M	6008489
			5 m, 3-wire	DOL-0803-W05M	6022010
			10 m, 3-wire	DOL-0803-W10M	6022012
			15 m, 3-wire	DOL-0803-W15M	6036473

M8, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-0803-G02MC	6025888
			5 m, 3-wire	DOL-0803-G05MC	6025889
			10 m, 3-wire	DOL-0803-G10MC	6025890
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-0803-W02MC	6025891
			5 m, 3-wire	DOL-0803-W05MC	6025892
			10 m, 3-wire	DOL-0803-W10MC	6025893

M8, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** PVC
- **Locking nut material:** stainless steel (V4A/1.4404/316L)

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-0804-G02M	6009870
			5 m, 4-wire	DOL-0804-G05M	6009872
			10 m, 4-wire	DOL-0804-G10M	6010754
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-0804-W02M	6009871
			5 m, 4-wire	DOL-0804-W05M	6009873
			10 m, 4-wire	DOL-0804-W10M	6010755

H

M8, 4-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-0804-G02MC	6025894
			5 m, 4-wire	DOL-0804-G05MC	6025895
			10 m, 4-wire	DOL-0804-G10MC	6025896
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-0804-W02MC	6025897
			5 m, 4-wire	DOL-0804-W05MC	6025898
			10 m, 4-wire	DOL-0804-W10MC	6025899

M12, 3-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	DOL-1203-G02MC	6039075
			5 m, 3-wire	DOL-1203-G05MC	6039076
			10 m, 3-wire	DOL-1203-G10MC	6039077
	Female connector, M12, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	DOL-1203-W02MC	6039078
			5 m, 3-wire	DOL-1203-W05MC	6039079
			10 m, 3-wire	DOL-1203-W10MC	6036752
			15 m, 3-wire	DOL-1203-W15MC	6036753
			20 m, 3-wire	DOL-1203-W20MC	6036754

M12, 4-pin, PVC

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02M	6009382
			5 m, 4-wire	DOL-1204-G05M	6009866
			10 m, 4-wire	DOL-1204-G10M	6010543
	Female connector, M12, 4-pin, angled, with 3 LED's	Cable, open conductor heads	2 m, 4-wire	DOL-1204-L02M	6027945
			5 m, 4-wire	DOL-1204-L05M	6027944
			10 m, 4-wire	DOL-1204-L10M	6027946
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02M	6009383
			5 m, 4-wire	DOL-1204-W05M	6009867
			10 m, 4-wire	DOL-1204-W10M	6010541

H

M12, 4-pin, PUR, halogen-free

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

Figure	Connection type head A	Connection type head B	Connecting cable	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02MC	6025900
			5 m, 4-wire	DOL-1204-G05MC	6025901
			10 m, 4-wire	DOL-1204-G10MC	6025902
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02MC	6025903
			5 m, 4-wire	DOL-1204-W05MC	6025904
			10 m, 4-wire	DOL-1204-W10MC	6025905

Female connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Screw-type terminals	DOS-0803-W	7902078

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M8, 4-pin, straight	Screw-type terminals	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Screw-type terminals	DOS-0804-W	6009975

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

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

H

Male connector (ready to assemble)

M8, 3-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 3-pin, straight	Screw-type terminals	STE-0803-G	6037322

M8, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M8, 4-pin, straight	Screw-type terminals	STE-0804-G	6037323

M12, 4-pin

- **Connector material:** PBT
- **Locking nut material:** CuZn

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Connector, M12, 4-pin, straight	Screw-type terminals	STE-1204-G	6009932
	Connector, M12, 4-pin, angled	Screw-type terminals	STE-1204-W	6022084

Mounting systems

Mounting brackets/plates

Mounting brackets [1)]

Figure	Material	Description	Measuring range sensor (amount of required brackets)	Model name	Part no.
	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw)	Braket for low mounting	107 mm ... 251 mm (2 pcs.) 287 mm ... 431 mm (3 pcs.) 467 mm ... 647 mm (4 pcs.) 683 mm ... 791 mm (5 pcs.) 827 mm ... 1,007 mm (6 pcs.)	BEF-WNL01MPA [2)]	2065973
	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw)	Braket for lateral mounting	107 mm ... 251 mm (2 pcs.) 287 mm ... 431 mm (3 pcs.) 467 mm ... 647 mm (4 pcs.) 683 mm ... 791 mm (5 pcs.) 827 mm ... 1,007 mm (6 pcs.)	BEF-WNZ01MPA [2)]	2065577

[1)] For measuring application with separate encoder (e.g. magnet).

[2)] Parts only for MPA.

Magnets

Figure	Dimensions	Model name	Part no.
	3.2 mm x 6 mm x 15.2 mm	Magnet	5327349

Dimensional drawings plug connectors and cables

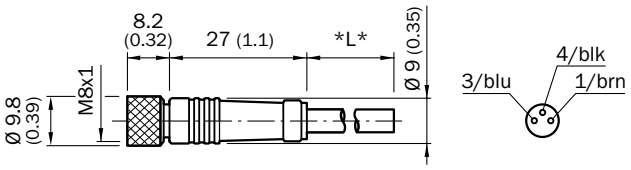
dimensions in mm (inch)

Plug connectors and cables

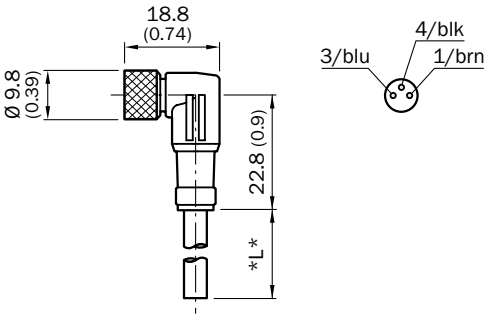
Connecting cable (female connector-open)

