

POSITION SENSORS



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POSITION SENSORS

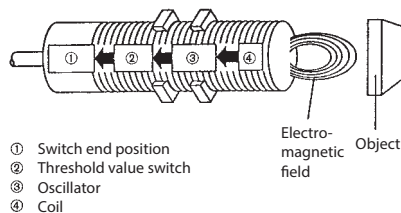
Functional principle of the sensor system

A sensor detects non-electrical physical quantities without contact and converts them into electrical quantities like currents or voltages. In this field, BERNSTEIN concentrates on inductive, capacitive and magnetic proximity switches.

Inductive Sensors

An inductive proximity switch detects metallic objects and consists of four functional groups: a coil, an oscillator, a threshold switch and a switching output stage.

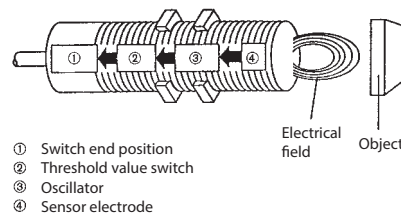
The oscillator generates a high-frequency alternating magnetic field that exits the coil at the active surface. When a metal object enters this field, eddy currents are induced in it. These eddy currents draw energy from the magnetic field and thus from the oscillator; it is damped. The energy withdrawal is greater the closer the metal object is brought to the active surface. The threshold value switch switches on the switching output stage at a defined value of damping.



Capacitive Sensors

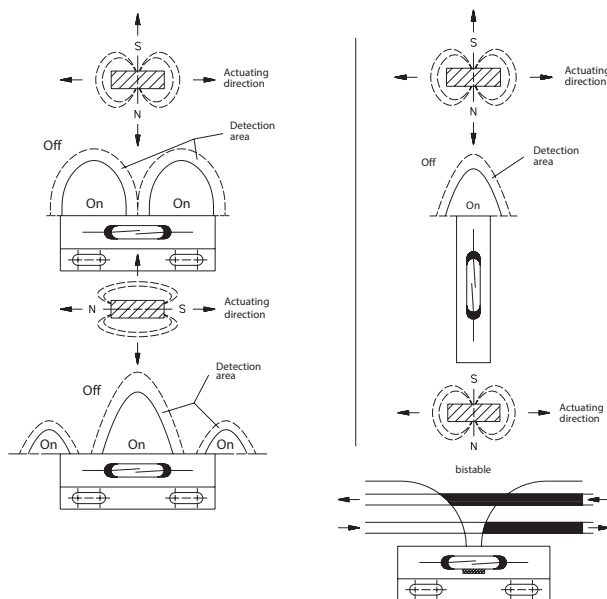
Capacitive proximity switches detect conductive and non-conductive materials in a solid or liquid state. The sensors consist of 4 functional groups: a sensor electrode, an oscillator, a threshold value switch and a switching output stage.

The sensor electrode, which is located behind the active surface, forms a capacitor with an actuating medium in combination with mass. An approximate medium increases the capacitance, which is why the RC oscillator begins to oscillate. The capacitance value required for oscillation can be determined by changing the amplification of the oscillator with a potentiometer. In this way, the response sensitivity/switching distance to the medium can be adjusted. The oscillator output signal is fed to an evaluation circuit which controls the respective switching amplifier.



Electromechanical magnetic switches

Electromechanical magnetic switches detect electro- and permanent magnets. Basic elements of these magnetic switches are reed contacts which change their electrical behaviour by approaching the actuating magnet. Under the influence of a magnetic field, the contact paddles assume an opposite polarity (south and north pole). Approaching or removing a magnet causes the contact paddles to close or open. The sensitivity of the switch and the field strength of the magnet determine the switching distance.



Electronic Magnetic Sensors

Magnetic switches with magnetoresistive elements or Hall elements detect an actuating magnet without contact. Magnetoresistive sensors react with an increase in resistance, while Hall elements generate a voltage when a magnetic field passes through them. With high switching frequencies and switching distances, as well as vibration resistance, the sensors are a good alternative to electromechanical sensors for challenging applications.

Speed sensors:

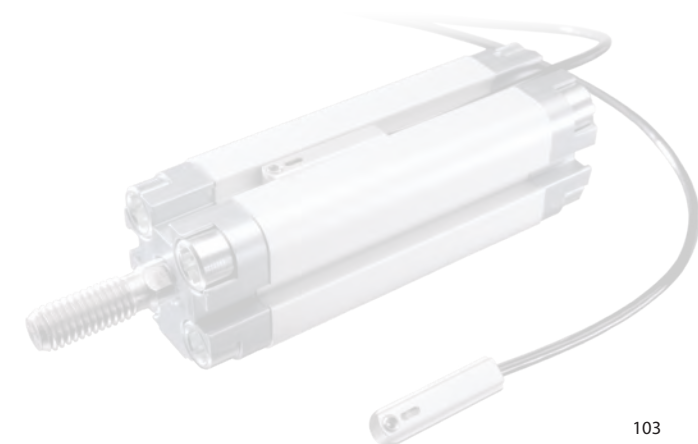
Are electronic magnetic sensors with Hall elements, which detect the rotation of ferromagnetic gears with switching distances of up to 2 mm. The high user-friendliness of Hall sensor technology is also fully effective here: high switching frequencies and insensitivity to shock impact.

Cylinder sensors

The sensors are based on the operating principles of magnetic sensors. They are defined by their design, which can be used in all common T and C profiles (e.g. type FESTO or SMC) or in space-saving applications. For this reason, they are often used for checking pneumatic cylinders.

For applications without changing the switching point, fixed sensors can be used. For this purpose, BERNSTEIN offers Hall sensors with adjusted sensitivity or reed contact versions which operate without auxiliary power.

For flexible use, sensors are also offered which permit one or two freely programmable and independent switching points, as well as IO-Link sensors which permit an analog output between two teach-in end positions.



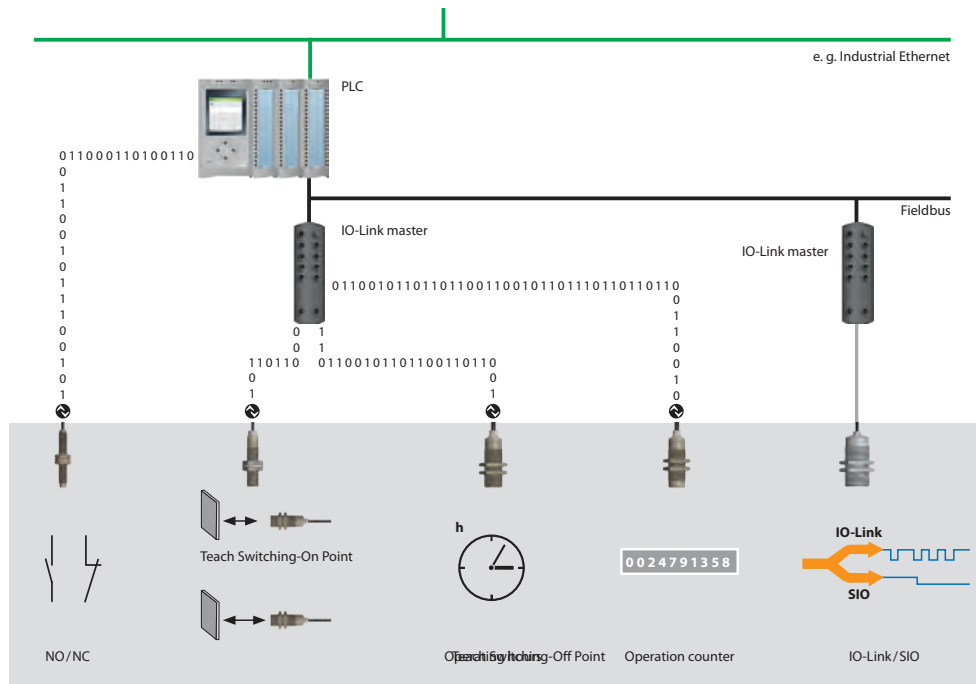
POSITION SENSORS

Technology Overview

NEW IO-Link

IO-Link is a manufacturer-independent, standardized communication interface. It enables continuous communication from the sensor to the controller. With a “wake-up command”, the single-switching sensor becomes an IO-Link device. Bidirectional data packets are exchanged via the point-to-point connection, whereby not only the switching signal is transmitted, but also parameter, diagnostic and communication data.

In IO-Link mode, the switching distance and the switching function can be configured, among other things. The sensor can then be operated in IO-Link mode or in standard input/output mode (SIO mode).



AC-2 Wire

These 2-wire sensors are used in applications where AC loads need to be switched. Instead of transistors, thyristors are used as switching output stages.

Analog output

The inductive analogue sensors do not switch at a defined switching point, but instead output an assigned output signal in accordance with their specific characteristic curve at a defined switching distance. Sensors with voltage or current output are commonly used.

Namur

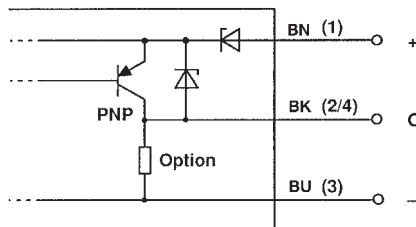
Standard Namur sensors are DC 2-wire devices consisting of a coil and an oscillator. They change their current consumption depending on the object distance. BERNSTEIN has built on this and also offers sensors that switch at a defined value.

POSITION SENSORS

Basic information

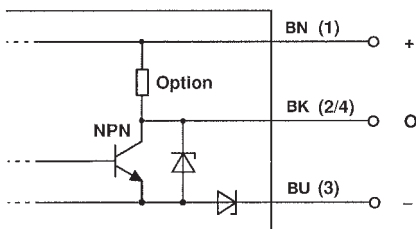
PNP output / Source output

With the source output the load is connected between the switching output and V-. The current flows at Switch V+ through the transistor and then through the load to ground.



NPN output / Sink output

With the sink output, the load is connected between the switching output and V+. The current flows at Switching from V+ via the load and then through the transistor to V-.



Normally-open contact



When the target enters the detection area, the load current flows. When the target is removed from the detection zone, the circuit is interrupted.

Normally-closed contact



If the target enters the detection area, the circuit is broken. When the target is removed from the detection area, the load current flows again.

Changeover contact



Is a combination of the normally open and normally closed function. When the target enters the detection zone, both elements change their state.

Bistable

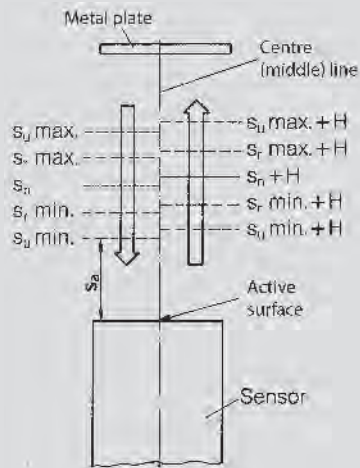
These magnetic sensors have integrated bias magnets which keep the contacts closed or pre-tension them. The contacts remain in their switching position until an oppositely polarised stronger magnet cancels the pretensioning.

POSITION SENSORS

Basic information

Sensing distance

Refers to the distance between target and sensor when approaching causes a signal change at the output.



Nominal sensing distance (S_n)

The switching distance does not take into account manufacturing tolerances or changes due to external influences.

Real sensing distance (S_r)

This distance is the effective operating distance measured at nominal voltage and nominal temperature. For inductive and capacitive proximity switches, it must be between 90 % - 110 % of the rated operating distance.

Useable sensing distance (S_u)

The measurement of this switching distance takes place within the permissible temperature and voltage ranges. The distance must be between 90 % and 110 % of the real switching distance for inductive sensors and between 80 % and 120 % of the real switching distance for capacitive sensors.

Assured switching distance (S_a)

The distance from the active surface, which ensures switching under the influence of the permissible operating conditions. For inductive proximity switches, the distance must be between 0 % and 81 %, and for capacitive proximity switches between 0 % and 72 % of the rated switching distance.



Hysteresis

Refers to the difference between the switch-on point when an object approaches and the switch-off point when it is moved away. It is given as a percentage in relation to the nominal switching distance.

The hysteresis is necessary to prevent the output from fluttering when objects slowly approach each other due to external influences such as temperature changes, and to prevent electrical interference or vibration.

Response sensitivity

Capacitive sensors react to changes in the electric field. Therefore, depending on the dielectric constant of the object to be detected, different switching distances result. Capacitive sensors often allow the sensitivity to be adjusted with a potentiometer.

Reduction factors

The definition of the switching distance for inductive sensors is based on the measurement with a standardized steel measuring plate. If other materials with the same dimensions are used, the switching distance is reduced.

Switching frequency

Specifies the maximum number of switching cycles per second.

Repeatability

Is the maximum percentage change of the real switching distance when repeated actuation occurs under specified conditions.

Residual current

Indicates the current which flows through the load circuit in the unswitched state.

Voltage drop

Is the maximum voltage which is lost in the switched state via the component resistances of the sensor.

Lowest operating current

The minimum current required at the switching output to maintain the function of the sensor.

Idle current

Is the intrinsic current of a 3-/4-wire proximity switch without a load being connected.

Ready delay

Period between the application of the supply voltage and the time at which the switching output assumes the switching state.

Short-circuit protection

The circuit arrangement protects the sensor from destruction in the event of a short circuit. The output is blocked and the status is interrogated in a clocked manner. Once the short-circuit is removed, the sensor resumes operation.

Reverse polarity protection

If the supply voltage is reversed, the Proximity switch is protected against destruction.



POSITION SENSORS

Basic information

Overload protection

The sensors are protected against destruction by overload. The output is blocked and the status is interrogated in a clogged manner. If the overload is removed, the sensor resumes operation.

Pickup delay

Is a time function integrated in the sensor, which delays the switching of the output when an object is detected.

Dropout delay

Is a time function integrated in the sensor which delays the switching of the output when an object leaves the active field.

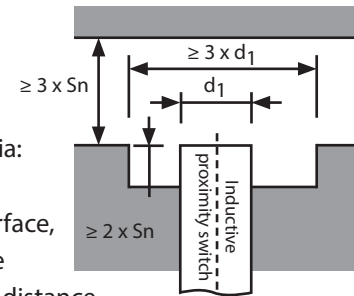
MTTF

Stands for "mean time to failure" and means the average time until a failure. This information is used for the reliability prognosis and predicts a statistical period until failure.

Non-flush

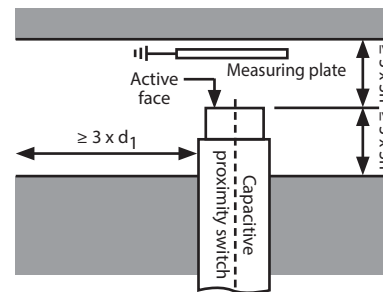
Inductive sensors must have a free zone with the following meet criteria:

- parallel to the active surface, a free zone at a distance of $\geq 3 \times$ rated switching distance
- laterally to the active surface, a free zone at a distance of $\geq 1 \times$ housing diameter
- free zone of a depth to the active surface $\geq 2 \times$ rated switching distance



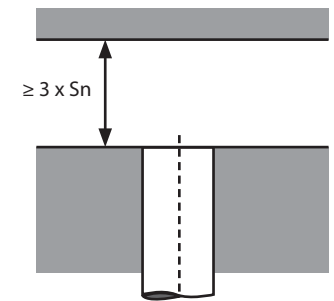
Capacitive sensors must maintain a free zone with the following criteria:

- parallel to the active surface, a free zone at a distance of $\geq 3 \times$ rated switching distance
- laterally to the active surface, a free zone at a distance of $\geq 3 \times$ housing diameter
- free zone of a depth to the active surface $\geq 3 \times$ rated switching distance



Flush

- with flush sensors, the active surface can be flush with a metal surface without being influenced.



ATEX-Sensors

Protection against ignitable energies is achieved by encapsulation in the case of magnetic switches and by the principle of intrinsic safety in the case of inductive NAMUR sensors. The magnetic switches offer solutions for zones 1, 2, 21, 22 (2G/2D) and the inductive sensors for zones 1, 2, 21, 22 (2G/2D/3G/3D). The sensors are provided with a connecting cable at the factory. This is inseparably connected to the housing and part of the required approval.



Definition of protection classes in accordance with DIN EN 60529

The protection class of an enclosed device denotes the degree of protection. The degree of protection includes the protection of persons against contact with parts under voltage and the protection of equipment against the infiltration of foreign bodies and water.

ISO 20653	DIN EN 60529	IP Protection classes International Protection
1. number		Protection against foreign bodies and contact
0	0	No protection
1	1	Protection against foreign bodies ≥ 50 mm/Access with the back of the hand
2	2	Protection against foreign bodies ≥ 12.5 mm/Access with one finger
3	3	Protection against foreign bodies ≥ 2.5 mm/Access with a tool
4	4	Protection against foreign bodies ≥ 1.0 mm/Access with a wire
5K	5	Protection against harmful amounts of dust/Access with a wire
6K	6	Dust proof/Protection against access with a wire

ISO 20653	DIN EN 60529	IP Protection classes International Protection
2. number		Protection against water
0	0	No protection
1	1	Protection against vertical dripping water
2	2	Protection against dripping water up to 15° inclination
3	3	Protection against spray water up to 60°
4	4	Protection against splash water
4K		Protection against splash water at elevated pressure
5	5	Protection against hose water
6	6	Protection against strong hose water
6K		Protection against strong hose water at elevated pressure
7	7	Protection against temporary immersion
8	8	Protection against permanent immersion
9K	9	Protection against steam jet cleaning/high jet water temperature

Inductive Sensors

Standard range



Product features

- Microsensors: Ø 3 mm – Ø 6 mm
- Metric types: M08 – M30
- Special types: smooth cylindrical, rectangular, square
- Sensing distance: 0.6 mm – 40 mm
- Switching function: NO contact, NC contact, Changeover contact
- Switching frequency: up to 3,000 Hz
- Enclosure material: stainless steel, brass and plastic enclosure

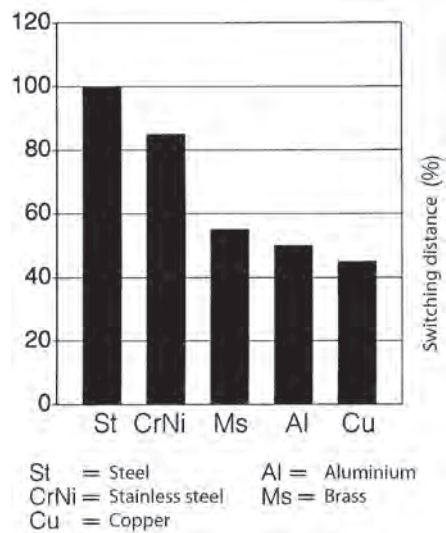
Good to know ...

A wide range of Ø 4 mm – M30 mm sensors are IO-Link capable. Take advantage of the flexibility, switching distances and switching functions to be optimally adapted to your specific plant.

The IO-Link can be found under inductive sensors at www.bernstein.eu

Reduction factors

The definition of the operating distance is based on the measurement with a standardized square measuring plate made of steel. If other materials with the same dimensions are used, the operating distance is reduced as shown in the diagram.



Options

- Cable and connector assembly
- Adaptation of the enclosures
- Product adaptations and modifications
- Customized development

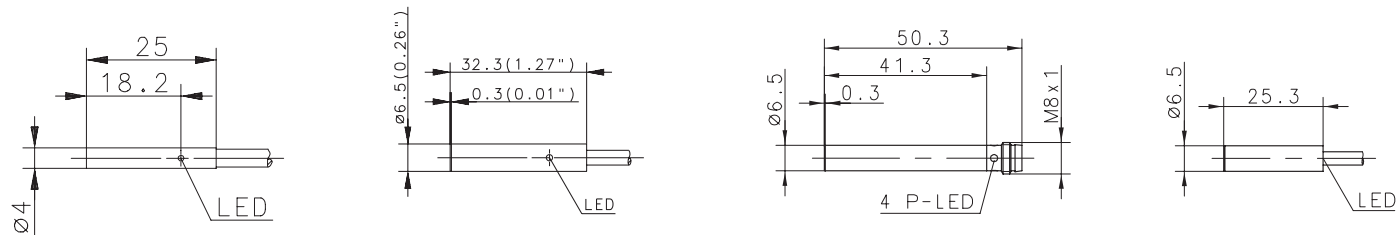


INDUCTIVE SENSORS Type Ø 4 mm, Ø 6.5 mm



Type	Ø 4 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm		
Enclosure material	Stainless steel 1.4401	Stainless steel 1.4401	Stainless steel 1.4401	Stainless steel 1.4401		
Type of installation	flush	flush	flush	flush		
Nominal sensing distance	0.8 mm	1.5 mm	1.5 mm	1.5 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M8	Cable 5 m		
Special feature				Short type		
PNP	DC	NO contact	6532999001 KIB-D04PS/001-KL2I	6502999010 KIB-D06PS/1,5-KL2	6502999012 KIB-D06PS/1,5-KLSM8	6602999460 KIB-D06PS/1,5-KL5V
PNP	DC	NC contact	6532799001 KIB-D04PÖ/001-KL2I			
NPN	DC	NO contact	6532399001 KIB-D04NS/001-KL2			
NPN	DC	NC contact	6532199001 KIB-D04NÖ/001-KL2			
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–36 VDC	10–36 VDC	10–36 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	1000 Hz	1000 Hz	1000 Hz	1000 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/-	LED/-	LED/-	LED/-	LED/-
Mechanical data						
Ambient temperature (min/max)		-25°C/+70°C	-25°C/+70°C	-25°C/+70°C	-25°C/+70°C	-25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.14	3 x 0.14 mm ²	M8 x 1	M8 x 1	3 x 0.14 mm ²
Approvals						

= IO-Link

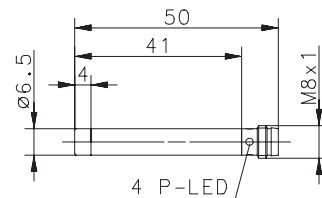


Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS Type Ø 6.5 mm



Type	Ø 6.5 mm		
Enclosure material	Stainless steel 1.4401		
Type of installation	non-flush		
Nominal sensing distance	2 mm		
Type of connection	Connector M8		
Special feature			
PNP	DC	NO contact	6502999013 KIN-D06PS/002-KLSM8
PNP	DC	NC contact	
NPN	DC	NO contact	
NPN	DC	NC contact	
Technical data			
Rated operating voltage range	U_B	10–36 VDC	
Rated operating current	I_e	≤ 200 mA	
Max. switching voltage	F	750 Hz	
Short circuit-protection	cyclic		
Function/operating voltage indicator	LED/–		
Mechanical data			
Ambient temperature (min/max)	–25°C/+70°C		
Protection class in accordance with IEC 529, EN 60529	IP67		
Connection	M8 x 1		
Approvals			

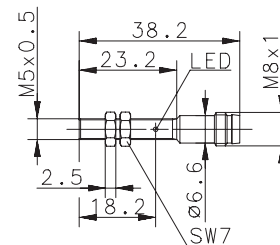
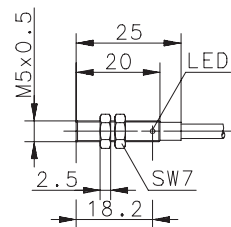


INDUCTIVE SENSORS Type M5



Type	M5		M5
Enclosure material	CuZn39Pb3		CuZn39Pb3
Type of installation	flush		flush
Nominal sensing distance	1 mm		1 mm
Type of connection	Cable 2m		Connector M8
Special feature			
PNP	DC	NO contact	6532999002 KIB-M05PS/001-KL2I
PNP	DC	NC contact	6532799002 KIB-M05PÖ/001-KL2I
NPN	DC	NO contact	6532399002 KIB-M05NS/001-KL2
NPN	DC	NC contact	6532199002 KIB-M05NÖ/001-KL2
NPN	DC	NO contact	6532999003 KIB-M05PS/001-KLSM8I
NPN	DC	NC contact	6532799003 KIB-M05PÖ/001-KLSM8I
NPN	DC	NO contact	6532399003 KIB-M05NS/001-KLSM8
NPN	DC	NC contact	6532199003 KIB-M05NÖ/001-KLSM8
Technical data			
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	1000 Hz
Short circuit-protection		cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–
Mechanical data			
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		3 x 0.14 mm ²	M8 x 1
Approvals			

= IO-Link

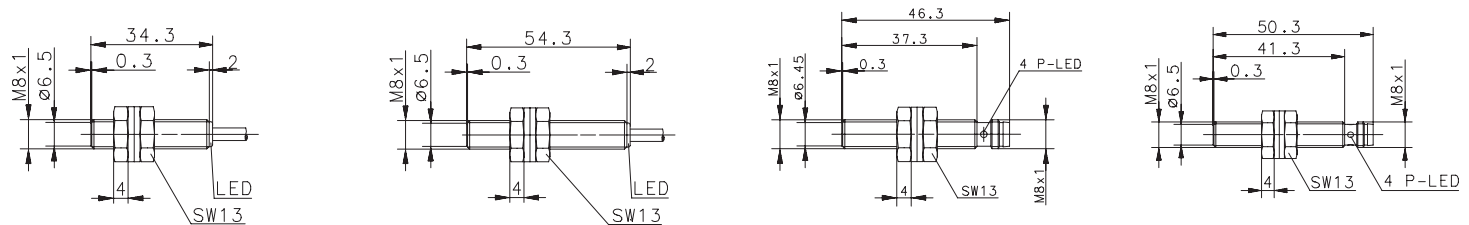


INDUCTIVE SENSORS Type M8



Type	M8	M8	M8	M8
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305
Type of installation	flush	flush	flush	flush
Nominal sensing distance	1 mm	1 mm	1 mm	1 mm
Type of connection	Cable 2 m	Cable 2 m	Connector M8	Connector M8
Special feature	Short type	Standard type	Short type	Standard type
PNP DC NO contact	6532901001 KIB-M08PS/001-KL2VI	6532902001 KIB-M08PS/001-KL2I	6532942001 KIB-M08PS/001-KLSM8VI	6532942003 KIB-M08PS/001-KLSM8I
PNP DC NC contact	6532701001 KIB-M08PÖ/001-KL2VI	6532702001 KIB-M08PÖ/001-KL2I	6532742001 KIB-M08PÖ/001-KLSM8VI	6532742003 KIB-M08PÖ/001-KLSM8I
NPN DC NO contact	6532301001 KIB-M08NS/001-KL2V	6532302001 KIB-M08NS/001-KL2	6532342001 KIB-M08NS/001-KLSM8V	6532342003 KIB-M08NS/001-KLSM8
NPN DC NC contact	6532101001 KIB-M08NÖ/001-KL2V	6532102001 KIB-M08NÖ/001-KL2	6532142001 KIB-M08NÖ/001-KLSM8V	6532142003 KIB-M08NÖ/001-KLSM8
Technical data				
Rated operating voltage range	U_B 10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e ≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F 1000 Hz	1000 Hz	1000 Hz	1000 Hz
Short circuit-protection	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator	LED/–	LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x 0.14 mm ²	3 x 0.14 mm ²	M8 x 1	M8 x 1
Approvals				

= IO-Link

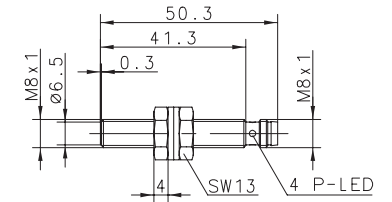
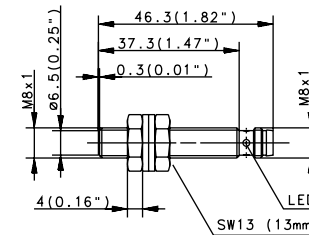
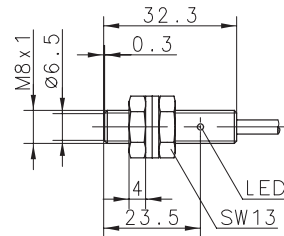
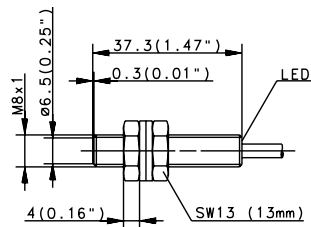


