



With millimeter precision: Cylinder Sensors from SICK

Innovative products with compact dimensions

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SICK
Sensor Intelligence.

Cylinder solutions from SICK

More accurate processes for greater quality

Measuring, checking, positioning, quality control – crucial tasks in industrial automation. With the products involved becoming ever smaller, yet offering unprecedented performance levels! For example: innovative cylinder sensors from SICK, developed for faster and more accurate detection of piston positions in compact pneumatic cylinders. This results in wider fields of application for pneumatic cylinders, with new potential on machinery and in production plants.



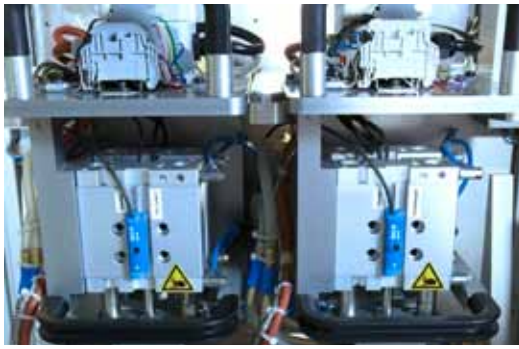
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Cylinder Sensors from SICK – Perfect for numerous applications



TECHNICAL DATA	MPS	MZ2Q-C	MZ2Q-T	MZT8
Dimensions in mm (W x H x L)	13.6 x 13.6 x 45/77/109/141	6.2 x 4.3 x 19	6.2 x 4.3 x 40	5 x 5.5 x 24
Housing material	Plastic	Plastic	Plastic	Plastic
Operating voltage U	15 ... 30 V DC	12 ... 30 V DC	12 ... 30 V DC	10 ... 30 V DC
Output current I		≤ 100 mA	≤ 100 mA	≤ 200 mA
Switching output interface		PNP/NPN	PNP/NPN	PNP/NPN
Output function	Analog, U, I	NO	NO	NO, NC
Type of connection	Cable, cable with plug M8 x 1	Cable, cable with plug M8 x 1/M12	Cable, cable with plug M8 x 1/M12	Cable, cable with plug M8 x 1/M12
Enclosure rating	IP 67	IP 67	IP 67	IP 68 / IP 69K
Switching frequency [Hz]		100	100	1,000
Features	Analog	1 sensor – 2 switching points	1 sensor – 2 switching points	
Approvals	CE cUL _{US}	CE cUL _{US}	CE cUL _{US}	CE cUL _{US}
Reed design				
Combined mounting Allen slot			•	•
Drop-in mounting	•	•	•	•
Accessories				
Mounting adapter	BEF-KHZ-ST1, BEF-KHZ-PT1 BEF-KHZ-TT1, BEF-KHZ-TT2	BEF-KHZ-TC1 BEF-KHZ-TC2	BEF-KHZ-ST1, BEF-KHZ-PT1 BEF-KHZ-RT1, BEF-KHZ-TT1, BEF-KHZ-TT2	BEF-KHZ-ST1, BEF-KHZ-PT1 BEF-KHZ-RT1, BEF-KHZ-TT1, BEF-KHZ-TT2
Application				
	Pneumatic cylinder, gripper T-slot Integrated profile cylinder Tie-rod cylinder Round body cylinder Dovetail cylinder SMC rail cylinder ECDQ, CDQ2	Pneumatic cylinder, gripper C-slot Integrated profile cylinder Tie-rod cylinder Round body cylinder Dovetail cylinder SMC rail cylinder ECDQ, CDQ2	Profile cylinder with T-slot Integrated profile cylinder Tie-rod cylinder Round body cylinder Dovetail cylinder SMC rail cylinder ECDQ, CDQ2	Profile cylinder with T-slot Integrated profile cylinder Tie-rod cylinder Round body cylinder Dovetail cylinder SMC rail cylinder ECDQ, CDQ2