M8, 3-pin, PVC

DOL-0803-GxxM

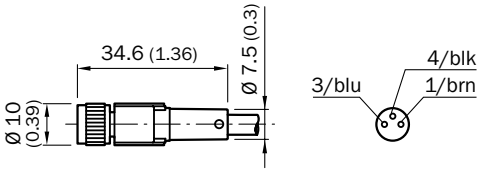


DOL-0803-WxxM

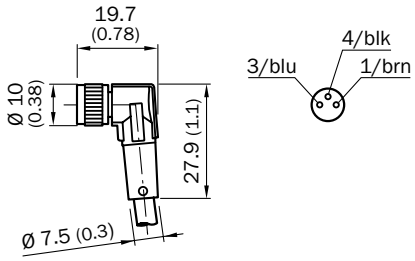


M8, 3-pin, PUR, halogen-free

DOL-0803-GxxMC

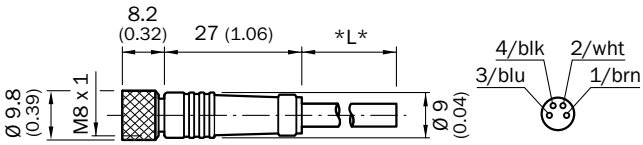


DOL-0803-WxxMC

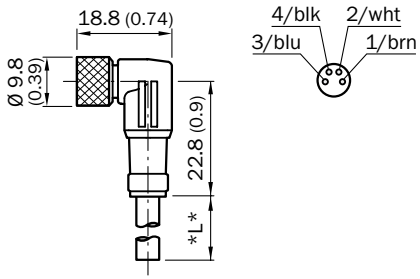


M8, 4-pin, PVC

DOL-0804-GxxM

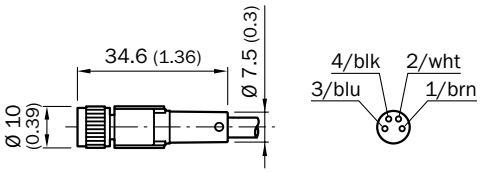


DOL-0804-WxxM

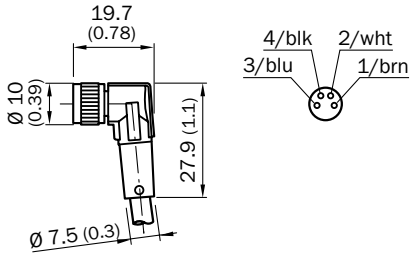


M8, 4-pin, PUR, halogen-free

DOL-0804-GxxMC



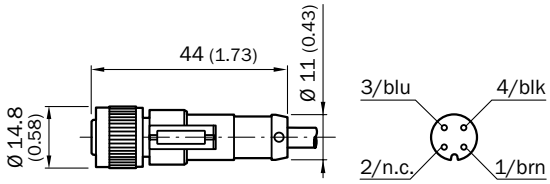
DOL-0804-WxxMC



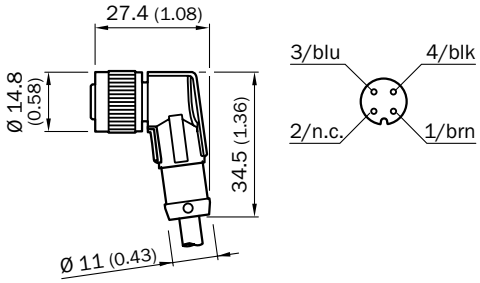
H

M12, 3-pin, PUR, halogen-free

DOL-1203-GxxMC

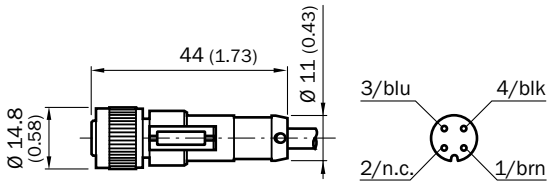


DOL-1203-WxxMC

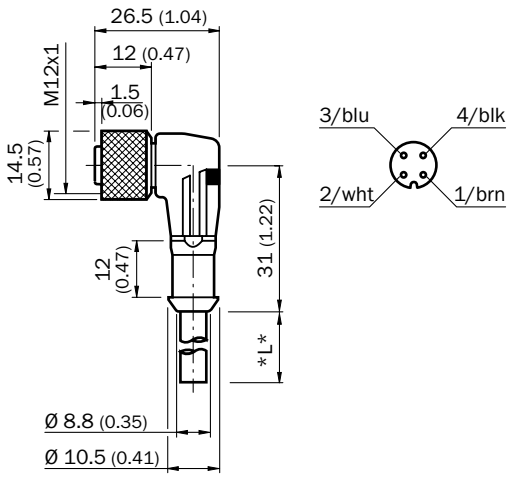


M12, 4-pin, PVC

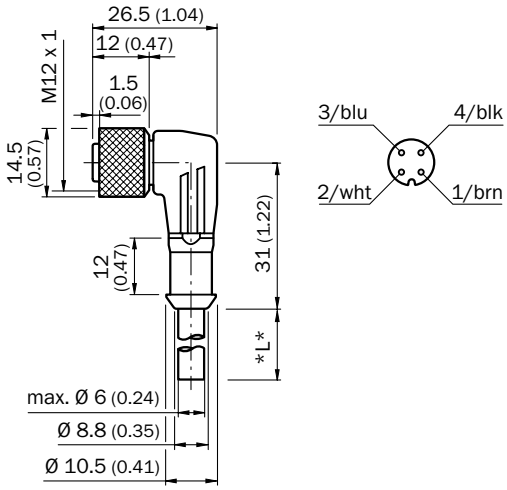
DOL-1204-GxxM



DOL-1204-LxxM

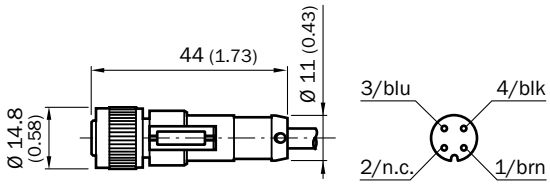


DOL-1204-WxxM

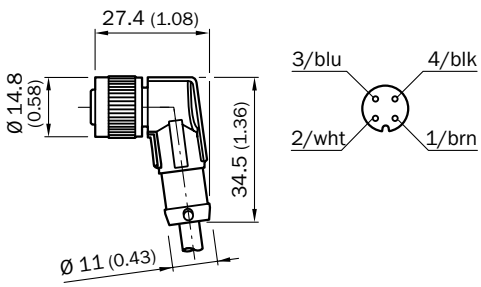


M12, 4-pin, PUR, halogen-free

DOL-1204-GxxMC



DOL-1204-WxxMC

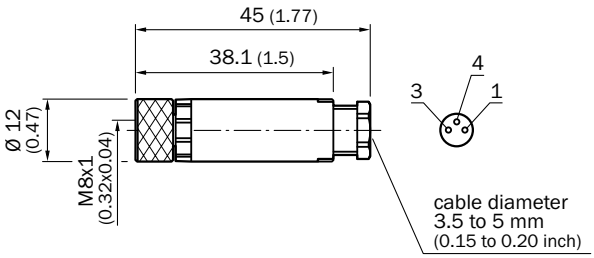


H

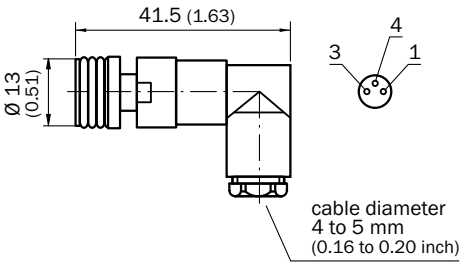
Female connector (ready to assemble)

M8, 3-pin

DOS-0803-G

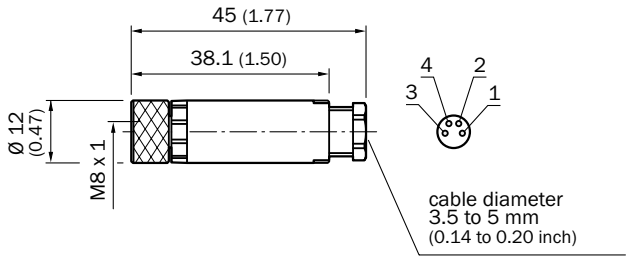


DOS-0803-W

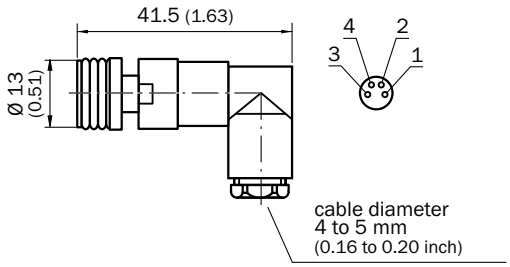


M8, 4-pin

DOS-0804-G

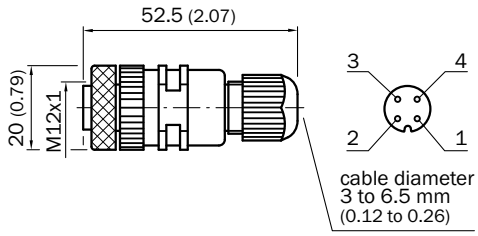


DOS-0804-W

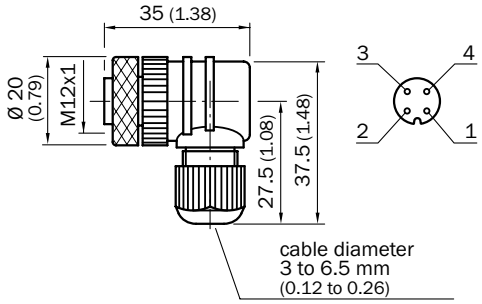


M12, 4-pin

DOS-1204-G



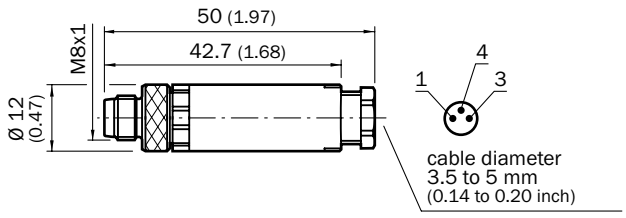
DOS-1204-W



Male connector (ready to assemble)

M8, 3-pin

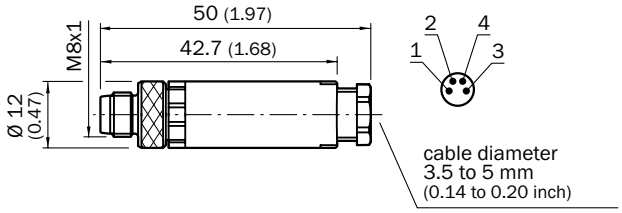
STE-0803-G



H

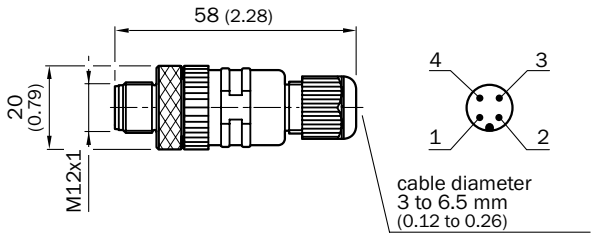
M8, 4-pin

STE-0804-G

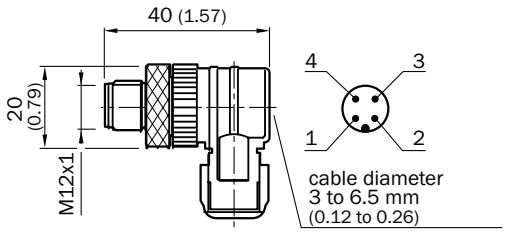


M12, 4-pin

STE-1204-G



STE-1204-W



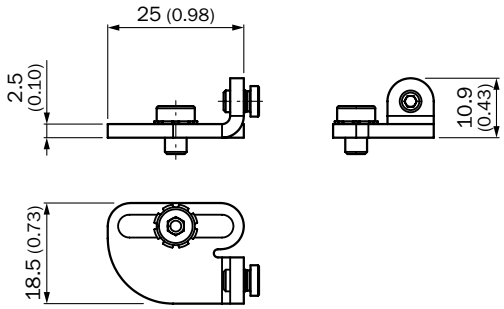
Dimensional drawings mounting systems

dimensions in mm (inch)

