Miniature magnetic position sensors

Programmable switching points and completely integrated electronics

Miniature magnetic position sensors

With analog output or freely programmable switching points

The product family of intelligent magnetic cylinder sensors are characterized through an analog output as well as one or two freely programmable, independent switching points.

Despite this high degree of functionality, BERNSTEIN has succeeded in integrating the entire electronics into a compact sensor enclosure with the smallest possible dimensions. This design feature renders additional protection (e.g. for the cable electronics or high-cost safeguards) unnecessary. The compact design is suitable for installation in all standard T- and C-slots (e.g. FESTO or SMC).

The analog output with 0 – 10 V provides the user with the ability to continuously detect the position in his application. When using versions HP1 and HP2, one or two switching points can be programmed.

In an installed position, the sensors can be quickly and easily set with the aid of the easy-to-use teach-in tool. The rapid, elecronic matching in an installed condition replaces the manual method of searching switching points.

LEDs at the top of the sensor serve as the function indicator, providing information on the programming status and also signal faults.

In addition to featuring effective polarity reversal protection as standard, the sensors also have an internal storage as security in the event of power failures. This configuration largely avoids unintentional changes to the settings.

Industries and applications

- Assembly and handling systems
- Short-stroke cylinders
- Block cylinders
- Clamping element
- Robotics
- Grippers

# Smallest analog cylinder sensor

Product range

| Technology	Series	Material	Type of connection	Type of installation	Article number	Article designation
Analog 0..10 V						
	E30	Aluminium	Plug	T-Nut	6370099169	MEA-E30A10/H50-KL0,3S8

Advantages

- Analog output with 0 – 10 V
- Straightforward teach-in procedure
- Suitable for standard T-slots
- Completely integrated electronic solution
- No need for additional electronics
- Fully immersed and therefore protected installation in the slot
- Can be fitted from above
- Shilded connection cable with M8 plug connector
- Ambient temperature +5 °C to +55 °C

Sensing distance

Pneumatic cylinder
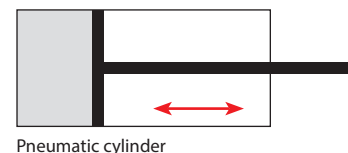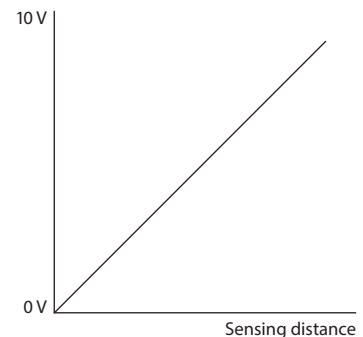
Miniature magnetic position sensors
with freely programmable switching points

Magnet

Teach-in tool
with sensor
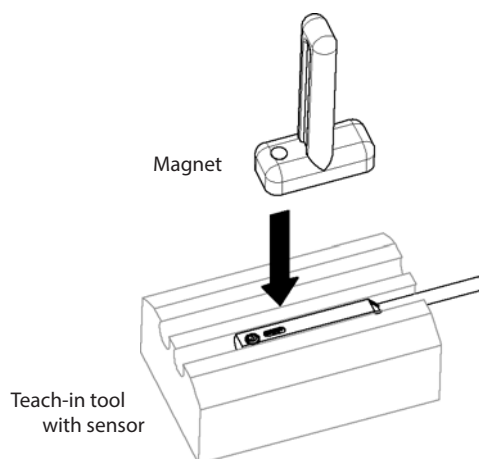
– The installed sensor assumes programming mode when the teach-in tool is placed over it

– The positions of the magnet are assigned to the respective outputs by correspondingly aligning the tool

