BERNSTEIN

Position switches and sensors

With certainty. Just the right thing.

CONTENTS

Our products – Your solutions

“Whatever you need ...” — Please contact us

We can offer all of our switches, sensors and enclosures in a customer-specific design. So do not hesitate to contact us. We are always happy to advise you.

Tel +49 571 793-0 | Fax +49 571 793-555
info@bernstein.eu | www.bernstein.eu

BERNSTEIN
Company profile

Successful for more than 70 years
Technically innovative. Personally specific.

Hans Bernstein founded “BERNSTEIN Spezialfabrik für Schaltkontakte” at the foot of the Emperor William Monument in the town of Porta Westfalica, Germany, in 1947. Today, the East Westphalian BERNSTEIN AG company has more than 500 employees in 10 countries and is an international, family-owned business that is now being run by the third generation.

As a worldwide leading manufacturer of industrial safety switchgear and enclosures, BERNSTEIN combines these competencies in two distinct business areas - DETECT and PROTECT. The PROTECT area comprises our enclosure technology, the DETECT area comprises our switch and safety technology.

Customer-specific solutions are part of BERNSTEIN’s core strengths. We realise them, starting from the idea, through to consultation, development, processing and implementation, all from one source. This is a service which distinguishes us from other competitors and enables our customers to take a decisive step forward.

"Over the years, I experienced not only the creation of various new switch series changes in our manufacturing technology, but also some very significant ones. Our fully automatic manufacturing line for the C14 switch insert is state of the art technology – an important milestone for us in the BERNSTEIN factory in Hartum."

— **Bernd Borcherding** | Production Manager, BERNSTEIN AG

A real milestone.

1947
2016

COMPANY FOUNDED
by Hans Bernstein in Porta Westfalica

IN62, IN65 AND I81
supplement the product range of our position switches

36

DISTRIBUTORS
are act worldwide ensuring first class customer support

3

GENERATIONS
characterize this successful family business

POSITION SWITCHES

POSITION SWITCHES | Plastic enclosure

POSITION SWITCHES | Metal enclosure

POSITION SWITCHES
Common features of electromechanical switches

Switching systems

Switching elements lie at the heart of all electro-mechanical switching devices and must correspond to the respective application. Essentially there are two basic types of switching system that differ in terms of their mechanical design and consequently their scope of application:

- Slow-action contacts
- Snap-action contacts

Slow-action contacts

- On actuation, the normally-closed and normally-open contact functions correspond to the movement of the impact pin
- The approach speed controls the contact opening (closing) time
- Large distance / actuating travel between normally-closed and normally-open contact function
- The switching points are identical in both forward and reverse travel

Snap-action contact

- On actuation, the normally-closed contact function is immediately followed by the normally-open contact function
- In this configuration there is no overlap of the NC/NO contacts. The switch provides a distinct OR-function.
- The changeover accuracy is not dependent on the approach speed
- Consistently effective suppression of the DC arc
- Reliable contact-making also for extremely slow approach speeds
- The snap mechanism triggers the full opening width of the contact on reaching the changeover point
- Due to the force reversal in the mechanical system, a different switching point occurs in both the forward and reverse travel. The lag is referred to as hysteresis.

Overlap

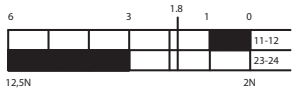
The switching principle of snap-action contacts makes overlapping of the NC/NO contact function possible. The term overlap refers to the area, in which both the normally-closed contact as well as the normally-open contact are closed in connection with a changeover switch with a delay.

Switching diagram

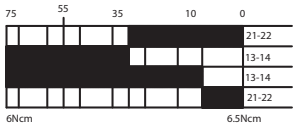
The switching diagram describes the function of the switching device in detail.

It combines the mechanical input variables that act on the contact system via the actuator with the electrical output variables. The user can deduce the following information from the switching diagram:

- Mechanical input variables (force, travel, torque, angle)
- Electrical contact-making in both forward and reverse travel
- Terminal designation
- Point at which positive opening is achieved
- Type of contact system



Slow-action contact



Snap-action contact

■ Contact closed
□ Contact open

Contact designation

In accordance with DIN 50013 and DIN 50005, the terminal designations of the contact elements always consist of two digits.

The contact rows are numbered consecutively with the allocating digit (1st digit) in the actuation direction. Contacts of a switching element that belong together have the same allocating digit.

The second digit is the function digit that denotes the type of contact element.

1 – 2 Normally-closed contact
3 – 4 Normally-open contact
5 – 6 Normally-closed contact with delayed opening
7 – 8 Normally-open contact with delayed closing

Protection class

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.

BERNSTEIN standard enclosures mainly correspond to protection classes IP65 and IP67. Higher protection ratings are also available for individual customer solutions. In accordance with DIN EN 60521 (IEC 529), the numerals used in the protection rating denote the following:

1st digit: Degree of protection against contact and infiltration of foreign bodies
2nd digit: Degree of protection against the infiltration of water

Example IP65:

6 =
- Complete protection against contact with components under voltage or with internal moving parts
- Protection against dust infiltration

5 =
- A water jet directed from all directions at the device must not cause any damaging effects
- Protection against hose water

Designation

The designation of BERNSTEIN switching devices depends on:

- The enclosure designation of the switching device
- The switching function
- The type of actuator

Example:
IN65 — Enclosure designation
U1Z — Switching function
AHK — Actuator

Enclosures

Position switches are supplied in either a plastic enclosure or a metal enclosure. The material selected for a specific application depends on the ambient conditions, the location, and several other factors.

Plastic position switches provide protective insulation and are resistant to many aggressive chemicals and liquids.
The formation of condensation water in moist environ- ments with extreme temperature fluctuations is signifi- cantly reduced on plastic enclosures.

Metal-enclosed position switches are able to withstand high mechanical loads and they can also be used wherever hot metal chips and sparks occur, as well as being resistant to many solvents and detergents.

POSITION SWITCHES
Common features of electromechanical switches

Designations – Switching systems

The designations of the switching systems are identical for both plastic and metal switches. The positive opening point is indicated in the technical data sheets by the international symbol ⊖.

Switching function:

NC = Normally-closed contact
NO = Normally-open contact

U1Z
Slow-action contact, 1NC, 1NO

UV1Z
Slow-action contact with overlapping contacts, 1NC, 1NO

UV15Z
Slow-action contact with overlapping contacts, 2NC, 1NO

UV16Z
Slow-action contact with overlapping contacts, 1NC, 2NO

SU1Z
Snap-action contact, 1NC, 1NO

SU2Z
Snap-action contact, 2NC, 2NO

A1Z
Slow-action contact, 1NC

A2Z
Slow-action contact, 2NC

A3Z
Slow-action contact, 3NC

E1
Slow-action contact, 1NO

E2
Slow-action contact, 2NO

40
Slow-action contact, 4NC

04
Slow-action contact, 4NO

31
Slow-action contact, 3NC, 2S

13
Slow-action contact, 1NC, 3NO

22
Slow-action contact, 2NC, 2NO

Safety switches

The scope of application for position switches has changed over time. Whereas position switches were previously used for the purpose of detecting end positions, today they are increasingly assuming functions designed to protect persons and products in machine, equipment and plant construction.