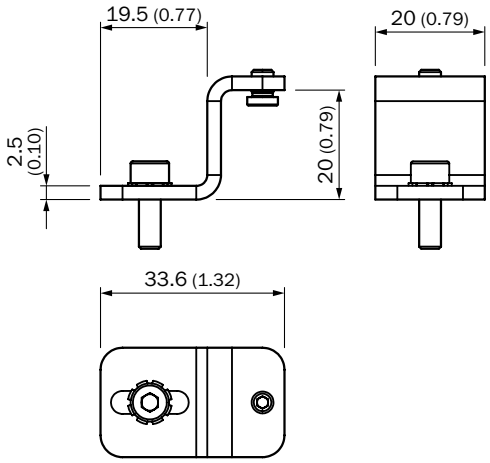
Mounting brackets/plates

Mounting brackets

BEF-WNL01MPA



BEF-WNZ01MPA



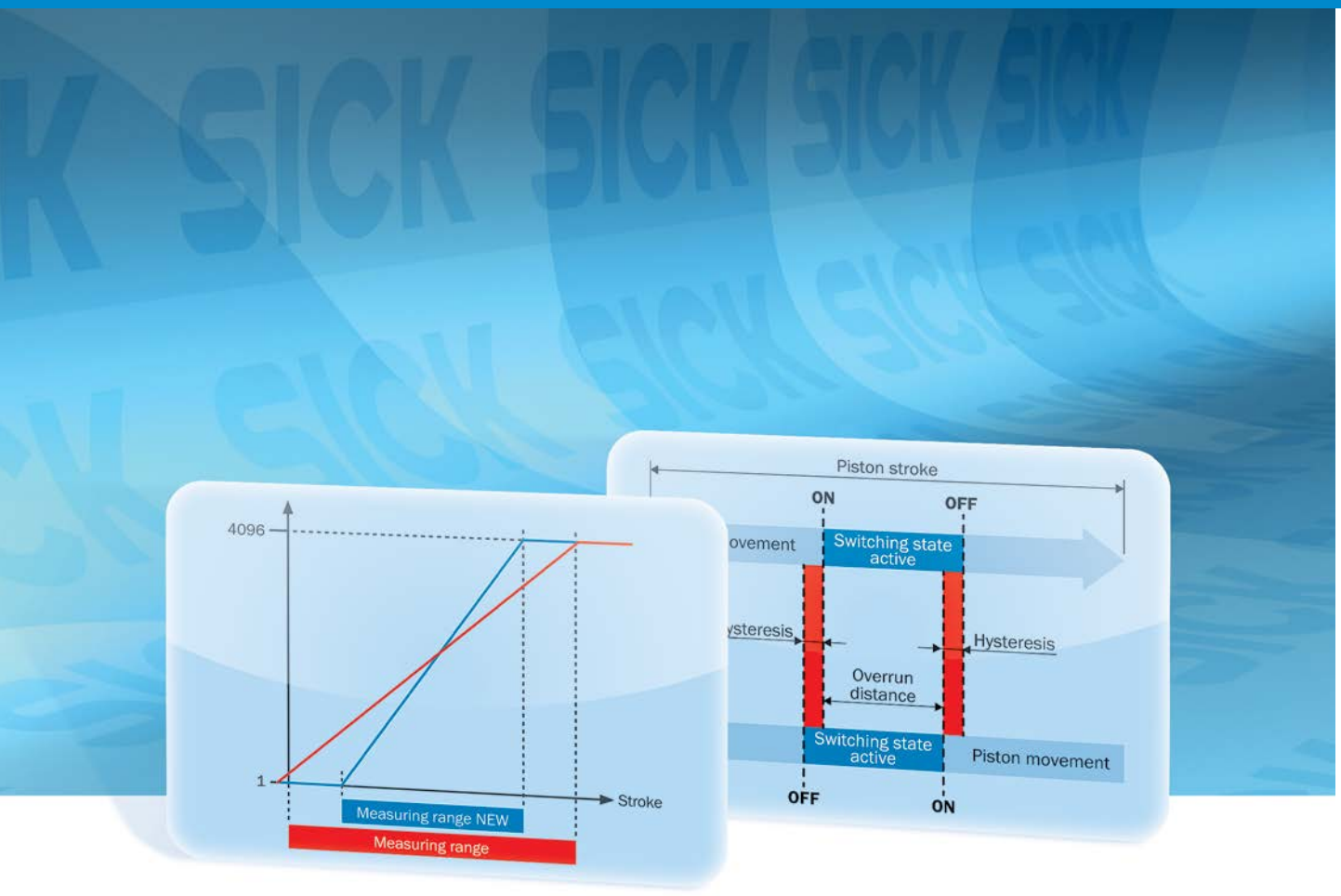
H

Important information about SICK sensor solutions

From A for Ambient temperature, operation to W for Wire-break protection, the following pages contain explanations of key terminology in a concise, easy-to-read format. Definitions of all key terms related to innovations and proximity sensor solutions from SICK can be found here.

This glossary also provides valuable information about directives and standards such as conformity, protection classes, electrical characteristics and much more.

8016544/2013-09-10
Subject to change without notice



Appendix

A

Ambient temperature, operation

The ambient temperature indicates the range within which the magnetic cylinder sensor works properly.

Analog output

Analog positioning sensors have a voltage output of 0 V ... 10 V as well as a current output of 4 mA ... 20 mA.

ATEX Directive 94/5/EC

→ See “Explosion protection according to ATEX” on page I-156

B C

Blind zone

The total length of the sensor is slightly longer than its measurement range. The difference is called the blind zone.

E F

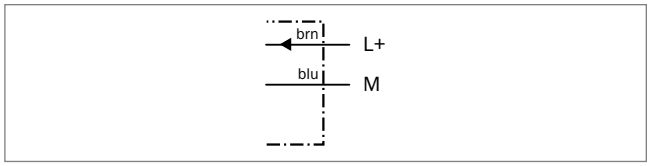
EC approval certificate

→ See “Explosion protection according to ATEX” on page I-156

Electrical wiring

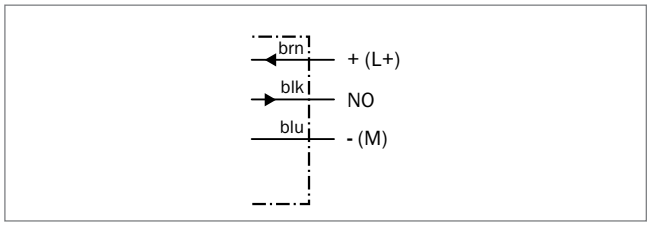
Example connection diagram DC 2-wire:

2-wire, NO

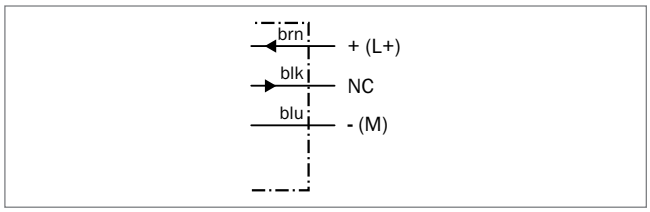


Example connection diagram DC 3-wire:

3-wire PNP, NO

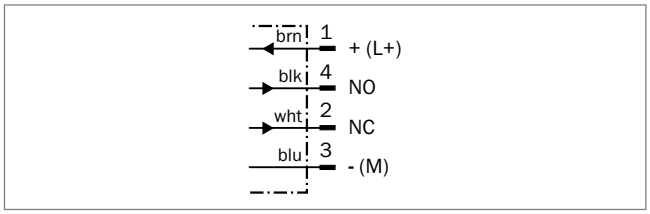


3-wire, NPN, NC



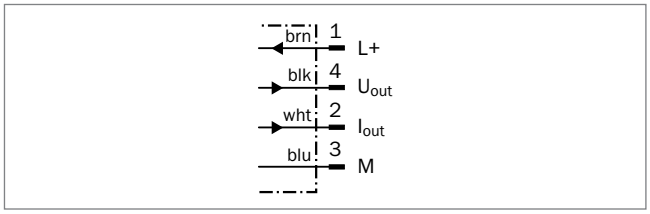
Example connection diagram DC 4-wire:

4-wire, NC / NO



Analog output

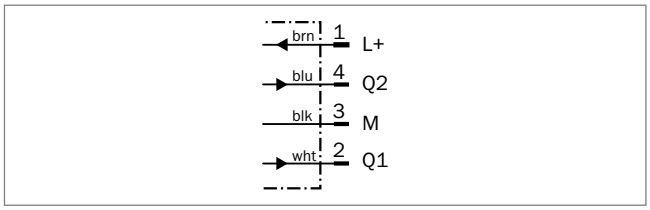
→ See “Analog output” on page I-150



Example connection diagram DC 4-wire, PNP/NPN NC:

Two point teach

→ See “Teach-in” on page I-154



EMC

According to EC Directive 2004/108/EC on electromagnetic compatibility, systems and components must satisfy certain properties in order to function smoothly in an electromagnetic environment.

Enclosure rating

The IP enclosure rating indicates the extent of a device's protection against contact with impurities such as dust or water. The code starts with the letters IP and is followed by the first digit, which is an ascending indicator of the degree of protection against contact and impurities, while the second digit is an indicator of protection against ingress of water:

IP 65: Complete protection against dust and protection against water jets

IP 67: Complete protection against dust and protection against water in 1 m of water for a period of 30 minutes at a constant room temperature

IP 68: Freely definable

IP 69K: Protection against high pressure cleaning according to EN 60529. Jet duration 30 s depending on jet angle 0° ... 90° in 30° steps at a water pressure of 80 bar ... 100 bar and a water temperature of 80 ± 5 °C.

→ See "Table of IP enclosure ratings" on page I-155

Equipment groups

→ See "Explosion protection according to ATEX" on page I-156

Equipment category

→ See "Explosion protection according to ATEX" on page I-156

Explosive groups

→ See "Explosion protection according to ATEX" on page I-156

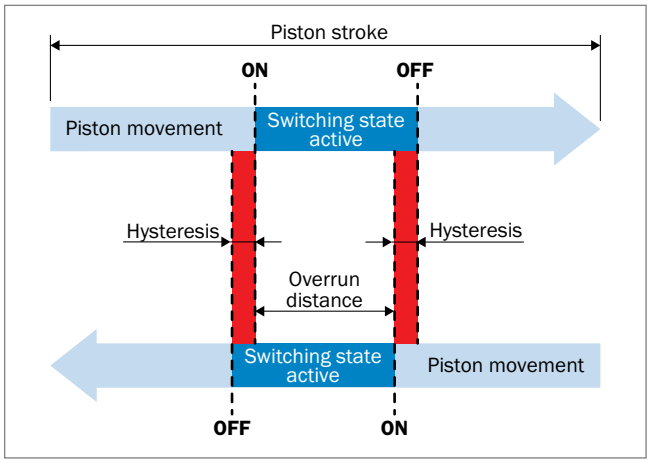
H I J

Hazardous area categorie

→ See "Explosion protection according to ATEX" on page I-156

Hysteresis

Hysteresis denotes the area between the point at which the piston movement switches the sensor to the active state and the point at which the switching state becomes inactive through movement in the opposite direction. If the cylinder piston is stopped in this area, the switching behavior becomes unstable and can be easily adversely affected by external influences.



→ See "Overrun distance" on page I-152

L

Linearity error

The linearity error describes the maximum deviation of the output signal from an ideal straight line. It is measured in millimeters. Determination of the linearity error: The measured values are first recorded. An adjustment calculation (method of the smallest maximum deviation) is used to set a reference line from these measured values. The maximum deviation of the recorded measured values from this reference line is then specified in millimeters as the linearity error.

Load resistance, min.

Describes the smallest current which is required for self-supply of 2-wire sensors to function in the switched-on state.