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS Type M8

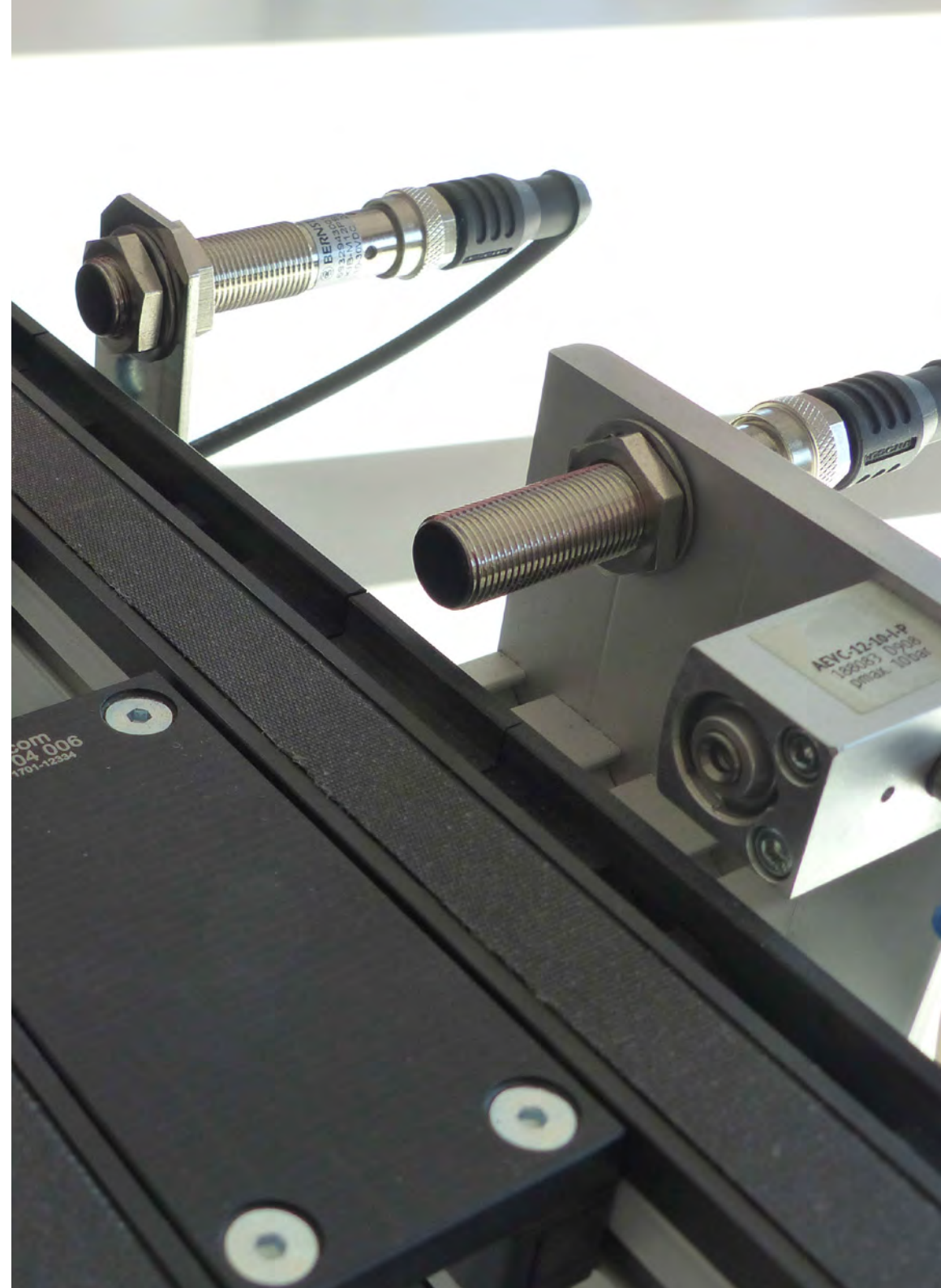
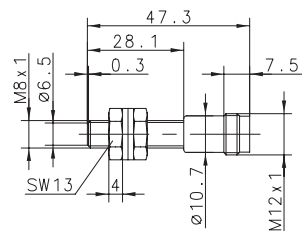


Type	M8	M8	M8	M8
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305
Type of installation	flush	flush	flush	flush
Nominal sensing distance	1.5 mm	1.5 mm	1.5 mm	1.5 mm
Type of connection	Cable 2 m	Cable 2 m	Connector M8	Connector M8
Special feature				
PNP	DC	NO contact	6932901001 KIB-M08PS/1,5-KL2	6932942001 KIB-M08PS/1,5-KLSM8
PNP	DC	NC contact	6502701001 KIB-M08PÖ/1,5-KL2	6502742001 KIB-M08PÖ/1,5-KLSM8
NPN	DC	NO contact	6932301001 KIB-M08NS/1,5-KL2	
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–36 VDC	10–36 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	1000 Hz	1000 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/-	LED/-	LED/-
Mechanical data				
Ambient temperature (min/max)		-25°C/+70°C	-25°C/+70°C	-25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	M8 x 1



Cable couplings and other accessories can be found from p. 208

Type	M8		
Enclosure material	Stainless steel 1.4305		
Type of installation	flush		
Nominal sensing distance	1.5 mm		
Type of connection	Connector M12		
Special feature			
PNP	DC	NO contact	6502942007 KIB-M08PS/0,1-KS12
PNP	DC	NC contact	
NPN	DC	NO contact	
NPN	DC	NC contact	
Technical data			
Rated operating voltage range	U_B	10–36 VDC	
Rated operating current	I_e	≤ 200 mA	
Max. switching voltage	F	1000 Hz	
Short circuit-protection	cyclic		
Function/operating voltage indicator	–/–		
Mechanical data			
Ambient temperature (min/max)	–25°C/+70°C		
Protection class in accordance with IEC 529, EN 60529	IP67		
Connection	M12 x 1		

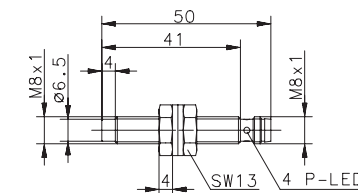
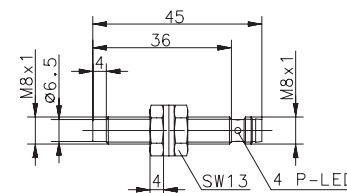
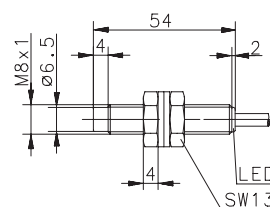
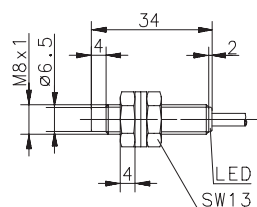


INDUKTIVE SENSOREN Type M8



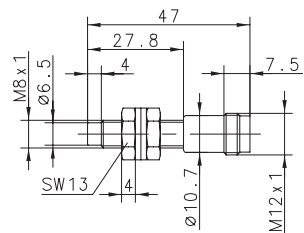
Type	M8	M8	M8	M8		
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305		
Type of installation	non-flush	non-flush	non-flush	non-flush		
Nominal sensing distance	2 mm	2 mm	2 mm	2 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M8	Connector M8		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532901002 KIN-M08PS/002-KL2VI	6532902002 KIN-M08PS/002-KL2I	6532942002 KIN-M08PS/002-KLSM8VI	6532942004 KIN-M08PS/002-KLSM8I
PNP	DC	NC contact	6532701002 KIN-M08PÖ/002-KL2VI	6532702002 KIN-M08PÖ/002-KL2I	6532742002 KIN-M08PÖ/002-KLSM8VI	6532742004 KIN-M08PÖ/002-KLSM8I
NPN	DC	NO contact	6532301002 KIN-M08NS/002-KL2V	6532302002 KIN-M08NS/002-KL2	6532342002 KIN-M08NS/002-KLSM8V	6532342004 KIN-M08NS/002-KLSM8
NPN	DC	NC contact	6532101002 KIN-M08NÖ/002-KL2V	6532102002 KIN-M08NÖ/002-KL2	6532142002 KIN-M08NÖ/002-KLSM8V	6532142004 KIN-M08NÖ/002-KLSM8
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	750 Hz	750 Hz	750 Hz	750 Hz	750 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	M8 x 1	M8 x 1	M8 x 1
Approvals						

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Cable couplings and other accessories can be found from p. 208

Type	M8		
Enclosure material	Stainless steel 1.4305		
Type of installation	non-flush		
Nominal sensing distance	2 mm		
Type of connection	Connector M12		
Special feature			
PNP	DC	NO contact	6502942008 KIN-M08PS/002-KS12
PNP	DC	NC contact	
NPN	DC	NO contact	
NPN	DC	NC contact	
Technical data			
Rated operating voltage range	U_B	10–36 VDC	
Rated operating current	I_e	≤ 200 mA	
Max. switching voltage	F	750 Hz	
Short circuit-protection	cyclic		
Function/operating voltage indicator	–/–		
Mechanical data			
Ambient temperature (min/max)	–25°C/+70°C		
Protection class in accordance with IEC 529, EN 60529	IP67		
Connection	M12 x 1		
Approvals			

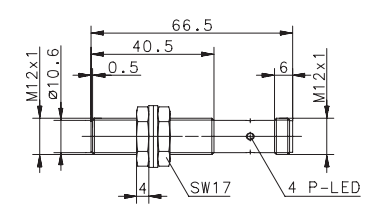
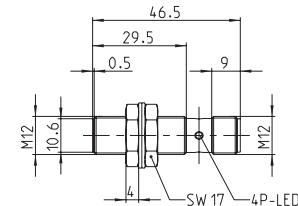
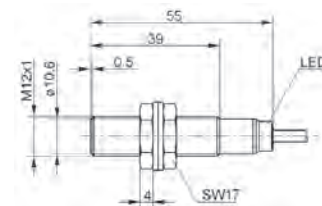
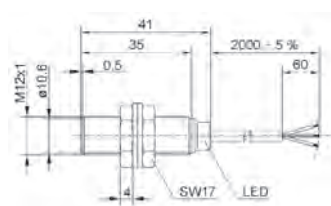


INDUCTIVE SENSORS Type M12



Type	M12	M12	M12	M12		
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3		
Type of installation	flush	flush	flush	flush		
Nominal sensing distance	2 mm	2 mm	2 mm	2 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Connector M12		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532903001 KIB-M12PS/002-KL2VI	6532903002 KIB-M12PS/002-KL2I	6532943001 KIB-M12PS/002-KLS12VI	6532943002 KIB-M12PS/002-KLS12I
PNP	DC	NC contact	6532703001 KIB-M12PÖ/002-KL2VI	6532703002 KIB-M12PÖ/002-KL2I	6532743001 KIB-M12PÖ/002-KLS12VI	6532743002 KIB-M12PÖ/002-KLS12I
NPN	DC	NO contact	6532303001 KIB-M12NS/002-KL2V	6532303002 KIB-M12NS/002-KL2	6532343001 KIB-M12NS/002-KLS12V	6532343002 KIB-M12NS/002-KLS12
NPN	DC	NC contact	6532103001 KIB-M12NÖ/002-KL2V	6532103002 KIB-M12NÖ/002-KL2	6532143001 KIB-M12NÖ/002-KLS12V	6532143002 KIB-M12NÖ/002-KLS12
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	800 Hz	800 Hz	800 Hz	800 Hz	800 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	M12 x 1	M12 x 1	M12 x 1
Approvals						

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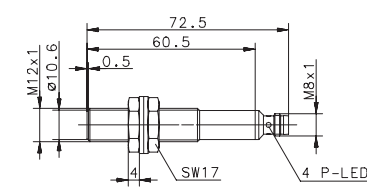
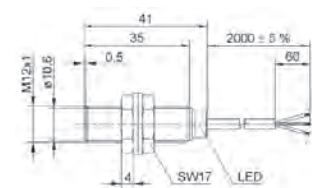
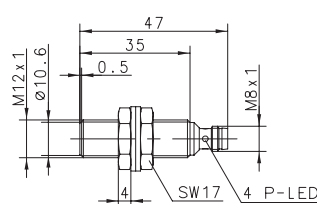
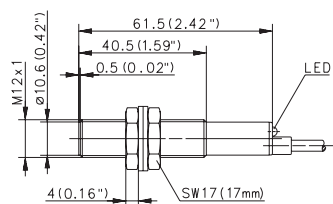


Cable couplings and other accessories can be found from p. 208





Type	M12	M12	M12	M12
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation	flush	flush	flush	flush
Nominal sensing distance	2 mm	2 mm	4 mm	4 mm
Type of connection	Cable 2 m	Connector M8	Cable 2 m	Connector M8
Special feature	4000 Hz	Short type	Short type	
PNP	DC	NO contact	6502903012 KIB-M12PS/002-KL2F	6502943008 KIB-M12PS/002-KLSM8V
PNP	DC	NC contact		6532903003 KIB-M12PS/004-KL2EVI
NPN	DC	NO contact		6602343366 KIB-M12NS/004-KLSM8E
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	200 mA
Max. switching voltage	F	4000 Hz	800 Hz	800 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.14 mm ²	M8 x 1	3 x 0.14 mm ²
Approvals				

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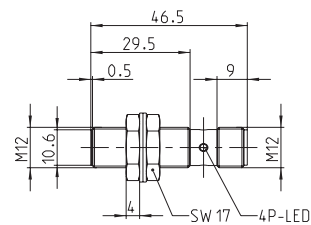
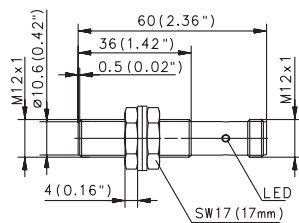


INDUCTIVE SENSORS Type M12



Type	M12		M12
Enclosure material	CuZn39Pb3		CuZn39Pb3
Type of installation	flush		flush
Nominal sensing distance	4 mm		4 mm
Type of connection	Connector M12		Connector M12
Special feature	Sensing distance		Sensing distance
PNP	DC	NO contact	6502943015 KIB-M12PS/004-KLS12E
			 6532943004 KIB-M12PS/004-KLS12EVI
PNP	DC	NC contact	
NPN	DC	NO contact	
NPN	DC	NC contact	
Technical data			
Rated operating voltage range	U_B	10–36 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	800 Hz	800 Hz
Short circuit-protection		cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–
Mechanical data			
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		M12 x 1	M12 x 1
Approvals			

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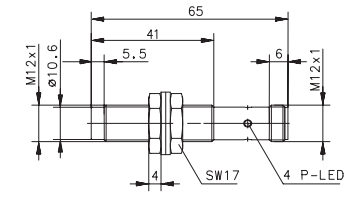
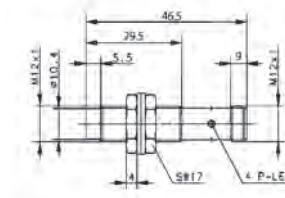
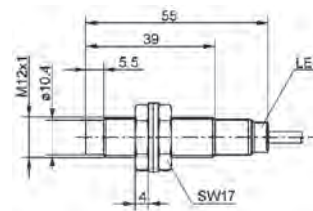
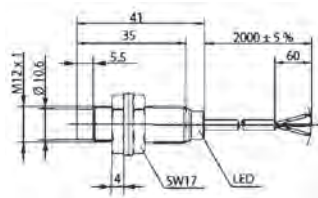


Cable couplings and other accessories can be found from p. 208



Type	M12	M12	M12	M12		
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3		
Type of installation	non-flush	non-flush	non-flush	non-flush		
Nominal sensing distance	4 mm	4 mm	4 mm	4 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Connector M12		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532904001 KIN-M12PS/004-KL2VI	6532904002 KIN-M12PS/004-KL2I	6532944001 KIN-M12PS/004-KLS12VI	6532944002 KIN-M12PS/004-KLS12I
PNP	DC	NC contact	6532704001 KIN-M12PÖ/004-KL2VI	6532704002 KIN-M12PÖ/004-KL2I	6532744001 KIN-M12PÖ/004-KLS12VI	6532744002 KIN-M12PÖ/004-KLS12I
NPN	DC	NO contact	6532304001 KIN-M12NS/004-KL2V	6532304002 KIN-M12NS/004-KL2	6532344001 KIN-M12NS/004-KLS12V	6532344002 KIN-M12NS/004-KLS12
NPN	DC	NC contact	6532104001 KIN-M12NÖ/004-KL2V	6532104002 KIN-M12NÖ/004-KL2	6532144001 KIN-M12NÖ/004-KLS12V	6532144002 KIN-M12NÖ/004-KLS12
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	1000 Hz	1000 Hz	1000 Hz	1000 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	M12 x 1	M12 x 1	M12 x 1
Approvals						

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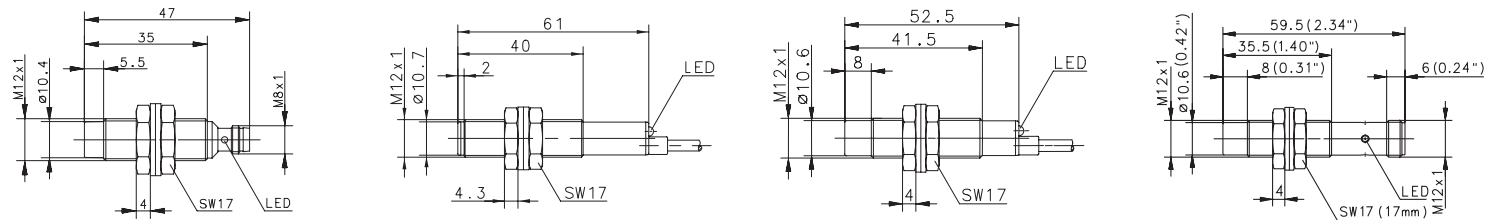


INDUCTIVE SENSORS Type M12



Type	M12	M12	M12	M12
Enclosure material	CuZn39Pb3	PA, red	CuZn39Pb3	CuZn39Pb3
Type of installation	non-flush	non-flush	non-flush	non-flush
Nominal sensing distance	4 mm	4 mm	8 mm	8 mm
Type of connection	Connector M8	Cable 2 m	Cable 2 m	Connector M12
Special feature	Short type		Sensing distance	Sensing distance
PNP	DC	NO contact	6502919001 KIN-T12PS/004-KL2	6502904021 KIN-M12PS/008-KL2E
PNP	DC	NC contact	6502744006 KIN-M12PÖ/004-KLSM8V	6502944013 KIN-M12PS/008-KLS12E
NPN	DC	NO contact		
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–36 VDC	10–30 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	1000 Hz	400 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		M8 x 1	3 x 0.14 mm ²	M12 x 1

Approvals



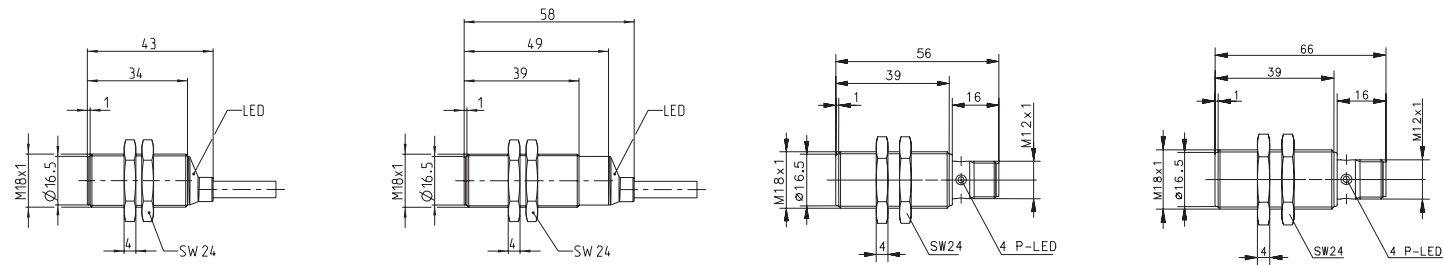
Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS Type M18



Type	M18	M18	M18	M18		
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3		
Type of installation	flush	flush	flush	flush		
Nominal sensing distance	5 mm	5 mm	5 mm	5 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Connector M12		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532905001 KIB-M18PS/005-KL2VI	6532905002 KIB-M18PS/005-KL2I	6532905003 KIB-M18PS/005-KLS12VI	6532905004 KIB-M18PS/005-KLS12I
PNP	DC	NC contact	6532705001 KIB-M18PÖ/005-KL2VI	6532705002 KIB-M18PÖ/005-KL2I	6532705003 KIB-M18PÖ/005-KLS12VI	6532705004 KIB-M18PÖ/005-KLS12I
NPN	DC	NO contact	6532305001 KIB-M18NS/005-KL2V	6532305002 KIB-M18NS/005-KL2	6532305003 KIB-M18NS/005-KLS12V	6532305004 KIB-M18NS/005-KLS12
NPN	DC	NC contact	6532105001 KIB-M18NÖ/005-KL2V	6532105002 KIB-M18NÖ/005-KL2	6532105003 KIB-M18NÖ/005-KLS12V	6532105004 KIB-M18NÖ/005-KLS12
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	500 Hz	500 Hz	500 Hz	500 Hz	500 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.34 mm ²	3 x 0.34 mm ²	M12 x 1	M12 x 1	M12 x 1
Approvals						

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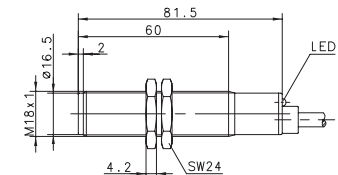
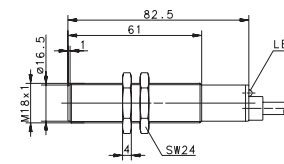
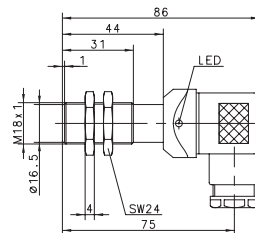
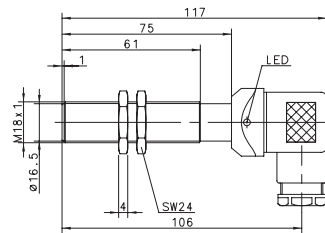


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS Type M18



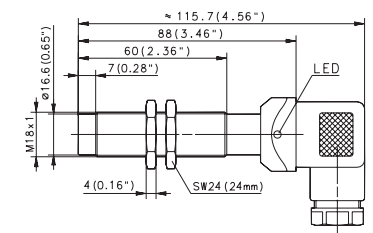
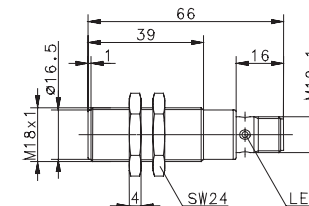
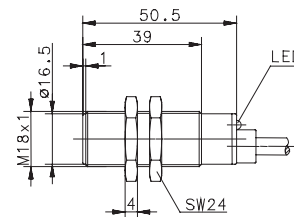
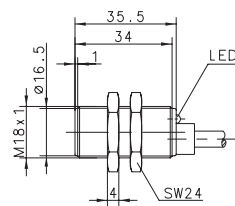
Type	M18	M18	M18	M18
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	PA, red
Type of installation	flush	flush	flush	flush
Nominal sensing distance	5 mm	5 mm	5 mm	5 mm
Type of connection	DIN Connector	DIN Connector	Cable 2 m	Cable 2 m
Special feature			Temperature	
PNP	DC	NO contact	6602905662 KIB-M18PS/005-KLSD	6502940001 KIB-M18PS/005-KLSDV
PNP	DC	NC contact	6502705001 KIB-M18PÖ/005-KLSD	6502905023 KIB-M18PS/005-KL2PUT
NPN	DC	NO contact		6502920990 KIB-T18PS/005-KL2
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	500 Hz	500 Hz	500 Hz
Short circuit-protection		–	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–40°C/+100°
Protection class in accordance with IEC 529, EN 60529		IP65	IP65	IP67
Connection		Plug connector DIN EN 175301-803	Plug connector DIN EN 175301-803	3 x 0.5 mm ²



Cable couplings and other accessories can be found from p. 208



Type	M18	M18	M18	M18
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation	flush	flush	flush	non-flush
Nominal sensing distance	8 mm	8 mm	8 mm	8 mm
Type of connection	Cable 2 m	Cable 2 m	Connector	DIN Connector
Special feature	Sensing distance	Sensing distance	Sensing distance	
PNP	DC	NO contact	6502905010 KIB-M18PS/008-KL2VE	6502905022 KIB-M18PS/008-KL2E
PNP	DC	NC contact		6502940005 KIB-M18PS/008-KLS12E
NPN	DC	NO contact		6502941001 KIN-M18PS/008-KLSD
NPN	DC	NC contact		6502741001 KIN-M18PÖ/008-KLSD
Technical data				
Rated operating voltage range	U_B	10–36 VDC	10–36 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	500 Hz	500 Hz	500 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/-	LED/-	-/-
Mechanical data				
Ambient temperature (min/max)		-25°C/+70°C	-25°C/+70°C	-25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP65
Connection		3 x 0.5 mm ²	3 x 0.5 mm ²	M12 x 1 Plug connector DIN EN 175301-803

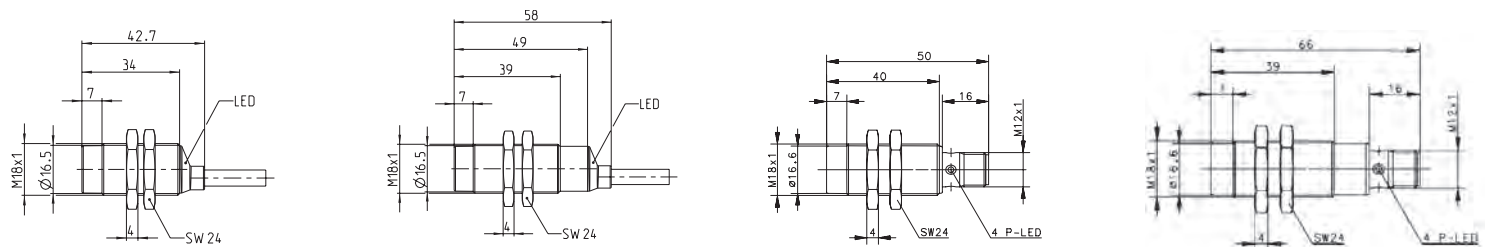


INDUCTIVE SENSORS Type M18



Type	M18	M18	M18	M18		
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3		
Type of installation	non-flush	non-flush	non-flush	non-flush		
Nominal sensing distance	8 mm	8 mm	8 mm	8 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Connector M12		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532906001 KIN-M18PS/008-KL2VI	6532906002 KIN-M18PS/008-KL2I	6532906003 KIN-M18PS/008-KLS12VI	6532906004 KIN-M18PS/008-KLS12I
PNP	DC	NC contact	6532706001 KIN-M18PÖ/008-KL2VI	6532706002 KIN-M18PÖ/008-KL2I	6532706003 KIN-M18PÖ/008-KLS12VI	6532706004 KIN-M18PÖ/008-KLS12I
NPN	DC	NO contact	6532306001 KIN-M18NS/008-KL2V	6532306002 KIN-M18NS/008-KL2	6532306003 KIN-M18NS/008-KLS12V	6532306004 KIN-M18NS/008-KLS12
NPN	DC	NC contact	6532106001 KIN-M18NÖ/008-KL2V	6532106002 KIN-M18NÖ/008-KL2	6532106003 KIN-M18NÖ/008-KLS12V	6532106004 KIN-M18NÖ/008-KLS12
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	200 Hz	200 Hz	200 Hz	200 Hz	200 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.34 mm ²	3 x 0.34 mm ²	M12 x 1	M12 x 1	M12 x 1
Approvals						

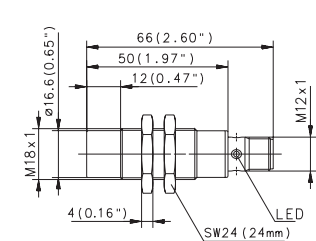
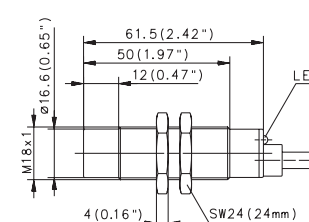
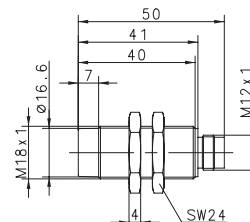
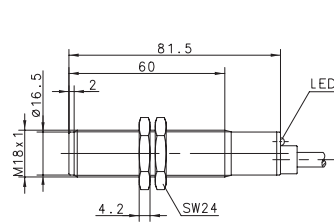
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Cable couplings and other accessories can be found from p. 208



Type	M18	M18	M18	M18
Enclosure material	PA, red	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation	non-flush	non-flush	non-flush	non-flush
Nominal sensing distance	8 mm	8 mm	16 mm	16 mm
Type of connection	Cable 2 m	Connector M12	Cable 2 m	Connector M12
Special feature		Sensing distance / Short type	Sensing distance	Sensing distance
PNP	DC	NO contact	6502921975 KIN-T18PS/008-KL2	6502906009 KIN-M18PS/008-KS12V
PNP	DC	NC contact		6502906018 KIN-M18PS/016-KL2E
NPN	DC	NO contact		6502941004 KIN-M18PS/016-KLS12E
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	200 Hz	200 Hz	200 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	–/–	LED/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.5 mm ²	M12 x 1	3 x 0.5 mm ²

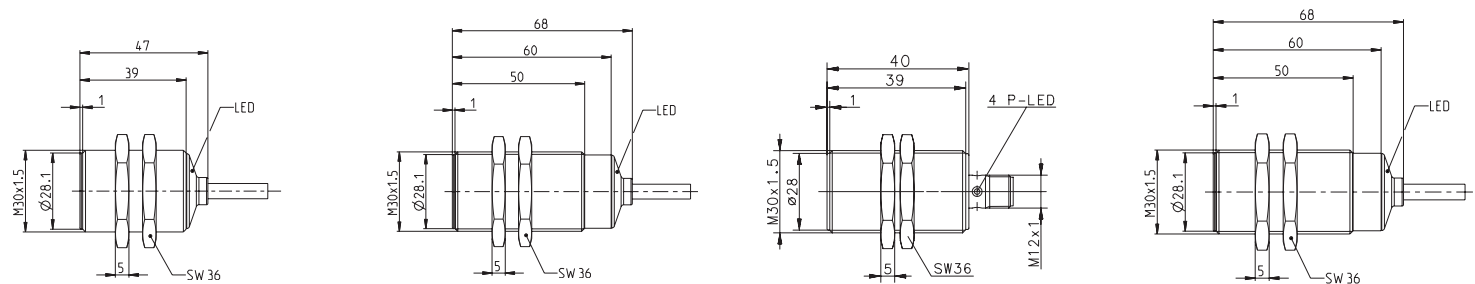


INDUCTIVE SENSORS Type M30



Type	M30	M30	M30	M30		
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3		
Type of installation	flush	flush	flush	flush		
Nominal sensing distance	10 mm	10 mm	10 mm	10 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Connector M12		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532907001 KIB-M30PS/010-KL2VI	6532907002 KIB-M30PS/010-KL2I	6532907003 KIB-M30PS/010-KLS12VI	6532907004 KIB-M30PS/010-KLS12I
PNP	DC	NC contact	6532707001 KIB-M30PÖ/010-KL2VI	6532707002 KIB-M30PÖ/010-KL2I	6532707003 KIB-M30PÖ/010-KLS12VI	6532707004 KIB-M30PÖ/010-KLS12I
NPN	DC	NO contact	6532307001 KIB-M30NS/010-KL2V	6532307002 KIB-M30NS/010-KL2	6532307003 KIB-M30NS/015-KLS12V	6532307004 KIB-M30NS/010-KLS12
NPN	DC	NC contact	6532107001 KIB-M30NÖ/010-KL2V	6532107002 KIB-M30NÖ/010-KL2	6532107003 KIB-M30NÖ/010-KLS12V	6532107004 KIB-M30NÖ/010-KLS12
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	300 Hz	300 Hz	300 Hz	300 Hz	300 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.34 mm ²	3 x 0.34 mm ²	M12 x 1	M12 x 1	M12 x 1
Approvals						