The BERNSTEIN range of safety switches offers the right solution for the most diverse applications in many branches of industry. And when it comes to safety, users particularly appreciate the fact that they are able to procure and receive all the required safety switches and professional advice from one source.

The decisive factors governing the selection of safety equipment include the ambient conditions, the installation situation and a risk analysis.

A position switch that can be used for safety functions is identified by the standardised symbol ⊖ conforming to EN 60947-5-1 Addendum K.

The switches can, of course, also be used for pure position monitoring purposes.

Safety switches are divided into two categories, Type 1 and Type 2.

The difference is in the actuating elements which are completely integrated in the enclosure in Type 1 and separated from the switching element in Type 2.

⊖ = Mechanical positive opening action

The term positive opening action refers to the contact separation as the direct result of a defined movement of the switch actuator by means of non-sprung parts. All parts involved in contact separation must be form-fit connected.

The positive opening distance describes the minimum travel distance from the start of the actuation of the operating element up to the point where the positive opening action of the opening contacts is completed.

DIN EN 60947-5-1 defines two types of positive opening action contacts with 4 connections and double break:

Type Za
- Positively opening contacts not galvanically isolated

Type Zb
- Positively opening contacts galvanically isolated

Galvanic isolation describes the isolation of electrically conducted parts by insulating material or by air gaps.

In switching devices with several contact elements, galvanically isolated contact elements make it possible to switch voltages with different potentials (e.g. a normally-closed contact in a safety circuit, normally-open contact for an indicator).

In accordance with applicable healthand safety requirements, protective devices (guards) must be mounted on machines, devices and systems that perform hazardous movements. Safety switches in the form of electromechanical switching devices are predominantly used for this purpose as they offer the following advantages:

- High degree of safety
- Non-susceptibility to interference
- Safety status easily checked on site
- Rational solutionsn

Form-fit, mechanical drives or coupling elements in the form of levers, rods, gearwheels etc. are necessary to ensure the optimum operation of these safety components.

Switching devices that are used for safety functions must be identified with the symbol ⊖ internationally standardised in accordance with DIN EN 60947-5-1. In defining the class of switching devices, this symbol denotes two important proper-ties that must be met for personal protection applications:

- Mechanical positive opening action
- Disruptive breakdown voltage > 2,5 kV

Disruptive breakdown voltage

In accordance with DIN EN 60947-5-1, open contacts must be able to maintain a minimum surge voltage of 2.5 kV without any disruptive breakdown.

Plastic enclosures

Position switches Plastic C2

Product characteristics

- Very small dimensions
- 2 positive break contacts
- Front- and top mounting
- Different actuators

Good to know …

The C2 position switch has the smallest possible dimensions and is therefore perfect for applications in very confined spaces.

The two contacts are positive break ones. It can therefore be used in safety applications.

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC, 2 NO

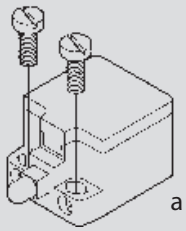
Technical data

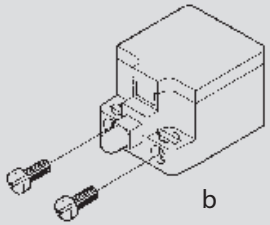
Electrical data		
Design insulation voltage	U_i max.	250 V AC
Conventional thermoelectric current	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category	U_e/I_e	AC-15, U_e/I_e 240 V/3 A
Short-circuit protection		Safety fuse 6 A gL/gG
Protection class		II, protective insulation
Mechanical data		
Enclosure material		Thermoplastics, glass-fibre reinforced (UL 94-V0)
Ambient temperature		–30 °C to +80 °C
Mechanical lifetime		3×10^6 switching cycles
B10d		6 million
Switching frequency		≤ 100/min
Type of connection		Screwed connections (M3.5)
Conductor cross-sections		Single-wire 0.5 –1.5 mm² or strand with wire-end ferrule 0.5 –1.5 mm²
Cable entry		Rectangle 8.5 × 3.5 mm
Protection class		IP20 conforming to EN 60529; DIN VDE 0470 T1
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

Mounting

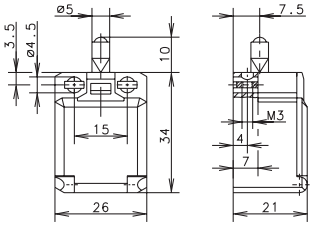
Front- and top mounting (type-related)

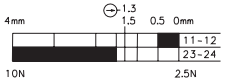
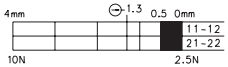
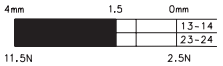
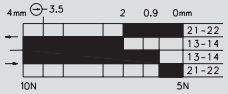
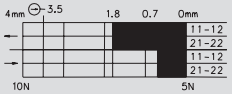
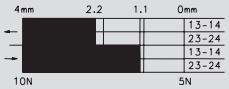
- a) 2× round holes for M4 screws
- b) 2× insert nuts for front-side installation for M3 screws M3 (type-related)


a


b

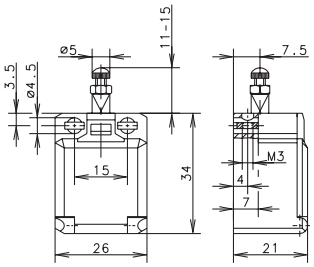
C2-... W

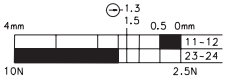
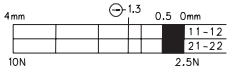
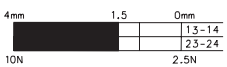


	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6008101001** C2-U1Z 	**6008801003** C2-A2Z 	**6008801005** C2-E2 
Snap-action system	**6008351002** C2-SU1Z 	**6008851004** C2-SA2Z 	**6008851006** C2-SE2 

Special features: on request

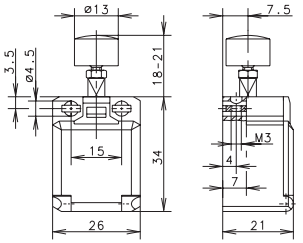
C2-... ST

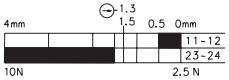
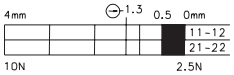


	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6008104025** C2-U1Z ST 	**6008804027** C2-A2Z ST 	**6008804029** C2-E2 ST 
Snap-action system	**6008354026** C2-SU1Z ST 		