M

Magnetic field sensitivity

Corresponds to the magnetic field strength in mT (millitesla), which is necessary to obtain a switching signal for the sensor: sensors with higher sensitivity can detect even the weakest magnetic fields.

Max. tightening torque

The maximum allowable force that can be used when turning a screw without damaging the thread.

Minimum operating current Im

→ See "Load resistance, min." on page I-151

N O P Q

NAMUR

Standardization association for measurement and control.

No-load current

→ See “Power consumption” on page I-152

Nominal sensitivity

→ See “Magnetic field sensitivity” on page I-151

Off-state current

Describes the current flowing in the off state in the load circuit of the sensor.

Output current Ia

Constant current is defined as the maximum load current for continuous operation.

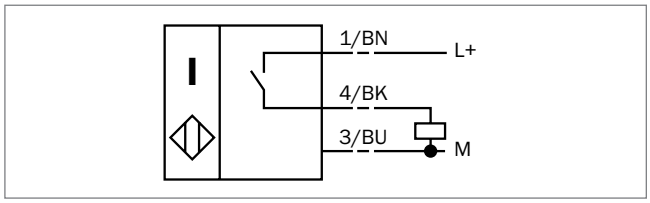
Output current QA

Current for analog devices varies according to the magnetic field strength (e.g., in the range 4 mA to 20 mA). This allows the exact position of the cylinder piston to be determined.

Output function

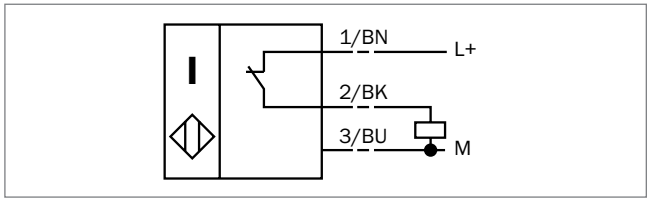
NO

A magnetic cylinder sensor‘s output circuit with NO function is energized when a target is detected, and de-energized when no target is detected.



NC

A magnetic cylinder sensor‘s output circuit with NC function is de-energized when a target is detected, and energized when no target is detected.

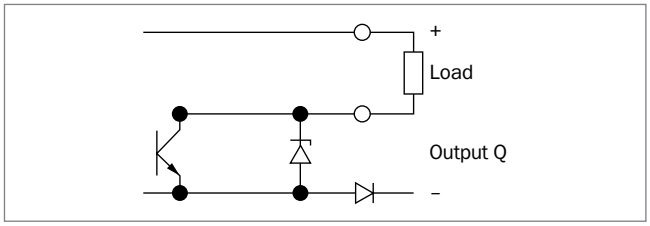


Output type

A output type is the output via which the switching state of the sensor is digitally outputted.

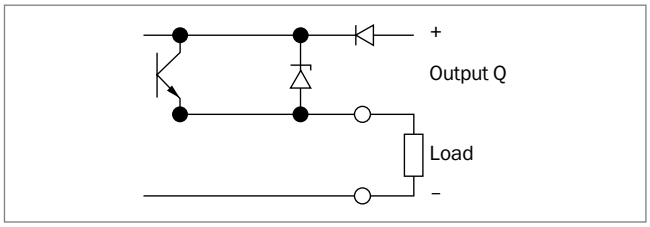
NPN output

The negative potential is connected to the load. This output is also referred to as negative switching or current-sinking.



PNP output

The positive potential is connected to the load. This output is also known as positive switching or current sourcing.



Output voltage QA

Voltage for analog devices varies according to the magnetic field strength (e.g., in the range 0 V to 10 V). This allows the exact position of the cylinder piston to be determined.

Overrun distance

Corresponds to the path that the cylinder piston travels while the sensor is in the active state.

Power consumption

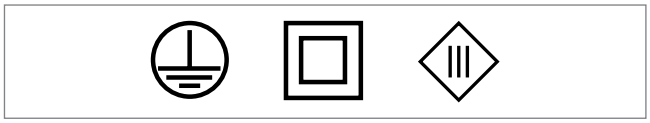
Power consumption refers to the current consumption of 3- and 4-wire sensors without a load being connected.

Power-up pulse protection

The power-up pulse suppression is used to suppress pulses by connecting of the operating voltage.

Protection class

Electrical equipment is classified in relation to existing safety measures for prevention of electric shocks. Protection classes are defined in DIN EN 61140. There are four protection classes ranging from “Basic insulation” (Class 0) to “Safety extra-low voltage (Class 1), double insulation (Class 2), safety transformer” (Class 3).



Left: Protection Class 1; middle: Protection Class 2; right: Protection Class 3

R

Repeat accuracy

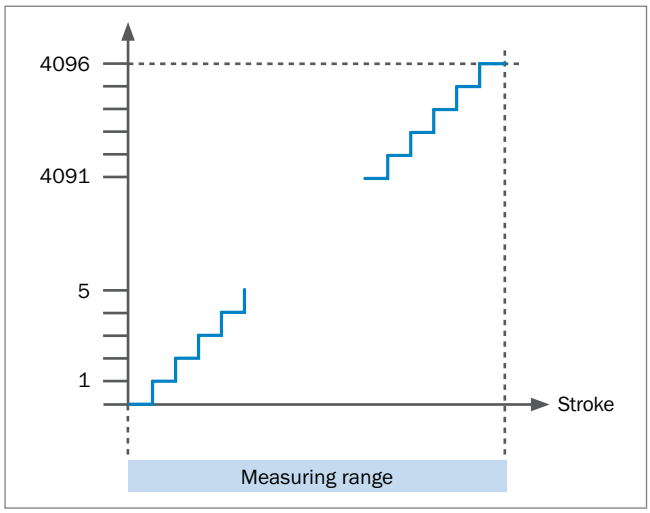
→ See “Reproducibility” on page I-153

Reproducibility

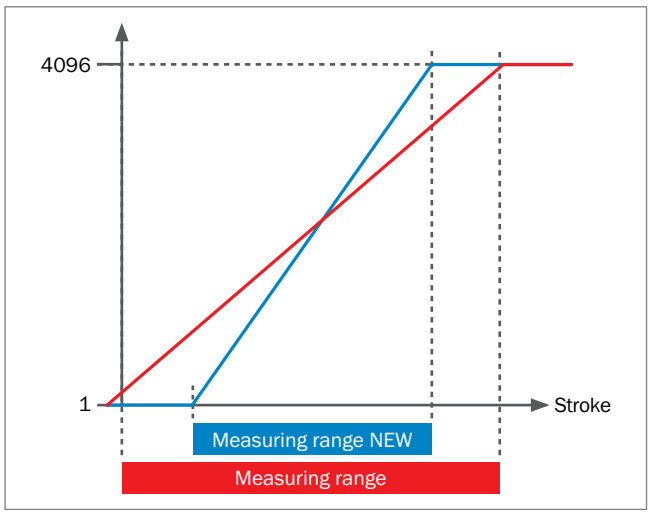
Reproducibility/repeat accuracy of analog sensors is defined as any move to a preset position from the same direction always. It is specified as a percentage or reproducibility of the upper range value (URV).

Resolution

The resolution of analog sensors describes the smallest measurable change in signal output. It is determined by moving the magnet until a change occurs on the signal output. The distance traveled is the resolution of the sensor. This deviation is specified as a percentage of the upper range value (URV). The resolution of the output signal A_{SIGNAL} is essentially determined by the digital/analog converter and is 12 bit (i.e., 4096 stages or 0.024% of the URV).



The resolution of the digital/analog converter is 12 bits or 4096 stages.



The resolution can be increased in the application if the measuring range is reduced. This applies only for a measuring range of approx. 200 mm.

Example of calculating the resolution

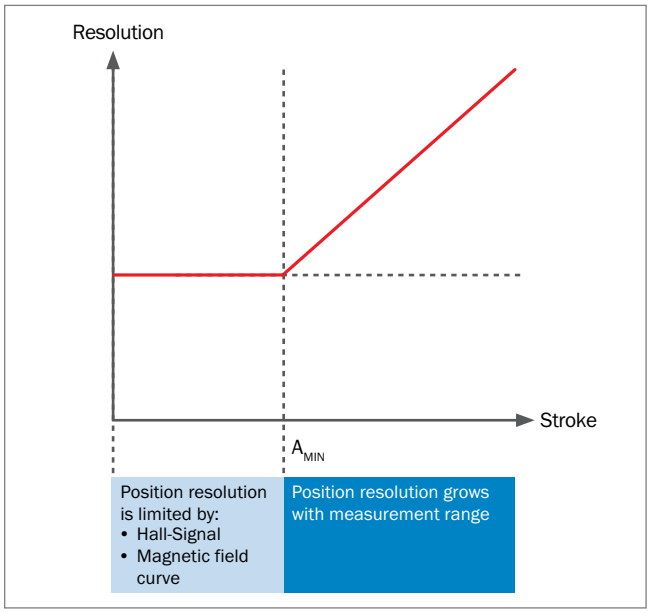
An analog positioning sensor with a maximum measurement range of 256 mm is used on a pneumatic cylinder. In this case, the resolution is calculated as follows:

A_{POS} = MB / A_{SIGNAL} = 256 mm / 4096 = 0.0625 mm

Now the measuring range is adjusted to a stroke of 40 mm

A_{POSNEW} = MB_{NEW} / A_{SIGNAL}
= 220 mm /4096 = 0.0537 mm

Result: The teach process was able to improve the position resolution by 0.0088 mm. However, this increase in resolution is set by the hall signal and magnetic field curve. (chart on the right).



Reverse polarity protection

Reverse polarity protection is protection built into a sensor against damage caused by mixing supply voltage connections.

Ripple

Residual ripple is defined as the superimposed AC component (maximum allowable peak, expressed as a % of U_V) of the DC operating voltage (typically 10 %).

S

Sampling rate

The sampling rate indicates the time interval in which the signal on the analog output is updated.