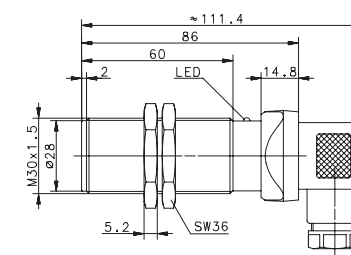
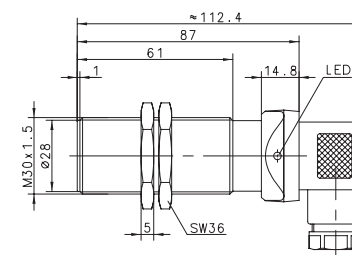
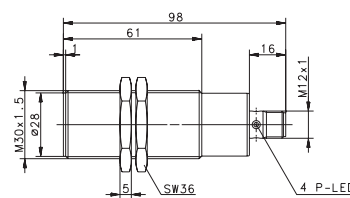
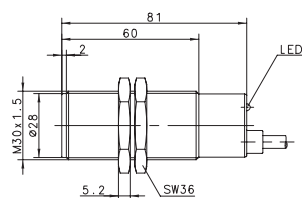
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Cable couplings and other accessories can be found from p. 208



Type	M30	M30	M30	M30
Enclosure material	PA, red	CuZn39Pb3	CuZn39Pb3	PA, red
Type of installation	flush	flush	flush	flush
Nominal sensing distance	10 mm	10 mm	10 mm	10 mm
Type of connection	Cable 2 m	Connector M12	DIN Connector	DIN Connector
Special feature		Temperature		
PNP	DC	NO contact	6502939006 KIB-M30PS/010-KLS12T	6502939001 KIB-M30PS/010-KLSD
PNP	DC	NC contact	6502722708 KIB-T30PÖ/010-KL2	6502739001 KIB-M30PÖ/010-KLSD
NPN	DC	NO contact		
NPN	DC	NC contact		
PNP/NPN	DC	NO/NC prog.		6502822862 KIB-T30PP/010-KLSD
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–30 VDC	10–60 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	300 Hz	300 Hz	300 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–40°C/+100°	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP65
Connection		3 x 0.5 mm ²	M12 x 1	Plug connector DIN EN 175301-803

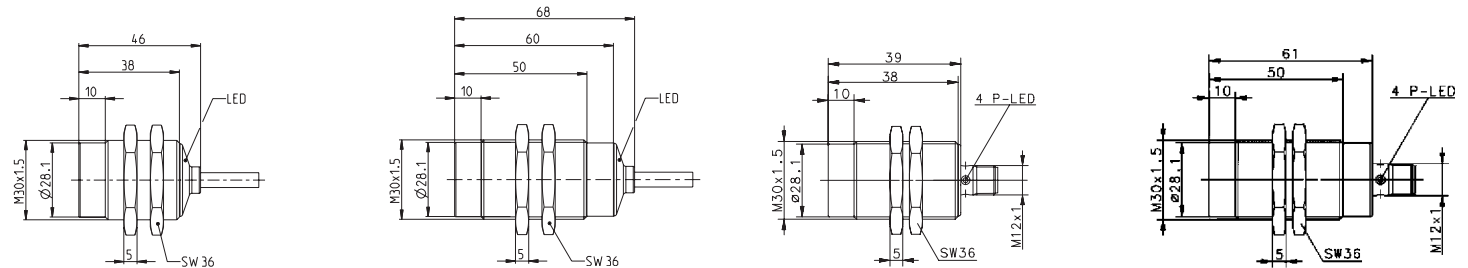


INDUCTIVE SENSORS Type M30



Type	M30	M30	M30	M30		
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3		
Type of installation	non-flush	non-flush	non-flush	non-flush		
Nominal sensing distance	15 mm	15 mm	15 mm	15 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Connector M12		
Special feature	Short type	Standard type	Short type	Standard type		
PNP	DC	NO contact	6532908001 KIN-M30PS/015-KL2VI	6532908002 KIN-M30PS/015-KL2I	6532908003 KIN-M30PS/015-KLS12VI	6532908004 KIN-M30PS/015-KLS12I
PNP	DC	NC contact	6532708001 KIN-M30PÖ/015-KL2VI	6532708002 KIN-M30PÖ/015-KL2I	6532708003 KIN-M30PÖ/015-KLS12VI	6532708004 KIN-M30PÖ/015-KLS12I
NPN	DC	NO contact	6532308001 KIN-M30NS/015-KL2V	6532308002 KIN-M30NS/015-KL2	6532308003 KIN-M30NS/015-KLS12V	6532308004 KIN-M30NS/015-KLS12
NPN	DC	NC contact	6532108001 KIN-M30NÖ/015-KL2V	6532108002 KIN-M30NÖ/015-KL2	6532108003 KIN-M30NÖ/015-KLS12V	6532108004 KIN-M30NÖ/015-KLS12
Technical data						
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67
Connection		3 x 0.34 mm ²	3 x 0.34 mm ²	M12 x 1	M12 x 1	M12 x 1
Approvals						

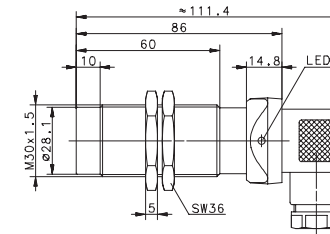
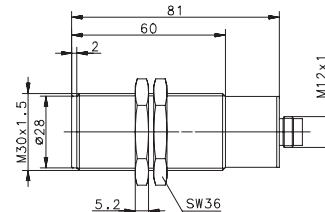
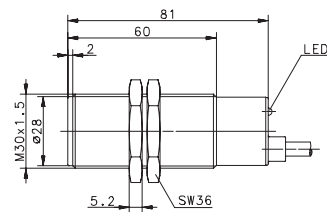
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Cable couplings and other accessories can be found from p. 208



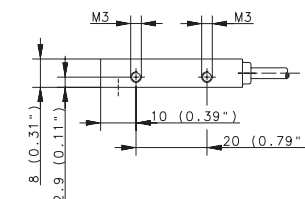
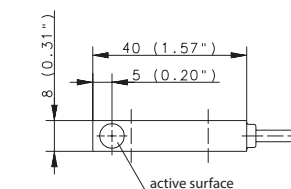
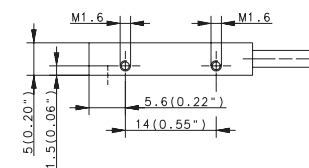
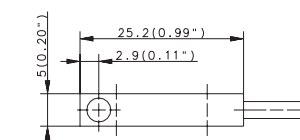
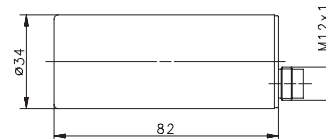
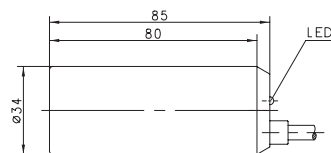
Type	M30	M30	M30
Enclosure material	PA, red	PA, red	CuZn39Pb3
Type of installation	non-flush	non-flush	non-flush
Nominal sensing distance	15 mm	15 mm	15 mm
Type of connection	Cable 2 m	Connector	DIN Connector
Special feature			
PNP	DC	NO contact	6502923981 KIN-T30PS/015-KL2
PNP	DC	NC contact	6502923002 KIN-T30PS/015-KS12
NPN	DC	NO contact	6502935001 KIN-M30PS/015-KLSD
NPN	DC	NC contact	
Technical data			
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	100 Hz	100 Hz
Short circuit-protection		cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–
Mechanical data			
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP65
Connection		3 x 0.5 mm ²	Plug connector DIN EN 175301-803



INDUCTIVE SENSORS Type Ø 34 mm, 5 x 5 x 25 mm, 8 x 8 x 40 mm



Type	Ø 34 mm	Ø 34 mm	5 x 5 x 25 mm	8 x 8 x 40 mm
Enclosure material	PBT, red	PBT, red	CuZn39Pb3	CuZn39Pb3
Type of installation	non-flush	non-flush	flush	flush
Nominal sensing distance	20 mm	20 mm	1.5 mm	1.5 mm
Type of connection	Cable 2 m	Connector	Cable	Cable 2 m
Special feature				
PNP	DC	NO contact	6502915002 KIN-R34PS/020-KL2	6502915004 KIN-R34PS/020-KS12
PNP	DC	NC contact		6502999026 KIB-Q05PS/001-K2PU
PNP	DC	antivalent NO/NC		6502799010 KIB-Q05PÖ/001-K2PU
NPN	DC	NO contact		6502980004 KIB-Q08PS/1,5-K2
				6502780001 KIB-Q08PÖ/1,5-K2
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	200 mA
Max. switching voltage	F	100 Hz	100 Hz	1000 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	–/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.5 mm ²	M12 x 1	3 x 0.05 mm ²

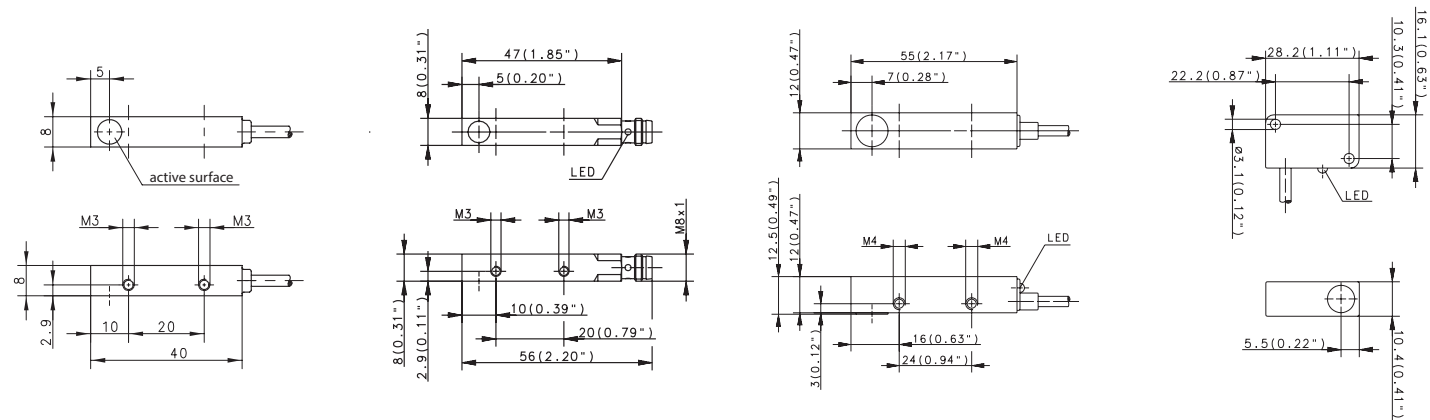


Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS Type 8x8x40 mm, 8x8x56 mm, 12x12x55 mm, 28x16x11 mm



Type	8 x 8 x 40 mm	8 x 8 x 56 mm	12 x 12 x 55 mm	28 x 16 x 11 mm
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	PA, black
Type of installation	flush	flush	flush	flush
Nominal sensing distance	1.5 mm	1.5 mm	4 mm	2 mm
Type of connection	Cable 2 m	Connector M8	Cable 2 m	Cable 2 m
Special feature	Temperature			
PNP	DC	NO contact	6502980087 KIB-Q08PS/1,5-K2T	6502980002 KIB-Q08PS/1,5-KLSM8
PNP	DC	NC contact	6502780002 KIB-Q08PÖ/1,5-KLSM8	6502999028 KIB-Q12PS/004-KL2E
NPN	DC	NO contact		6502973001 KIB-E28PS/002-KL2
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–36 VDC	10–36 VDC	10–60 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	1000 Hz	800 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		–/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)		0°C/+100°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.14 mm ²	M8 x 1	3 x 0.14 mm ²

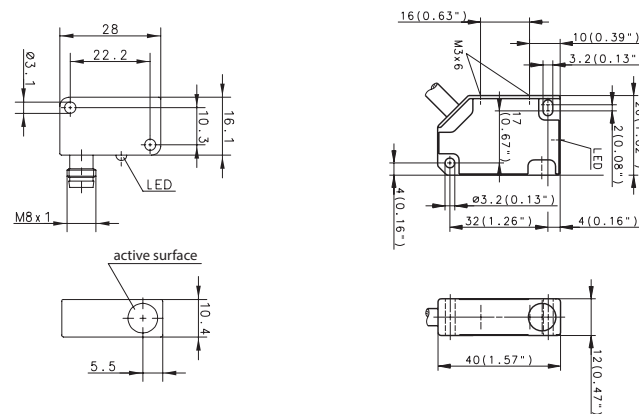


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS Type 28x16x11 mm, 40x26x12 mm



Type	28 x 16 x 11 mm		40 x 26 x 12 mm	
Enclosure material	PA, black		PBT, black	
Type of installation	flush		flush	
Nominal sensing distance	2 mm		2 mm	
Type of connection	Connector M8		Cable 2 m	
Special feature				
PNP	DC	NO contact	6502973002 KIB-E28PS/002-KLSM8	6502984023 KIB-E40PS/002-KL2
PNP	DC	NC contact	6502773001 KIB-E28PÖ/002-KLSM8	6502784006 KIB-E40PÖ/002-KL2
PNP	DC	antivalent NO/NC		
NPN	DC	NO contact		
Technical data				
Rated operating voltage range	U_B	10–30 VDC	10–36 VDC	
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	
Max. switching voltage	F	800 Hz	800 Hz	
Short circuit-protection		cyclic	cyclic	
Function/operating voltage indicator		LED/–	LED/–	
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	
Connection		M8 x 1	3 x 0.5 mm ²	

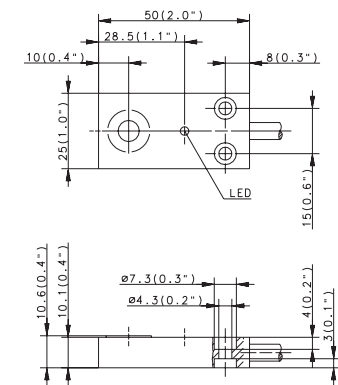
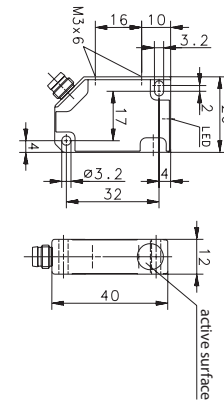
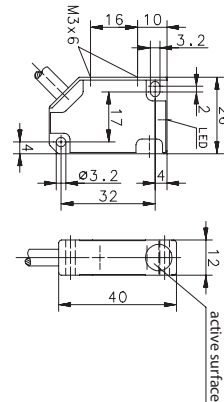
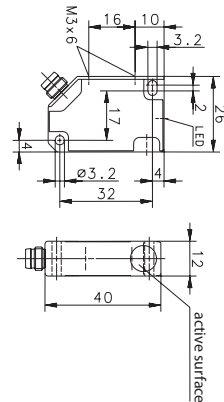


Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS Type 40x26x12 mm, 50x25x10 mm



Type	40 x 26 x 12 mm	40 x 26 x 12 mm	40 x 26 x 12 mm	50 x 25 x 10 mm
Enclosure material	PBT, black	PBT, black	PBT, black	PA, black
Type of installation	flush	non-flush	non-flush	flush
Nominal sensing distance	2 mm	4 mm	4 mm	5 mm
Type of connection	Connector M8	Cable 2 m	Connector M8	Cable 2 m
Special feature				
PNP	DC	NO contact	6502984025 KIB-E40PS/002-KLSM8	6502984024 KIN-E40PS/004-KL2
PNP	DC	NC contact		6502784007 KIN-E40PÖ/004-KL2
NPN	DC	NO contact		6502984026 KIN-E40PS/004-KLSM8
NPN	DC	NC contact		6502784008 KIN-E40PÖ/004-KLSM8
				6502390001 KIB-E50NS/005-KL2
Technical data				
Rated operating voltage range	U_B	10–36 VDC	10–36 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	800 Hz	400 Hz	500 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		M8 x 1	3 x 0.5 mm ²	M8 x 1

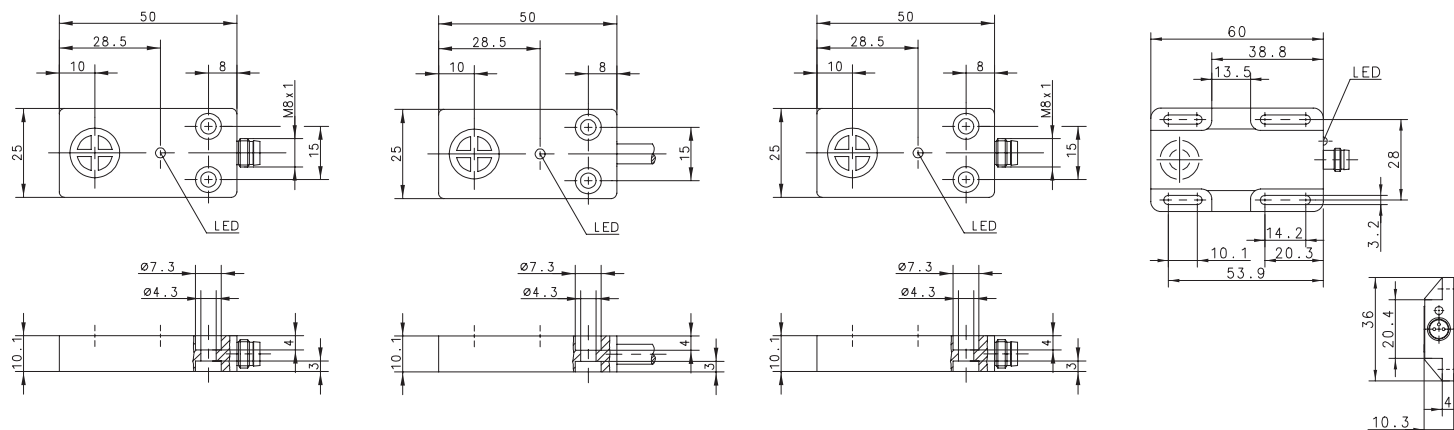


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS Type 50x25x10 mm, 60x36x10 mm



Type	50 x 25 x 10 mm		50 x 25 x 10 mm		50 x 25 x 10 mm		60 x 36 x 10 mm	
Enclosure material	PA, black		PA, black		PA, black		PA, black	
Type of installation	flush		non-flush		non-flush		non-flush	
Nominal sensing distance	5 mm		8 mm		8 mm		8 mm	
Type of connection	Connector M8		Cable 2 m		Connector M8		Connector M8	
Special feature								
PNP	DC	NO contact	6502990005 KIB-E50PS/005-KLSM8	6502990003 KIN-E50PS/008-KL2	6502990006 KIN-E50PS/008-KLSM8			
PNP	DC	NC contact				6602790048 KIN-E60PÖ/008-KLSM8		
PNP	DC	antivalent NO/NC						
NPN	DC	NO contact						
Technical data								
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–60 VDC	10–60 VDC	10–60 VDC	10–60 VDC	
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 400 mA	
Max. switching voltage	F	500 Hz	200 Hz	200 Hz	200 Hz	200 Hz	200 Hz	
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic	cyclic	
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–	LED/–	
Mechanical data								
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67	IP67	IP67	
Connection		M8 x 1	3 x 0.5 mm ²	M8 x 1	M8 x 1	M8 x 1	M8 x 1	

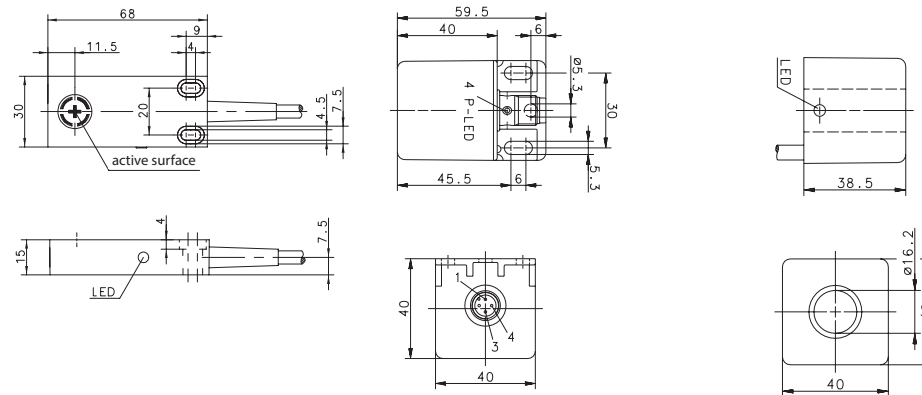


Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS Type 68x30x15 mm, 40x40 mm



Type	68x30x15 mm	40 x 40 mm	40 x 40 mm
Enclosure material	PBT, black	PA, red/black	PA, black
Type of installation	non-flush	non-flush	non-flush
Nominal sensing distance	7 mm	20 mm	
Type of connection	Cable 2 m	Connector M12	Cable 6 m
Special feature			Ring sensor
PNP	DC	NO contact	6502956076
			KIN-E68PS/007-KL2
PNP	DC	NC contact	6502982003
			KIN-N40PS/020-KLS12
NPN	DC	NO contact	6502999036
			KIR-N40PS/000-KL6
NPN	DC	NC contact	6502156058
			KIN-E68NÖ/007-KL6
Technical data			
Rated operating voltage range	U_B	10–60 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	200 Hz	50 Hz
Short circuit-protection		cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–
Mechanical data			
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		3 x 0.5 mm ²	3 x 0.5 mm ²



You can find detailed product data sheets at www.bernstein.eu

Inductive Sensors

NAMUR Sensors

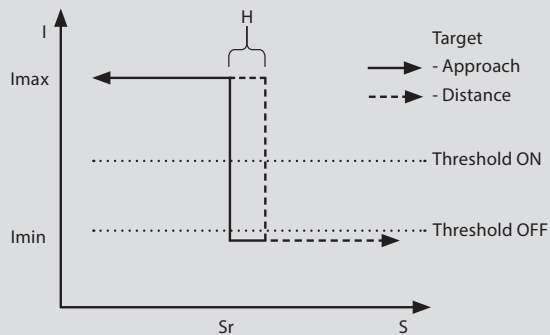


Product features

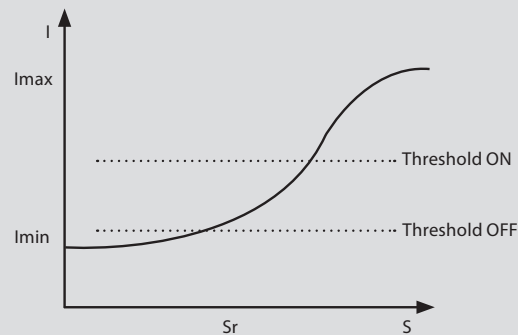
- Metric types: M04 – M30
- Special types: Ø 34, square
- Sensing distance: 0.6 mm – 10 mm
- Switching function: NO contact and NC contact
- Enclosure material: Stainless steel and brass enclosure

Good to know ...

By using Namur sensors, short circuits and cable breaks can be detected.



• non-continuous characteristic curve



• continuous characteristic curve

Options

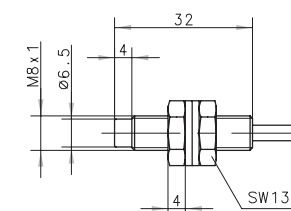
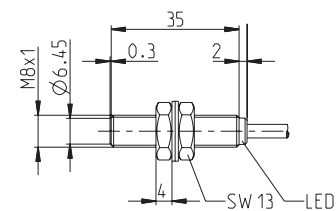
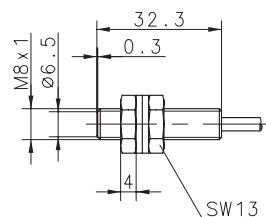
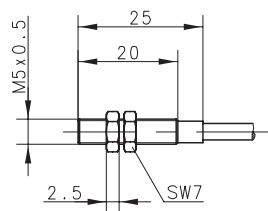
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development
- ATEX Namur sensors can be found in the "Inductive ATEX sensors" chapter

Further NAMUR sensors can be found in the EX chapter from p. 150

INDUCTIVE SENSORS NAMUR Type M5, M8



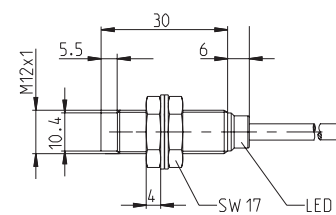
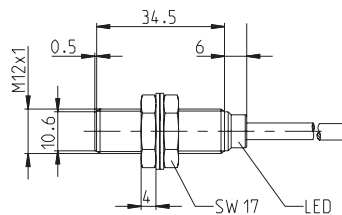
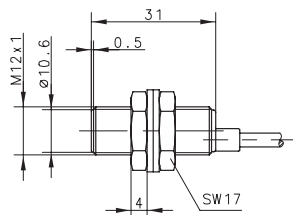
Type	M5	M8	M8	M8
Enclosure material	CuZn39Pb3	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305
Type of installation	flush	flush	flush	non-flush
Nominal sensing distance	1 mm	1.5 mm	2 mm	2 mm
Type of connection	Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m
Special feature	continuous characteristic curve	continuous characteristic curve	NO contact / non-contin. characteristic curve	continuous characteristic curve
NAMUR DC	6501699008 KIB-M05EA/001-2	6501601003 KIB-M08EA/1,5-2	6501601007 KIB-M08ES/002-L2	6501601005 KIN-M08EA/002-2
Technical data				
Rated operating voltage range	U_b 5–25 VDC	5–25 VDC	5–25 VDC	5–25 VDC
Rated operating current	I_e –	–	–	–
Max. switching voltage	F \approx 3 kHz	\approx 1 kHz	\approx 1.5 kHz	\approx 1 kHz
Short circuit-protection	–	–	–	–
Function/operating voltage indicator	–/–	–/–	LED/–	–/–
Mechanical data				
Ambient temperature (min/max)	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x 0.14 mm ²	2 x 0.25 mm ²	2 x 0.34 mm ²	2 x 0.25 mm ²



INDUCTIVE SENSORS NAMUR Type M12



Type	M12	M12	M12	M12
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation	flush	flush	non-flush	non-flush
Nominal sensing distance	2 mm	4 mm	4 mm	6 mm
Type of connection	Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m
Special feature	continuous characteristic curve	NO contact / non-contin. charact. curve	NC contact / non-contin. charact. curve	Sensing dist. / contin. characteristic curve
NAMUR DC	6501624760 KIB-M12EA/002-2	6501624004 KIB-M12ES/004-L2	6501625004 KIN-M12EÖ/004-KL2	
Technical data				
Rated operating voltage range	U_b 5–25 VDC	5–25 VDC	5–30 VDC	5–25 VDC
Rated operating current	I_e –	–	–	–
Max. switching voltage	F ≤ 800 Hz	≈ 1 kHz	≈ 1 kHz	≤ 200 Hz
Short circuit-protection	–	–	–	–
Function/operating voltage indicator	–/–	–/–	–/–	–/–
Mechanical data				
Ambient temperature (min/max)	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x 0.25 mm ²	2 x 0.34 mm ²	2 x 0.34 mm ²	2 x 0.25 mm ²



Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS NAMUR Type M18



Type	M18
Enclosure material	CuZn39Pb3
Type of installation	flush
Nominal sensing distance	5 mm
Type of connection	Cable 2 m
Special feature	continuous characteristic curve

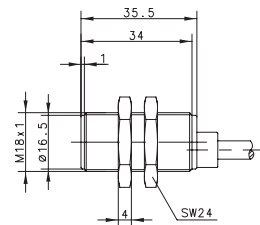
NAMUR DC **6501626762**
KIB-M18EA/005-2

Technical data

Rated operating voltage range	U_B	5–25 VDC
Rated operating current	I_e	–
Max. switching voltage	F	≤ 400 Hz
Short circuit-protection		–
Function/operating voltage indicator		–/–

Mechanical data

Ambient temperature (min/max)	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67
Connection	2 x 0.5 mm ²



Inductive Sensors

AC-Sensors



Product features

- Metric types: M12 – M30
- Voltage range: from 20 V AC to 265 V AC
- Sensing distance: 2 mm – 20 mm
- Switching function: NO contact/NC contact
- Enclosure material: plastic, brass

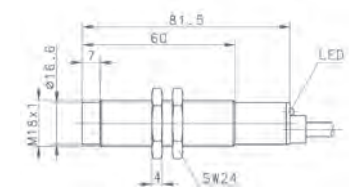
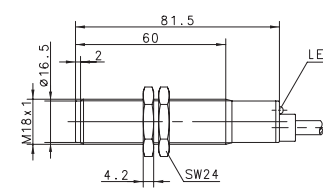
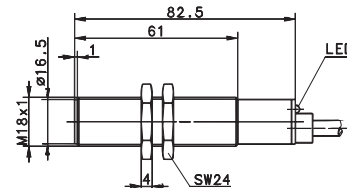
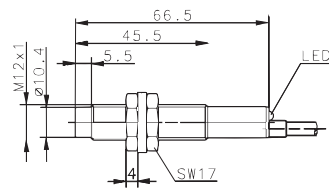
Options

- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

INDUCTIVE SENSORS AC 2-WIRE Type M12, M18



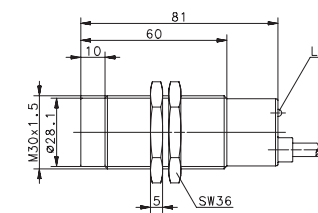
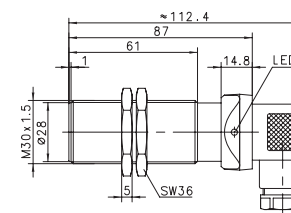
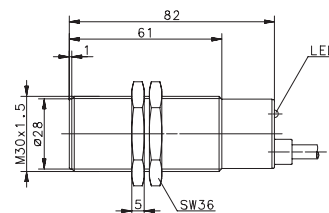
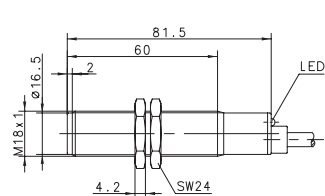
Type	M12	M18	M18	M18
Enclosure material	CuZn39Pb3	CuZn39Pb3	PA, red	CuZn39Pb3
Type of installation	non-flush	flush	flush	non-flush
Nominal sensing distance	4 mm	5 mm	5 mm	8 mm
Type of connection	Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m
Special feature				
2-wire AC NO contact	6503504001 KIN-M12AS/004-L2	6503505004 KIB-M18AS/005-L2	6503520697 KIB-T18AS/005-L2	6503506002 KIN-M18AS/008-L2
2-wire AC NC contact	6503404001 KIN-M12AÖ/004-L2	6503405001 KIB-M18AÖ/005-L2		6503406001 KIN-M18AÖ/008-L2
Technical data				
Rated operating voltage range	U_b 76–250 V AC	20–250 V AC	24–250 V AC	20–250 V AC
Rated operating current	I_e ≤ 200 mA	≤ 400 mA	≤ 200 mA	≤ 400 mA
Max. switching voltage	F ≈ 10 Hz	≈ 10 Hz	≈ 10 Hz	≈ 10 Hz
Short circuit-protection	–	–	–	–
Function/operating voltage indicator	LED/–	LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x 0.14 mm ²	2 x 0.5 mm ²	2 x 0.5 mm ²	2 x 0.5 mm ²



INDUCTIVE SENSORS AC 2-WIRE Type M18, M30



Type	M18	M30	M30	M30
Enclosure material	PA, red	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation	non-flush	flush	flush	non-flush
Nominal sensing distance	8 mm	10 mm	10 mm	15 mm
Type of connection	Cable 2 m	Cable 2 m	DIN Connector	Cable 2.5 m
Special feature				
2-wire AC NO contact	6503521705 KIN-T18AS/008-L2	6503507378 KIB-M30AS/010-L2	6503535960 KIB-M30AS/010-LSD	6503508246 KIN-M30AS/015-L2,5
2-wire AC NC contact	6503421704 KIN-T18AÖ/008-L2	6503407240 KIB-M30AÖ/010-L2	6503435959 KIB-M30AÖ/010-LSD	
Technical data				
Rated operating voltage range	U_b 24–250 V AC	20–250 V AC	20–265 V AC	20–250 V AC
Rated operating current	I_e ≤ 200 mA	≤ 400 mA	≤ 500 mA	≤ 400 mA
Max. switching voltage	F ≈ 10 Hz	≈ 10 Hz	20 Hz	≈ 10 Hz
Short circuit-protection	–	–	–	–
Function/operating voltage indicator	LED/–	LED/–	LED/–	LED/–
Mechanical data				
Ambient temperature (min/max)	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP65	IP67
Connection	2 x 0.5 mm ²	2 x 0.5 mm ²	Plug connector DIN EN 175301-803	2 x 0.5 mm ²

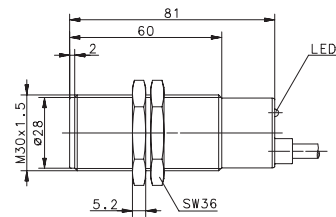


Cable couplings and other accessories can be found from p. 208

INDUCTIVE SENSORS AC 2-WIRE Type M30



Type	M30	
Enclosure material	PA, red	
Type of installation	non-flush	
Nominal sensing distance	15 mm	
Type of connection	Cable 2.5 m	
Special feature		
2-wire AC NO contact	6503523956 KIN-T30AS/015-L2,5	
2-wire AC NC contact		
Technical data		
Rated operating voltage range	U_B	20–250 V AC
Rated operating current	I_e	≤ 400 mA
Max. switching voltage	F	≈ 10 Hz
Short circuit-protection		–
Function/operating voltage indicator		LED/–
Mechanical data		
Ambient temperature (min/max)		–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67
Connection		2 x 0.5 mm ²



Inductive Sensors

Analogue Sensors



Product features

- Metric types: M18/M30
- Sensing distance: 8 mm – 15 mm
- Current output: 0 – 10 mA/0 – 20 mA
- Enclosure material: Brass

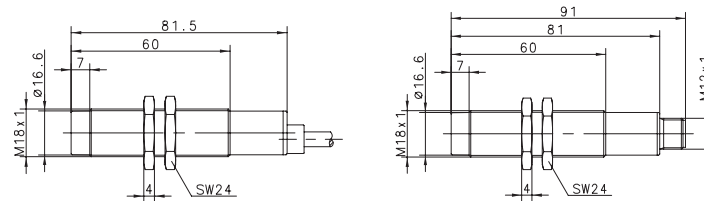
Options

- Cable and connector assembly
- Adaptation of the enclosures
- Product adaptations and modifications
- Customized development

INDUCTIVE SENSORS ANALOGUE Type M18



Type	M18	M18
Enclosure material	CuZn39Pb3	CuZn39Pb3
Type of installation	non-flush	non-flush
Nominal sensing distance	8 mm	8 mm
Type of connection	Cable 2 m	Connector M12
Special feature		
Analogue DC	6502006001	6602006111
	KIN-M18PA/008-2	KIN-M18PA/008-S12
Technical data		
Rated operating voltage range	U_b	10–36 VDC
Rated operating current	I_e	–
Max. switching voltage	F	–
Short circuit-protection		cyclic
Function/operating voltage indicator		–/–
Mechanical data		
Ambient temperature (min/max)		–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67
Connection		3 x 0.5 mm ²



Inductive Sensors

ATEX Sensors



Product features

- Metric types: M05 – M30
- Sensing distance: 1 mm – 15 mm
- Switching function: NO contact/NC contact, NAMUR
- Enclosure material: plastic, brass, stainless steel

Good to know ...

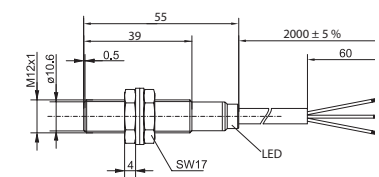
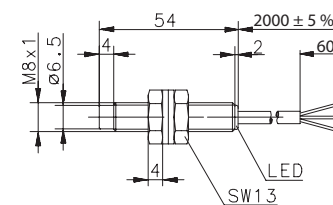
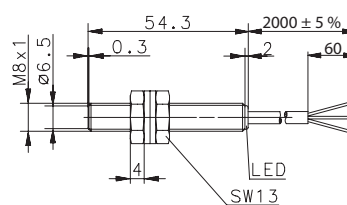
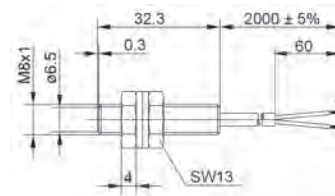
The term: "ATEX" is a derivative of **Atmosphères Explosibles**, which is French for explosive atmosphere.



INDUCTIVE SENSORS ATEX Type M08, M12



Type	M08	M08	M08	M12	
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305	CuZn39Pb3	
Type of installation	flush	flush	non-flush	flush	
Nominal sensing distance	1.5 mm	1 mm	2 mm	2 mm	
Type of connection	Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m	
ATEX	II 3 G Ex ib IIC T6 Gc II 3 D Ex ib IIIC T70°C Dc	II 2 D Ex tb IIIC T100°C Db	II 2 D Ex tb IIIC T100°C Db	II 2 D Ex tb IIIC T100°C Db	
Special feature	NAMUR				
NPN	DC	NO contact	6522302025 KIB-M08NS/001-KL2D	6522302040 KIN-M08NS/002-KL2D	6522303029 KIB-M12NS/002-KL2D
NPN	DC	NC contact	6522102024 KIB-M08NÖ/001-KL2D	6522102039 KIN-M08NÖ/002-KL2D	6522103028 KIB-M12NÖ/002-KL2D
PNP	DC	NO contact	6522902027 KIB-M08PS/001-KL2D	6522902042 KIN-M08PS/002-KL2D	6522903022 KIB-M12PS/002-KL2D
PNP	DC	NC contact	6522702026 KIB-M08PÖ/001-KL2D	6522702041 KIN-M08PÖ/002-KL2D	6522703030 KIB-M12PÖ/002-KL2D
DC	6521601003 KIB-M08EA/1,5-2G				
Technical data					
Rated operating voltage range	U_b	5–25 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	–	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	≈ 1 kHz	≈ 1 kHz	750 Hz	800 Hz
Short circuit-protection		–	cyclic	cyclic	cyclic
Function/operating voltage indicator		–/–	LED	LED	LED
Mechanical data					
Ambient temperature (min/max)		–20°C/+60°C	–20°C/+60°C	–20°C/+60°C	–20°C/+60°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67
Connection		2 x 0.25 mm ²	3 x 0.14 mm ²	3 x 0.14 mm ²	3 x 0.14 mm ²

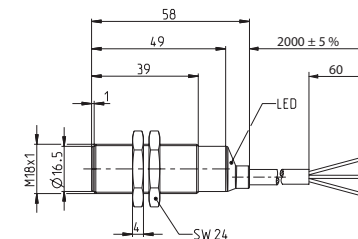
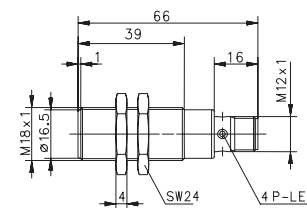
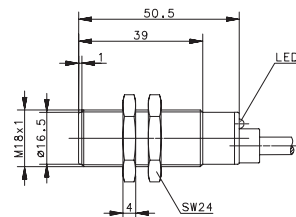
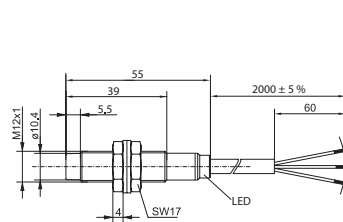


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS ATEX Type M12, M18



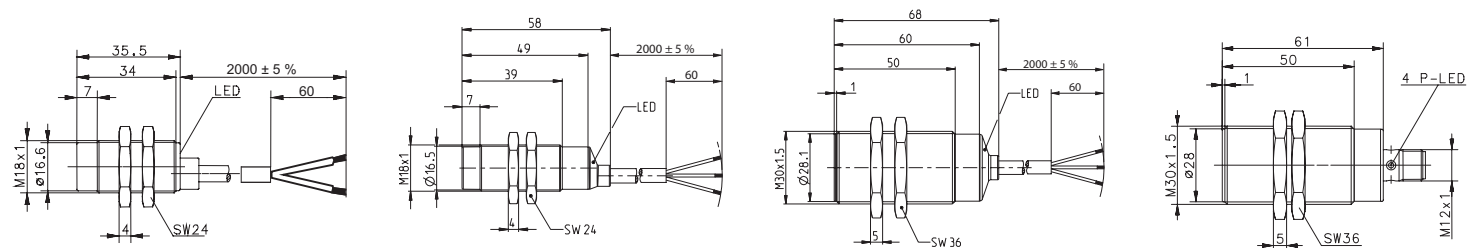
Type	M12	M18	M18	M18	
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	
Type of installation	non-flush	flush	flush	flush	
Nominal sensing distance	4 mm	5 mm	5 mm	5 mm	
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Cable 2 m	
ATEX	II 2 D Ex tb IIIC T100°C Db	II 3G Ex nA IIC T6 Gc X II 3D Ex tc IIIC T80°C Dc X	II 3G Ex nA IIC T6 Gc X II 3D Ex tc IIIC T80°C Dc X	II 2 D Ex tb IIIC T100°C Db	
Special feature					
NPN	DC	NO contact	6522304044 KIN-M12NS/004-KL2D	6522305032 KIB-M18NS/005-KL2D	
NPN	DC	NC contact	6522104043 KIN-M12NÖ/004-KL2D	6522105031 KIB-M18NÖ/005-KL2D	
PNP	DC	NO contact	6522904023 KIN-M12PS/004-KL2D	6522905013 KIB-M18PS/005-KL2D	
PNP	DC	NC contact	6522704045 KIN-M12PÖ/004-KL2D	6522905015 KIB-M18PS/005-KLS12D	
				6522905034 KIB-M18PS/005-KL2D	
				6522705033 KIB-M18PÖ/005-KL2D	
DC					
Technical data					
Rated operating voltage range	U_b	10–30 VDC	10–36 VDC	10–36 VDC	10–30 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	200 mA	≤ 200 mA
Max. switching voltage	F	450 Hz	500 Hz	500 Hz	500 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED	LED	LED	LED
Mechanical data					
Ambient temperature (min/max)		–20°C/+60°C	–20°C/+60°C	–25°C/+60°C	–20°C/+60°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.5 mm ²	M12 x 1	3 x 0.34 mm ²



Cable couplings and other accessories can be found from p. 208



Type	M18	M18	M30	M30	
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	
Type of installation	non-flush	non-flush	flush	flush	
Nominal sensing distance	8 mm	8 mm	10 mm	10 mm	
Type of connection	Cable 2 m	Cable 2 m	Cable 2 m	Connector M12	
ATEX	II 3G Ex ib IIC T6 Gc II 3D Ex i IIIC T70°C Dc	II 2 D Ex tb IIIC T100°C Db	II 2 D Ex tb IIIC T100°C Db	II 3G Ex nA IIC T6 Gc X II 3D Ex tc IIIC T80°C Dc X	
Special feature	NAMUR				
NPN DC NO contact	6522306047 KIN-M18NS/008-KL2D		6522307036 KIB-M30NS/010-KL2D		
NPN DC NC contact	6522106046 KIN-M18NÖ/008-KL2D		6522107035 KIB-M30NÖ/010-KL2D		
PNP DC NO contact	6522906049 KIN-M18PS/008-KL2D		6522907038 KIB-M30PS/010-KL2D		
PNP DC NC contact	6522706048 KIN-M18PÖ/008-KL2D		6522707037 KIB-M30PÖ/010-KL2D		
DC	6521627001 KIN-M18EA/008-2G				
Technical data					
Rated operating voltage range	U_b	5–25 VDC	10–30 VDC	10–30 VDC	10–36 VDC
Rated operating current	I_e	–	≤ 200 mA	≤ 200 mA	200 mA
Max. switching voltage	F	200 Hz	200 Hz	300 Hz	300 Hz
Short circuit-protection		–	cyclic	cyclic	cyclic
Function/operating voltage indicator		–/–	LED	LED	LED
Mechanical data					
Ambient temperature (min/max)		–25°C/+60°C	–20°C/+60°C	–20°C/+60°C	–25°C/+60°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67
Connection		2 x 0.5 mm ²	3 x 0.34 mm ²	3 x 0.34 mm ²	M12 x 1



INDUCTIVE SENSORS ATEX Type M30



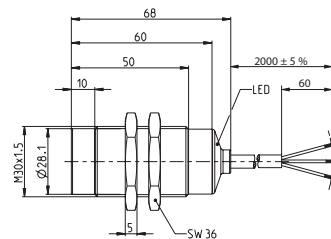
Type	M30
Enclosure material	CuZn39Pb3
Type of installation	non-flush
Nominal sensing distance	15 mm
Type of connection	Cable 2 m
ATEX	II 2 D Ex tb IIIC T100°C Db
Special feature	

NPN	DC	NO contact	6522308051 KIN-M30NS/015-KL2D
NPN	DC	NC contact	6522108050 KIN-M30NÖ/015-KL2D
PNP	DC	NO contact	6522908053 KIN-M30PS/015-KL2D
PNP	DC	NC contact	6522708052 KIN-M30PÖ/015-KL2D

DC

Technical data		
Rated operating voltage range	U_b	10–30 VDC
Rated operating current	I_e	≤ 200 mA
Max. switching voltage	F	100 Hz
Short circuit-protection		cyclic
Function/operating voltage indicator		LED

Mechanical data		
Ambient temperature (min/max)		–20°C/+60°C
Protection class in accordance with IEC 529, EN 60529		IP67
Connection		3 x 0.34 mm ²



Cable couplings and other accessories can be found from p. 208



Capacitive Sensors

Standard range



Product features

- Metric types: metric M12 – M30
- Special types: smooth cylindrical, rectangular
- Sensing distance: 2 mm – 30 mm
- Switching function: NO contact, NC contact, Dual output, Changeover contact
- Enclosure material: brass and plastic enclosure
- Medium: conductive and non-conductive materials
solid, liquid, granular or powder
- Time delay: Switch-on and switch-off delay

Good to know ...

The capacitive sensors have in principle a potentiometer integrated, which allows the response sensitivity, i.e. the switching distance to the medium, to be adjusted. Optionally, the sensors can also be preset or can be delivered without a potentiometer.

Options

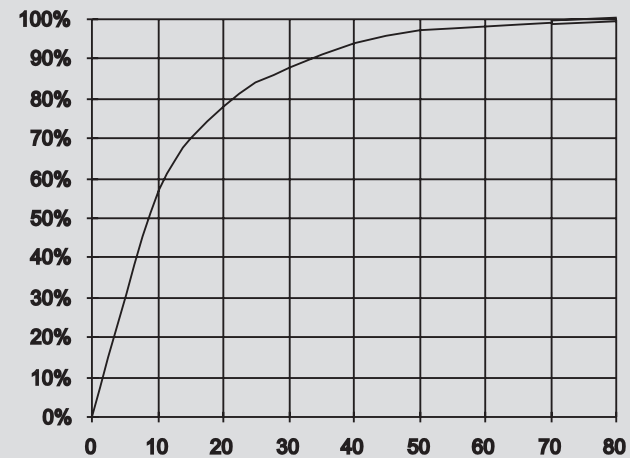
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

Application descriptions

A special application of the capacitive proximity switch is to detect fill levels in non-metallic containers from the outside.

Advantage: The container wall does not have to be broken through for scanning. A prerequisite for this is that the dielectric constant and the mass of the material to be scanned is greater than that of the container. The response sensitivity of the proximity switch must be reduced with the built-in potentiometer to such an extent that the limit switch does not respond to the container wall but to the medium to be scanned.

Adhesion of the medium to the sensor head is a common challenge when capacitive sensors come into direct contact with the medium. This can lead to false switching signals. In these applications, sensors with PTFE front cap should be used.



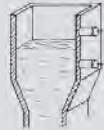
Variance of sensing distance as a function of ϵ

Examples of dielectric constants	
Glass	3 ... 14
Rubber	2.5 ... 3
Laminated paper	3.5 ... 6
Wood	2.5 ... 6.8
Marble	8.4 ... 14
Mineral oil	2.15
Epoxy resin	3.3 ... 3.6
Petroleum	2.2
Plexiglas	3.6
Polyamide	3 ... 8
PVC	3.3 ... 4.1
Porcelain	4.2 ... 6.5
Teflon PTFE	2
Air	1
Water	80.8
Paper (dry)	2

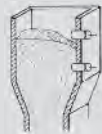
Capacitive Sensors

Standard range

Level monitoring in
non-metallic containers



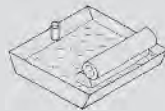
Level monitoring of bulk material,
e.g. granulated material, fodder



Stack height scanning, e.g. paper, chip board



Fill level monitoring in paint and
adhesive containers



Registering, counting, sorting or
monitoring in conveyor belt systems



Detecting, positioning in
sequence control systems



Detection in woodworking applications



Belt breakage signalling



Level monitoring in
packing systems

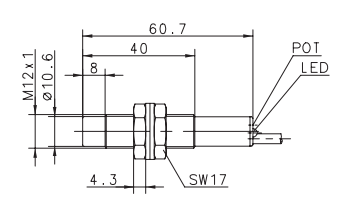
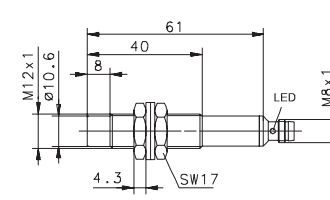
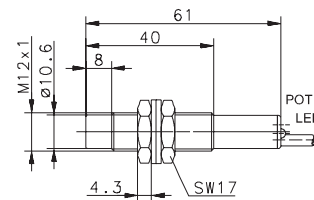
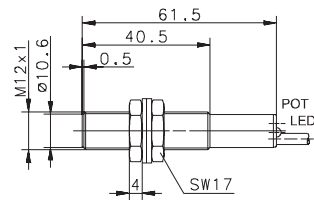




CAPACITIVE SENSORS Type M12



Type	M12	M12	M12	M12		
Enclosure material	CuZn39Pb3	PBT, black	PBT, black	PBT, black		
Type of installation	flush	non-flush	non-flush	non-flush		
Nominal sensing distance	2 mm	4 mm	4 mm	6 mm		
Type of connection	Cable 2 m	Cable 2 m	Connector M8	Cable 2 m		
Special feature	PTFE Front cap			Sensing distance		
PNP	DC	NO contact	6507903001 KCB-M12PS/002-KLP2	6507919001 KCN-T12PS/004-KLP2	6507919004 KCN-T12PS/004-KLSM8	6607919110 KCN-T12PS/006-KLP2E
PNP	DC	NC contact				
NPN	DC	NO contact				
NPN	DC	NC contact				
Technical data						
Rated operating voltage range	U_B	10–36 VDC	10–36 VDC	10–36 VDC	10–36 VDC	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Switching frequency (max)	F	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–	LED/–
Sensing distance, adjustable		Poti	Poti	–	–	Poti
Mechanical data						
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP65	IP65	IP65	IP65	IP65
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	M8 x 1	M8 x 1	3 x 0.14 mm ²

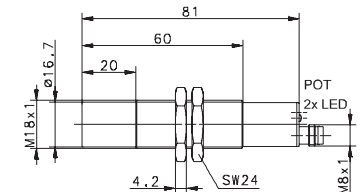
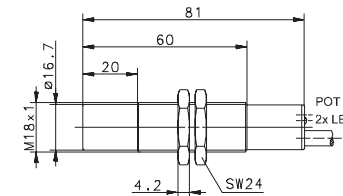
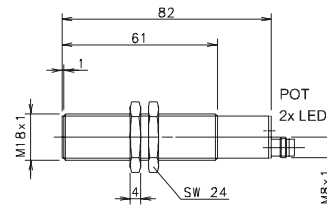
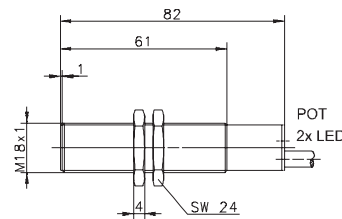


Cable couplings and other accessories can be found from p. 208

CAPACITIVE SENSORS Type M18



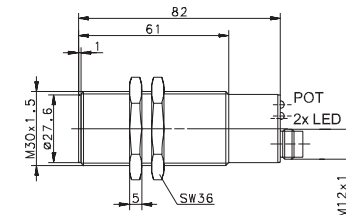
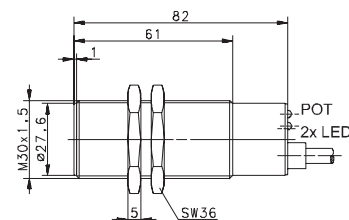
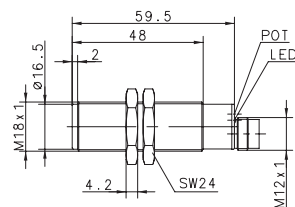
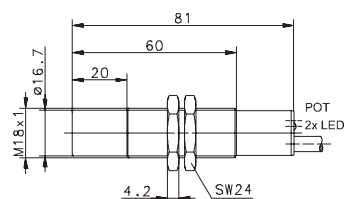
Type	M18	M18	M18	M18
Enclosure material	CuZn39Pb3	CuZn39Pb3	PBT, black	PBT, black
Type of installation	flush	flush	non-flush	non-flush
Nominal sensing distance	5 mm	5 mm	8 mm	8 mm
Type of connection	Cable 2 m	Connector M8	Cable 2 m	Connector M8
Special feature	PTFE Front cap	PTFE Front cap		
PNP	DC	NO contact	6507905001 KCB-M18PS/005-KLP2	6507905004 KCB-M18PS/005-KLP5M8
PNP	DC	NC contact		6507921724 KCN-T18PS/008-KLP2
PNP	DC	antivalent NO/NC		6507921002 KCN-T18PS/008-KLP5M8
NPN	DC	NO contact		6507321723 KCN-T18NS/008-KLP2
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–60 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Switching frequency (max)	F	25 Hz	25 Hz	25 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/LED	LED/LED	LED/LED
Sensing distance, adjustable		Poti	Poti	Poti
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP65	IP65	IP65
Connection		3 x 0.5 mm ²	M8 x 1	3 x 0.5 mm ²



CAPACITIVE SENSORS Type M18, M30



Type	M18	M18	M30	M30
Enclosure material	PBT, black	PBT, black	CuZn39Pb3	CuZn39Pb3
Type of installation	non-flush	non-flush	flush	flush
Nominal sensing distance	13,5 mm	13,5 mm	10 mm	10 mm
Type of connection	Cable 3 m	Connector M12	Cable 2 m	Connector M12
Special feature	Sensing distance	Sensing distance/Short type	PTFE Front cap	PTFE Front cap
PNP	DC	NO contact	6607921461 KCN-T18PS/013-KLP3	6507921004 KCN-T18PS/013-KLPS12V
PNP	DC	NC contact		6507907001 KCB-M30PS/010-KLP2
NPN	DC	NO contact		6507707001 KCB-M30PÖ/010-KLP2
NPN	DC	NC contact		
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–60 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA	≤ 400 mA
Switching frequency (max)	F	25 Hz	25 Hz	25 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/LED	LED/LED	LED/LED
Sensing distance, adjustable		Poti	Poti	Poti
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP65	IP65	IP65
Connection		3 x 0.5 mm ²	M12 x 1	3 x 0.5 mm ²

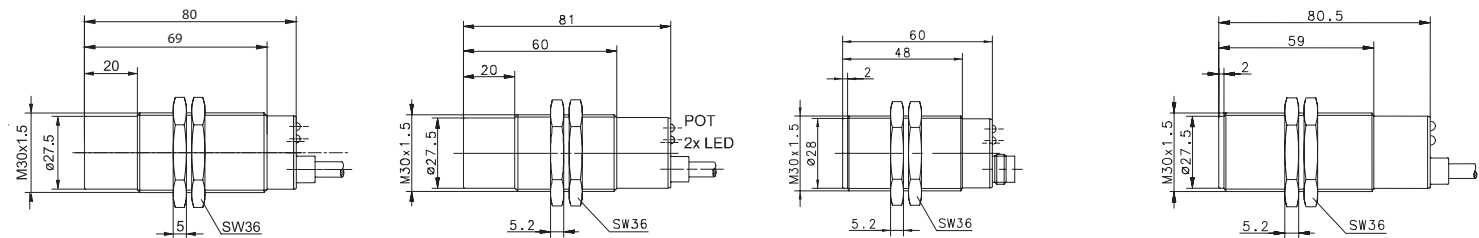


Cable couplings and other accessories can be found from p. 208

CAPACITIVE SENSORS Type M30



Type	M30	M30	M30	M30
Enclosure material	Stainless steel 1.4305	PBT, black	PBT, black	PBT, black
Type of installation	non-flush	non-flush	non-flush	non-flush
Nominal sensing distance	20 mm	20 mm	20 mm	20 mm
Type of connection	Cable 2 m	Cable 2 m	Connector M12	Cable 2 m
Special feature	PTFE Front cap / Stainless steel enclosure		Short type	Pickup delay / Relais
PNP	DC	NO contact	6507908001 KCN-M30PS/020-KLP2	6507923727 KCN-T30PS/020-KLP2
PNP	DC	NC contact	6507723001 KCN-T30PÖ/020-KLP2	6507923006 KCN-T30PS/020-KLPS12V
NPN	DC	NO contact	6507308001 KCN-M30NS/020-KLP2	6507323001 KCN-T30NS/020-KLP2
NPN	DC	NC contact		
Relay	Changeover contact			6509023001 KCN-T30RU/020-LP2
Technical data				
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–60 VDC
Rated operating current	I_e	≤ 400 mA	≤ 400 mA	≤ 400 mA
Switching frequency (max)	F	25 Hz	25 Hz	25 Hz
Short circuit-protection		cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/LED	LED/LED	LED/LED
Sensing distance, adjustable		Poti	Poti	Poti
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP65	IP65
Connection		3 x 0.5 mm ²	3 x 0.5 mm ²	M12 x 1

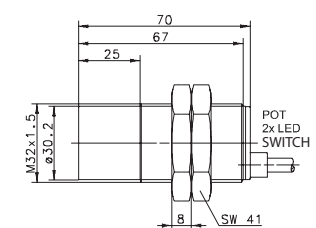
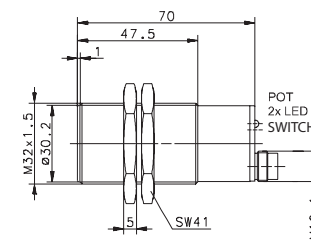
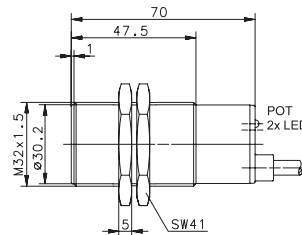
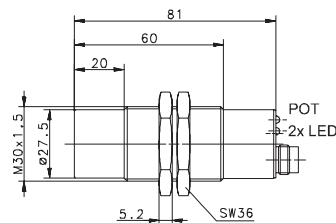