Special feature: Actuator length adjustable with adjusting screw

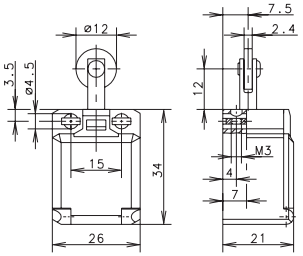
C2-... K

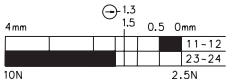
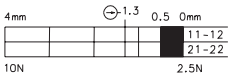
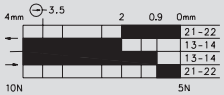


	1 NC / 1 NO	2 NC
Slow-action system	**6008107019** C2-U1Z K 	**6008807021** C2-A2Z K 
Snap-action system	**6008357020** C2-SU1Z K 	**6008857022** C2-SA2Z K 

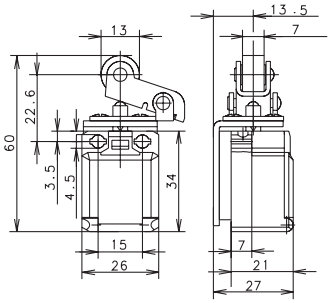
Special feature: Button actuator, for manual operation

C2-... R



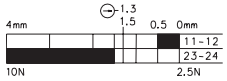
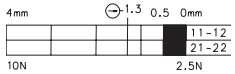
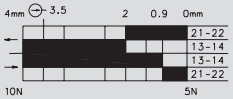
	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6008116013** C2-U1Z R 	**6008816015** C2-A2Z R 	**6008816017** C2-E2 R 
Snap-action system	**6008366014** C2-SU1Z R 	**6008866016** C2-SA2Z R 	

Special feature: on request, also available with the roller turned by 90°



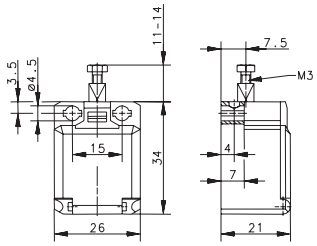
C2-... O.M.

Replacement actuator: 3910190259

	1 NC / 1 NO	2 NC
Slow-action system	**6008101007 + 3910190259** C2-U1Z O.M. 	**6008801009 + 3910190259** C2-A2Z O.M. 
Snap-action system	**6008351008 + 3910190259** C2-SU1Z O.M. 	

Special features: on request

C2-... BISTABIL O.M.



	1 NC / 1 NO
Snap-action system	**6108351008** C2-SU1Z BISTABIL O.M. 

Special features: bistable characteristics, the actuator must be returned to the initial position by external actuation (pulling); actuator length adjustable with M3 adjusting screw

Notes

Diagrams. Sketches. Ideas.

Plastic enclosures

Position switches Plastic Ti2

Product characteristics

- Compact dimensions
- 2 contacts, 1 or 2 positive break contacts
- Protection class IP65
- Different actuators
- Snap-on cover can be released with a screwdriver

Good to know …

With a higher protection class (IP65) and a wider range of actuators such as the C2, the Ti2 is suitable for many different applications.

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC, 2 NO

Options

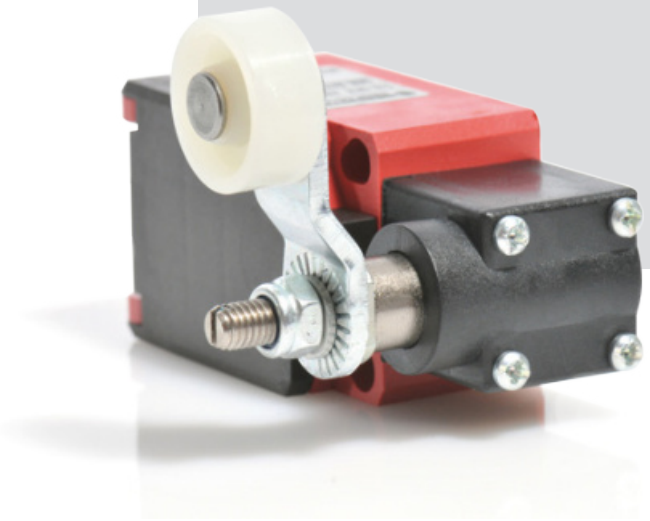
- Available with M12 connectors
- Customised cables and connectors upon request

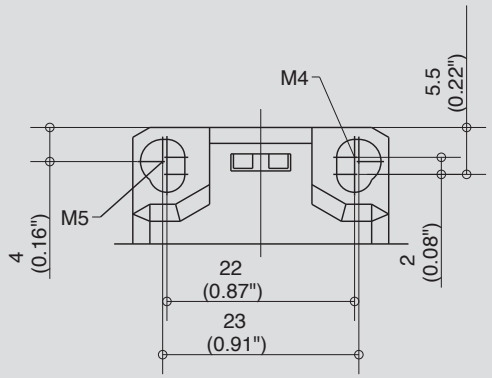
Technical data

Electrical data		
Design insulation voltage	U_i max.	240 V AC
Conventional thermoelectric current	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category	U_e/I_e	AC-15, U_e/I_e 240 V/3 A; DC-13, U_e/I_e 240 V/0.27 A
Short-circuit protection		Safety fuse 6 A gL/gG
Protection class		II, protective insulation
Mechanical data		
Enclosure material	Thermoplastics, glass-fibre reinforced (UL 94-V0)	
Ambient temperature	–30 °C to +80 °C	
Mechanical lifetime	3 x 10^6 switching cycles	
B10d	6 million	
Switching frequency	≤ 100/min.	
Type of connection	Screwed terminals	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm² or strand with wireend ferrule 0.5 – 1.5 mm²	
Cable entry	1 x M16 x 1.5	
Protection class	IP65 conforming to EN 60529; DIN VDE 0470 T1	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

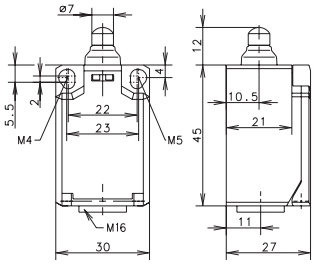
Mounting

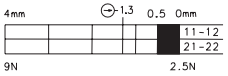
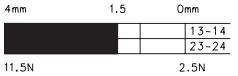
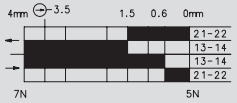
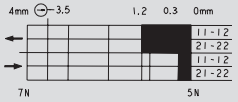
- Mounting dimension according to DIN EN 50047
- 2 oval holes for adjustment for screws M4 (distance 22 mm)
- Fixed positioning for safety applications with two M5 screws (distance 23 mm)





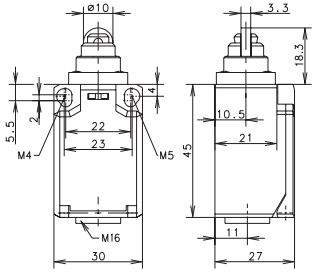
Ti2-... W

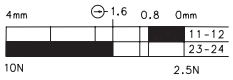
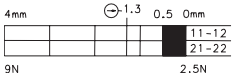
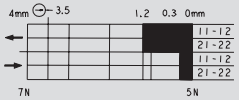
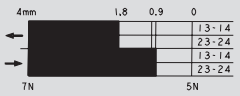