Shock resistance

According to IEC 60068-2-27

6 shocks (six separate tests) are executed in each direction along three mutually perpendicular axes:

Pulse shape: half sine

Acceleration: ≤ 30 g

Pulse duration: 11 ms

Short-circuit protection

Short-circuit protection protects against overload and a direct short circuit. After exceeding the trigger threshold, the output is disabled. Then it is periodically (pulsed) queried whether the short circuit persists. After eliminating the short-circuit, the output is switched on again.

Short-time withstand current

Describes the current which can temporarily flow in the load circuit, without the sensor being destroyed.

Supply voltage

The supply voltage describes the voltage range within which the sensor works properly.

Switching frequency

The switching frequency is the number of switching operations a sensor can perform within a specified time interval.

T

Teach-in

The user can use the Teach function to easily and precisely adjust the measuring range. Zero and end points can be freely selected. The optimal resolution is also achieved in this step because the full measuring range is used for the required length of stroke.

Temperature classes

→ See “Explosion protection according to ATEX” on page I-156

Temperature drift

This parameter of analog sensors defines the measurement error caused by any change in the ambient temperature. It is specified as a percentage of the upper range value (URV).

Time delay before availability

The time delay before availability is the time it takes for the sensor to be ready after power-up.

Types of flammable protection

→ See “Explosion protection according to ATEX” on page I-156

V

Vibration resistance

According to IEC 60068-2-6

The test shall be conducted in three mutually perpendicular axes under the following conditions:

Frequency range: 10 Hz to 55 Hz

Amplitude: 1 mm

Oscillation period: 5 min

Duration of the service life at resonance frequency or at 55 Hz: 30 min on each axis.

Voltage drop

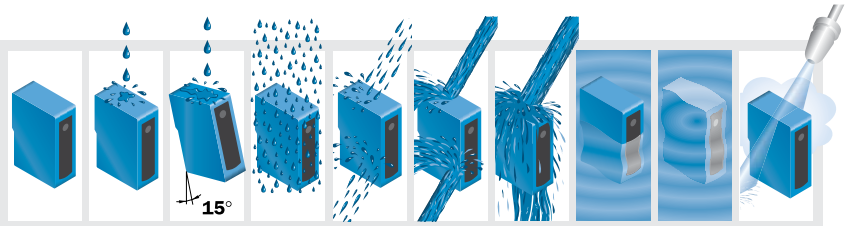
Voltage drop is defined as the voltage loss that occurs with maximum continuous current I_a across the switching stage of the magnetic cylinder sensor. In particular, this behavior is observed in the series circuit.

W X Y

Wire-break protection

Due to broken wire protection, the output remains locked if the supply cable breaks. Malfunctions are thereby prevented.

Table of IP enclosure ratings



2nd digit: Protection against ingress of water / **1st digit:** Protection against ingress of foreign bodies	No protection	Drip-water vertical	Drip-water tilted	Spray water	Splash water	Jet water	Strong jet of water	Temporary immersion	Lasting immersion	100 bar, 16 l/min., 80 °C
IEC 529 DIN 40050	**IP...0**	**IP...1**	**IP...2**	**IP...3**	**IP...4**	**IP...5**	**IP...6**	**IP...7**	**IP...8**	**IP...9K**
IP 0... No protection	IP 00									
IP 1... Size of foreign body ≥ 50 mm Ø	IP 10	IP 11	IP 12							
IP 2... Size of foreign body ≥ 12 mm Ø	IP 20	IP 21	IP 22	IP 23						
IP 3... Size of foreign body ≥ 2.5 mm Ø	IP 30	IP 31	IP 32	IP 33	IP 34					
IP 4... Size of foreign body ≥ 1 mm Ø	IP 40	IP 41	IP 42	IP 43	IP 44					
IP 5... Dust-protected	IP 50			IP 53	IP 54	IP 55	IP 56			
IP 6... Dust-proof	IP 60					IP 65	IP 66	IP 67	IP 68	IP 69K

Explosion protection according to ATEX

ATEX Directive 94/9

The directive 94/9/EC in the European Union is the framework for approximation of the laws of the Member States concerning equipment and protective systems for use in potentially explosive atmospheres. Generally called ATEX (for "Atmosphère explosible"), this directive was implemented in Germany with the 11th Ordinance of the Equipment and Product Safety Act ("Explosion Protection Regulation"/11th GPSGV). Thus, there exist detailed rules for the marketing of new equipment and protective systems for use in hazardous locations. In accordance with the regulations of the directive, products are classified into equipment groups and categories.

Equipment groups

Equipment group I

Encompasses equipment for use in underground mining, including surface equipment.

Equipment group II

Encompasses equipment for use in surface operations and is subdivided into categories 1–3.

Categories and criteria

Category 1 – Very high safety measures

Equipment for use in areas (zones) in which explosive atmospheres are present continuously, long-term or frequently. Even for rarely occurring problems, explosion protection must be guaranteed. This category corresponds to Zones 0 for gases, vapors and mists, as well as Zones 20 for dust environments, where an explosive atmosphere occurs continuously, long-term or frequently in the form of a cloud of combustible dust in the air.

The conditions of Zones 0 and 20 might also occur inside boxes, pipe lines and equipment.

Category 2 – High safety measures

Equipment for use in areas (zones) in which explosive atmospheres only occasionally occur. Explosion protection must also be guaranteed for frequently occurring equipment problems. This category corresponds to Zones 1 for gases, vapors and mists, as well as Zones 21 for dust environments, where an explosive atmosphere occurs occasionally in the form of a cloud of combustible dust in the air under normal operation. This zone can, for example, include areas in the immediate vicinity of e.g., powder filling and emptying points and areas where dust deposits occur and in areas of normal operation give rise occasionally to an explosive concentration of combustible dust when mixed with air.

Category 3 – Normal safety measures

Equipment for use in areas (zones) in which explosive atmospheres are not expected to occur. However, in the event that an explosive atmosphere does occur, it occurs only very rarely and only temporarily. Under normal operation, category 3 equipment must guarantee the required safety measures.

The corresponding zones are Zone 2 for gases, vapors and mists, as well as Zone 22 for areas in which under normal operation it is not expected that an explosive atmosphere in the form of a cloud of combustible dust in air occurs and if it does, then only briefly. This can include areas around dust containing instruments, protective systems and components in which dust can escape due to lack of tightness and cause dust deposits.

Equipment group II						
Equipment for use in other hazardous areas						
	Category 1		Category 2		Category 3	
Danger	Constant, frequent or over a long period		Occasional		Seldom and over a short period	
Requirements	Very high safety		High safety		Normal safety	
Zone	Zone 0	Zone 20	Zone 1	Zone 21	Zone 2	Zone 22
Substance group	G	D	G	D	G	D

G = Gas, D = Dust.

Certificate

After a test body for a device has ensured compliance with the basic safety requirements, it generates a test report. This test report is the basis for a certificate authority (notified body) to issue an EC type-examination certificate.

The CE and ATEX symbols may only be attached to the product when yet another certificate of a notified body per Directive 97/9 concerning the quality assurance of the production of the products has also been granted for the corresponding product group and when the manufacturer has issued a conformity declaration concerning the conformity of the products with the construction type treated in the EC type-examination certificate.

Principles of explosion protection

To establish uniform standards in the determination of protective measures, flammable liquids and gases are divided into explosion groups and temperature classes based on their explosion-relevant properties.

Explosive groups

Gases and vapors are classified into three explosive groups (IIA, IIB and IIC) based on their specific flammability. The danger increases from explosion group IIA to IIC (the higher IIC explosion group always includes the lower IIB and IIA groups).

Temperature classes

To help plan for an installation, 6 temperature classes (T1 to T6) have been established for the approved surface temperatures. Depending on their respective ignition temperatures, certain flammable gases and vapors can be classified under these temperature classes. For the temperature classes, the following maximum allowable surface temperatures are valid for equipment (the higher temperature classes encompass the lower classes, e.g., T6 includes the lower temperature classes T5 to T1):

Class	Max. surface temperature		
T1	450 °C	T4	135 °C
T2	300 °C	T5	100 °C
T3	200 °C	T6	85 °C

Types of flammable protection

Technical means must be used to ensure that no ignition source can take effect according to the classification of a given explosive mixture (gap width, temperature class). There are several technical possibilities to achieve explosion protection of an electrical device. The types of flammable protection are listed in the table. On the explosive identification label of a device, the type of flammable protection accorded to the device is indicated by the initial letters of the type of flammable protection.

Flammable protection	Description
Flameproof Encapsulation d (drive enclosure)	The components that could trigger ignition are installed in an enclosure that withstands the explosion pressure. The openings of the enclosure are designed such that an outward transmission of the explosion is prevented.
Enhanced safety e (enhanced safety)	The development of sparks, electric arcs, or impermissible temperatures that could function as a source of ignition, is prevented by additional measures and an increased degree of safety.
Pressurized apparatus p (pressurization, purging)	The device enclosure is filled with a protective gas. An excess pressure is maintained so that an explosive gas mixture cannot reach the possible ignition sources arranged in the interior of the enclosure. If necessary, gas flows continuously through the enclosure.
Intrinsic safety i (intrinsic safety)	The supply of the electric equipment is led through a safety barrier that limits current and voltage to such an extent that the minimum ignition energy and ignition temperature of an explosive mixture is not reached.
Oil immersion o (oil immersion)	The parts of the electric equipment from which an ignition can arise are immersed in a protective liquid (mostly oil).
Sand encasing q (quartz filled)	The equipment is filled with fine-grained sand. A possible electric arc is cooled so much that the ignition of an explosive mixture is impossible. The surface temperature must not exceed the limit value.
Molded encapsulation m (molded)	The parts of the electric equipment that can create ignition sources are embedded in casting compound so that an electric arc cannot pass through to an explosive mixture outside the casing.
Ignition protection methods n (non-incendive, non-sparking)	In normal operation and with defined errors, there is no risk of ignition from the electric equipment.

All data without guarantee

Index by part no.