MZT6/RZT6	MZN1/RZN1	MZU2
6.05 x 4.3 x 31.5	3.6 x 2.8 x 25	18 x 29 x 48
Plastic	Plastic	Die-cast zinc
10 ... 30 V DC	10 ... 30 V DC	10 ... 30 V DC
≤ 100/≤ 500 mA	≤ 100/500 mA	≤ 300 mA
PNP/NPN	PNP/NPN	PNP
NO, NC/reed	NO, NC/reed	NO
Cable, cable with plug M8 x 1/M12	Cable, cable with plug M8 x 1/M12	Plug M12 x 1
IP 68 / IP 69K	IP 67	IP 67
1,000/400	1,000/500	40
ATEX 3D/3G		Welding field resistant
   ATEX 3D/3G	 	
•	•	
•		
•	•	
BEF-KHZ-ST1, BEF-KHZ-PT1 BEF-KHZ-RT1, BEF-KHZ-TT1, BEF-KHZ-TT2	BEF-KHZ-TC1 BEF-KHZ-TC2	BEF-KS-U2-P1, BEF-KS-U2-P2, BEF-KS-U2-S1, BEF-KS-U2-T1,
Profile cylinder with T-slot Integrated profile cylinder Tie-rod cylinder Round body cylinder Dovetail cylinder SMC rail cylinder ECDQ, CDQ2	Pneumatic cylinder, gripper C-slot SMC rail cylinder ECDQ, CDQ2	Integrated profile cylinder Tie-rod cylinder Round body cylinder Dovetail cylinder SMC rail cylinder ECDQ, CDQ2

ADAPTERS
<ul style="list-style-type: none"> • Integrated profile cylinder • Tie-rod cylinder • Round body cylinder • Cylinder with dovetail slot • Cylinder with rail profile (SMC)

Mounting adapter

One More Strength: Universal

A reduction in product variants, same standards: The versatile mounting adapters not only allow convenient installation and replacement, but also reduce inventory costs considerably. This "one sensor concept" is ideally suited to most popular cylinder types.

- Versatile – enhanced flexibility
- Optimized inventory costs
- Convenient installation – reduces time and cost



For integrated profile cylinders: BEF-KHZ-PT1



For Tie-rod cylinders: BEF-KHZ-PT1



For SMC rail cylinders: BEF-KHZ-TT1



For round body cylinders: BEF-KHZ-RT1



For dovetail slots: BEF-KHZ-ST1



For SMC rail cylinders: BEF-KHZ-TT2

SICK

Cylinder sensors Technical data



System Recommendation:
Standard Intel Pentium PC
350 MHz, 128 MB RAM, 300 MB HD,
VGA High Color (256 Color)
Operating System:
Win 98, ME NT, 2000 or XP
Acrobat Reader Version 5.0 or higher



MPS – MAGNETIC POSITION SENSORS

Now offering more operating space for low-cost, high-performance pneumatic cylinders – through magnetic position sensors in new sizes.

- Measuring ranges between 32 and 128 mm
- High sample rate of 0.5 ms
- 0.1 mm repeat accuracy
- 0.05 mm resolution
- Individually teachable measuring ranges
- Convenient mounting



MZ2Q C AND T – MAGNETIC CYLINDER SENSORS

An ingenious principle in two sizes for C- and T-slots: MZ2Q series sensors have 2 adjustable switching points.

- Easy 2-point Teach-in procedure
- Cabling reduced by half
- Can be mounted from above
- Can be fully flush mounted into the slot
- IO-Link-enabled
- Detection zone up to 50 mm



MZT8 – MINI-FORMAT CYLINDER SENSORS

Incredibly small and robust, with active sensor tip: The MZT8 sensor is the ideal solution for pneumatic short-stroke cylinders and characterized by a wealth of technical benefits:

- At 24 mm, the shortest sensor on the market
- ASIC technology from SICK ensures best switching performance
- IP 68 / IP 69K
- Single-hand mounting via allen key or screwdriver

MPS and MZ2Q

More “action” for pneumatic cylinders and grippers

Full “active coverage” of pneumatic cylinders for improved application potential – an idea implemented by the MPS position sensors. With sizes from 32 to 128 mm and corresponding ranges of measuring and switching functions.