	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6088103001** Ti2-U1Z W 	**6088803003** Ti2-A2Z W 	**6088803005** Ti2-E2 W 
Snap-action system	**6088153002** Ti2-SU1Z W 	**6088853004** Ti2-SA2Z W 	

Special feature (on request): available with increased switching force

Ti2-... RIW

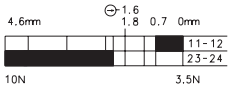
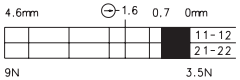
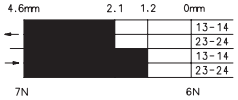
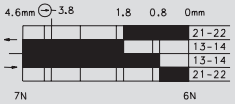
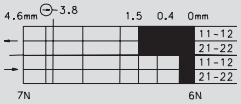


	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6088117007** Ti2-U1Z RIW 	**6088817009** Ti2-A2Z RIW 	
Snap-action system	**6088167008** Ti2-SU1Z RIW 	**6088867010** Ti2-SA2Z RIW 	**6088867012** Ti2-SE2 RIW 

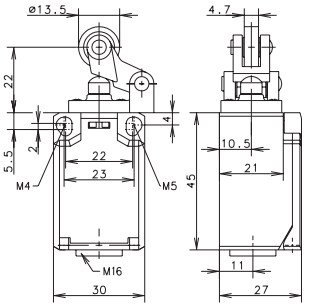
Special features (on request): available with increased switching force; available with different actuating directions; cannot be turned by user

Replacement actuator: 3918190681

Ti2-... HW

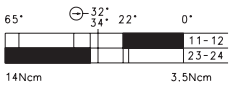
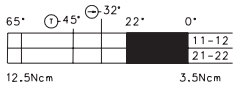
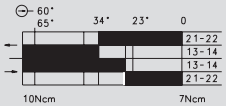
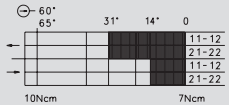
	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6088121015** Ti2-U1Z HW 	**6088821017** Ti2-A2Z HW 	**6088871020** Ti2-SE2 HW 
Snap-action system	**6088171016** Ti2-SU1Z HW 	**6088871018** Ti2-SA2Z HW 	

Special features (on request): available with different actuating directions; with steel roller; various roller diameters

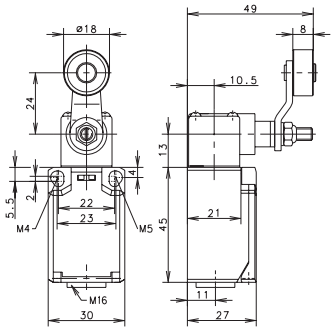


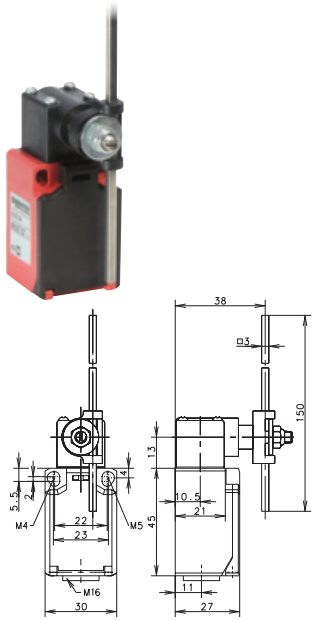
Replacement actuator: 3918351166

Ti2-... AH

	1 NC / 1 NO	2 NC
Slow-action system	**6088135021** Ti2-U1Z AH 	**6088835023** Ti2-A2Z AH 
Snap-action system	**6088185022** Ti2-SU1Z AH 	**6088885024** Ti2-SA2Z AH 

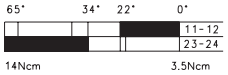
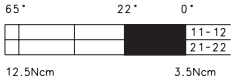
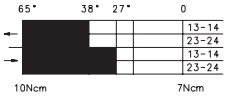
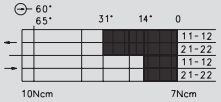
Special features (on request): available with different actuating directions; with a steel roller; various roller diameters; cranked or straight lever; various lever lengths; with a roller over switch



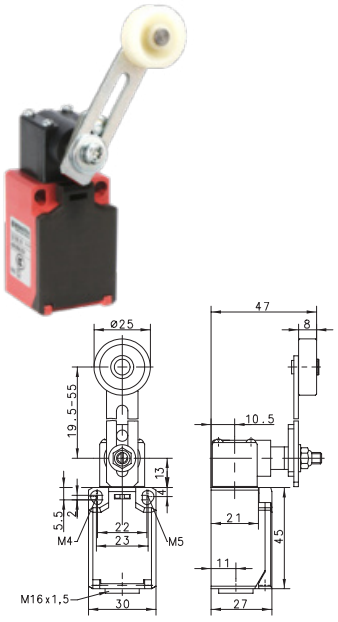


Ti2-... AD

Replacement actuator: 3918370986

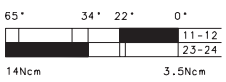
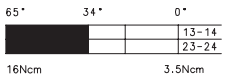
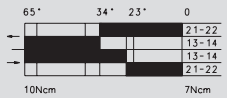
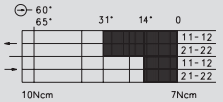
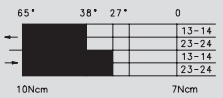
	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6088137027** Ti2-U1 AD 	**6088837029** Ti2-A2 AD 	**6088887032** Ti2-SE2 AD 
Snap-action system	**6088187028** Ti2-SU1 AD 	**6088887030** Ti2-SA2 AD 	

Special features (on request): available with increased switching force; available with different actuating directions; with various actuator lengths



Ti2-... AV

Replacement actuator: 3918360984

	1 NC / 1 NO	2 NC	2 NO
Slow-action system	**6088136033** Ti2-U1 AV 		**6088836037** Ti2-E2 AV 
Snap-action system	**6088186034** Ti2-SU1 AV 	**6088886036** Ti2-SA2 AV 	**6088886038** Ti2-SE2 AV 

Special features (on request): available with different actuating directions; various roller diameters; various lever lengths; with roller over switch

Notes

Diagrams. Sketches. Ideas.

Plastic enclosures

Position switches Plastic I49

Product characteristics

- Flat and compact design
- Pre-installed connecting cable (1m length) for quick and easy installation
- Top-mounting versions available
- Cable outlet on the side or at the bottom
- High protection class IP67
- Suitable for safety applications according to DIN EN 60947-5-1 (positive break)

Good to know …

Due to the space-saving enclosures and the high protection class IP67 the position switches of the I49 series are perfect for an installation where a flat design and a high protection class of IP67 is required. The switches are often used for the monitoring of covers and inspection doors, for position monitoring applications and similar applications. The high protection class allows outdoor applications.