Part no.	Model name	Page
1016809	MZT1-03VPS-KW0	D-76
1016910	MZT1-03VPS-KP0	D-76
1016911	RZT1-03ZRS-KW0	D-88
1016912	RZT1-03ZRS-KP0	D-88
1017450	MZU2-03VPS-DCM	D-93
1017451	MZU2-03VPS-TCM	D-93
1017851	MZT1-03VNS-KP0	D-76
1018579	RZT1-03ZRS-KWB	D-88
1018999	MZT1-03VPS-KUB	D-76
1019005	MZT1-03VPS-KR0	D-76
1019698	RZT1-03ZRS-KR0	D-88
1022188	MZT1-03VPS-KQ0	D-76
1022786	RZT1-03ZRS-KWD	D-88
1023009	MZT1-03VNS-KU0	D-76
1023970	MZT6-03VPS-KW0	D-64
1023971	MZT6-03VPS-KP0	D-64
1023972	MZT6-03VPS-KR0	D-64
1023973	RZT6-03ZRS-KP0	D-82
1023974	RZT6-03ZRS-KW0	D-82
1023975	RZT6-03ZRS-KR0	D-82
1025380	RZT1-03ZUS-KWD	D-88
1025381	RZT1-03ZUS-KP0	D-88
1025522	RZT6-03ZUS-KW0	D-82
1025549	RZT6-03ZRS-KQ0	D-82
1025550	MZT6-03VPS-KQ0	D-64
1025642	MZT6-03VPS-KPD	D-64
1025809	MZT6-03VPS-^{KWB}	D-64
1025827	MZT6-03VPS-KWX	D-70
1025830	RZT6-03ZRS-KWB	D-82
1025872	MZT6-03VPS-KRD	D-64
1026246	MZT6-03VPS-KWD	D-64
1026469	RZT1-03ZUO-KW0	D-88
1026752	RZT6-03ZRS-KWD	D-82
1027089	MZT6-03VPS-KRB	D-64
1027577	MZT1-03VNS-KR0	D-76
1027621	MZT1-03VPS-KU0	D-76
1028079	RZT1-03ZRS-KWA	D-88
1028403	RZT6-03ZRS-KRD	D-82
1028629	MZT6-03VPS-KPX	D-70
1028741	MZT6-03VPO-KP0	D-64
1029161	MZT6-03VPS-KQX	D-70
1029401	MZT6-03VNS-KW0	D-64
1029402	MZT6-03VNS-KP0	D-64
1029602	RZT1-03ZUS-KWB	D-88
1029639	MZT6-03VPO-KWD	D-64
1029649	MZT1-03VPS-KQD	D-76
1029845	MZ2Q-FTZPS-KU0	D-50
1029846	MZ2Q-FTZPS-KP0	D-50
1041322	MZ2Q-FTZPS-KR0	D-50
1041323	MZ2Q-FTZPS-KQ0	D-50
1042228	MZ2Q-TSLPS-KQ0	D-50
1042237	MZ2Q-CSSPSKU0	E-104
1042238	MZ2Q-CSSPSKP0	E-104
1042239	MZ2Q-CSSPSKR0	E-104
1042240	MZ2Q-CSSPSKQ0	E-104
1042241	MZ2Q-CFSPSKU0	E-104
1042242	MZ2Q-CFSPSKP0	E-104
1042243	MZ2Q-CFSPSKR0	E-104
1042244	MZ2Q-CFSPSKQ0	E-104
1043063	MZT1-03VPS-KRA	D-76
1043369	MZT6-03VPS-KU0	D-64
1043407	MZT6-03VPS-KUB	D-64
1043567	RZT1-03ZUS-KU0	D-88
1043696	MZ2Q-CSLPSKQ0	E-104
1043697	MZ2Q-CFLPSKQ0	E-104
1044349	MZT8-03VPS-KW0	D-58
1044458	MZT8-03VPS-KP0	D-58
1044459	MZT8-03VPS-KR0	D-58
1044460	MZT8-03VPS-KQ0	D-58
1044461	MZT8-03VPS-KPD	D-58
1044463	MZT8-03VPS-KRB	D-58
1044464	MZT8-03VPS-KRD	D-58
1044466	MZT8-03VPS-KUA	D-58
1044468	MZT8-03VNS-KW0	D-58
1044469	MZT8-03VPS-KU0	D-58
1044470	MZT8-03VPS-KUB	D-58
1044930	MZT8-03VPO-KP0	D-58
1044931	MZT8-03VPO-KU0	D-58
1044932	MZT8-03VNS-KP0	D-58
1044934	MZT8-03VNS-KU0	D-58
1044935	MZT8-03VNS-KR0	D-58
1045267	MZ2Q-FTZPS-KUB	D-50
1045666	MPS-032TSTP0	C-28
1045667	MPS-032TSTU0	C-28
1045668	MPS-064TSTP0	C-28
1045669	MPS-064TSTU0	C-28
1045670	MPS-096TSTP0	C-28
1045671	MPS-096TSTU0	C-28
1045672	MPS-128TSTP0	C-28
1045673	MPS-128TSTU0	C-28
1046001	RZT1-03ZUS-KW0	D-88
1046234	MZ2Q-CSSNSKUA	E-104
1047728	MPS-192TSTP0	C-28
1048048	MZT8-28VPS-KP0	D-58
1048049	MZT8-28VPS-KU0	D-58
1048050	MZT8-28VPS-KR0	D-58
1048051	MZT8-28VPS-KQ0	D-58
1048103	MZ2Q-FTZNS-KU0	D-50
1048285	MZT1-03VNO-KW0	D-76
1048294	MZT6-03VPO-KRD	D-64
1048314	MZT8-03VPS-KWB	D-58
1050551	MPS-256TSTP0	C-28
1050685	MPS-160TSTP0	C-28
1050686	MPS-224TSTP0	C-28
1050738	MPS-192TSTU0	C-28
1050739	MPS-256TSTU0	C-28
1050740	MPS-160TSTU0	C-28
1050741	MPS-224TSTU0	C-28
1050918	MPS-032TSNU0	C-28
1050919	MPS-064TSNU0	C-28
1050920	MPS-096TSNU0	C-28
1050921	MPS-128TSNU0	C-28

Part no.	Model name	Page
1050922	MPS-160TSNU0	C-28
1050923	MPS-192TSNU0	C-28
1050924	MPS-224TSNU0	C-28
1050925	MPS-256TSNU0	C-28
1053835	MPS-032TSNP0	C-28
1053836	MPS-064TSNP0	C-28
1053837	MPS-096TSNP0	C-28
1053838	MPS-128TSNP0	C-28
1053839	MPS-160TSNP0	C-28
1053840	MPS-192TSNP0	C-28
1053841	MPS-224TSNP0	C-28
1053842	MPS-256TSNP0	C-28
1054051	MZT8-03VPS-KUD	D-58
1057030	MZT8-28VPS-KWB	D-58
1058311	MZT8-28VPS-KQD	D-58
1058317	MZT8-03VPS-KQD	D-58
1059442	MPA-107THTP0	C-36
1059443	MPA-107THTU0	C-36
1059444	MPA-143THTP0	C-36
1059445	MPA-143THTU0	C-36
1059446	MPA-179THTP0	C-36
1059447	MPA-179THTU0	C-36
1059448	MPA-215THTP0	C-36
1059449	MPA-215THTU0	C-36
1059450	MPA-251THTP0	C-36
1059451	MPA-251THTU0	C-36
1059452	MPA-287THTP0	C-36
1059453	MPA-287THTU0	C-36
1059454	MPA-323THTP0	C-36
1059455	MPA-323THTU0	C-36
1059456	MPA-359THTP0	C-36
1059457	MPA-359THTU0	C-36
1059458	MPA-395THTP0	C-36
1059459	MPA-395THTU0	C-36
1059460	MPA-431THTP0	C-36
1059461	MPA-431THTU0	C-36
1059462	MPA-467THTP0	C-36
1059463	MPA-467THTU0	C-36
1059464	MPA-503THTP0	C-36
1059465	MPA-503THTU0	C-36
1059466	MPA-539THTP0	C-36
1059467	MPA-575THTP0	C-36
1059468	MPA-611THTP0	C-36
1059469	MPA-647THTP0	C-36
1059470	MPA-683THTP0	C-36
1059471	MPA-719THTP0	C-36
1059472	MPA-755THTP0	C-36
1059473	MPA-791THTP0	C-36
1059474	MPA-827THTP0	C-36
1059475	MPA-863THTP0	C-36
1059476	MPA-899THTP0	C-36
1059477	MPA-935THTP0	C-36
1059478	MPA-971THTP0	C-36
1059479	MPA-1007THTP0	C-36
1059735	MZC1-2V2PS-KP0	E-112
1059736	MZC1-2V2PS-KQ0	E-112
1059737	MZC1-2V2PS-KR0	E-112
1059738	MZC1-2V2PS-KU0	E-112