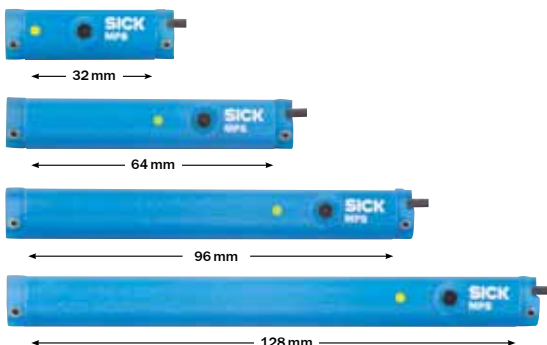
MPS POSITION SENSOR

- 0.5 ms sampling rate and 0.3 mm linearity set new precision benchmarks in this sensor class, and the MPS features a top-notch operating concept
- Freely selectable mounting direction
- In-range LED display



ABOUT MPS SAMPLE APPLICATIONS

- Magnetic position sensors enable the use of low-cost pneumatic cylinders instead of costly linear drives and offer benefits for all fields of application
- More speed for metering systems
- More accurate press-in work on automatic assembly machines
- Efficient quality controls
- Fast product changeovers e.g. for clamping operations



New sizes for more performance

The MPS series offers a practical variety of sizes, tailored to the dimensions of the most commonly used pneumatic cylinders.

- Compact design
- Minimal blind zones, wide measuring ranges
- Electronic zero point and end point adjustments



“Vanishingly” small, amazingly functional through 2 adjustable switching points: MZ2Q series magnetic cylinder sensors make automation more compact and more efficient. Only one slot on the cylinder is occupied, allowing convenient installation even in the most restricted spaces. For detection zones up to 50 mm.



MZ2Q C CYLINDER SENSORS

The compact solution for C-slots. Clever: they completely disappear into the slot, with remote teach-in via control wire.



MZ2Q T CYLINDER SENSORS

The intelligent solution for T-slots – maximum performance, smallest format. With IO-Link interface for very easy parametrization and diagnostics.

- A world first for C-slots
- Can be mounted from above
- Can be fully flush mounted into the slot
- Cabling reduced by half
- IO-Link

MZ2Q TARGET INDUSTRIES

- Robotics
- Electronics industry
- Pneumatics industry
- Mechanical engineering
- Packaging industry
- Food industry

MZ2Q – SICK perfection for T- and C-slot cylinders

More precision, more speed, plus more mounting convenience where space is restricted – MZ2Q series sensors from SICK modernize automation.

- Fast end position indication on short-stroke cylinders
- More accurate detection of intermediate positions on pneumatic cylinders and grippers

MZT8

Short, robust, ASIC-intelligent

When every millimeter counts, the ultra-short MZT8 impresses with its active sensor tip. Benefit: even for very compact short-stroke cylinders, the sensor is always ideally positioned: at the very front, on the end position of the piston.



MZT8 - CYLINDER SENSOR WITH ASIC

Precise switching point and low hysteresis through innovative ASIC technology from SICK – with only 24 mm length, and IP 69K enclosure rating

- Easily placed into the T-slot, from above
- Captive clamping screw, easy assembly
- Shock-proof, vibration-proof
- Resistant to oils, cutting and cleaning agents



MZT8 magnetic cylinder used on a bread cutting machine. The task is to detect the end position of the cylinder piston or of the cutting knife during the cutting operation.



MZT8 - SAMPLE APPLICATIONS

The MZT8's housing and electronics are designed for the tough everyday world of industry and extreme requirements, including extremely harsh conditions:

- Electronics industry
- Pneumatics industry
- Mechanical engineering
- Packaging industry
- Food industry



MZT8 used on a labelling system, tasked with final position detection of the piston or the label stamp.

FACTORY AUTOMATION

With its intelligent sensors, safety systems, and automatic identification applications, SICK realises comprehensive solutions for factory automation.

- Non-contact detecting, counting, classifying, and positioning of any type of object
- Accident protection and personal safety using sensors, as well as safety software and services



LOGISTICS AUTOMATION

Sensors made by SICK form the basis for automating material flows and the optimisation of sorting and warehousing processes.

- Automated identification with barcode and RFID reading devices for the purpose of sorting and target control in industrial material flow
- Detecting volume, position, and contours of objects and surroundings with laser measurement systems



PROCESS AUTOMATION

Optimised system solutions from SICK ensure efficient acquisition of environmental and process data in many industrial processes.

- Precise measurement of gases, liquids and dust concentrations for continuous monitoring of emissions and the acquisition of process data in production processes
- Gas flow measurements with maximum accuracy thanks to compact gas metres



8013409/2009-12 - MRH/FD - Printed in Germany (2009-12)
Subject to change without notice - WB USmod Int-US34

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