Options

- Different cable lengths are available on request

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC, 2 NC/2 NO

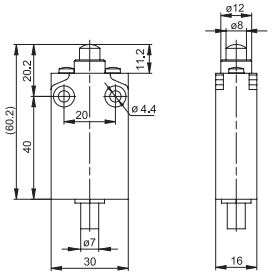
Technical data

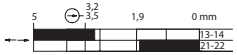
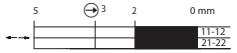
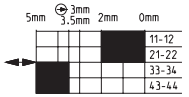
Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category		AC-15; 24 V / 10 A; 240 V / 3 A
Protection class		II, protective insulation
Mechanical data		
Ambient temperature	–25 °C to +70 °C (connecting cable firmly wired)	
Mechanical lifetime	10 x 10^6 switching cycles	
Switching frequency	≤ 60/min.	
Type of connection	Cable 4 x 0.75 mm^2	
Protection class	IP67 conforming to IEC/EN 60529	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

Application examples

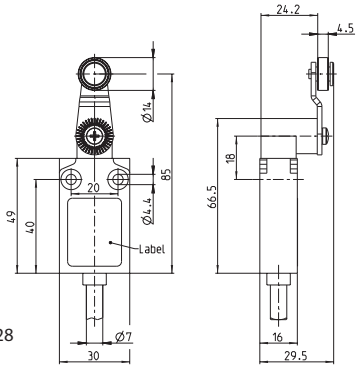
- Monitoring of safety gates, hatches or protective hoods
- Position monitoring of moving parts
- Object detection in conveying technology
- End position control of components
- Position monitoring on rolling doors
- Monitoring of sliding doors

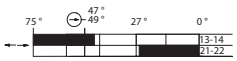
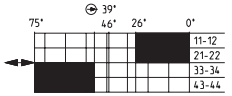
I49-... IW



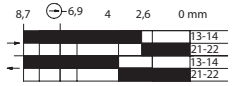
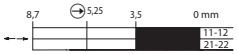
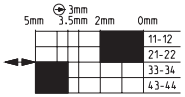
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NC / 2 NO Slow-action
Switching diagram				
Cable outlet right	**6089152048** I49-SU1Z IW	**6089102049** I49-U1Z IW		
Cable outlet below	**6089152058** I49-SU1Z IW Z	**6089102059** I49-U1Z IW Z	**6089802070** I49-A2Z IW Z	**6089202075** I49-U2Z IW Z

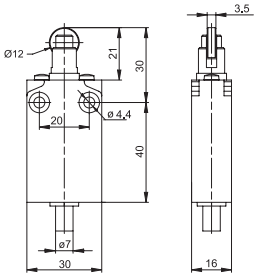
I49-... AH



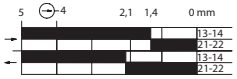
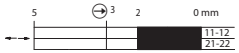
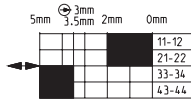
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NC / 2 NO Slow-action
Switching diagram				
Cable outlet right	**6089185056** I49-SU1Z AH	**6089135057** I49-U1Z AH		
Cable outlet below	**6089185066** I49-SU1Z AH Z	**6089135067** I49-U1Z AH Z	**6089835073** I49-A2Z AH Z	**6089235078** I49-U2Z AH Z

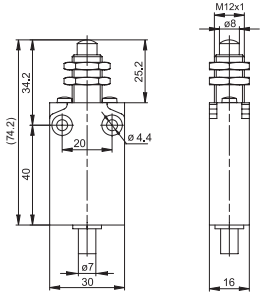
I49-... RIW

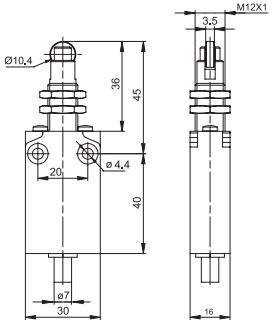
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NC / 2 NO Slow-action
Switching diagram				
Cable outlet right	**6089167052** I49-SU1Z RIW	**6089117053** I49-U1Z RIW		
Cable outlet below	**6089167060** I49-SU1Z RIW Z	**6089117061** I49-U1Z RIW Z	**6089817071** I49-A2Z RIW Z	**6089217076** I49-U2Z RIW Z



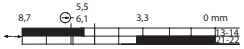
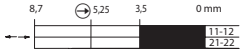
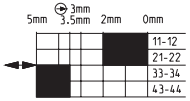
I49-... IWF

	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NC / 2 NO Slow-action
Switching diagram				
Cable outlet right	**6089152050** I49-SU1Z IWF	**6089102051** I49-U1Z IWF		
Cable outlet below	**6089152062** I49-SU1Z IWF Z	**6089102063** I49-U1Z IWF Z	**6089852069** I49-A2Z IWF Z	**6089452074** I49-U2Z IWF Z





I49-... RIWF

	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NC / 2 NO Slow-action
Switching diagram				
Cable outlet right	**6089167054** I49-SU1Z RIWF	**6089117055** I49-U1Z RIWF		
Cable outlet below	**6089167064** I49-SU1Z RIWF Z	**6089117065** I49-U1Z RIWF Z	**6089817072** I49-A2Z RIWF Z	**6089217077** I49-U2Z RIWF Z


BERNSTEIN
I49-SU1Z AH
6089185056
BERNSTEIN
I49-U1Z RIWF
6089117055
BERNSTEIN
I49-U1Z RIW
6089117053
BERNSTEIN
I49-SU1Z IWF
6089152050
BERNSTEIN
I49-U1Z IW
6089102049

Plastic enclosures

Position switches Plastic Bi2

Product characteristics

- Protection class IP65 according to VDE 0470 T1
- Enclosure and cover PA 6, self-extinguishing (UL-94 V0)
- Actuator turnable by 4 x 90°
- Cable entry 2 x M16 x 1.5
- Connection designation conforming to DIN EN 50013

Good to know …

Due to its two cable entry slots, this switch is ideally suited for the connection of two cables. A large number of actuators are available. Please do not hesitate to contact us for support in choosing the best solution for your application.