Part no.	Model name	Page
1059739	MZC1-2V2PS-KUB	E-112
1059740	MZC1-2V2PS-KW0	E-112
1059741	MZC1-2V2PS-KWB	E-112
1059742	MZC1-2V2NS-KR0	E-112
1059743	MZC1-2V2NS-KU0	E-112
1059744	MZC1-2V2NS-KP0	E-112
1059745	RZC1-04ZRS-KQ0	E-118
1059746	RZC1-04ZRS-KU0	E-118
1059747	RZC1-04ZRS-KP0	E-118
1059748	RZC1-04ZRS-KR0	E-118
1059749	RZC1-04ZRS-KUB	E-118
1059750	RZC1-04ZUS-KU0	E-118
1059751	RZC1-04ZUS-KP0	E-118
1059752	MZC1-4V3PS-KP0	E-112
1059753	MZC1-4V3PS-KR0	E-112
1059754	MZC1-4V3PS-KQ0	E-112
1059755	MZC1-4V3PS-KU0	E-112
1059756	MZC1-4V3NS-KU0	E-112
1059757	MZC1-4V3NS-KP0	E-112
1060129	MZC1-2V2PS-KRD	E-112
1060130	RZC1-04ZRS-KRD	E-118
1062506	MPS-032TLTQ0	C-29
1062507	MPS-064TLTQ0	C-29
1062508	MPS-096TLTQ0	C-29
1062518	MPS-128TLTQ0	C-29
1062519	MPS-192TLTQ0	C-29
1062520	MPS-256TLTQ0	C-29
1062521	MPS-160TLTQ0	C-29
1062522	MPS-224TLTQ0	C-29
2019822	BEF-KS-U2-T1	F-126
2019823	BEF-KS-U2-P2	F-126
2019824	BEF-KS-U2-P1	F-126
2022702	BEF-KHZ-PT1	F-126
2022703	BEF-KHZ-ST1	F-125
2046439	BEF-KHZ-TT1	F-126
2046440	BEF-KHZ-TT2	F-126
2046441	BEF-KHZ-TC1	F-126
2046442	BEF-KHZ-TC2	F-126
2061698	BEF-KHZ-CT45	F-126
2065575	BEF-KHZT01MPA	F-125
2065577	BEF-WNZ01MPA	H-143
2065578	BEF-KHZPZ1MPA	F-126
2065973	BEF-WNL01MPA	H-143
2066626	BEF-KHZR085MPA	F-125
2066627	BEF-KHZR135MPA	F-125
2066628	BEF-KHZR210MPA	F-125
4030922	BEF-KS-U2-S1	F-126
4031632	BEF-KS-U2-S1T	F-126
5311171	BEF-KHZ-RT1-25	F-125
5311172	BEF-KHZ-RT1-63	F-125
5311506	BEF-KHZ-RT1-130	F-125
5327349	Magnet	H-143
6007302	DOS-1204-G	H-142
6007303	DOS-1204-W	H-142
6008489	DOL-0803-W02M	H-140
6009382	DOL-1204-G02M	H-141
6009383	DOL-1204-W02M	H-141
6009866	DOL-1204-G05M	H-141

Part no.	Model name	Page
6009867	DOL-1204-W05M	H-141
6009870	DOL-0804-G02M	H-140
6009871	DOL-0804-W02M	H-140
6009872	DOL-0804-G05M	H-140
6009873	DOL-0804-W05M	H-140
6009932	STE-1204-G	H-143
6009974	DOS-0804-G	H-142
6009975	DOS-0804-W	H-142
6010541	DOL-1204-W10M	H-141
6010543	DOL-1204-G10M	H-141
6010754	DOL-0804-G10M	H-140
6010755	DOL-0804-W10M	H-140
6022009	DOL-0803-G05M	H-140
6022010	DOL-0803-W05M	H-140
6022011	DOL-0803-G10M	H-140
6022012	DOL-0803-W10M	H-140
6022084	STE-1204-W	H-143
6025888	DOL-0803-G02MC	H-140
6025889	DOL-0803-G05MC	H-140
6025890	DOL-0803-G10MC	H-140
6025891	DOL-0803-W02MC	H-140
6025892	DOL-0803-W05MC	H-140
6025893	DOL-0803-W10MC	H-140
6025894	DOL-0804-G02MC	H-141
6025895	DOL-0804-G05MC	H-141
6025896	DOL-0804-G10MC	H-141
6025897	DOL-0804-W02MC	H-141
6025898	DOL-0804-W05MC	H-141
6025899	DOL-0804-W10MC	H-141
6025900	DOL-1204-G02MC	H-142
6025901	DOL-1204-G05MC	H-142
6025902	DOL-1204-G10MC	H-142
6025903	DOL-1204-W02MC	H-142
6025904	DOL-1204-W05MC	H-142
6025905	DOL-1204-W10MC	H-142
6027944	DOL-1204-L05M	H-141
6027945	DOL-1204-L02M	H-141
6027946	DOL-1204-L10M	H-141
6036472	DOL-0803-G15M	H-140
6036473	DOL-0803-W15M	H-140
6036752	DOL-1203-W10MC	H-141
6036753	DOL-1203-W15MC	H-141
6036754	DOL-1203-W20MC	H-141
6037322	STE-0803-G	H-143
6037323	STE-0804-G	H-143
6039075	DOL-1203-G02MC	H-141
6039076	DOL-1203-G05MC	H-141
6039077	DOL-1203-G10MC	H-141
6039078	DOL-1203-W02MC	H-141
6039079	DOL-1203-W05MC	H-141
7902077	DOS-0803-G	H-142
7902078	DOS-0803-W	H-142

Index by model name

Model name	Part no.	Page
BEF-KHZ-CT45	2061698	F-126
BEF-KHZ-PT1	2022702	F-126
BEF-KHZ-RT1-130	5311506	F-125
BEF-KHZ-RT1-25	5311171	F-125
BEF-KHZ-RT1-63	5311172	F-125
BEF-KHZ-ST1	2022703	F-125
BEF-KHZ-TC1	2046441	F-126
BEF-KHZ-TC2	2046442	F-126
BEF-KHZ-TT1	2046439	F-126
BEF-KHZ-TT2	2046440	F-126
BEF-KHZPZ1MPA	2065578	F-126
BEF-KHZR085MPA	2066626	F-125
BEF-KHZR135MPA	2066627	F-125
BEF-KHZR210MPA	2066628	F-125
BEF-KHZT01MPA	2065575	F-125
BEF-KS-U2-P1	2019824	F-126
BEF-KS-U2-P2	2019823	F-126
BEF-KS-U2-S1T	4031632	F-126
BEF-KS-U2-S1	4030922	F-126
BEF-KS-U2-T1	2019822	F-126
BEF-WNL01MPA	2065973	H-143
BEF-WNZ01MPA	2065577	H-143
DOL-0803-G02MC	6025888	H-140
DOL-0803-G05MC	6025889	H-140
DOL-0803-G05M	6022009	H-140
DOL-0803-G10MC	6025890	H-140
DOL-0803-G10M	6022011	H-140
DOL-0803-G15M	6036472	H-140
DOL-0803-W02MC	6025891	H-140
DOL-0803-W02M	6008489	H-140
DOL-0803-W05MC	6025892	H-140
DOL-0803-W05M	6022010	H-140
DOL-0803-W10MC	6025893	H-140
DOL-0803-W10M	6022012	H-140
DOL-0803-W15M	6036473	H-140
DOL-0804-G02MC	6025894	H-141
DOL-0804-G02M	6009870	H-140
DOL-0804-G05MC	6025895	H-141
DOL-0804-G05M	6009872	H-140
DOL-0804-G10MC	6025896	H-141
DOL-0804-G10M	6010754	H-140
DOL-0804-W02MC	6025897	H-141
DOL-0804-W02M	6009871	H-140
DOL-0804-W05MC	6025898	H-141
DOL-0804-W05M	6009873	H-140
DOL-0804-W10MC	6025899	H-141
DOL-0804-W10M	6010755	H-140
DOL-1203-G02MC	6039075	H-141
DOL-1203-G05MC	6039076	H-141
DOL-1203-G10MC	6039077	H-141
DOL-1203-W02MC	6039078	H-141
DOL-1203-W05MC	6039079	H-141
DOL-1203-W10MC	6036752	H-141
DOL-1203-W15MC	6036753	H-141
DOL-1203-W20MC	6036754	H-141
DOL-1204-G02MC	6025900	H-142

Model name	Part no.	Page
DOL-1204-G02M	6009382	H-141
DOL-1204-G05MC	6025901	H-142
DOL-1204-G05M	6009866	H-141
DOL-1204-G10MC	6025902	H-142
DOL-1204-G10M	6010543	H-141
DOL-1204-L02M	6027945	H-141
DOL-1204-L05M	6027944	H-141
DOL-1204-L10M	6027946	H-141
DOL-1204-W02MC	6025903	H-142
DOL-1204-W02M	6009383	H-141
DOL-1204-W05MC	6025904	H-142
DOL-1204-W05M	6009867	H-141
DOL-1204-W10MC	6025905	H-142
DOL-1204-W10M	6010541	H-141
DOS-0803-G	7902077	H-142
DOS-0803-W	7902078	H-142
DOS-0804-G	6009974	H-142
DOS-0804-W	6009975	H-142
DOS-1204-G	6007302	H-142
DOS-1204-W	6007303	H-142
Magnet	5327349	H-143
MPA-1007THTP0	1059479	C-36
MPA-107THTP0	1059442	C-36
MPA-107THTU0	1059443	C-36
MPA-143THTP0	1059444	C-36
MPA-143THTU0	1059445	C-36
MPA-179THTP0	1059446	C-36
MPA-179THTU0	1059447	C-36
MPA-215THTP0	1059448	C-36
MPA-215THTU0	1059449	C-36
MPA-251THTP0	1059450	C-36
MPA-251THTU0	1059451	C-36
MPA-287THTP0	1059452	C-36
MPA-287THTU0	1059453	C-36
MPA-323THTP0	1059454	C-36
MPA-323THTU0	1059455	C-36
MPA-359THTP0	1059456	C-36
MPA-359THTU0	1059457	C-36
MPA-395THTP0	1059458	C-36
MPA-395THTU0	1059459	C-36
MPA-431THTP0	1059460	C-36
MPA-431THTU0	1059461	C-36
MPA-467THTP0	1059462	C-36
MPA-467THTU0	1059463	C-36
MPA-503THTP0	1059464	C-36
MPA-503THTU0	1059465	C-36
MPA-539THTP0	1059466	C-36
MPA-575THTP0	1059467	C-36
MPA-611THTP0	1059468	C-36
MPA-647THTP0	1059469	C-36
MPA-683THTP0	1059470	C-36
MPA-719THTP0	1059471	C-36
MPA-755THTP0	1059472	C-36
MPA-791THTP0	1059473	C-36
MPA-827THTP0	1059474	C-36
MPA-863THTP0	1059475	C-36
MPA-899THTP0	1059476	C-36
MPA-935THTP0	1059477	C-36