– The programmable switching points are stored in the sensor

– The switching points can be changed by repeating the teach-in procedure

Advantages

● One or two freely programmable switching points

● Straightforward teach-in procedure

● Suitable for standard C- and T-slots

● High switching accuracy

● Reduced installation and wiring requirements

● Can be fitted from above

● Completely integrated electronic solution

● No need for additional electronics

● Fully immersed and therefore protected installation

● Available as cable or plug version

Product range

**Intelligent electronic magnetic sensors – teachable, one or two switching points**

Configuration	Series	Material	Type of connection	Type of installation	Article number	Article designation
2 switching points	E22	Plastic	Cable	C-slot – SMC	6370281183	MEK-E22PS/HP2-KL2
2 switching points	E22	Plastic	M8 plug	C-slot – SMC	6370281184	MEK-E22PS/HP2-KL0,3S8
1 switching point	E22	Plastic	Cable	C-slot – SMC	6372281177	MEK-E22PS/HP1-KL2
1 switching point	E22	Plastic	M8 plug	C-slot – SMC	6372281178	MEK-E22PS/HP1-KL0,3S8
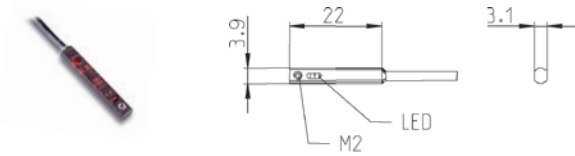
Configuration	Series	Material	Type of connection	Type of installation	Article number	Article designation
2 switching points	E22	Plastic	Cable	C-slot – Festo	6370281185	MEK-E22PS/HP2-KL2
2 switching points	E22	Plastic	M8 plug	C-slot – Festo	6370281186	MEK-E22PS/HP2-KL0,3S8
1 switching point	E22	Plastic	Cable	C-slot – Festo	6372281179	MEK-E22PS/HP1-KL2
1 switching point	E22	Plastic	M8 plug	C-slot – Festo	6372281180	MEK-E22PS/HP1-KL0,3S8
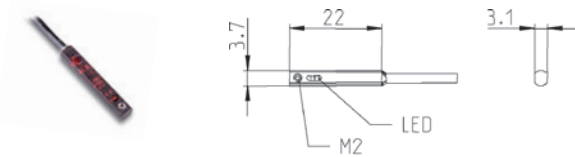
Configuration	Series	Material	Type of connection	Type of installation	Article number	Article designation
2 switching points	E30	Aluminium	Cable	T-slot	6370299187	MEA-E30PS/HP2-KL2
2 switching points	E30	Aluminium	M8 plug	T-slot	6370299188	MEA-E30PS/HP2-KL0,3S8
1 switching point	E30	Aluminium	Cable	T-slot	6372299181	MEA-E30PS/HP1-KL2
1 switching point	E30	Aluminium	M8 plug	T-slot	6372299182	MEA-E30PS/HP1-KL0,3S8
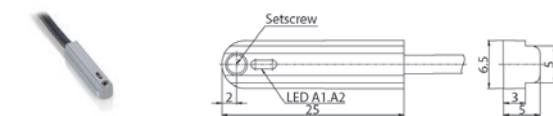
Accessories

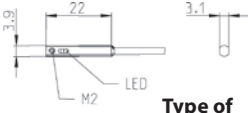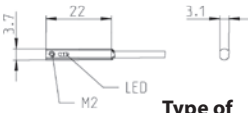|			
Cable coupler (straight version, 2 m cable)	4-pin M8	4139100837	GDK-M08UA/WO0-2
Cable coupler (straight version, 2 m cable)	3-pin M8	4139100795	GDK-M08US/WO0-2

All sensors come with the following accessories:
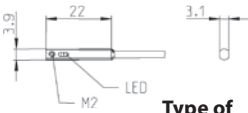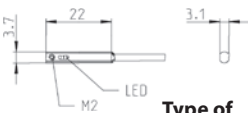
1 x Setscrew M2x3 (E22), M3x6 (E30), DIN 913
1 x Offset screwdriver (E22)
1 x Teach-in tool
1 x Operating and installation instructions

Other slot sensors:

Sensors with only one output can also be used for applications that require only one switching point. For this purpose BERNSTEIN offers a range of Hall sensors with set sensitivity or reed contact versions that do not require auxiliary energy (see "Delivery Range – Other Slot Sensors", page 6).