Options

- Available with M12 plug
- Preassembled with customer-specific cables and connectors on request

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC

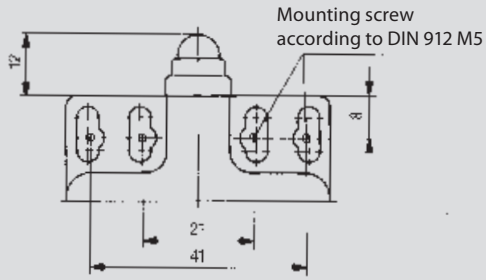
Technical data

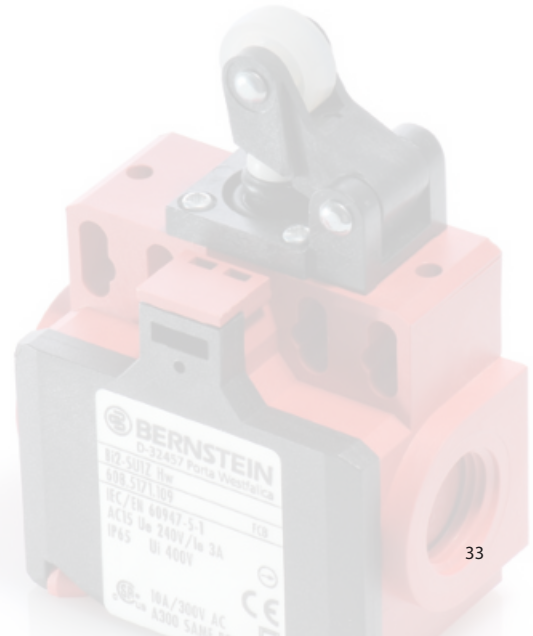
Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current ①	I_{the}	10 A
Rated operating voltage	U_e max.	240 V AC
Utilisation category		AC15, U_e/I_e 240 V/3 A
Short-circuit protection (up to) ①		Safety fuse 10 A gL/gG
Protection class		II, protective insulation
Mechanical data		
Enclosure material	Thermoplastics, glass-fibre reinforced	
Ambient temperature	–30 °C to +80 °C	
Mechanical lifetime (up to) ①	10 x 10^6 switching cycles	
B10d (up to) ①	20 million	
Switching frequency	≤ 100/min.	
Type of connection	Screwed terminals	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm^2 or strand with wire-end ferrule 0.5 – 1.5 mm^2	
Cable entry	2 x M16 x 1.5	
Protection class	IP65 conforming to EN 60529; DIN VDE 0470 T1	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

① Depending on the switching system

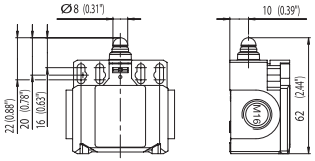
Mounting

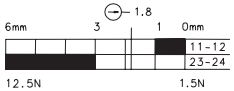
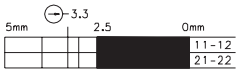
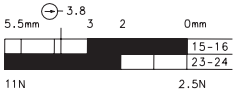
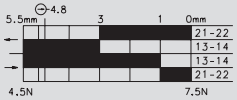
- 2 M4 oval holes (distance 22 mm) for adjustment
- 2 M4 oval holes (distance 42 mm) for adjustment
- 2 M5 round holes (distance 21 mm) for security applications
- 2 M5 round holes (distance 41 mm) for safety applications without additional fixation required
- Front mounting



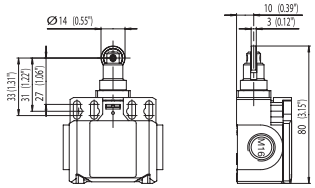


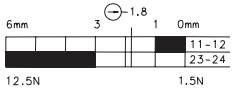
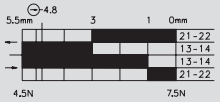
Bi2-... W



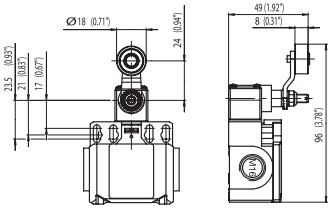
	1 NC / 1 NO	2 NC	1 NC / 1 NO overlapping
Slow-action system	**6085103100** Bi2-U1Z W 	**6085803116** Bi2-A2Z W 	**6085303115** Bi2-UV1Z W 
Snap-action system	**6085153107** Bi2-SU1Z W 		

Bi2-... RIW

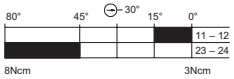


	1 NC / 1 NO
Slow-action system	**6085117101** Bi2-U1Z RIW 
Snap-action system	**6085167108** Bi2-SU1Z RIW 

Special feature (on request): with steel roller



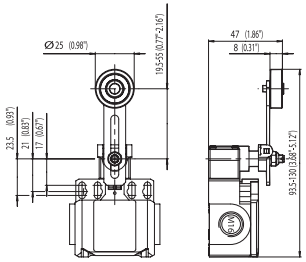
Bi2-... AH

	1 NC / 1 NO
Slow-action system	**6085135104** Bi2-U1Z AH 
Snap-action system	**6085185111** Bi2-SU1Z AH 

Special features (on request):
available with different actuating directions; with steel roller;
various roller diameters; cranked or straight lever; various lever lengths

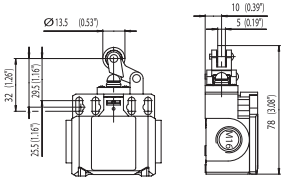
Bi2-... AV

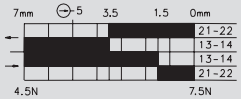
1 NC / 1 NO	
Slow-action system	
Snap-action system	**6085186112** Bi2-SU1 AV



Bi2-... HW RO13.5

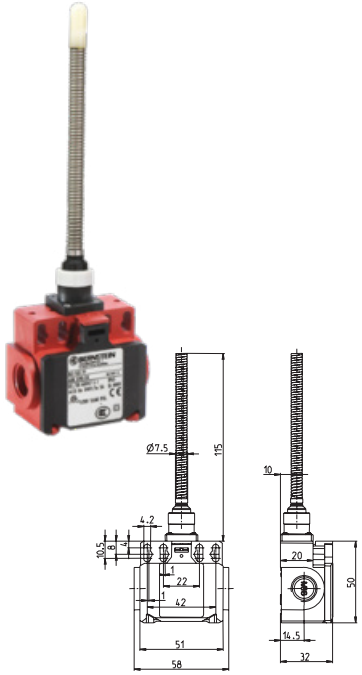
1 NC / 1 NO	
Slow-action system	
Snap-action system	**6085171109** Bi2-SU1Z HW RO13.5

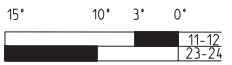




Bi2-... FF

1 NC / 1 NO	
Slow-action system	**6185140104** Bi2-U1 FF
Snap-action system	**6085190114** Bi2-SU1 FF

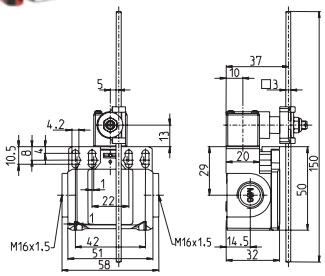




Special features (on request):
available with different spring lengths; spring rod; various spring versions

Bi2-... AD

1 NC / 1 NO	
Slow-action system	
Snap-action system	**6085187113** Bi2-SU1 AD



Plastic enclosures

Position switches Plastic IN62, IN65 und I81

Product characteristics

- Highest reliability at low currents (1 mA/24VDC)
- Actuator and parts of the cover made of metal (IN65 and I81)
- Tool-free rotation (8 x 45°) and changing of the actuators (IN65 und I81) is possible without a tool
- Standard switch and standard actuator conforming to DIN EN 50047
- Protection class IP66 und IP67 conforming to EN 60529

Options

- Available with M12 connector
- Cable entry M16 x 1.5

Good to know …

The new standard switches, IN62 and IN65, and the position switch I81, are the latest in our I88 series. All three switches, i.e. IN62, IN65 and I81, include the integrated, new type C14 switch insert. The C14 has encapsulated contacts that ensure good functioning at very low currents (1 mA / 24 VDC). Due to the modular design and the easy-to-change actuator, they can be used for all applications in mechanical and plant engineering.