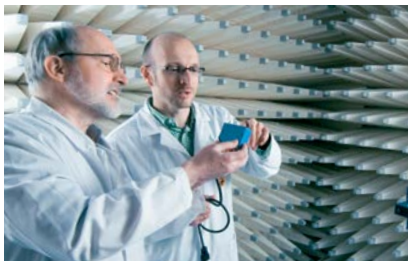
Model name	Part no.	Page
MPA-971THTP0	1059478	C-36
MPS-032TLTQ0	1062506	C-29
MPS-032TSNP0	1053835	C-28
MPS-032TSNU0	1050918	C-28
MPS-032TSTP0	1045666	C-28
MPS-032TSTU0	1045667	C-28
MPS-064TLTQ0	1062507	C-29
MPS-064TSNP0	1053836	C-28
MPS-064TSNU0	1050919	C-28
MPS-064TSTP0	1045668	C-28
MPS-064TSTU0	1045669	C-28
MPS-096TLTQ0	1062508	C-29
MPS-096TSNP0	1053837	C-28
MPS-096TSNU0	1050920	C-28
MPS-096TSTP0	1045670	C-28
MPS-096TSTU0	1045671	C-28
MPS-128TLTQ0	1062518	C-29
MPS-128TSNP0	1053838	C-28
MPS-128TSNU0	1050921	C-28
MPS-128TSTP0	1045672	C-28
MPS-128TSTU0	1045673	C-28
MPS-160TLTQ0	1062521	C-29
MPS-160TSNP0	1053839	C-28
MPS-160TSNU0	1050922	C-28
MPS-160TSTP0	1050685	C-28
MPS-160TSTU0	1050740	C-28
MPS-192TLTQ0	1062519	C-29
MPS-192TSNP0	1053840	C-28
MPS-192TSNU0	1050923	C-28
MPS-192TSTP0	1047728	C-28
MPS-192TSTU0	1050738	C-28
MPS-224TLTQ0	1062522	C-29
MPS-224TSNP0	1053841	C-28
MPS-224TSNU0	1050924	C-28
MPS-224TSTP0	1050686	C-28
MPS-224TSTU0	1050741	C-28
MPS-256TLTQ0	1062520	C-29
MPS-256TSNP0	1053842	C-28
MPS-256TSNU0	1050925	C-28
MPS-256TSTP0	1050551	C-28
MPS-256TSTU0	1050739	C-28
MZ2Q-CFLPSKQ0	1043697	E-104
MZ2Q-CFSPSKP0	1042242	E-104
MZ2Q-CFSPSKQ0	1042244	E-104
MZ2Q-CFSPSKR0	1042243	E-104
MZ2Q-CFSPSKU0	1042241	E-104
MZ2Q-CSLPSKQ0	1043696	E-104
MZ2Q-CSSNSKUA	1046234	E-104
MZ2Q-CSSPSKP0	1042238	E-104
MZ2Q-CSSPSKQ0	1042240	E-104
MZ2Q-CSSPSKR0	1042239	E-104
MZ2Q-CSSPSKU0	1042237	E-104
MZ2Q-FTZNS-KU0	1048103	D-50
MZ2Q-FTZPS-KP0	1029846	D-50
MZ2Q-FTZPS-KQ0	1041323	D-50
MZ2Q-FTZPS-KR0	1041322	D-50
MZ2Q-FTZPS-KU0	1029845	D-50
MZ2Q-FTZPS-KUB	1045267	D-50

Model name	Part no.	Page
MZ2Q-TSLPS-KQ0	1042228	D-50
MZC1-2V2NS-KP0	1059744	E-112
MZC1-2V2NS-KR0	1059742	E-112
MZC1-2V2NS-KU0	1059743	E-112
MZC1-2V2PS-KP0	1059735	E-112
MZC1-2V2PS-KQ0	1059736	E-112
MZC1-2V2PS-KR0	1059737	E-112
MZC1-2V2PS-KRD	1060129	E-112
MZC1-2V2PS-KU0	1059738	E-112
MZC1-2V2PS-KUB	1059739	E-112
MZC1-2V2PS-KW0	1059740	E-112
MZC1-2V2PS-KWB	1059741	E-112
MZC1-4V3NS-KP0	1059757	E-112
MZC1-4V3NS-KU0	1059756	E-112
MZC1-4V3PS-KP0	1059752	E-112
MZC1-4V3PS-KQ0	1059754	E-112
MZC1-4V3PS-KR0	1059753	E-112
MZC1-4V3PS-KU0	1059755	E-112
MZT1-03VNO-KW0	1048285	D-76
MZT1-03VNS-KP0	1017851	D-76
MZT1-03VNS-KR0	1027577	D-76
MZT1-03VNS-KU0	1023009	D-76
MZT1-03VPS-KP0	1016910	D-76
MZT1-03VPS-KQ0	1022188	D-76
MZT1-03VPS-KQD	1029649	D-76
MZT1-03VPS-KR0	1019005	D-76
MZT1-03VPS-KRA	1043063	D-76
MZT1-03VPS-KU0	1027621	D-76
MZT1-03VPS-KUB	1018999	D-76
MZT1-03VPS-KW0	1016809	D-76
MZT6-03VNS-KP0	1029402	D-64
MZT6-03VNS-KW0	1029401	D-64
MZT6-03VPO-KP0	1028741	D-64
MZT6-03VPO-KRD	1048294	D-64
MZT6-03VPO-KWD	1029639	D-64
MZT6-03VPS-KP0	1023971	D-64
MZT6-03VPS-KPD	1025642	D-64
MZT6-03VPS-KPX	1028629	D-70
MZT6-03VPS-KQ0	1025550	D-64
MZT6-03VPS-KQX	1029161	D-70
MZT6-03VPS-KR0	1023972	D-64
MZT6-03VPS-KRB	1027089	D-64
MZT6-03VPS-KRD	1025872	D-64
MZT6-03VPS-KU0	1043369	D-64
MZT6-03VPS-KUB	1043407	D-64
MZT6-03VPS-KW0	1023970	D-64
MZT6-03VPS-KWB	1025809	D-64
MZT6-03VPS-KWD	1026246	D-64
MZT6-03VPS-KWX	1025827	D-70
MZT8-03VNS-KP0	1044932	D-58
MZT8-03VNS-KR0	1044935	D-58
MZT8-03VNS-KU0	1044934	D-58
MZT8-03VNS-KW0	1044468	D-58
MZT8-03VPO-KP0	1044930	D-58
MZT8-03VPO-KU0	1044931	D-58
MZT8-03VPS-KP0	1044458	D-58
MZT8-03VPS-KPD	1044461	D-58
MZT8-03VPS-KQ0	1044460	D-58

Model name	Part no.	Page
MZT8-03VPS-KQD	1058317	D-58
MZT8-03VPS-KR0	1044459	D-58
MZT8-03VPS-KRB	1044463	D-58
MZT8-03VPS-KRD	1044464	D-58
MZT8-03VPS-KU0	1044469	D-58
MZT8-03VPS-KUA	1044466	D-58
MZT8-03VPS-KUB	1044470	D-58
MZT8-03VPS-KUD	1054051	D-58
MZT8-03VPS-KW0	1044349	D-58
MZT8-03VPS-KWB	1048314	D-58
MZT8-28VPS-KP0	1048048	D-58
MZT8-28VPS-KQ0	1048051	D-58
MZT8-28VPS-KQD	1058311	D-58
MZT8-28VPS-KR0	1048050	D-58
MZT8-28VPS-KU0	1048049	D-58
MZT8-28VPS-KWB	1057030	D-58
MZU2-03VPS-DCM	1017450	D-93
MZU2-03VPS-TCM	1017451	D-93
RZC1-04ZRS-KP0	1059747	E-118
RZC1-04ZRS-KQ0	1059745	E-118
RZC1-04ZRS-KR0	1059748	E-118
RZC1-04ZRS-KRD	1060130	E-118
RZC1-04ZRS-KU0	1059746	E-118
RZC1-04ZRS-KUB	1059749	E-118
RZC1-04ZUS-KP0	1059751	E-118
RZC1-04ZUS-KU0	1059750	E-118
RZT1-03ZRS-KP0	1016912	D-88
RZT1-03ZRS-KR0	1019698	D-88
RZT1-03ZRS-KW0	1016911	D-88
RZT1-03ZRS-KWA	1028079	D-88
RZT1-03ZRS-KWB	1018579	D-88
RZT1-03ZRS-KWD	1022786	D-88
RZT1-03ZUO-KW0	1026469	D-88
RZT1-03ZUS-KP0	1025381	D-88
RZT1-03ZUS-KU0	1043567	D-88
RZT1-03ZUS-KW0	1046001	D-88
RZT1-03ZUS-KWB	1029602	D-88
RZT1-03ZUS-KWD	1025380	D-88
RZT6-03ZRS-KP0	1023973	D-82
RZT6-03ZRS-KQ0	1025549	D-82
RZT6-03ZRS-KR0	1023975	D-82
RZT6-03ZRS-KRD	1028403	D-82
RZT6-03ZRS-KW0	1023974	D-82
RZT6-03ZRS-KWB	1025830	D-82
RZT6-03ZRS-KWD	1026752	D-82
RZT6-03ZUS-KW0	1025522	D-82
STE-0803-G	6037322	H-143
STE-0804-G	6037323	H-143
STE-1204-G	6009932	H-143
STE-1204-W	6022084	H-143

8016544/2013-09-10 · SF · Pre USmod int40

SICK at a glance



Leading technologies

With a staff of more than 6,000 and over 40 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.

Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids

Comprehensive services

- SICK LifeTime Services – for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under real-world conditions
- E-Business Partner Portal www.mysick.com – price and availability of products, requests for quotation and online orders

Worldwide presence with subsidiaries in the following countries:

Australia
Belgium/Luxembourg
Brasil
Ceská Republika
Canada
China
Danmark
Deutschland
España
France
Great Britain
India
Israel
Italia
Japan
México
Nederland
Norge
Österreich
Polska
România
Russia
Schweiz
Singapore
Slovenija
South Africa
South Korea
Suomi
Sverige
Taiwan
Türkiye
United Arab Emirates
USA

Please find detailed addresses and additional representatives and agencies in all major industrial nations at **www.sick.com**

SICK
Sensor Intelligence.