You can find detailed product data sheets at www.bernstein.eu

CAPACITIVE SENSORS Type M30, M32



Type	M30	M32	M32	M32	
Enclosure material	PBT, black	CuZn39Pb3	CuZn39Pb3	PBT, black	
Type of installation	non-flush	flush	flush	non-flush	
Nominal sensing distance	20 mm	15 mm	15 mm	30 mm	
Type of connection	Connector M12	Cable 2 m	Connector M12	Cable 2 m	
Special feature		PTFE Front cap	PTFE Front cap		
PNP	DC	NO contact	6507923004 KCN-T30PS/020-KLPS12		
NPN	DC	NO contact			
PNP/NPN	DC	NO/NC prog.	6507013011 KCB-M32DP/015-KLP2	6507013015 KCB-M32DP/015-KLPS12	6507013001 KCN-T32DP/030-KLP2
PNP/NPN	DC	Push-pull operation	6507013012 KCB-M32GP/015-KLP2		
Technical data					
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC	10–60 VDC	10–60 VDC
Rated operating current	I_e	≤ 400 mA	≤ 400 mA	≤ 400 mA	≤ 400 mA
Switching frequency (max)	F	25 Hz	25 Hz	25 Hz	25 Hz
Short circuit-protection		cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator		LED/LED	LED/LED	LED/–	LED/–
Sensing distance, adjustable		Poti	Poti	Poti	Poti
Mechanical data					
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP65	IP67	IP65	IP65
Connection		M12 x 1	3 x 0.5 mm ²	M12 x 1	3 x 0.5 mm ²



Cable couplings and other accessories can be found from p. 208

CAPACITIVE SENSORS Type M32



Type	M32
Enclosure material	PBT, black
Type of installation	non-flush
Nominal sensing distance	30 mm
Type of connection	Connector M12
Special feature	

PNP DC NO contact

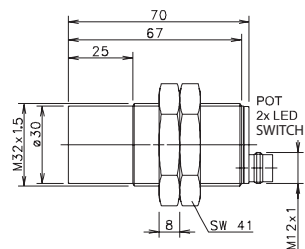
NPN DC NO contact

PNP/NPN DC NO/NC prog. 6507013004
KCN-T32DP/030-KLPS12

PNP/NPN DC Push-pull operation

Technical data		
Rated operating voltage range	U_B	10–60 VDC
Rated operating current	I_e	≤ 400 mA
Switching frequency (max)	F	25 Hz
Short circuit-protection		cyclic
Function/operating voltage indicator		LED/–
Sensing distance, adjustable		Poti

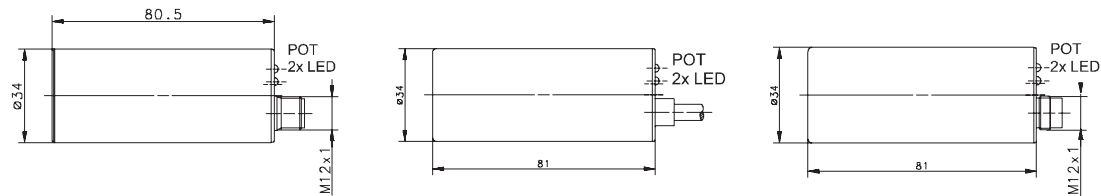
Mechanical data	
Ambient temperature (min/max)	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP65
Connection	M12 x 1



CAPACITIVE SENSORS Type Ø 34 mm

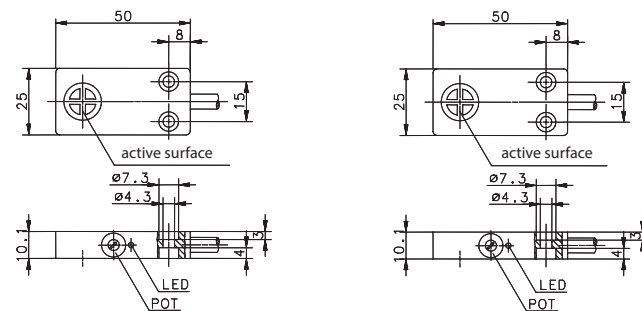


Type	Ø 34 mm	Ø 34 mm	Ø 34 mm
Enclosure material	CuZn39Pb3	PBT, red	PBT, red
Type of installation	flush	non-flush	non-flush
Nominal sensing distance	20 mm	30 mm	30 mm
Type of connection	Connector M12	Cable 2 m	Connector M12
Special feature			
PNP	DC	NO contact	6507915006 KCB-D34PS/020-KLPS12
PNP	DC	NC contact	6507915001 KCN-R34PS/030-KLP2
NPN	DC	NO contact	6507915004 KCN-R34PS/030-KLPS12
NPN	DC	NC contact	6507715004 KCN-R34PÖ/030-KLPS12
Technical data			
Rated operating voltage range	U_B	10–60 VDC	10–60 VDC
Rated operating current	I_e	≤ 200 mA	≤ 400 mA
Switching frequency (max)	F	25 Hz	25 Hz
Short circuit-protection		cyclic	cyclic
Function/operating voltage indicator		LED/LED	LED/LED
Sensing distance, adjustable		Poti	Poti
Mechanical data			
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP65	IP65
Connection		M12 x 1	3 x 0.5 mm ²



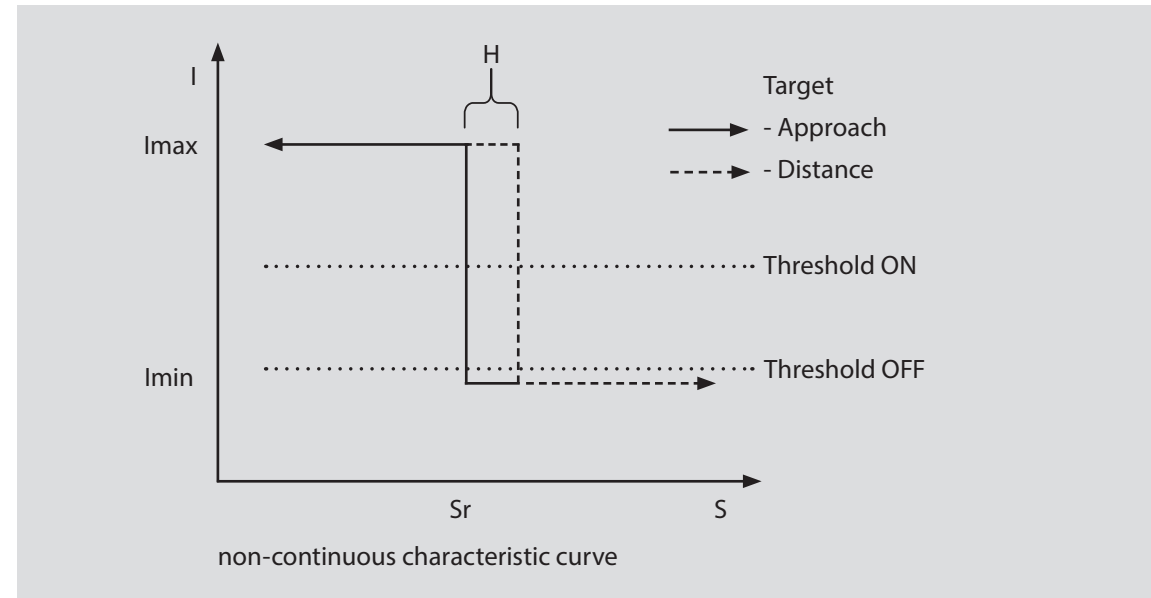
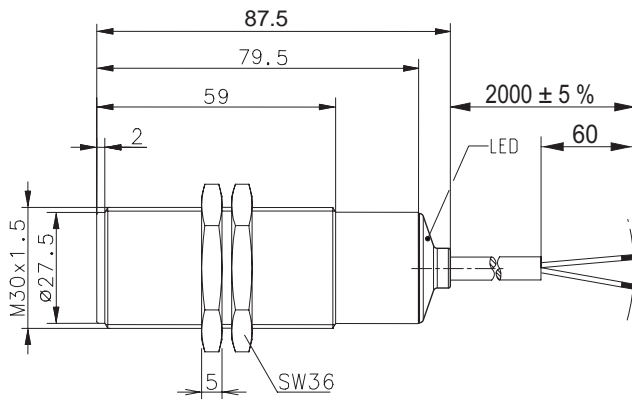
Cable couplings and other accessories can be found from p. 208

Type	15 x 25 x 10 mm	15 x 25 x 10 mm
Enclosure material	PBT, black	PBT, black
Type of installation	flush	flush
Nominal sensing distance	8 mm	8 mm
Type of connection	Cable 2 m	Connector M8
Special feature		
PNP	DC	NO contact
		6507990001 KCB-E50PS/008-KLP2
		6607990842 KCB-E50PS/008-KLPSM8
PNP	DC	NC contact
NPN	DC	NO contact
NPN	DC	NC contact
Technical data		
Rated operating voltage range	U_B	10–36 VDC
Rated operating current	I_e	≤ 200 mA
Switching frequency (max)	F	25 Hz
Short circuit-protection		cyclic
Function/operating voltage indicator		LED/–
Sensing distance, adjustable		Poti
Mechanical data		
Ambient temperature (min/max)		–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP65
Connection		3 x 0.34 mm ²



Capacitive Sensors

NAMUR-Sensors



Good to know ...

By using Namur sensors, short circuits and cable breaks can be detected.

Technical data NAMUR Type M30

NAMUR DC	6506623001	KCN-T30ES/015-L2
Electrical data		
Type of installation	S_n	non-flush
Nominal sensing distance		15 mm (Characteristic curve acc. to DIN EN 60947-5-6, 5.4 Fig. 2)
Standard measuring plate		45 mm x 45 mm x 1 mm, material: Fe
Assured switching distance	S_a	0 ... 12 mm
Repeatability	R	< 5 %
Nominal voltage	U_n	DC 8 V
Rated operating voltage	U_e	DC 5 ... 25 V
Ripple		≤ 5 %
Power consumption	I	> 3.5 mA ($U_n = 8\text{ V}$ und $R_i = 1\text{ k}\Omega$) sensing face damping < 1.2 mA ($U_n = 8\text{ V}$ und $R_i = 1\text{ k}\Omega$) sensing face free
Switching frequency	f	100 Hz
Mechanical data		
Enclosure material		PBT, black
End cap		PA 12, transparent
Ambient temperature		-25 °C ... +70 °C
Protection class		IP67
Display		LED, yellow
Type of connection		Cable 2 x 0.5 mm ² ; PVC Coating, black
Fastening aids		2 x hexagon nuts, PA 6.6, black
EU Conformity		
according to directive 2014/30/EU (EMV-directive)		
EMV		
to EN 60947-5-2		
Remarks		
Overvoltage protection at 10-30 V for 400 ms.		

Cable couplings and other accessories can be found from p. 208



Electromechanical magnetic sensors

Standard range



Product features

- Metric types: M08/M12
- Special types: Ø 6 mm – Ø 15.5 mm, rectangular
- Sensing distance: 6 mm – 25 mm
- Switching function: NO contact, NC contact, Changeover contact, Bistable
- Enclosure material: aluminium, plastic, stainless steel, brass

Good to know ...

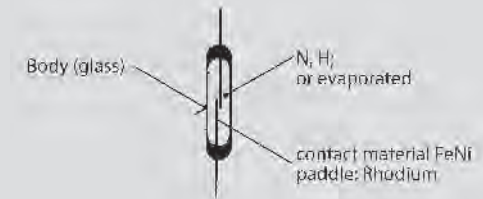
Magnetic sensors with reed contacts can be connected to both DC and AC voltage and do not consume power in passive operation.

Options

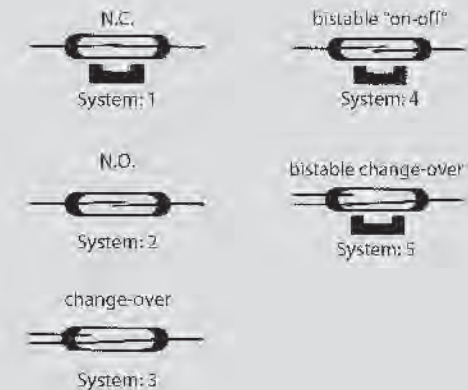
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

Special features of electromechanical magnetic switches

- Perfect functioning under extreme environmental influences, such as dirt, moisture, gases, dust etc.
- Protection class up to IP67
- Stable switching point, reproducible switching point accuracy of approx. 0.1 mm
- Can be actuated from several directions
- Installation in any position
- High operational reliability is guaranteed by the standard use of only one component
- Easy installation
- Long electrical life (depending on the load to be switched), more than 10⁸ switching cycles with appropriate contact protection measures
- Special versions for extreme temperatures from -40 °C to +150 °C
- Can be connected to DC and AC voltage sources



Design of a reed contact

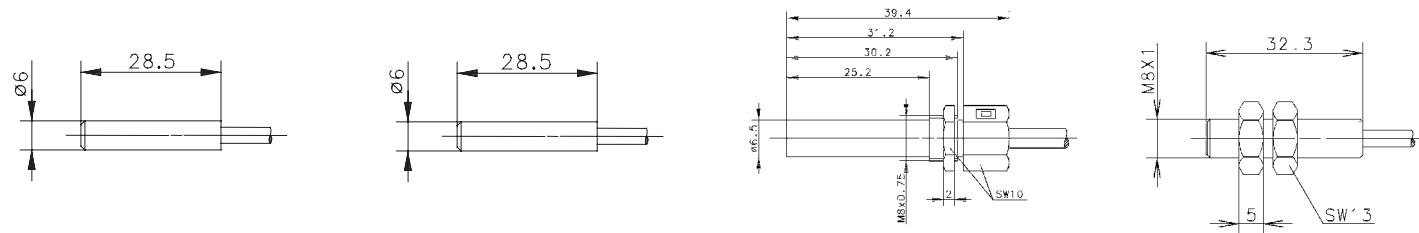


Types of reed contact switches

ELECTROMECHANICAL MAGNETIC SENSORS Type Ø 6 mm, Ø 6.5 mm, M8



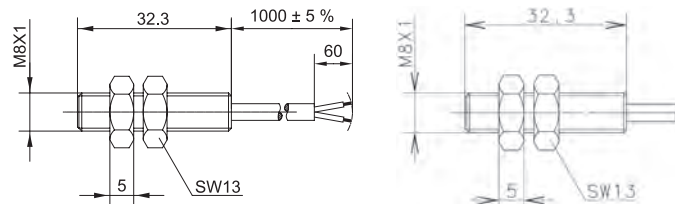
Type	Ø 6 mm	Ø 6 mm	Ø 6.5 mm	M8
Enclosure material	PA, black	PA, black	PA, red	Stainless steel 1.4305
Nominal sensing distance (San)	29 mm	20 mm	20 mm	29 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 2 m	Cable 1 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature				
NO contact		6311230704 MAK-3012-F-1	6310246723 MAK-4612-F-2	
NC contact				
Changeover contact	6310330705 MAK-3013-D-1			6310308733 MAN-0813-D-1
bistable				
Technical data				
Switching voltage (max)	125 V AC / 175 V DC	250 V AC / DC	250 V AC / DC	125 V AC / 175 V DC
Switching current (max)	280 mA AC / 400 mA DC	1 A	1 A	280 mA AC / 400 mA DC
Max. switching capacity	5 VA	100 VA	100 VA	5 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C	-5°C/+90°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x AWG 26	2 x AWG 26	2 x AWG 26	3 x AWG 26
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208



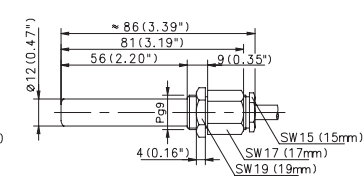
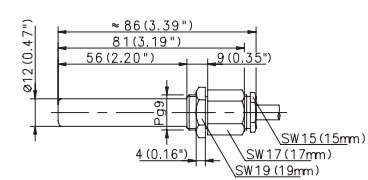
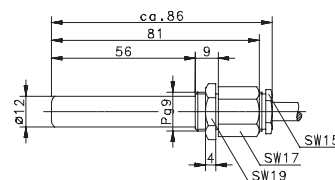
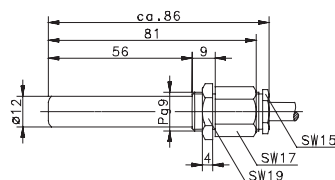
Type	M8	M8
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305
Nominal sensing distance (San)	13 mm	20 mm
Type of connection	Cable 1 m	Cable 1 m
Reference magnet	T-62 N/S	T-62 N/S
Special feature		
NO contact		6311208732 MAN-0812-F-1
NC contact	6310108664 MAN-0811-Y-1	
Changeover contact		
bistable		
Technical data		
Switching voltage (max)	150 V AC / DC	250 V AC / DC
Switching current (max)	1 A	1 A
Max. switching capacity	20 VA	100 VA
Function/operating voltage indicator	-	-
Mechanical data		
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67
Connection	2 x 0.34 mm ²	2 x AWG 26
Approval – observe the restricted electrical data in the data sheet		



ELECTROMECHANICAL MAGNETIC SENSORS Type Ø 12 mm



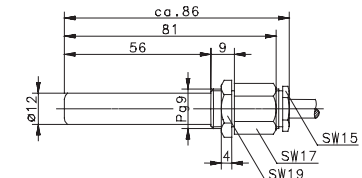
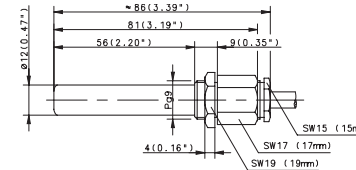
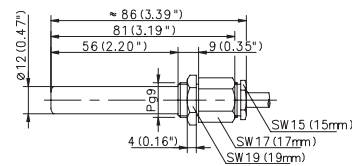
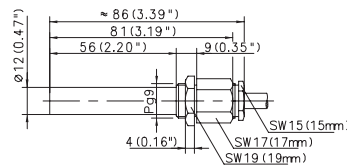
Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	Aluminium	Aluminium	Al / CuZn39Pb3	Al / CuZn39Pb3
Nominal sensing distance (San)	7 mm	20 mm	7 mm	8 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 1 m	Cable 1 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature				
NO contact	6312206678 MAA-0612-A-1		6314206246 MAA-0612-F-1	
NC contact				
Changeover contact				6315306314 MAA-0613-K-1
bistable		6310406685 MAA-0614-A-1		
Technical data				
Switching voltage (max)	250 V AC / DC	250 V AC / DC	250 V	250 V
Switching current (max)	3 A	3 A	3 A	0.5 A
Max. switching capacity	120 VA	120 VA	100 VA	30 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	2 x AWG 20	3 x 0.75 mm ²	4 x 0.75 mm ²
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208




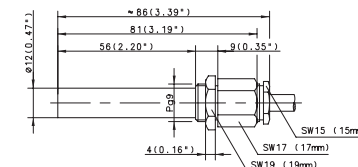
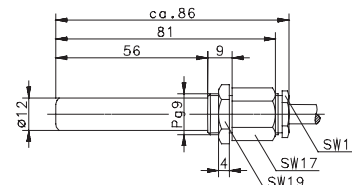
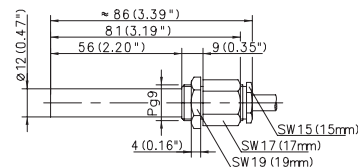
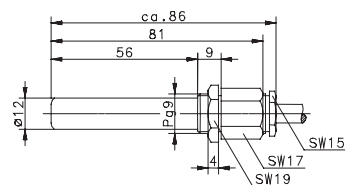
Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	Al / CuZn39Pb3	Al / CuZn39Pb3	Al / CuZn39Pb3	Al / CuZn39Pb3
Nominal sensing distance (San)	16 mm	19 mm	19 mm	20 mm
Type of connection	Cable 4 m	Cable 1 m	Cable 1 m	Cable 4 m
Reference magnet	T-62 N/S	T-69 N/S	T-69 N/S	T-62 N/S
Special feature	Temperature		Temperature	
NO contact	6410206399 MAA-0612-NT-4			6310206680 MAA-0612-F-4
NC contact				
Changeover contact		6316306248 MAA-0613-L-1	6316306004 MAA-0613-LT-1	
bistable				
Technical data				
Switching voltage (max)	250 V AC / 200 V DC	250 V	250 V	250 V AC / DC
Switching current (max)	1.5 A	1 A	1 A	1 A
Max. switching capacity	50 VA	60 VA	60 VA	100 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-40°C/+150°C	-5°C/+70°C	-40°C/+150°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x 0.75 mm ²	4 x 0.75 mm ²	4 x 0.75 mm ²	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



ELECTROMECHANICAL MAGNETIC SENSORS Type Ø 12 mm



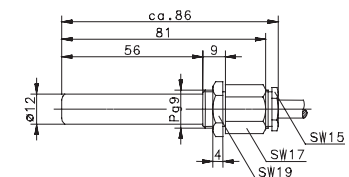
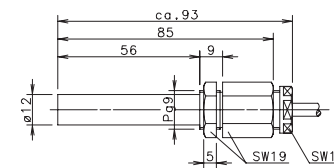
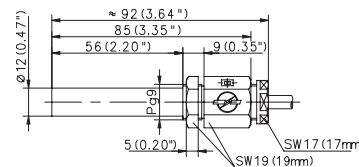
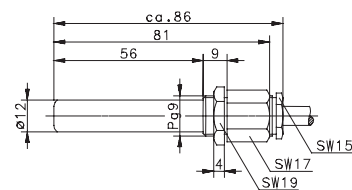
Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305
Nominal sensing distance (San)	6 mm	7 mm	7 mm	12 mm
Type of connection	Cable 3 m	Cable 8 m	Cable 10 m	Cable 1 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature		Temperature	Temperature	
NO contact	6314216734 MAN-1612-A-3	6314216585 MAN-1612-FT-8		
NC contact				
Changeover contact			6316316628 MAN-1613-LT-10	6316316259 MAN-1613-L-1
bistable				
Technical data				
Switching voltage (max)	250 V AC / DC	250 V	250 V	250 V
Switching current (max)	3 A	3 A	1 A	1 A
Max. switching capacity	120 VA	100 VA	60 VA	60 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–40°C/+150°C	–40°C/+150°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	3 x 0.75 mm ²	4 x 0.75 mm ²	4 x 0.75 mm ²
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208



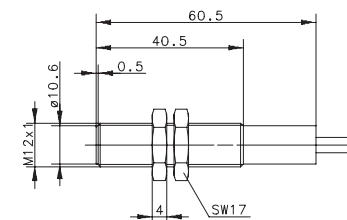
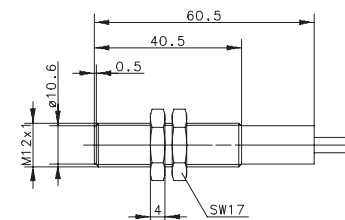
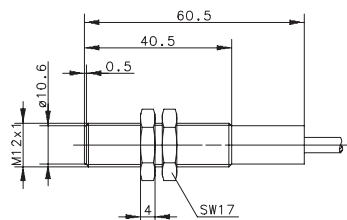
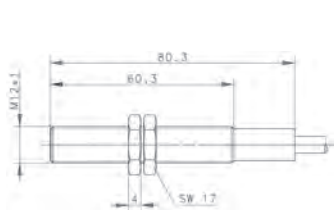
Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	PA, red	PA, red	PA, red	PA, red
Nominal sensing distance (San)	7 mm	10 mm	16 mm	29 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 2 m	Cable 1 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature				
NO contact	6314226700 MAK-2612-A-1			
NC contact				
Changeover contact		6316326426 MAK-2613-L-1		6315326701 MAK-2613-D-1
bistable			6420626354 MAK-2626-2	
Technical data				
Switching voltage (max)	250 V AC / DC	250 V	30 V AC / DC	125 V AC / 175 V DC
Switching current (max)	3 A	1 A	0.25 A	280 mA AC / 400 mA DC
Max. switching capacity	120 VA	60 VA	5 VA	5 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	3 x 0.5 mm ²	4 x 0.25 mm ²	3 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



ELECTROMECHANICAL MAGNETIC SENSORS Type M12



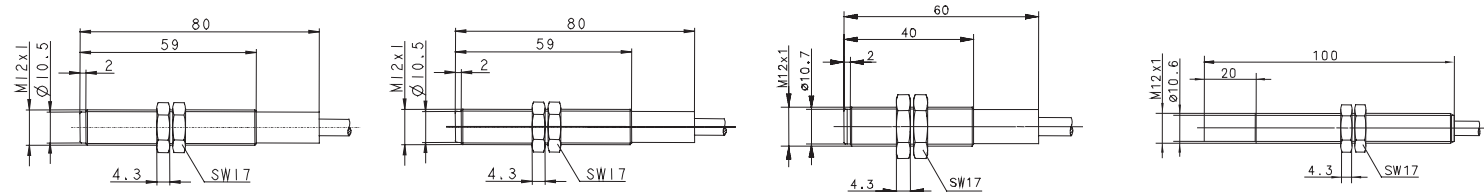
Type	M12	M12	M12	M12
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Nominal sensing distance (San)	6 mm	18 mm	20 mm	29 mm
Type of connection	Cable 1 m	Cable 6 m	Cable 1 m	Cable 6 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature				
NO contact	6314223730 MAK-2312-A-1		6311218728 MAM-1812-F-1	
NC contact		6420218189 MAM-1822-6		6310118727 MAM-1811-D-2
Changeover contact				
1 NO contact / 1 NC contact				
Technical data				
Switching voltage (max)	250 V AC / DC	60 V	250 V AC / DC	125 V AC / 175 V DC
Switching current (max)	3 A	0.5 A	1 A	280 mA AC / 400 mA DC
Max. switching capacity	120 VA	10 VA	100 VA	5 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	4 x 0.25 mm ²	2 x AWG 20	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208



Type	M12	M12	M12	M12
Enclosure material	PA, red	PA, red	PA, red	PBT, black
Nominal sensing distance (San)	7 mm	22 mm	29 mm	29 mm
Type of connection	Cable 2 m	Cable 2 m	Cable 3 m	Cable 2 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature				
NO contact	6314233708 MAK-3312-A-2		6316228703 MAK-2812-D-3	6410299498 MAK-9912-2
NC contact				
Changeover contact				
bistable		6310433710 MAK-3314-A-2		
Technical data				
Switching voltage (max)	250 V AC / DC	250 V AC / DC	125 V AC / 175 V DC	200 V
Switching current (max)	3 A	3 A	280 mA AC / 400 mA DC	0.5 A
Max. switching capacity	120 VA	120 VA	5 VA	10 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	2 x AWG 20	2 x AWG 20	2 x 0.5 mm ²
Approval – observe the restricted electrical data in the data sheet				



ELECTROMECHANICAL MAGNETIC SENSORS Type PG9



Type	PG9	PG9	PG9
Enclosure material	CuZn39Pb3	CuZn39Pb3	PA, red
Nominal sensing distance (San)	20 mm	29 mm	11 mm
Type of connection	Cable 2 m	Cable 2 m	Cable 3 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S
Special feature			

NO contact

NC contact

Changeover contact

6316343731
MAM-4313-D-2

6415317431
MAK-1713-K-3

bistable **6310431569**
MAM-3114-2-LED

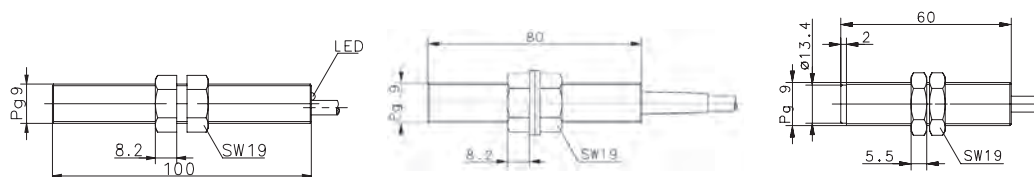
Technical data

Switching voltage (max)	250 V	125 V AC / 175 V DC	250 V
Switching current (max)	1 A	280 mA AC / 400 mA DC	0,5 A
Max. switching capacity	120 VA	5 VA	30 VA
Function/operating voltage indicator	LED	-	-

Mechanical data

Ambient temperature (min/max)	-5°C/+80°C	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP65	IP67	IP67
Connection	2 x 0.5 mm ²	3 x AWG 20	3 x 0.5 mm ²

Approval – observe the restricted electrical data in the data sheet



Cable couplings and other accessories can be found from p. 208

ELECTROMECHANICAL MAGNETIC SENSORS Type Ø 13 mm, 28.6x18x6.4 mm



Type	Ø 13 mm	Ø 13 mm	28.6 x 18 x 6.4 mm	28.6 x 18 x 6.4 mm
Enclosure material	PA, black	PA, black	PA, black	PA, black
Nominal sensing distance (San)	9 mm	20 mm	8 mm	8 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 1.5 m	Cable 10 m
Reference magnet	T-62 N/S	T-62 N/S	TK-11-11	TK-11-11
Special feature				