The standard IN62 switch is the basic switch. Its actuators can handle many lift and escalator applications.

The standard IN65 switch is the “all-rounder”.
It is as effective as a moulded plastic switch, as robust as a metal switch, and clever due to its modular design and the easy-to-change actuator.

The I81 position switch completes the new series of position switches. It is the bistable version of the IN65, our “latching” switch.

What’s so special about the C14?

We installed a modern assembly line in our factory in Hille-Hartum to produce the new C14 switch inserts (1 NC / 1 NO, 2 NC, 2 NO). The modular design of the line allows maximum flexibility for the production of all the different switch inserts. During the fullly-automatic manufacturing process, all switch inserts are tested to ensure the highest quality. More than 800 switch inserts can be produced per hour.

The most important feature of the C14 switch insert is the encapsulated contacts. Production takes place in a cleanroom environment to ensure that the contact surfaces are extremely clean, even during the assembly. And due to the encapsulated enclosure of the C14 switch insert, we can ensure that, even after the manufacturing process, no dirt or dust can contaminate the contacts. The switch can therefore handle very low currents of 1 mA at 24 VDC.

C14 SWITCH INSERT

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC, 2 NO, overlapping contacts

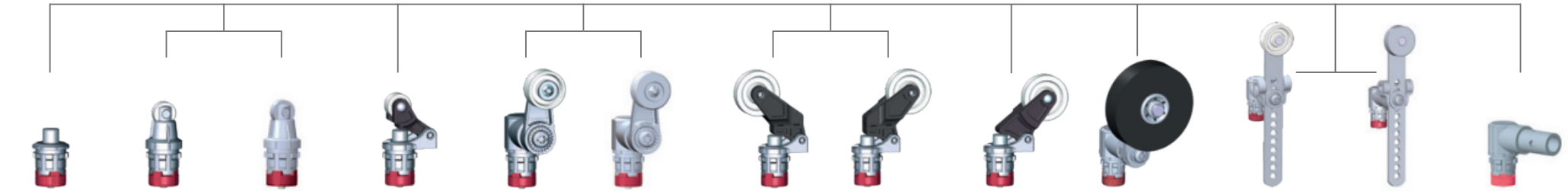
Mounting

- 2 screws M4 (distance 22 mm), adjustment with oval holes
- 2 screws M5 for safety applications without any additional fixation required

Technical data

Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current	(up to) I_{the}	5 A
Rated operating voltage	U_e max.	240 V AC/24 V DC
Utilisation category (up to)		AC-15, U_e/I_e 240 V/3 A DC-13 U_e/I_e 24 V/1.5 A (B300 Table A.1)
Short-circuit protection (up to)		Safety fuse 4 A gG
Protection class		II, protective insulation
Mechanical data		
Enclosure material	Thermoplastics, glass-fibre reinforced (UL 94-V0)	
Ambient temperature	–30 °C to +75 °C	
Mechanical lifetime (up to)	30×10^6 switching cycles	
B10d NC Contact cycles (up to) B10d NO Contact cycles (up to)	30 million 1 million	
Switching frequency	≤ 60/min.	
Type of connection	4 screwed connections (M3)	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm^2 or strand with wire-end ferrule 0.5 – 1.5 mm^2	
Cable entry	1 × M20 × 1.5	
Protection class	IP66/IP67 according to EN 60529; DIN VDE 0470 T1	
Standards		
VDE 0660 T211, DIN EN 60947-5-4, IEC 60947-5-4 DIN EN ISO 13849-1, DIN EN ISO 13849-2		

Here is a small selection of our actuators. Others are available on request.



SM
3918052341
(Metal plunger)

RK
3918172342
(Plastic roller)

RM
3918172362
(Metal roller)

HK
3918202343
(Plastic roller)

AHK
3918352345
(Plastic roller)

AHM
3918352364
(Metal roller)

DGHK
3918202344
(Plastic roller)

DGKK
3918202348
(Plastic roller)

KNK
3918262349
(Plastic roller)

AHSGU RO50
3918352359
(Rubber roller)

AVZK
3918362358
(Plastic roller)

AVZM
3918362365
(Metal roller)

AHDB
3918352406
(Metal actuator)

IN65 enclosure with C14 switching unit

	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6083000272** IN65-U1Z M20	**6083000274** IN65-A2Z M20	**6083000276** IN65-E2 M20	**6083000277** IN65-UV1Z M20
Snap-action system	**6083000271** IN65-SU1Z M20	**6083000273** IN65-SA2Z M20	**6083000275** IN65-SE2 M20	

The enclosures are also available in black.

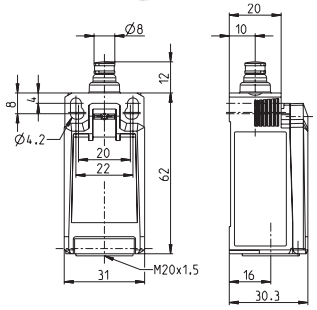
Modular concept

Changing an actuator of our new position switches is very easy, no tools are required: Simply pull the metal clamp to the front, remove the actuator, insert the new actuator and push the metal clamp back — done.

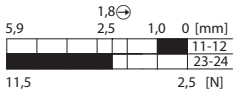
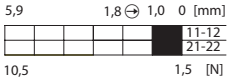
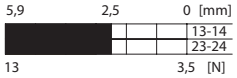
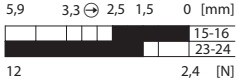
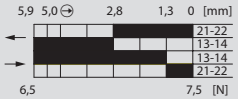
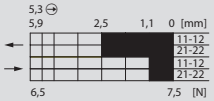
Optional
Our position switches are usually equipped with an M20 thread for cable glands. All switches are also available with M12-connectors.