Product range

Other slot sensors – one switching point, non-teachable

| Technology	Series	Material	Type of connection	Type of installation	Article number	Article designation
Reed						
	E22	Plastic	Cable	C-slot – SMC	6310281741	MAK-E22S/R20-2
	E22	Plastic	M8 plug	C-slot – SMC	6310281742	MAK-E22S/R20-0,3S8

Series	Material	Type of connection	Type of installation	Article number	Article designation
E22	Plastic	Cable	C-slot – Festo	6310281743	MAK-E22S/R20-2
E22	Plastic	M8 plug	C-slot – Festo	6310281744	MAK-E22S/R20-0,3S8

2-wire
NO contact

Series	Material	Type of connection	Type of installation	Article number	Article designation
E30	Aluminium	Cable	T-slot	6310299745	MAA-E30S/R20-2
E30	Aluminium	M8 plug	T-slot	6310299746	MAA-E30S/R20-0,3S8

Technology	Series	Material	Type of connection	Type of installation	Article number	Article designation
Hall						
	E22	Plastic	Cable	C-slot – SMC	6372281171	MEK-E22PS/H03-KL2
	E22	Plastic	M8 plug	C-slot – SMC	6372281172	MEK-E22PS/H03-KL0,3S8

Series	Material	Type of connection	Type of installation	Article number	Article designation
E22	Plastic	Cable	C-slot – Festo	6372281173	MEK-E22PS/H03-KL2
E22	Plastic	M8 plug	C-slot – Festo	6372281174	MEK-E22PS/H03-KL0,3S8

8–30 V DC
Typ. 3mT
150 mA
PNP/ NO contact
south-switching

Series	Material	Type of connection	Type of installation	Article number	Article designation
E30	Aluminium	Cable	T-slot	6372299175	MEA-E30PS/H03-KL2
E30	Aluminium	M8 plug	T-slot	6372299176	MEA-E30PS/H03-KL0,3S8

Functional principle of the programmable HP1 and HP2 versions

The illustration shows the maximum sensing range of both sensor elements over the traverse range of the magnet. A curve must be outside the tolerance range in order to achieve clear assignment of the switching points.
The sensor immediately detects the moment at which both curves are within the tolerance range of low magnetic sensitivity due to the magnet and air gap constellation and signals a fault.

Magnetic field parallel to sensor

Max. operating range

Tolerance range
U_{Hall} 1
U_{Hall} 2
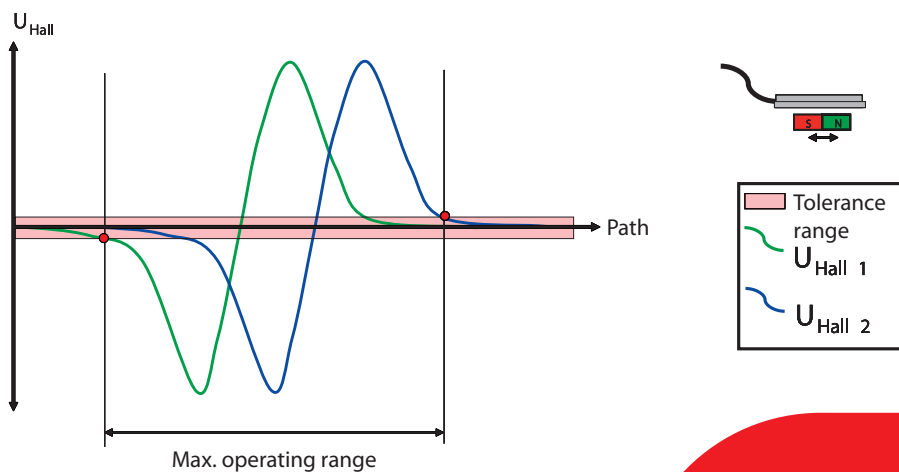
Other products in our complete range

Technical data

- PNP/NO contact
- Magnetic sensitivity ±1.5 mT to ±13.5 mT
- Sensing distance up to 50 mm (depending on magnet/air gap)
- Repeat accuracy ≤ 0.1 mT
- Hysteresis 1 mT ≤ H ≤ 1.35 mT
- Operating voltage range UB 10–30 V DC
- Output current Ie ≤ 50 mA (one output switched) ≤ 25 mA per output (both outputs switched)
- Ambient temperature –20 °C to +80 °C
- Protection class IP 67

BERNSTEIN

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Economy meets safety

Sensor systems –
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Enclosure systems –
Function and design

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