NO contact

NC contact	6310136711 MAK-3611-A-1		631111665 MAK-1111-10
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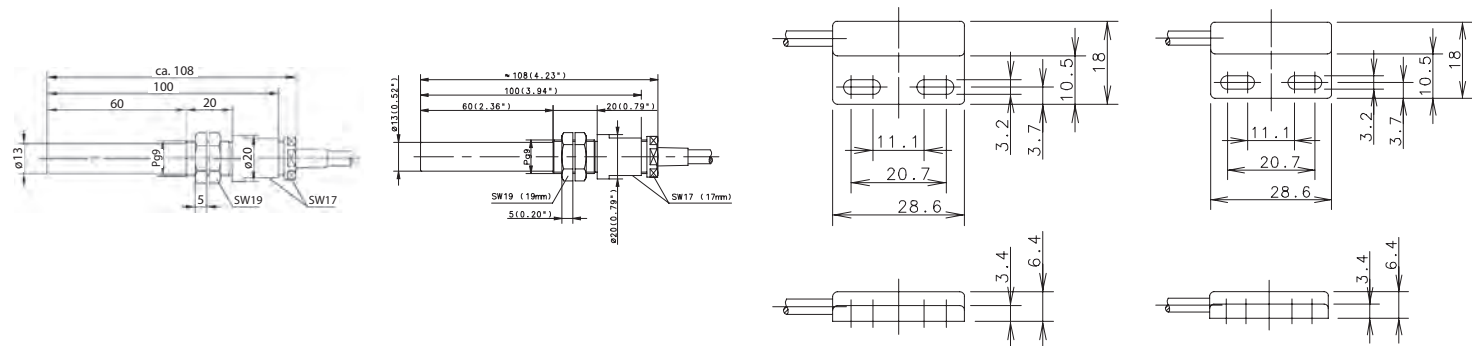
Changeover contact

bistable	6310536617 MAK-3615-L-1	641031368 MAK-1113-1,5
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Technical data				
Switching voltage (max)	250 V DC / AC	250 V	130 V	130 V AC, 175 V DC
Switching current (max)	3 A	1 A	0,25 A	0.25 A
Max. switching capacity	120 VA	60 VA	3 VA	5 VA
Function/operating voltage indicator	-	-	-	-

Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C	-20°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	3 x 0.75 mm ²	3 x 0.14 mm ²	2 x 0.14 mm ²

Approval – observe the restricted electrical data in the data sheet

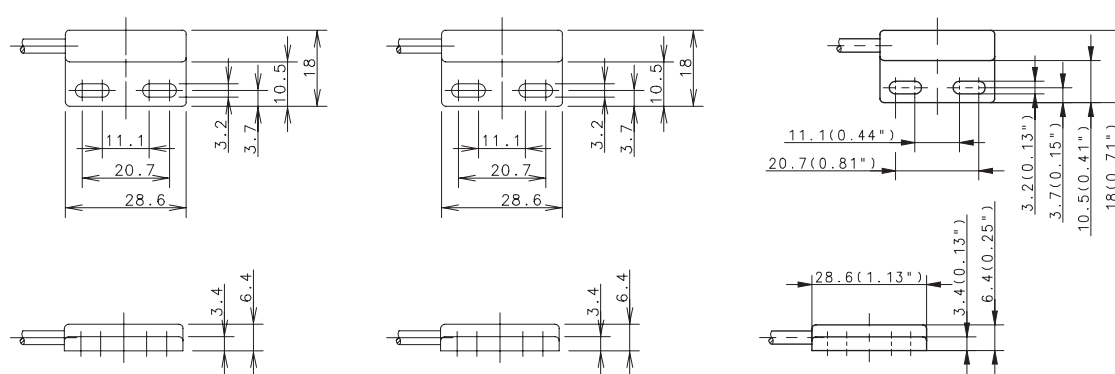


You can find detailed product data sheets at www.bernstein.eu

ELECTROMECHANICAL MAGNETIC SENSORS Type 28.6x18x6.4 mm



Type	28.6 x 18 x 6.4 mm	28.6 x 18 x 6.4 mm	28.6 x 18 x 6.4 mm
Enclosure material	PA, black	PA, black	PA, black
Nominal sensing distance (San)	10 mm	12 mm	30 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 5 m
Reference magnet	TK-11-11	TK-11-11	T-67 N/S
Special feature			
NO contact	6311211692 MAK-1112-F-1		
NC contact			
Changeover contact		6310311693 MAK-1113-D-1	
bistable			6311411603 MAK-1114-B-5
Technical data			
Switching voltage (max)	250 V AC / DC	125 V AC / 175 V DC	250 V
Switching current (max)	1 A	280 mA AC / 400 mA DC	0.5 A
Max. switching capacity	100 VA	5 VA	10 VA
Function/operating voltage indicator	-	-	-
Mechanical data			
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67
Connection	2 x AWG 26	3 x AWG 26	2 x 0.14 mm ²
Approval – observe the restricted electrical data in the data sheet			



Cable couplings and other accessories can be found from p. 208

ELECTROMECHANICAL MAGNETIC SENSORS Type 45 x 13 x 9 mm, 45 x 25.5 x 9 mm



Type	45 x 13 x 9 mm	45 x 25.5 x 9 mm
Enclosure material	PA, black	PA, black
Nominal sensing distance (San)	10 mm	12 mm
Type of connection	Cable 3 m	Cable 1 m
Reference magnet	TK-11-01	TK-45
Special feature		

NO contact

NC contact

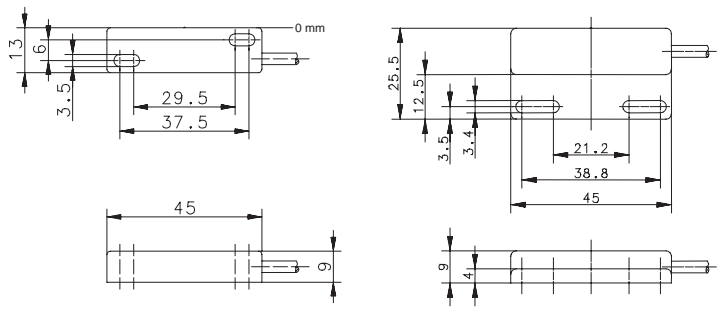
Changeover contact	6310301666 MAK-0113-3	6316345722 MAK-4513-D-1
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bistable

Technical data		
Switching voltage (max)	175 V	125 V AC / 175 V DC
Switching current (max)	0.25 A	280 mA AC / 400 mA DC
Max. switching power	10 VA	5 VA
Function/operating voltage indicator	-	-

Mechanical data		
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67
Connection	3 x 0.14 mm ²	3 x AWG 26


Approval – observe the restricted electrical data in the data sheet

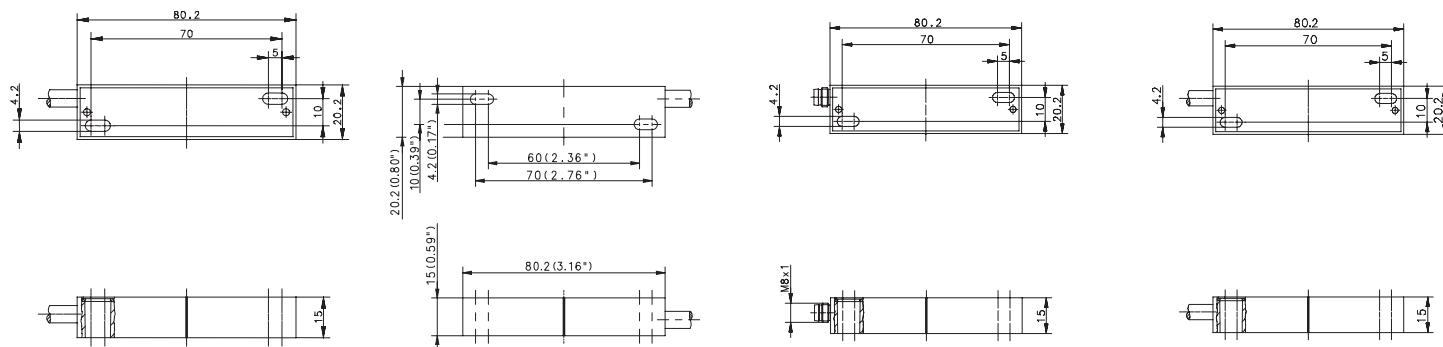


You can find detailed product data sheets at www.bernstein.eu

ELECTROMECHANICAL MAGNETIC SENSORS Type 80x20x15 mm



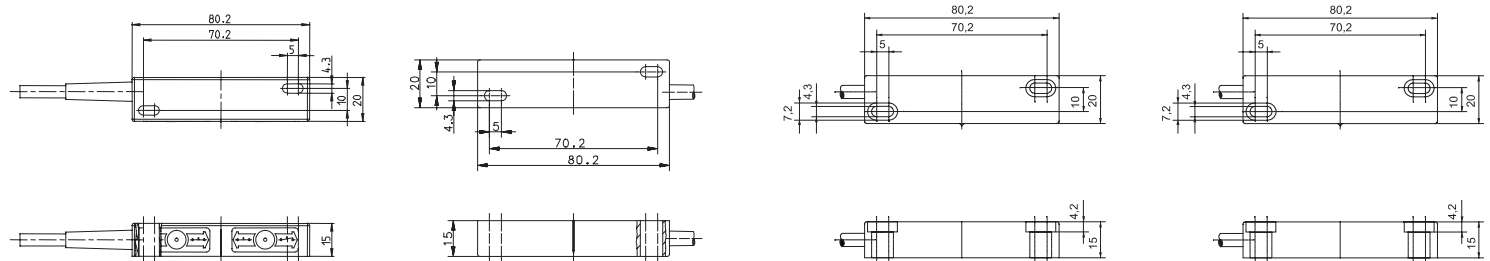
Type	80 x 20 x 15 mm	80 x 20 x 15 mm	80 x 20 x 15 mm	80 x 20 x 15 mm
Enclosure material	GDAISi12, red	GDAISi12, red	GDAISi12, red	GDAISi12, red
Nominal sensing distance (San)	5-40 mm	20 mm	25 mm	30 mm
Type of connection	Cable 3 m	Cable 3 m	Connector M8	Cable 1 m
Reference magnet	TK-21-02	T-62 N/S	TA-21-02	TA-21-02
Special feature		Temperature		Temperature
NO contact	6314402674 MAA-0214-A-3			
NC contact				
Changeover contact			6310302636 MAA-0213-STK	6316302389 MAA-0213-LT-1
bistable		6314402566 MAA-0214-FT-3		
Technical data				
Switching voltage (max)	250 V AC / DC	250 V	50 V AC / 75 V DC	250 V
Switching current (max)	3 A	3 A	1 A	1 A
Max. switching power	120 VA	100 VA	3 VA	60 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-10°C/+80°C	-40°C/+150°C	-30°C/+80°C	-40°C/+150°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP65	IP67
Connection	2 x AWG 20	3 x 0.75 mm ²	M8 x 1	4 x 0.75 mm ²
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208



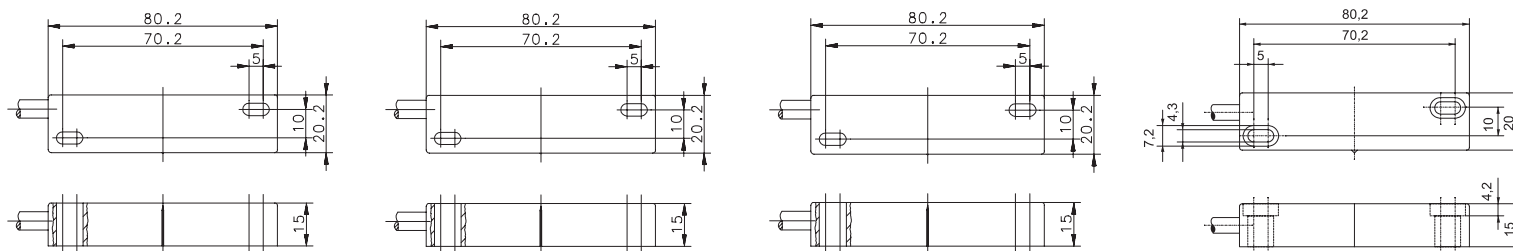
Type	80 x 20 x 15 mm	80 x 20 x 15 mm	80 x 20 x 15 mm	80 x 20 x 15 mm
Enclosure material	PA, black	PA, black	PA, red	PA, red
Nominal sensing distance (San)	10 mm	18 mm	18 mm	18 mm
Type of connection	Cable 3 m	Con. cable 0.9 m with plug connector	Cable 1 m	Cable 2 m
Reference magnet	T-67 N/S	TK-21-02	TK-21-02	T-62 N/S
Special feature		Temperature		
NO contact		6420202219 MAK-0222-L-0,8-STK		
NC contact				
Changeover contact			6315312696 MAK-1213-D-1	
bistable	6319402691 MAK-0214-A-3			6310412698 MAK-1214-A-2
Technische Daten				
Switching voltage (max)	250 V AC / DC	250 V	125 V AC / 175 V DC	250 V AC / DC
Switching current (max)	3 A	1 A	280 mA AC / 400 mA DC	3 A
Max. switching power	120 VA	60 VA	5 VA	120 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-30°C/+70°C	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP65	IP67	IP67
Connection	2 x AWG 20	Connection cable with plug connector	3 x 1.5 mm ²	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



ELECTROMECHANICAL MAGNETIC SENSORS Type 80x20x15 mm



Type	80 x 20 x 15 mm	80 x 20 x 15 mm	80 x 20 x 15 mm	80 x 20 x 15 mm
Enclosure material	PC, black	PA, black	PA, black	PA, red
Nominal sensing distance (San)	18 mm	21 mm	21 mm	21 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 1 m	Cable 1 m
Reference magnet	TK-21-02	TK-21-02	TK-21-02	TK-21-12
Special feature				
NO contact		6312202687 MAK-0212-A-1	6314202204 MAK-0212-F-1	6314212695 MAK-1212-A-1
NC contact				
Changeover contact	6315302689 MAK-0213-D-1			
bistable				
Technical data				
Switching voltage (max)	125 V AC / 175 V DC	250 V AC / DC	250 V	250 V AC / DC
Switching current (max)	280 mA AC / 400 mA DC	3 A	3 A	3 A
Max. switching power	5 VA	120 VA	100 VA	120 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x AWG 20	2 x AWG 20	2 x 0.75 mm ²	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208



Type	80 x 20 x 15 mm	80 x 20 x 15 mm
Enclosure material	PA, black	PA, red
Nominal sensing distance (San)	24 mm	24 mm
Type of connection	Cable 1 m	Cable 1 m
Reference magnet	TA-21-02	TK-21-12
Special feature		

NO contact

NC contact

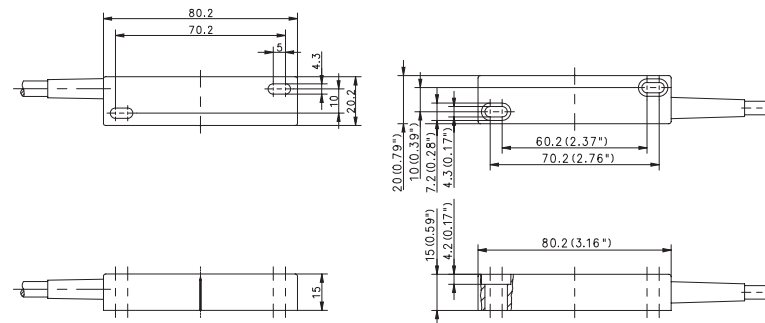
Changeover contact	6316302206 MAK-0213-L-1	6316312220 MAK-1213-L-1
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bistable

Technical data		
Switching voltage (max)	250 V	250 V
Switching current (max)	1 A	1 A
Max. switching power	60 VA	60 VA
Function/operating voltage indicator	-	-

Mechanical data		
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67
Connection	3 x 0.5 mm ²	3 x 0.5 mm ²

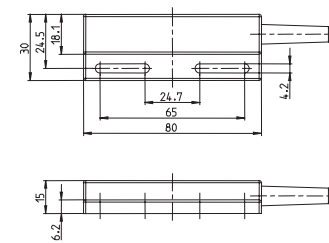
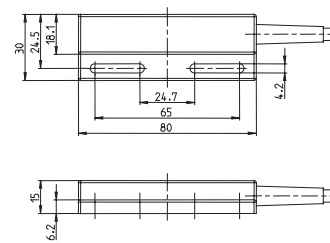
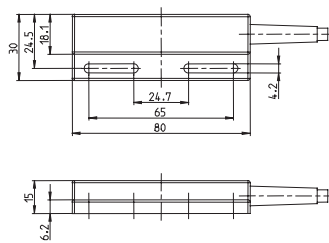
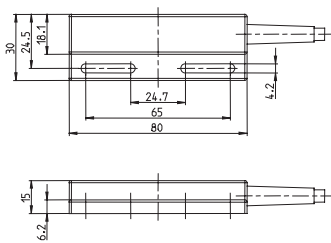
Approval – observe the restricted electrical data in the data sheet



ELECTROMECHANICAL MAGNETIC SENSORS Type 80x30x15 mm

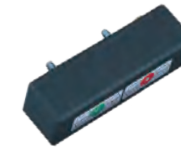


Type	80 x 30 x 15 mm	80 x 30 x 15 mm	80 x 30 x 15 mm	80 x 30 x 15 mm
Enclosure material	PA, black	PA, black	PA, black	PA, black
Nominal sensing distance (San)	8 mm	18 mm	7-23 mm	19 mm
Type of connection	Cable 1 m	Cable 1 m	Cable 2 m	Cable 1 m
Reference magnet	TK-44	T-62 N/S	T-62 N/S	TK-44
Special feature				
NO contact				6314244718 MAK-4412-A-1
NC contact	6314144717 MAK-4411-A-1			
Changeover contact				
bistable		6310444720 MAK-4414-A-1		
Bistable Changeover contact			6316544621 MAK-4415-L-2	
Technical data				
Switching voltage (max)	250 V AC / DC	250 V AC / DC	250 V	250 V AC / DC
Switching current (max)	3 A	3 A	1 A	3 A
Max. switching power	120 VA	120 VA	60 VA	120 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+60°C	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	2 x AWG 20	2 x AWG 20	3 x 0.5 mm ²	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



Cable couplings and other accessories can be found from p. 208

ELECTROMECHANICAL MAGNETIC SENSORS Type 80x30x15 mm, 85x24x26 mm

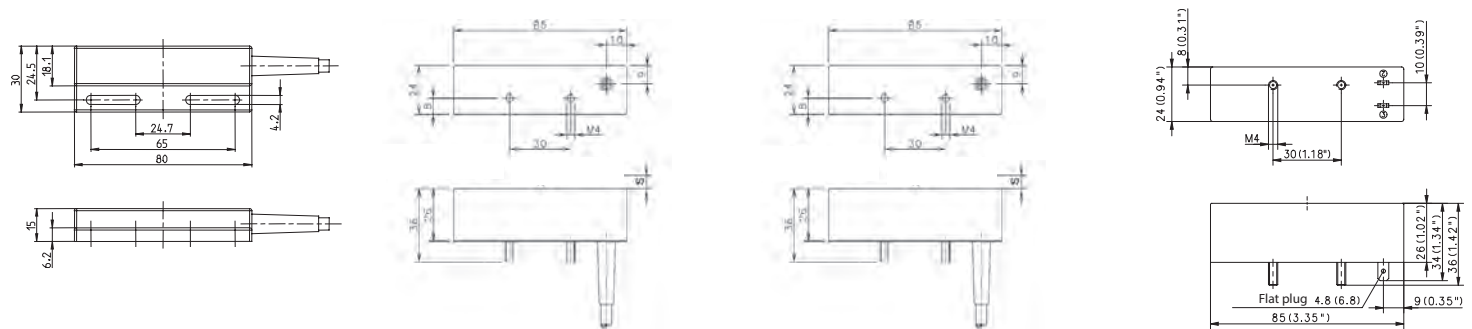


Type	80 x 30 x 15 mm	85 x 24 x 26 mm	85 x 24 x 26 mm	85 x 24 x 26 mm
Enclosure material	PA, black	PBT, black	PBT, black	PBT, black
Nominal sensing distance (San)	22 mm	2-15 mm	17 mm	24 mm
Type of connection	Cable 1 m	Cable 3 m	Cable 1 m	Flat plug
Reference magnet	TK-44	T-67 N/S	T-62 N/S	T-69 N/S
Special feature				Flat plug K4.8

NO contact

NC contact




Changeover contact	6317344719 MAK-4413-D-1			
bistable		6314432706 MAK-3214-A-3	6310432707 MAK-3214-A-1	6310432590 MAK-3214-P-STK4.8
Technical data				
Switching voltage (max)	125 V AC / 175 V DC	250 V AC / DC	250 V	250 V
Switching current (max)	280 mA AC / 400 mA DC	3 A	3 A	5 A
Max. switching power	5 VA	120 VA	120 VA	250 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C	-20°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x AWG 20	2 x AWG 20	2 x AWG 20	Flat plug 4.8
Approval – observe the restricted electrical data in the data sheet				

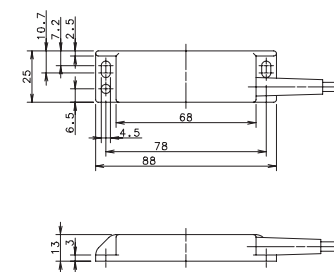
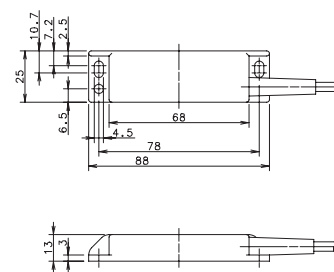
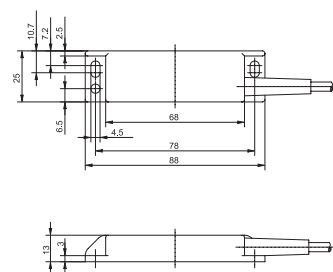
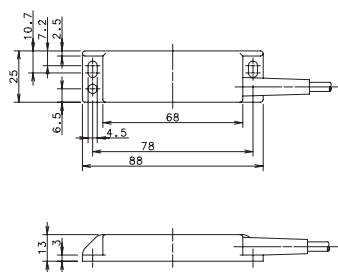


You can find detailed product data sheets at www.bernstein.eu

ELECTROMECHANICAL MAGNETIC SENSORS Type 88x25x13 mm



Type	88 x 25 x 13 mm	88 x 25 x 13 mm	88 x 25 x 13 mm	88 x 25 x 13 mm
Enclosure material	PA, black	PA, black	PA, black	PA, black
Nominal sensing distance (San)	18 mm	19 mm	2-20 mm	22 mm
Type of connection	Cable 5 m	Cable 1 m	Cable 1 m	Cable 1 m
Reference magnet	T-62 N/S	TK-42	T-62 N/S	TK-42
Special feature	2 NO contacts			
NO contact	6420242220 MAK-4222-5	6314242713 MAK-4212-A-1		
NC contact				
Changeover contact				6317342714 MAK-4213-D-1
bistable			6310442715 MAK-4214-A-1	
Technical data				
Switching voltage (max)	230 V	30 V AC / 60 V DC	250 V AC / DC	125 V AC / 175 V DC
Switching current (max)	3 A	2 A	3 A	280 mA AC / 400 mA DC
Max. switching power	100 VA	100 VA	120 VA	5 VA
Function/operating voltage indicator	-	-	-	-
Mechanical data				
Ambient temperature (min/max)	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C	-5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	4 x 0.5 mm ²	2 x AWG 20	2 x AWG 20	3 x AWG 20
Approval – observe the restricted electrical data in the data sheet				



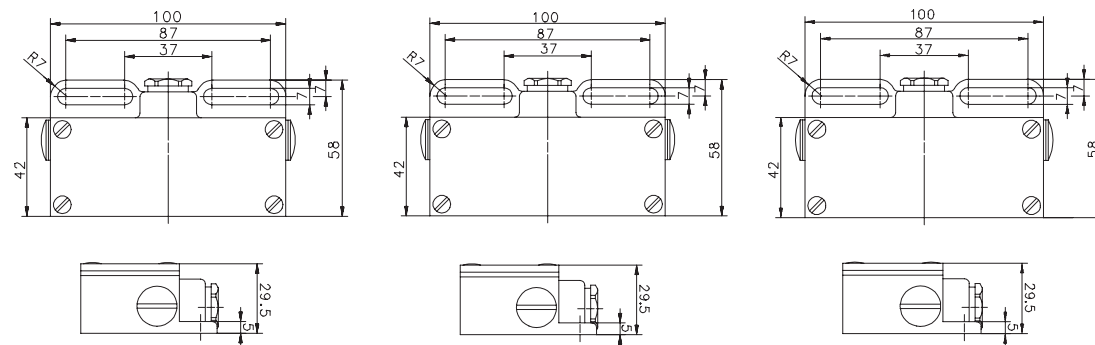
Cable couplings and other accessories can be found from p. 208

ELECTROMECHANICAL MAGNETIC SENSORS Type 100x58x29.5 mm



Type	100 x 58 x 29.5 mm	100 x 58 x 29.5 mm	100 x 58 x 29.5 mm
Enclosure material	Aluminium	Aluminium	GDAISI12
Nominal sensing distance (San)	10 mm	20 mm	15 mm
Type of connection	Screw terminal	Screw terminal	Screw terminal
Reference magnet	TA-31	TA-31	T-62 N/S
Special feature			
NO contact		6314203675 MAA-0312-A	
NC contact			
Changeover contact	6317303312 MAA-0313-M		
bistable			6319403677 MAA-0314-A
Technical data			
Switching voltage (max)	250 V DC / AC	250 V DC / AC	250 V DC / AC
Switching current (max)	1 A	3 A	3 A
Max. switching power	80 VA	120 VA	120 VA
Function/operating voltage indicator	-	-	-
Mechanical data			
Ambient temperature (min/max)	-5°C/+70°C	-15°C/+70°C	-15°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP65	IP65
Connection	Screw terminal	Screw terminal	Screw terminal

Approval – observe the restricted electrical data in the data sheet



Electronic Magnetic Sensors

Standard range



Product features

- Metric types: M05 – M18
- Special types: Ø 4 mm/Ø 6 mm, rectangular
- Sensing distance: 2 mm – 45 mm
- Switching function: NO contact, NC contact, Bistable
- Enclosure material: Stainless steel, brass, plastic

Good to know ...

BERNSTEIN offers electronic speed sensors. These detect ferromagnetic gears with a switching frequency of up to 20kHz and do not require an actuating magnet.

Options

- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

Electronic magnetic switches with magnetoresistive or Hall elements are ideal for use in different applications due to their special properties. They are insensitive to shock, impact, vibration and wear. High switching frequencies, large switching distances, a wide temperature range and very good reproducibility are also among the advantages of this technology.

Advantages of electronic magnetic sensors over electromechanical reed contacts are:

- Reliable and insensitive to vibrations
- Bounce-free switching
- Unlimited life
- High repetition accuracy
- Fast response times
- High sensitivity
- Temperature stability

Standard programme magnetoresistive

Magnetoresistive sensors are about 10 times more sensitive than sensors with the Hall effect. They can not only be very small, but they can also detect particularly low field strengths.

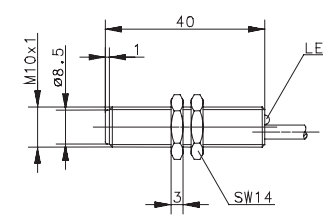
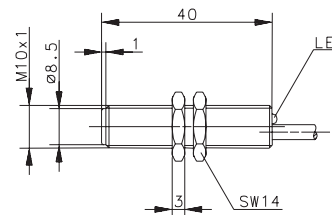
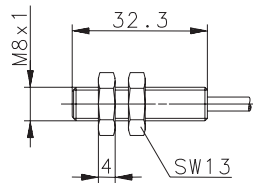
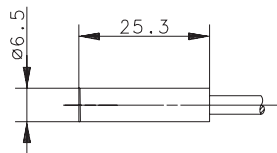
At the same time, they are characterised by a high measuring accuracy - even at high ambient temperatures - a special reliability and a small space requirement. In addition, they are in principle, polarity independent, so that the counter magnet does not have to be mounted pole-oriented.

Magnet	Dimensions	Article number	Sn for Hall sensors	Sn for magnetoresistive sensors
T 06	Ø 6 mm	6301106065	5 mm	15 mm
T 61	Ø 20 mm	6301261035	10 mm	35 mm
T 62	Ø 23 mm	6301262039	17 mm	45 mm
T 67	Ø 20 mm	6301167054	15 mm	40 mm
T 69	Ø 31 mm	6301269031	20 mm	60 mm

ELECTRONIC MAGNETIC SENSORS Type D06, M08, M10



Type		D06	M08	M10	M10
Enclosure material		Stainless steel 1.4401	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Operating mode		MR	MR	Hall	Hall
Magnetic sensitivity (mT)		1.5 mT	1.5 mT	10 mT	10 mT
Sensing distance (Sn)		45 mm	45 mm	17 mm	17 mm
Reference magnet (Side)		T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Type of connection		Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m
Special feature				All-metal	Temperature
PNP	NO contact	6373270105 MEN-D06PS/M02-K2	6373260107 MEM-M08PS/M02-K2	6372261085 MEM-M10PS/H10-KL2	6472261080 MEM-M10PS/H10-KL2T
NPN	NO contact				
NPN	bistable				
Technical data					
Rated operating voltage range	U_B	10–30 VDC	10–30 V	10–39 V	10–39 V
Rated operating current	I_e	200 mA	200 mA	400 mA	400 mA
Max. switching voltage	F	1500 Hz	1500 Hz	10 kHz	1500 Hz
Function/operating voltage indicator		–/–	–/–	LED/–	LED/–
Sensitivity adjustable					
Short circuit-protection		cyclic	cyclic	cyclic	cyclic
Mechanical data					
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–40°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	3 x 0.14 mm ²	3 x 0.14 mm ²

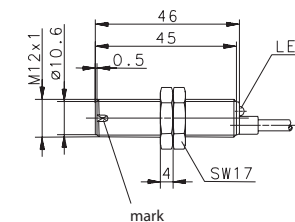
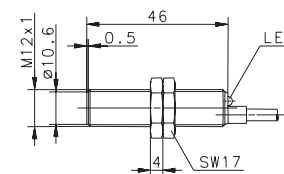
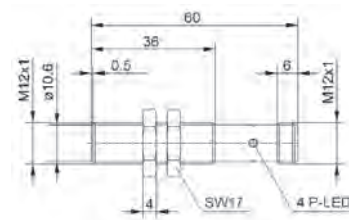
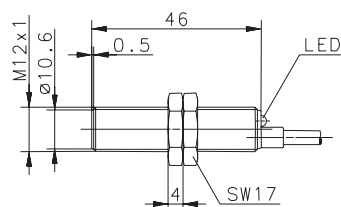


Cable couplings and other accessories can be found from p. 208

ELECTRONIC MAGNETIC SENSORS Type M12



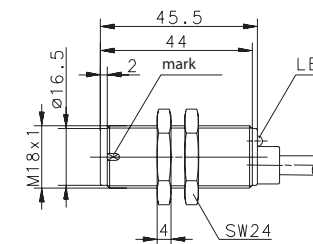
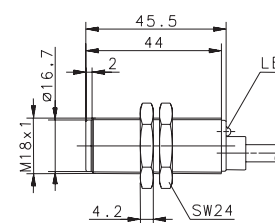
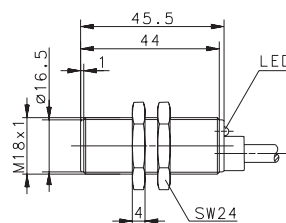
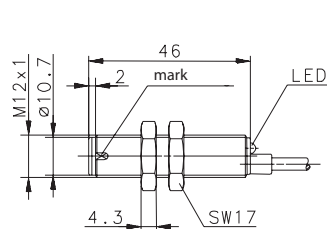
Type		M12	M12	M12	M12
Enclosure material		CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Operating mode		Hall	Hall	MR	Hall
Magnetic sensitivity (mT)		10 mT	10 mT	1 mT	–
Sensing distance (Sn)		17 mm	17 mm	45 mm	0-2 mm
Reference magnet (Side)		T-62 N/S	T-62 N/S	T-62 N/S	–
Type of connection		Cable 2 m	Connector M12 x 1	Cable 5 m	Cable 2 m
Special feature					Speed sensor
PNP	NO contact	6372262090 MEM-M12PS/H10-KL2	6372262160 MEM-M12PS/H10-KLS12	6373262123 MEM-M12PS/M01-KL5	6379262120 MEM-M12PD/H-KL2
NPN	NO contact				
NPN	bistable				
Technical data					
Rated operating voltage range	U_B	10–39 VDC	10–39 VDC	10–39 VDC	10–39 VDC
Rated operating current	I_e	400 mA	400 mA	400 mA	400 mA
Max. switching voltage	F	10 kHz	10 kHz	1500 Hz	10 kHz
Function/operating voltage indicator		LED/–	LED/–	LED/–	LED/–
Sensitivity adjustable					
Short circuit-protection		cyclic	cyclic	cyclic	cyclic
Mechanical data					
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67
Connection		3 x 0.14 mm ²	M12 x 1	3 x 0.14 mm ²	3 x 0.14 mm ²



ELECTRONIC MAGNETIC SENSORS Type M12, M18

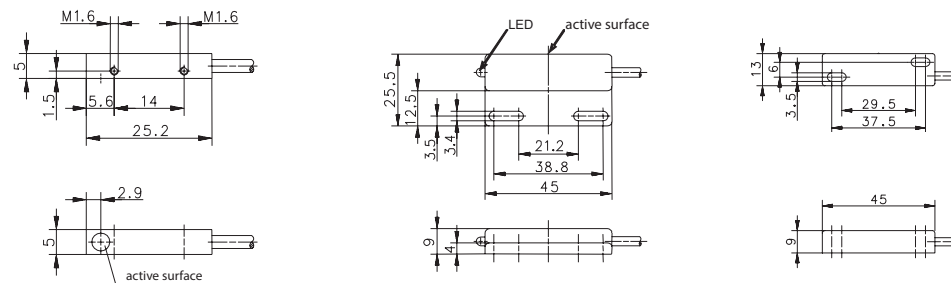


Type	M12	M18	M18	M18
Enclosure material	PA, red	CuZn39Pb3	PBT, black	PBT, black
Operating mode	Hall	MR	MR	Hall
Magnetic sensitivity (mT)	–	1 mT	1 mT	–
Sensing distance (Sn)	0-2 mm	45 mm	45 mm	0 – 2 mm
Reference magnet (Side)	–	T-62 N/S	T-62 N/S	–
Type of connection	Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m
Special feature	Speed sensor			Speed sensor
PNP	NO contact	6373263102	6373263101	6379263121
		MEM-M18PS/M01-KL2	MEK-M18PS/M01-KL2	MEK-M18PD/H-KL2
PNP	NC contact	6379262119		
		MEK-M12PD/H-KL2		
PNP	bistable			
Technical data				
Rated operating voltage range	U_B	10–39 VDC	10–39 VDC	10–39 VDC
Rated operating current	I_e	400 mA	400 mA	400 mA
Max. switching voltage	F	10 kHz	10 kHz	10 kHz
Function/operating voltage indicator		LED/–	LED/–	LED/–
Sensitivity adjustable				
Short circuit-protection		cyclic	cyclic	cyclic
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.14 mm ²	3 x 0.14 mm ²	3 x 0.14 mm ²



Cable couplings and other accessories can be found from p. 208

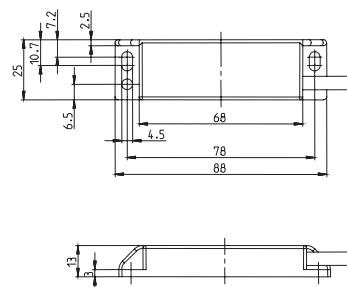
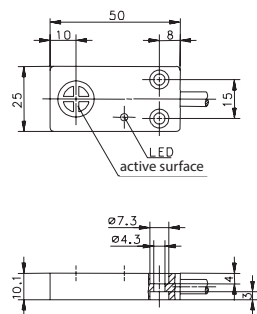
Type	5 x 5 x 25 mm	45 x 25.5 x 9 mm	45 x 13 x 9 mm
Enclosure material	CuZn39Pb3	PA, black	PA, black
Operating mode	MR	Hall	MR
Magnetic sensitivity (mT)	3 mT	10 mT	3 mT
Sensing distance (Sn)	10 mm	17 mm	20 mm
Reference magnet (Side)	T-62 N/S	T-62 N/S	T-62 N/S
Type of connection	Cable 2 m	Cable 2 m	Cable 1 m
Special feature			
PNP	NO contact	6373299134 MEM-Q05PS/M03-K2	
PNP	NC contact		
PNP	bistable	6373445129 MEK-E45PB/H11-KL2	6370401203 MEK-E45PB/M03-1
Technical data			
Rated operating voltage range	U_B	4.5–30 VDC	10–39 VDC
Rated operating current	I_e	200 mA	400 mA
Max. switching voltage	F	10 kHz	10 kHz
Function/operating voltage indicator		–/–	LED/–
Sensitivity adjustable			
Short circuit-protection	Current limiter	cyclic	–
Mechanical data			
Ambient temperature (min/max)		–20°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		3 x 0.05 mm ²	2 x 0.14 mm ²



ELECTRONIC MAGNETIC SENSORS Type 50x25x10 mm, 88x25x13 mm



Type		50 x 25 x 10 mm	88 x 25 x 13 mm
Enclosure material		PBT, black	PA, black
Operating mode		Hall	MR
Magnetic sensitivity (mT)		10 mT	3 mT
Sensing distance (Sn)		17 mm	20 mm
Reference magnet (Side)		T-62 N/S	T-62 N/S
Type of connection		Cable 2 m	Cable 1 m
Special feature			
PNP	NO contact	6372290081 MEK-E50PS/H10-KL2	
PNP	NC contact		
PNP	bistable	6373490130 MEK-E50PB/H11-KL2	6370442204 MEK-E90PB/M03-1
Technical data			
Rated operating voltage range	U_B	10–39 VDC	10–60 VDC
Rated operating current	I_e	400 mA	200 mA
Max. switching voltage	F	10 kHz	20 Hz
Function/operating voltage indicator		LED/–	–/–
Sensitivity adjustable			
Short circuit-protection		cyclic	–
Mechanical data			
Ambient temperature (min/max)		–25°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		3 x 0.50 mm ²	2 x 0.50 mm ²



Cable couplings and other accessories can be found from p. 208



Magnetic cylinder sensors

Standard range

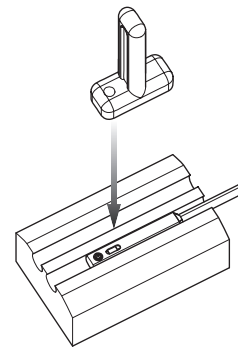


Product features

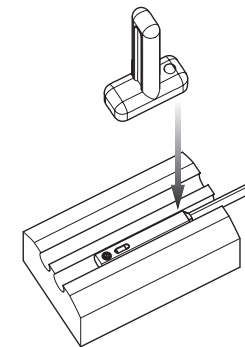
- Type: T-slot/C-slot
- Operating principle: Hall, magnetoresistive, Reed
- Sensitivity: 1.5 – 13.5 mT
- Enclosure material: plastic/aluminium
- Function: IO-Link
Analogue output
Switching points teachable

Good to know ...

The switching points of the 2-channel cylinder sensors can have a teach-in facility. This is done by simply using the supplied teach tool and requires no complex programming.



Teach-in output 1

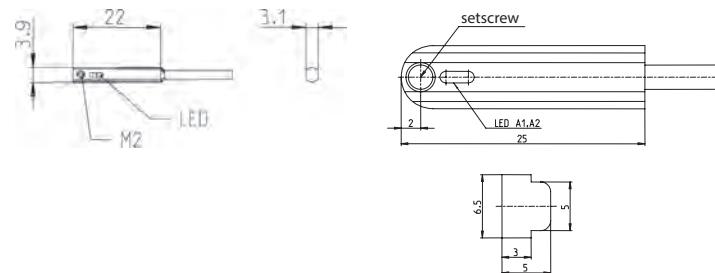


Teach-in output 2

ELECTRONIC CYLINDER SENSORS **TEACHABLE DOUBLE-CHANNEL Type C-slot, T-slot**



Type	C-slot	T-slot
Enclosure material	PA, smoking topaz	Aluminium
Operating mode	Hall	Hall
Magnetic sensitivity (mT)	1.5 – 13.5 mT	1.5 – 13.5 mT
Output	Double-channel	Double-channel
Type of connection	Cable 2 m	Cable 2 m
Special feature	Switching points programmable	Switching points programmable
PNP NO contact	C-slot SMC	6370281183
		MEK-E22PS/HP2-KL2
PNP NO contact	C-slot Festo	
PNP NO contact	T-slot	6370299187
		MEA-E30PS/HP2-KL2
Technical data		
Rated operating voltage range	U_B 10–30 VDC	10–30 VDC
Rated operating current	I_e ≤ 50 mA	≤ 50 mA
Function/operating voltage indicator	LED/–	LED/–
Sensitivity adjustable	yes	yes
Short circuit-protection	cyclic	cyclic
Teachable	yes	yes
Mechanical data		
Ambient temperature (min/max)	–20°C/+80°C	–20°C/+80°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67
Connection	4 x 0.05 mm ²	4 x 0.05 mm ²



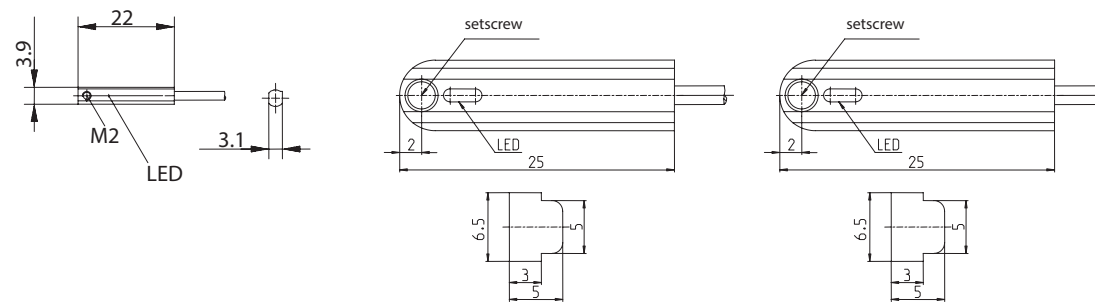
Cable couplings and other accessories can be found from p. 208

ELECTRONIC CYLINDER SENSORS **TEACHABLE SINGLE-CHANNEL Type C-slot, T-slot**



Type	C-slot	T-slot	T-slot
Enclosure material	PA, smoking topaz	Aluminium	Aluminium
Operating mode	Hall	Hall	Hall
Magnetic sensitivity (mT)	1.5 – 13.5 mT	±5 – ±25 mT	1.5 – 13.5 mT
Output	Single-channel	Single-channel	Single-channel
Type of connection	Cable 2 m	Connection cable with plug M12	Connection cable with plug M8
Special feature		IO-Link	Analogue

PNP NO contact	C-slot SMC		
PNP NO contact	C-slot Festo	6372281179 MEK-E22PS/HP1-KL2	
PNP NO contact	T-slot	6370099196 MEA-E30AIOL/H50-KL0,3S12	6370099169 MEA-E30A10/H50-KL0,3S8
Technical data			
Rated operating voltage range	U_B	10–30 VDC	10–30 VDC
Rated operating current	I_e	≤ 50 mA	≤ 50 mA
Function/operating voltage indicator		LED/–	LED/–
Sensitivity adjustable		yes	yes
Short circuit-protection		cyclic	cyclic
Teachable		yes	yes
Mechanical data			
Ambient temperature (min/max)		–20°C/+80°C	+5°C/+55°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		4 x 0.05 mm ²	Connection cable with plug M12 x 1

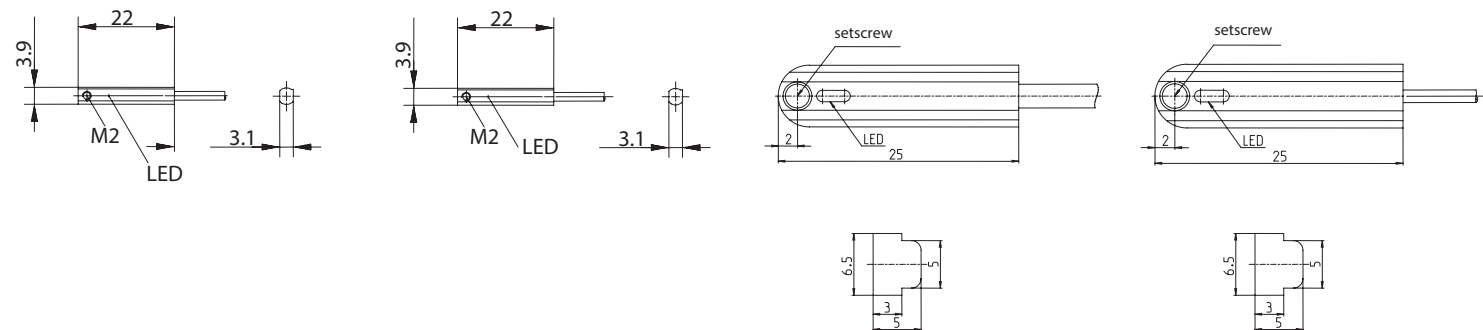


Cable couplings and other accessories can be found from p. 208

ELECTRONIC CYLINDER SENSORS SINGLE-CHANNEL Type C-slot, T-slot



Type	C-slot	C-slot	T-slot	T-slot
Enclosure material	PA, smoking topaz	PA, smoking topaz	Aluminium	Aluminium
Operating mode	Hall	Hall	Hall	Hall
Magnetic sensitivity (mT)	3 mT	3 mT	3 mT	3 mT
Output	Single-channel	Single-channel	Single-channel	Single-channel
Type of connection	Cable 2 m	Connection cable with plug M8	Cable 2 m	Connection cable with plug M8
Special feature				
PNP NO contact	C-slot SMC	6372281172 MEK-E22PS/H03-KL0,3S8		
PNP NO contact	C-slot Festo	6372281173 MEK-E22PS/H03-KL2		
PNP NO contact	T-slot		6372299175 MEA-E30PS/H03-KL2	6372299176 MEA-E30PS/H03-KL0,3S8
Technical data				
Rated operating voltage range	U_B 10–30 VDC	10–30 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e ≤ 50 mA	≤ 50 mA	≤ 50 mA	≤ 50 mA
Function/operating voltage indicator	LED/–	LED/–	LED/–	LED/–
Sensitivity adjustable	yes	yes	yes	yes
Short circuit-protection	cyclic	cyclic	cyclic	cyclic
Mechanical data				
Ambient temperature (min/max)	–20°C/+80°C	–20°C/+80°C	–20°C/+80°C	–20°C/+80°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x 0.05 mm ²	Connection cable with plug M8 x 1	3 x 0.05 mm ²	Connection cable with plug M8 x 1



You can find detailed product data sheets at www.bernstein.eu

Magnetic ATEX sensors



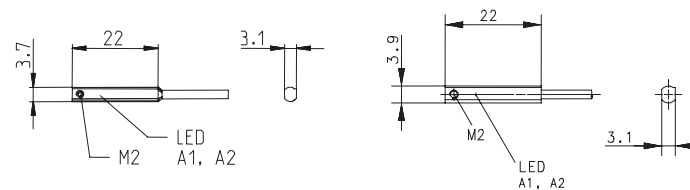
Product features

- Type: C-slot/Ø 12 mm
- Switching function: NO contact, Changeover contact
- Enclosure material: plastic
- ATEX: 2G/2D





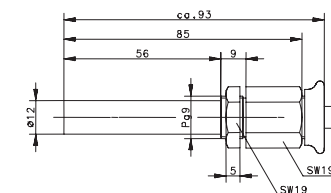
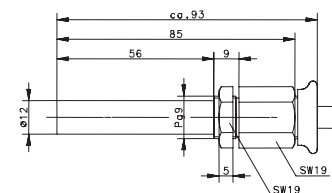
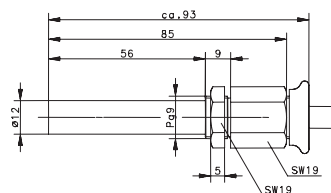
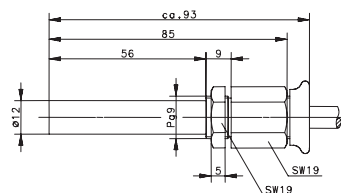
Type	C-slot	C-slot
Enclosure material	PA, smoking topaz	PA, black
Operating mode	Hall	Hall
Magnetic sensitivity (mT)	1.5 – 13.5 mT	1.5 – 13.5 mT
Output	Double-channel	Double-channel
Type of connection	Cable 2 m	Cable 2 m
Special feature	II 2 G Ex mb IIC T6 Gb II 2 D Ex tb IIIC T85°C Db	II 2 G Ex mb IIC T6 Gb II 2 D Ex tb IIIC T85°C Db
PNP NO contact	C-slot SMC	6370281197
		MEK-E22PS/HP2-KL2-EX
PNP NO contact	C-slot Festo	6370281189
		MEK-E22PS/HP2-KL2-EX
PNP NO contact	T-slot	
Technical data		
Rated operating voltage range	U_B 10–30 VDC	10–30 VDC
Rated operating current	I_e ≤ 50 mA	≤ 50 mA
Function/operating voltage indicator	LED/–	LED/–
Sensitivity adjustable	yes	yes
Short circuit-protection	cyclic	cyclic
Teachable	yes	yes
Mechanical data		
Ambient temperature (min/max)	–20°C/+80°C	–20°C/+80°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67
Connection	4 x 0.05 mm ²	4 x 0.05 mm ²



ELECTROMECHANICAL MAGNETIC SENSORS ATEX Type Ø 12 mm



Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	PA, red	PA, red	PA, red	PA, red
Nominal sensing distance	10 mm	10 mm	10 mm	10 mm
Type of connection	Cable 2 m	Cable 3 m	Cable 7 m	Cable 10 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature	II 2 G Ex mb IIC T6 Gb II 2 D Ex tb IIIC T85 °C Db	II 2 G Ex mb IIC T6 Gb II 2 D Ex tb IIIC T85 °C Db	II 2 G Ex m IIC T6 Gb II 2 D Ex tb IIIC T85 °C Db	II 2 G Ex mb IIC T6 Gb II 2 D Ex tb IIIC T85 °C Db
Changeover contact	6316315308 MAK-1513-LEX-1	6316315001 MAK-1513-LEX-3	6316315344 MAK-1513-LEX-7	6316315654 MAK-1513-LEX-10
Technical data				
Switching voltage (max)	250 V AC / DC	250 V AC / DC	250 V AC / DC	250 V AC / DC
Switching current (max)	1.0 A	1.0 A	1.0 A	1.0 A
Max. switching capacity	20 VA	20 VA	20 VA	20 VA
Function/operating voltage indicator	-/-	-/-	-/-	-/-
Mechanical data				
Ambient temperature (min/max)	-20°C/+60°C	-20°C/+60°C	-20°C/+60°C	-20°C/+60°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	3 x 0.75 mm ²	3 x 0.75 mm ²	3 x 0.75 mm ²	3 x 0.75 mm ²





Accessories

Magnets



Product features

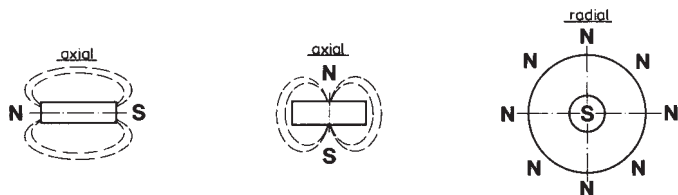
- Shapes: round Ø 5 mm – 31 mm/square
- Enclosure: with and without encapsulation/enclosure
- Enclosure material: PA 6.6, PBT, aluminium
- Temperature range: From –40°C to +150 °C

Good to know ...

Permanent magnets can lose their magnetisation if they are exposed to radioactive radiation.

Directions of magnetisation

The term preferred direction refers to the alignment of the magnetic elements in a certain direction. The magnet achieves its highest magnetic values in this preferred direction and must therefore be magnetised in this direction.



Mounting a magnetic switch system on ferromagnetic materials

The nominal distance may be reduced when magnetic limit switches and their actuating magnets are mounted on magnetisable material (Fe, etc.). To ensure trouble-free operation, a minimum gap of 15 mm between the magnetic switch and any material that can be magnetised should be maintained as a reference value. The same applies to the actuating magnets.

1. Hard ferrite magnets

Barium and strontium hard ferrites are economically priced, reliable components that are also widely used in automation, control and measurement applications.

When operated in high temperature ranges, the specified switching distance will decrease by a factor of 0.2 % per 1 °C.

- **Chemical properties:**

Ferrite magnets are oxide ceramics. They are made of approx. 80 % iron oxide and 20 % barium oxide or strontium oxide. The magnets are resistant to a large number of chemicals, including solvents, caustic solutions and weak acids. If strong organic and inorganic acids, e.g. hydrochloric, sulphuric and hydrofluoric acid, are used, their resistance will basically be determined by the temperature, concentration and reaction time of the medium. In general, the resistance should first be determined by means of long-term tests.

- **Mechanical properties:**

Due to their ceramic characteristic, ferrites are brittle and sensitive to shock and bending loads.

2. Rare-earth magnets

Permanent magnets made from samarium cobalt and neodymium iron boron are high performance and high quality

components that are widely used in drive and control engineering. When operated in high temperature ranges, the specified switching distance will decrease by a factor of 0.02 % per 1 °C.

- **Chemical properties:**

All rare-earth magnets are metallic materials and show the corresponding characteristics associated with these materials, e.g. a polished shine immediately after being machined. The magnets are surface-treated (e.g. nickel coating) to protect them from environmental influences.

- **Mechanical properties:**

Minor chips may occur if rare-earth magnets are subjected to impact stress. They respond very sensitively to vibrations and may become demagnetised.

3. Plastic-bound magnets

Plastic-bound permanent magnets have an attractive price-performance ratio and, thanks to the way they are formed, they can be produced with complex geometries. Injection-moulded magnets are typical composite materials. The magnetic powder is embedded in thermoplastic materials (polyamides). One of the main advantages of plastic-bound magnets is that they can be formed into a wide range of shapes.

- **Chemical properties:**

Surface corrosion can rarely be found on plastic bound magnets. For this reason, they can be used in most fields of application without additional coating.

- **Mechanical properties:**

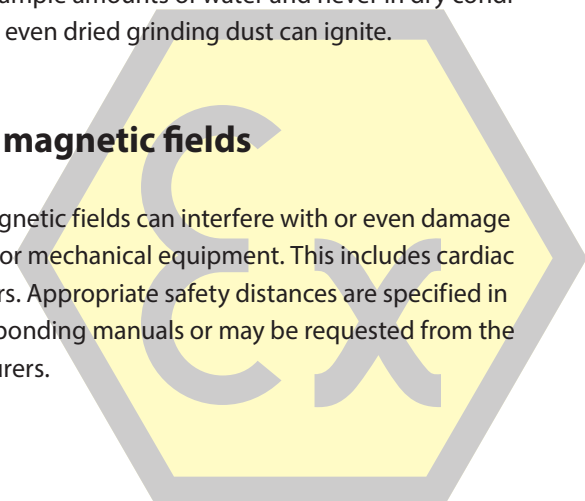
Plastic-bound magnets can be subjected to buckling and bending without breaking or chipping.

Use in potentially explosive atmospheres

Magnets must not be used in potentially explosive atmospheres as they can cause sparks. Grinding dust and chips from rare-earth magnets are self-igniting and burn off at high temperatures. They should therefore only be machined using ample amounts of water and never in dry conditions since even dried grinding dust can ignite.

Strong magnetic fields

Strong magnetic fields can interfere with or even damage electronic or mechanical equipment. This includes cardiac pacemakers. Appropriate safety distances are specified in the corresponding manuals or may be requested from the manufacturers.



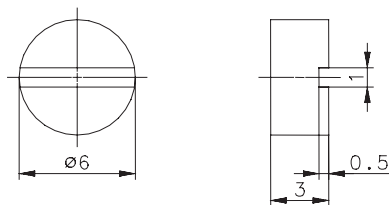
ACCESSORIES ACTUATING MAGNETS WITHOUT ENCAPSULATION

To ensure stable, reproducible actuation, we recommend using our actuating magnets. You can find the exact switch travel in the following table.

T-06 N/S Actuating magnet



Product range	
Article number	Designation
6301106065	T-06 N/S



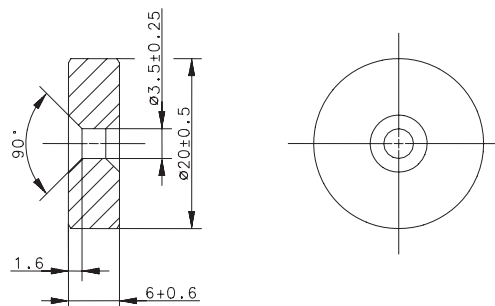
Mechanical data

Magnet material	Neodymium iron boron (NdFeB) (Sn-Ni coating)
Ambient temperature	-40°C ... +150°C

T-61 N/S Actuating magnet



Product range	
Article number	Designation
6301261035	T-61 N/S



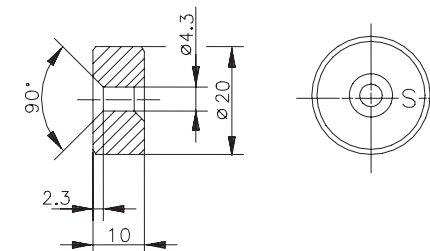
Mechanical data

Magnet material	Barium ferrite Hard ferrite 24/23; axially magnetised; marking on the south-pole side
Ambient temperature	-40°C ... +150°C

T-67 N/S Actuating magnet



Product range	
Article number	Designation
6301167054	T-67 N/S



Mechanical data

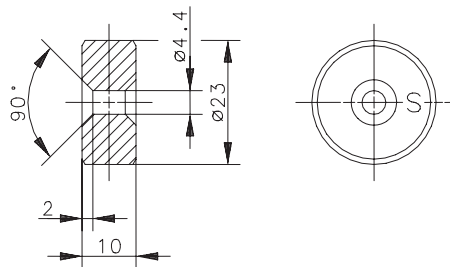
Magnet material	Hard ferrite 24/23; axially magnetised; marking on the south-pole side
Ambient temperature	-40°C ... +150°C

T-62 N/S Actuating magnet



Product range

Article number	Designation
6301262039	T-62 N/S



Mechanical data

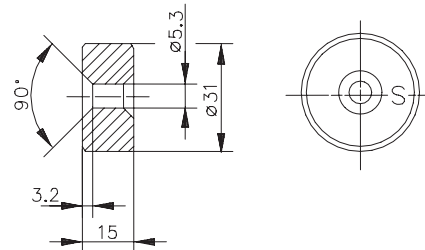
Magnet material	Hard ferrite 24/16; axially magnetised; marking on the south-pole side
Ambient temperature	-40°C ... +150°C

T-69 N/S Actuating magnet



Product range

Article number	Designation
6301269031	T-69 N/S



Mechanical data

Magnet material	Hard ferrite 24/16; axially magnetised; marking on the south-pole side
Ambient temperature	-20°C ... +80°C

ACCESSORIES ACTUATING MAGNETS WITHOUT ENCAPSULATION



T-68 N Actuating magnet



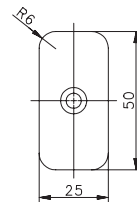
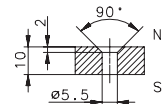
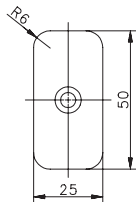
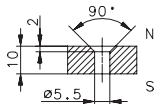
T-68 S Actuating magnet

Product range

Article number	Designation
6301268028	T-68 N

Product range

Article number	Designation
6301368033	T-68 S



Mechanical data

Magnet material	Hard ferrite 24/16; axially magnetised
Ambient temperature	-20°C ... +80°C

Mechanical data

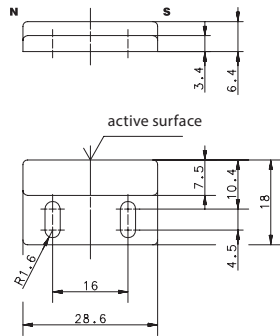
Magnet material	Hard ferrite 24/16; axially magnetised
Ambient temperature	-20°C ... +80°C

TK-11-11 Actuating magnet



Product range

Article number	Designation
6302111047	TK-11-11



Mechanical data

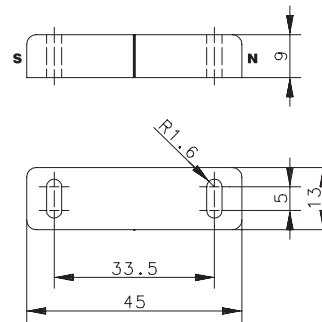
Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, black

TK-11-01 Actuating magnet



Product range

Article number	Designation
6303111001	TK-11-01



Mechanical data

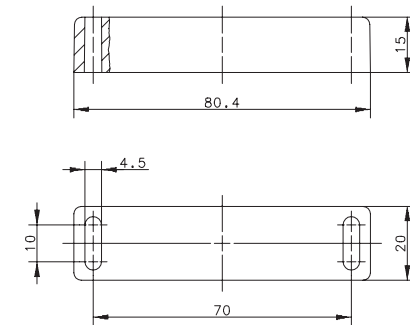
Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, black

TK-21-02 Actuating magnet



Product range

Article number	Designation
6303121002	TK-21-02



Mechanical data

Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, black

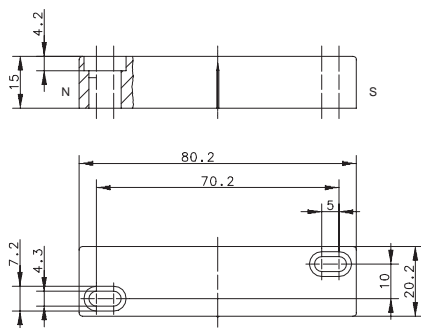
ACCESSORIES ACTUATING MAGNETS IN A PLASTIC ENCLOSURE

TK-21-12 Actuating magnet



Product range

Article number	Designation
6302121030	TK-21-12



Mechanical data

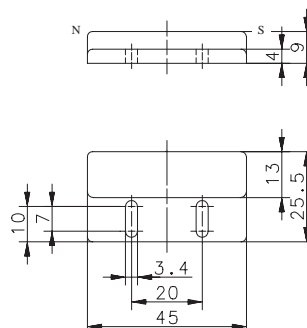
Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, red

TK-45 Actuating magnet



Product range

Article number	Designation
6302145048	TK-45



Mechanical data

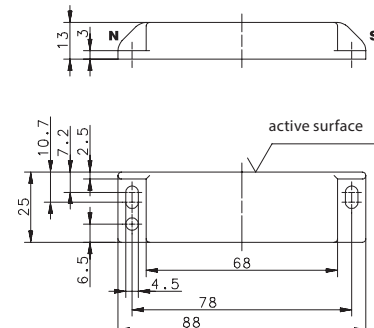
Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +70°C
Enclosure material	PA 6.6, black

TK-42 Actuating magnet



Product range

Article number	Designation
6302142049	TK-42



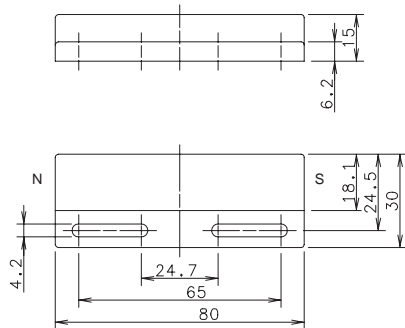
Mechanical data

Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, black



TK-44 Actuating magnet

Product range	
Article number	Designation
6302144050	TK-44

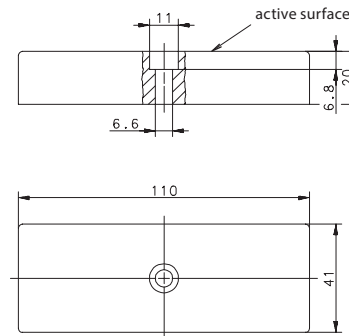


Mechanical data	
Magnet material	AlNiCo – 500
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, black



TK-50 Actuating magnet

Product range	
Article number	Designation
6302100053	TK-50

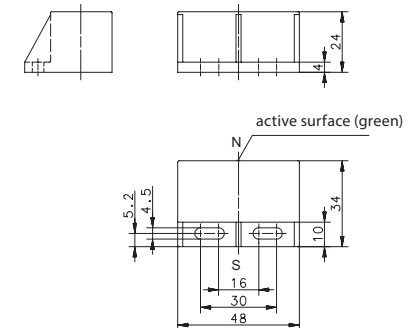


Mechanical data	
Magnet material	Hard ferrite
Ambient temperature	-20°C ... +80°C
Enclosure material	PA 6.6, black



TK-57 N Actuating magnet

Product range	
Article number	Designation
6302257060	TK-57 N



Mechanical data	
Magnet material	Hard ferrite
Ambient temperature	-20°C ... +80°C
Enclosure material	PBT, black

ACCESSORIES ACTUATING MAGNETS IN A PLASTIC ENCLOSURE

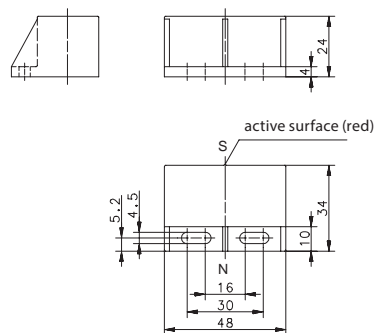
TK-57 S Actuating magnet



Product range

Article number **Designation**

6302357061 TK-57 S



Mechanical data

Magnet material Hard ferrite

Ambient temperature -20°C ... +80°C

Enclosure material PBT, black

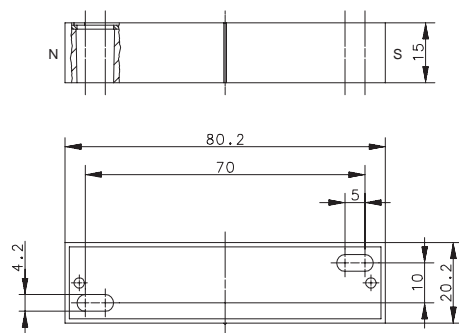
TK-21-02 Actuating magnet



Product range

Article number **Designation**

6305121064 TK-21-02



Mechanical data

Magnet material AlNiCo - 500

Ambient temperature -40°C ... +150°C

Enclosure material Al, red

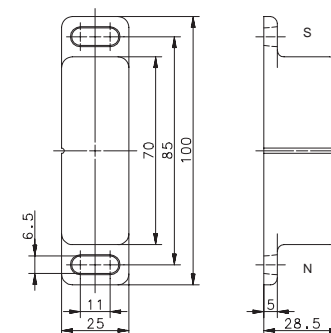
TA-31 Actuating magnet



Product range

Article number **Designation**

6303131005 TA-31



Mechanical data

Magnet material AlNiCo - 500

Ambient temperature -20°C ... +80°C

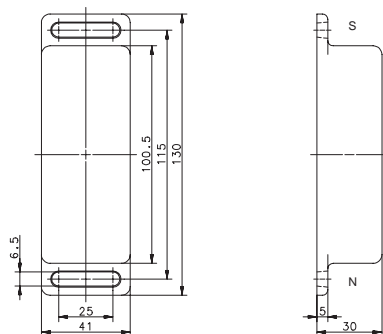
Enclosure material Al, black

TA-33 Actuating magnet



Product range

Article number	Designation
6303133034	TA-33



Mechanical data

Magnet material	Hard ferrite 24/16
Ambient temperature	-20°C ... +80°C
Enclosure material	Al, black

ACCESSORIES MOUNTING BRACKETS



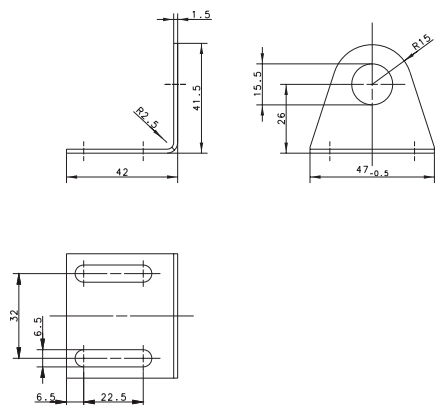
BWN-M06NI/40 x 47

Product range

Article number	Designation
4102802001	BWN-M06NI/40 x 47

Mechanical data

Material	Stainless steel 1.4301
for series	MA-06, MA-16, MA-26, MA-15



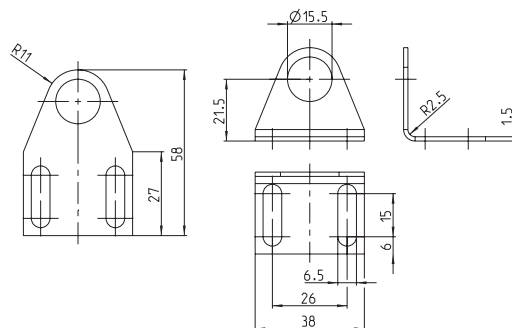
BWN-M06NI/27 x 38

Product range

Article number	Designation
4102802002	BWN-M06NI/27x38

Mechanical data

Material	Stainless steel 1.4301
for series	MA-06, MA-16, MA-26, MA-15



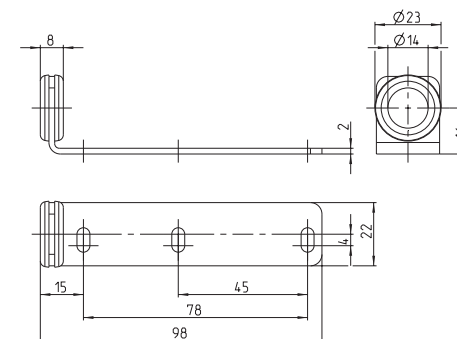
BWN-M36NI

Product range

Article number	Designation
4904700035	BWN-M36NI

Mechanical data

Material	Stainless steel 1.4301
for series	MA-06, MA-16, MA-26, MA-15





Ø 6.5 mm 3-wire Connector

Product range

Article number	Cable length	Designation
4139100219	2.5 m	GDK-R06US/SO0-2,5PU
4139100220	5 m	GDK-R06US/SO0-5PU

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PUR
Coupler material	PA 12
Coupling ring material	POM
Temperature range	-25 °C ... +90 °C
Switching function	universal
Cable structure	3 x 0.25 mm ²
Protection class	IP67/NEMA 4



Ø 6.5 mm 3-wire Connector

Product range

Article number	Cable length	Designation
4139100221	2.5 m	WDK-R06US/SO0-2,5PU
4139100222	5 m	WDK-R06US/SO0-5PU

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PUR
Coupler material	PA 12
Coupling ring material	POM
Temperature range	-25 °C ... +90 °C
Switching function	universal
Cable structure	3 x 0.25 mm ²
Protection class	IP67/NEMA 4

ACCESSORIES CONNECTORS

M8 3-wire Cable connector



Product range		
Article number	Cable length	Designation
4139100213	2 m	WDK-M08PS/LL2-2
4139100216	5 m	WDK-M08PS/LL2-5

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PVC
Coupler material	TPU
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	PNP/LED
Cable structure	3 x 0.25 mm ²
Protection class	IP67

M8 3-wire Cable connector



Product range		
Article number	Cable length	Designation
4139100795	2 m	GDK-M08US/WO0-2
4139100796	5 m	GDK-M08US/WO0-5
4139100797	10 m	GDK-M08US/WO0-10

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PVC
Coupler material	PUR
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	3 x 0.25 mm ²
Protection class	IP67

M8 3-wire Cable connector



Product range		
Article number	Cable length	Designation
4139100798	2 m	WDK-M08US/WO0-2
4139100799	5 m	WDK-M08US/WO0-5
4139100800	10 m	WDK-M08US/WO0-10

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PVC
Coupler material	PUR
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	3 x 0.25 mm ²
Protection class	IP67

M12 3-wire Cable connector



Product range		
Article number	Cable length	Designation
4139100801	2 m	GDK-M12US/WO0-2
4139100802	5 m	GDK-M12US/WO0-5
4139100803	10 m	GDK-M12US/WO0-10

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PVC
Coupler material	PUR
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	3 x 0.34 mm ²
Protection class	IP67

M12 3-wire Cable connector



Product range		
Article number	Cable length	Designation
4139100804	2 m	WDK-M12US/WO0-2
4139100468	5 m	WDK-M12US/WO0-5
4139100805	10 m	WDK-M12US/WO0-10

Contact assignments

1 = brown
3 = blue
4 = black

Cable material	PVC
Coupler material	PUR
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	3 x 0.34 mm ²
Protection class	IP67

M12 4-wire Cable connector



Product range		
Article number	Cable length	Designation
4139100903	5 m	WDK-M12UA/WO0-5
4139100467	10 m	WDK-M12UA/WO0-10

Contact assignments

1 = brown
2 = white
3 = blue
4 = black

Cable material	PVC
Coupler material	PA
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	4 x 0.25 mm ²
Protection class	IP67

ACCESSORIES CONNECTORS



M12 4-wire Cable connector

Product range		
Article number	Cable length	Designation
4139100244	2 m	WDK-M12PA/SL2-2PU
4139100245	5 m	WDK-M12PA/SL2-5PU
4139100254	10 m	WDK-M12PA/SL2-10PU

Contact assignments

1 = brown
2 = white
3 = blue
4 = black

Cable material	PUR
Coupler material	PUR
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	PNP/LED
Cable structure	4 x 0.25 mm ²
Protection class	IP67



M12 4-wire Cable connector

Product range	
Article number	Designation
4139100102	GDA-M12UA/LO

Cable material	-
Coupler material	PA
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	-
Protection class	IP67



M12 4-wire Cable connector

Product range	
Article number	Designation
4139100101	WDA-M12UA/LO

Cable material	-
Coupler material	PA
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	-
Protection class	IP67



M12 3-wire Cable connector

Product range		
Article number	Cable length	Designation
4139100553	2 m	WDK-M12PS/LL2-2
4139100554	6 m	WDK-M12PS/LL2-6

Contact assignments
1 = brown
3 = blue
4 = black

Cable material	PVC
Coupler material	TPU
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	PNP/LED
Cable structure	3 x 0.4 mm ²
Protection class	IP67



M12 5-wire Cable connector

Product range		
Article number	Cable length	Designation
4139100956	2 m	GDK-M12UU/HO-2PU

Contact assignments
1 = brown
2 = white
3 = blue
4 = black
5 = grey

Cable material	PUR
Coupler material	PUR
Coupling ring material	CuZn39Pb3
Temperature range	-25/+90 °C
Switching function	universal
Cable structure	5 x 0.34 mm ²
Protection class	IP67

TYPE CODE INDUCTIVE SENSORS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	+
K	I	N	-	T	1	2	N	S	/	0	0	4	-	K	L	2			
Product group			Type of enclosure			Output		Sensing distance			Options								

Product group		
1	K	Non-contact proximity switch
2	I	Inductive
3	B	Flush mount
	N	Non-flush mount
	R	Ring sensor
4	-	Dash (fixed)

Type of enclosure		
5	M	Metric thread (metal enclosure)
	T	Metric thread (plastic enclosure)
	D	Round enclosure (metal)
	R	Round enclosure (plastic)
	Q	Cuboid enclosure (metal)
	P	PG thread (metal)
	E	Rectangular enclosure (plastic)
	S	Slot proximity switch (plastic)
	N	Standard mounting (to DIN 50025/50037)
	C	Compact enclosure
6 - 7		Two-digit number for:
		Round types = Ø as specified
		Threaded types = standard designation
		Rectangular types = consecutive type numbers

Design examples		
	D08	Ø 8 mm (metal)
	R22	Ø 22 mm (plastic)
	M12	Threaded barrel M12 x 1
Rectangular and other types		
	E16	16 x 5 x 5 mm
	E27	27 x 10 x 5,5 mm
	E28	28 x 16 x 11 mm
	E40	40 x 26 x 12 mm
	E50	50 x 25 x 10 mm
	E68	68 x 30 x 15 mm
	G00	Tube thread, general
	N44	41,5 x 41,5 x 120 mm
	Q05	5 x 5 x 25 mm
	Q08	8 x 8 x 40 mm, Side active
	Q12	12 x 12 x 55 mm

Output		
8	P	PNP
	N	NPN
	A	AC 2-wire
	E	NAMUR
	Z	DC 2-wire
	R	Relay
	G	Push-pull
	D	Dual output stage (NPN/PNP selectable)
9	S	NO contact
	Ö	NC contact
	P	Programmable
	A	Analogue
	U	Antivalent (selectable)
10	/	Slash (fixed)

Sensing distance		
11 - 13	e.g. 1,5	1,5 mm
	e.g.002	2,0 mm
	e.g. 040	40 mm
14	-	Dash (fixed)
Options		
15 - 17		See type code "OPTIONS", p. 229

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	+
K	C	N	-	T	1	2	N	S	/	0	0	4	-	K	L	P	2		
Product group			Type of enclosure			Output		Sensing distance			Options								

Product group		
1	K	Non-contact proximity switch
2	C	Capacitive
3	B	Flush mount
	N	Non-flush mount
4	-	Dash (fixed)

Type of enclosure		
5	M	Metric thread (metal enclosure)
	T	Metric thread (plastic enclosure)
	D	Round enclosure (metal)
	R	Round enclosure (plastic)
	Q	Cuboid enclosure (metal)
	P	PG thread (metal)
	E	Rectangular enclosure (plastic)
	N	Standard mounting (to DIN 50025/50037)
6 - 7		Two-digit number for:
		Round types = Ø as specified
		Threaded types = standard designation
		Rectangular types = consecutive type numbers

Design examples		
	12	Thread M12 x 1
	18	Thread M18 x 1
	30	Thread M30 x 1,5
	32	Thread M32 x 1,5
	34	Ø 34 mm (metal/plastic)
	20	Ø 20 mm (plastic)
	22	Ø 22 mm (plastic)
	50	50 x 25 x 10 mm
	68	68 x 30 x 15 mm
	44	41.5 x 41.5 x 120 mm (Euro standard enclosure)

Output		
8	P	PNP
	N	NPN
	A	AC 2-wire
	E	NAMUR
	Z	DC 2-wire
	R	Relay
	G	Push-pull
	D	Dual output stage (NPN/PNP selectable)

Output		
9	S	NO contact
	Ö	NC contact
	P	Programmable
	A	Analogue
	U	Antivalent (selectable)
10	/	Slash (fixed)
Sensing distance		
11 - 13	e.g. 1,5	1,5 mm
	e.g. 002	2,0 mm
	e.g. 040	40 mm
14	-	Dash (fixed)
Options		
15 - 19		See type code "OPTIONS", p. 229

TYPE CODE MAGNETIC SWITCHES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
M	A	K	-	0	1	1	2	-	D	-	1	-	S	O	K			
Product group			Type			Contact specifications				Cable length		Special features						

Product group		
1	M	Magnetic switch
2	Type of output	
	A	Reed contact
	R	Relay
3	Enclosure material	
	A	Aluminium
	N	Stainless steel
	M	Brass, nickel-plated
	K	Plastic, general
	O	Other materials
4	-	Dash (fixed)
Type		
5 – 6	01 – 99	Cylindrical and rectangular types (see next page for details)
Contact specifications		
7	Number of contacts	
	e.g. 1	1 Reed contact
	e.g. 2	2 Reed contacts
	...	etc.

8	Contact function	
	1	NC contact
	2	NO contact
	3	Changeover contact
	4	Bistable (ON/OFF)
	5	Bistable (changeover contact)
	6	NC, NO contact; separate contacts
	7	Coded, BG
	8	Currently not used
	9	Currently not used
	0	Other outputs
9	-	Dash (fixed)
10	Contact type/power of reed contacts	
	A	250 VDC ; 0,5 A; 20 VA
	B	250 VDC ; 0,5 A; 10 VA
	C	250 VDC ; 0,5 A; 30 VA
	D	250 VDC ; 0,5 A; 30 VA
	E	250 VDC ; 1,5 A; 30 VA
	F	250 VDC ; 3,0 A; 100 VA
	G	250 VDC ; 5,0 A; 250 VA
	H	250 VDC ; 1,0 A; 60 VA

	K	250 VDC ; 0,5 A; 30 VA
	L	250 VDC ; 1,0 A; 60 VA
	M	250 VDC ; 1,0 A; 80 VA
	N	250 VDC ; 1,0 A; 60 VA
	O	120 VDC ; 0,5 A; 10 VA
	P	250 VDC ; 5,0 A; 250 VA
	R	28 VDC ; 0,25 A; 3 VA
	W	250 VDC ; 1,0 A; 60 VA
	X	100 VDC ; 0,25 A; 5 VA
	Y	100 VDC ; 0,5 A; 10 VA
	TRIAC	
	K	24 – 250 VDC ; 1,5 A a. 300 VA b. 330 VA
	Hall	
11	-	Dash (fixed)

Cable length in metres		
12	e.g. 1	1 m cable
	e.g. 2	2 m cable
	...	etc.
13	-	Dash (fixed)
Special features		
14 – 17	T	Temperature resistant from –40 °C to +150 °C
	SI	With miniature fuse
	VDR	With VDR
	WID	With resistor
	LED	With LED
	SPK	Spiral cable
	SK	Special cable
	SOK	Connector type without head (without device socket)
	SMK	Connector type with head (with device socket)
	PG11	Type of thread
	RZ	Time delay with relay
	220 V	220 Volt version
	24 V	24 Volt version
	STK	Connector

TYPE CODE MAGNETIC SWITCHES



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
M	A	K	-	0	1	1	2	-	D	-	1	-	S	O	K			
Product group			Type			Contact specifications			Cable length			Special features						

Type		
5-6	01-99	Cylindrical and rectangular types
	01	45 x 13 x 9 mm [MA-01] PA
	02	80 x 20 x 15 mm [MA-02] PA/AL
	03	110 x 58 x 29 mm [MA-03] AL
	04	∅ 15.5 x 87 mm [MA-04] PC
	05	Currently not used
	06	∅ 12 x 81 mm [MA-06] AL
	07-10	Currently not used
	11	28.6 x 18 x 6.4 mm [MA-11] PA
	12	80 x 20 x 15 mm [MA-12] PA
	13	68 x 30 x 15 mm [MA-13] PC
	14	Currently not used
	15	∅ 12 x 81 mm [MA-15] PA
	16	∅ 12 x 81 mm [MA-13] VA
	17	PG9 x 60 mm [MA-17] PA
	18	M12 x 1 x 60 mm [MA-18] Ms
	19	M18 x 1 x 80 mm [MA-19] Ms
	20	Currently not used
	21	PG9 x 80 mm [MA-21] PA
	22	Currently not used

	23	M12 x 1 x 80 mm [MA-23] Ms
	24/25	Currently not used
	26	∅ 12 x 81 mm [MA-26] PA
	27	Currently not used
	28	M12 x 1 x 60 mm [MA-28] PA
	29	M18 x 1 x 80 mm [MA-29] PA
	30	∅ 6 x 30 mm [MA-30] PA
	31	Currently not used
	32	85 x 26 x 26 mm [MA-32] PBT
	33	M12 x 1 x 80 mm [MA-33] PA
	34/35	Currently not used
	36	∅ 13 x 96 mm [MA-36] PA
	37-39	Currently not used
	40	M10 x 1 x 40 mm [MA-40] PPE
	41	50 x 31 x 11 mm [MA-41] PA
	42	88 x 25 x 13 mm [MA-42] PA
	43	PG9 x 80 mm [MA-43] Ms
	44	80 x 30 x 15 mm [MA-44] PA
	45	45 x 25.5 x 9 mm [MA-45] PA
	46	∅ 6.5 x 39.34 mm [MA-46] PA
	47	Currently not used
	48	80 x 30 x 15 mm [MA-48] PA

	49-51	Currently not used
	52	43 x 26 x 13 mm [MA-52] PBT
	53	M30 x 1.5 mm [MA-53] PA
	54	Currently not used
	55	12 x 12 x 55 mm [MA-55] S
	56-59	Currently not used
	60	M8 x 1 mm [MA-60] S
	61	M10 x 1 mm [MA-61] S
	62	M12 x 1 mm [MA-62] S
	63	M18 x 1 mm [MA-63] S
	64	M30 x 1.5 mm [MA-64] S
	65-69	Currently not used
	70	∅ 6.5 mm [MA-70] S
	71/72	Currently not used
	73	68 x 30 x 15 mm [MA-73] S
	74-79	Currently not used
	80	8 x 8 x 40 mm [MA-80] S
	81-98	Currently not used
	99	other [MA-99] S

TYPE CODE **MAGNETIC SENSORS / CYLINDER SENSORS ELEKTRONIC / TEACHABLE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15					
M	E	K	-	M	1	2	P	S	/	H	1	0	-	K	L	2			
Product group			Type of enclosure			Output		Sensitivity			Options								

Product group		
1	M	Magnetic sensor
2	E	Electronic
3	K	Plastic
	M	Brass
	N	Stainless steel
4	-	Dash (fixed)
Type of enclosure		
5	M	Metric thread
	D	Round enclosure
	E	Rectangular enclosure
	Q	Cuboid enclosure
6-7		Two-digit number for:
		Metric enclosure = standard designation
		Round enclosure = Ø as specified
		Rectangular enclosure = enclosure width
		Cuboid enclosure = edge length

Output		
8	P	PNP
	N	NPN
9	S	NO contact
	Ö	NC contact
	B	Bistable
	A	Analogue
	D	Speed
10	/	Slash (fixed)
Sensitivity		
11	H	Hall
	M	Magneto-resistive
12-13		Sensitivity in mT
	z. B. 10	10 mT
	z. B. 01	1 mT
14	-	Dash (fixed)
Options		
15		See type code "OPTIONS", p. 229

TYPE CODE OPTIONS

1	2	3	4	5	6	7	8	9	10	11	12	13	14				
K	L	2	E	V	P	S	N	T	F	Z	I	D	G				

1	K	Short circuit-proof
2	L	LED
3	2	Cable length in m
4	E	Extended sensing distance (sn large)
5	V	Shortened type
6	P	Potentiometer
7	S	Device connector (terminals)
	PU	PUR cable
	SD	Connector to DIN 43650 (including socket)
	SM	Mini snap-in device connector
	S8	M8 device connector with union nut
	S12	M12 device connector with union nut
	SM8	Mini snap-in / M8 screw-on device connector
	S12A	M12 device connector with union nut, AC version

	S16S	M16 device connector with union nut and dust cap
	S12U	M12 Ultra-Lock device connector
	S5	M5 x 0,5 device connector Screw-connection with cable
8	N	Stainless steel enclosure
9	T	Extended temperature range
10	F	Extended switching frequency
11	Z	Time-delayed
12	I	Programmable (intelligent)
13	D	ATEX products, dust Ex
14	G	ATEX products, gas Ex

TYPE CODE **CABLE CONNECTORS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17				
W	D	K	-	M	1	2	P	S	/	L	L	2	-	2	P	U				
Device specifications				Type of connection			Classification					LEDs			Cable length	Options				

Device specifications		
1		Cable output
	W	Elbow
	G	Straight
2		Product group
	D	Socket
	S	Connector (the sensor connections should always be used as the basis for connecting lines with different outputs)
	A	Adapter (socket and connector)
	3	Preassembly
	K	Fixed cable
	A	Connection space, self-configurable
	V	Connecting line (extension)
	4	-

Type of connection		
5 - 7		Always related to the socket / connector
	M12	Union nut M12 x 1
	M08	Union nut M8 x 1
	R06	Round snap-in connection Ø 6.5 mm
	R12	Round snap-in connection, Ultra-Lock M12
	M05	M5 x 0.5 screw-on connection

Classification		
8		Configuration for switch output
	P	PNP (LED to negative)
	N	N = NPN (LED to positive)
	U	Universal (no LED)
	A	AC (M12 special coding Pin 1 + 2)
	9	Pin assignments of cable sockets for switch output
	S	NO contact 1 - 3 - 4 for M12 1 - 3 - 2 for Mini 1 - 2 for M12 AC
	Ö	NC contact 1 - 3 - 2 for M12
	A	Antivalent 1 - 3 - 4 - 2 for M12
	N	NAMUR 1 - 3 for M12
	U	More than 4 connections
	T	Teach-in function
10	/	Slash (fixed)
Manufacturer		
11		Internal information

LEDs		
12	L	Integrated LED
	O	Without LED
13		Number of LEDs
	0	No LED
	1	1 LED
	2	2 LEDs etc.
14	-	Dash (fixed)
Cable length		
15		In m (moulded cable)
Options		
16 - 17	PU	Polyurethane cable
	HF	Highly flexible cable
	SD	Connector/socket
	BD	Socket both ends
	R	Vibration safeguard
	Without	PVC cable

TYPE CODE MOUNTING MATERIAL



1	2	3	4	5	6	7	8	9												
B	K	S	-	D	2	0	P	A												
Product group				Type group			Material													

Product group		
1	B	Mounting material
2		Type of product
	K	Retaining bracket
	W	Mounting bracket
	H	Retaining plate
3		Specification
	S	Bracket, 2-piece
	B	Block, 1-piece
	R	Reducer
	N	90° elbow
4	-	Dash (fixed)

Type group		
5 - 7		For clips:
		Diameter in mm corresponding to matching sensor
		For elbows:
		Type group
	z. B. L05	Light barrier OR05
	z. B. M06	Magnetic switch M06
Material		
8 - 9		Material
	ST	Steel
	NI	Stainless steel
	AL	Aluminium
	PA	Polyamide
	PP	Polypropylene