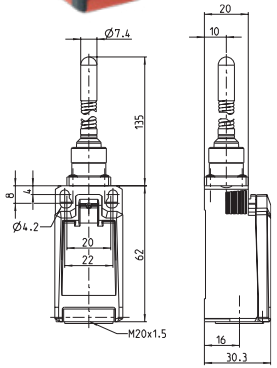
IN65 enclosure with C14 switching unit and M12 plug connector

	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6083000289** IN65-U1Z M12	**6083000290** IN65-A2Z M12	**6083000291** IN65-E2 M12	**6083000292** IN65-UV1Z M12
Snap-action system	**6083000293** IN65-SU1Z M12	**6083000294** IN65-SA2Z M12	**6083000295** IN65-SE2 M12	

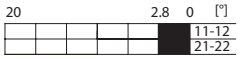
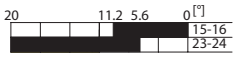
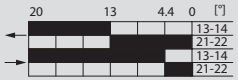
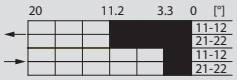
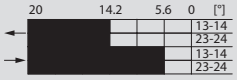


IN62-... SK

	1 NC / 1 NO →	2 NC →	2 NO →	1 NC / 1 NO overlapping →
Slow-action system	**6083000201** IN62-U1Z SK 	**6083000203** IN62-A2Z SK 	**6083000205** IN62-E2 SK 	**6083000206** IN62-UV1Z SK 
Snap-action system	**6083000200** IN62-SU1Z SK 	**6083000202** IN62-SA2Z SK 	**6083000204** IN62-SE2 SK 	

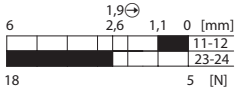
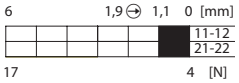
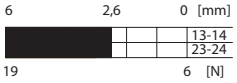
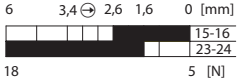
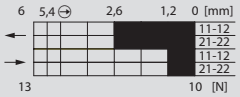
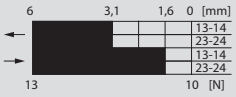


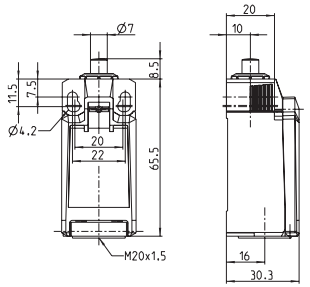
IN62-... FF

	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000362** IN62-U1 FF 	**6083000364** IN62-A2 FF 	**6083000366** IN62-E2 FF 	**6083000367** IN62-UV1 FF 
Snap-action system	**6083000361** IN62-SU1 FF 	**6083000363** IN62-SA2 FF 	**6083000365** IN62-SE2 FF 	

Replacement actuator: 3918052341

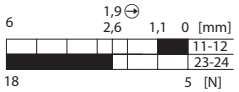
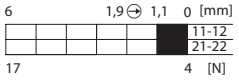
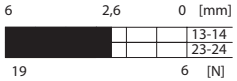
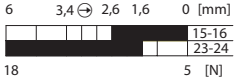
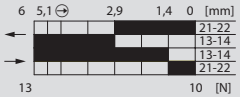
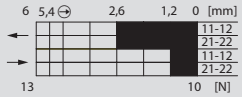
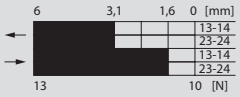
IN65-... SM

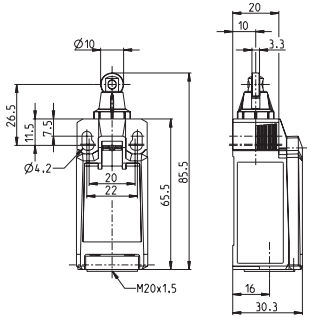
	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000208** IN65-U1Z SM 	**6083000210** IN65-A2Z SM 	**6083000212** IN65-E2 SM 	**6083000213** IN65-UV1Z SM 
Snap-action system	**6083000207** IN65-SU1Z SM 	**6083000209** IN65-SA2Z SM 	**6083000211** IN65-SE2 SM 	

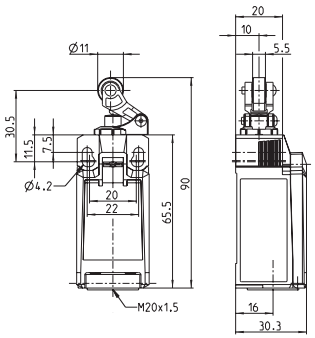


Replacement actuator: 3918172342

IN65-... RK

	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000215** IN65-U1Z RK 	**6083000217** IN65-A2Z RK 	**6083000219** IN65-E2 RK 	**6083000220** IN65-UV1Z R 
Snap-action system	**6083000214** IN65-SU1Z RK 	**6083000216** IN65-SA2Z RK 	**6083000218** IN65-SE2 RK 	

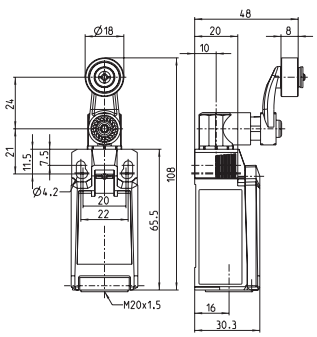




IN65-... HK

Replacement actuator: 3918202343

	1 NC / 1 NO ⇢	2 NC ⇢	2 NO	1 NC / 1 NO overlapping ⇢
Slow-action system	**6083000222** IN65-U1Z HK 2,3⇢ 7,7 3,2 1,3 0 [mm] 11-12 23-24 18 5 [N]	**6083000224** IN65-A2Z HK 7,7 2,3⇢ 1,3 0 [mm] 11-12 21-22 17 4 [N]	**6083000226** IN65-E2 HK 7,7 3,2 0 [mm] 13-14 23-24 19 6 [N]	**6083000227** IN65-UV1Z HK 7,7 4,2⇢ 3,2 1,9 0 [mm] 15-16 23-24 18 5 [N]
Snap-action system	**6083000221** IN65-SU1Z HK 7,7 6,6⇢ 3,6 1,7 0 [mm] 21-22 13-14 13-14 21-22 13 10 [N]	**6083000223** IN65-SA2Z HK 7,7 7⇢ 3,2 1,4 0 [mm] 11-12 21-22 11-12 21-22 13 10 [N]	**6083000225** IN65-SE2 HK 7,7 3,8 1,9 0 [mm] 13-14 23-24 13-14 23-24 13 10 [N]	

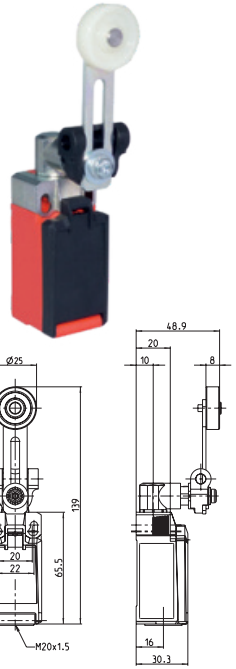


IN65-... AHK

Replacement actuator: 3918352345

	1 NC / 1 NO ⇢	2 NC ⇢	2 NO	1 NC / 1 NO overlapping ⇢
Slow-action system	**6083000236** IN65-U1Z AHK 25,9°⇢ 75,6° 34,8° 15,6° 0° 11-12 23-24 22,7 11,1 9,1 8,9 7,3 [Ncm]	**6083000238** IN65-A2Z AHK 25,9°⇢ 75,6° 15,6° 0° 11-12 21-22 22,7 9,7 8,8 7,1 [Ncm]	**6083000240** IN65-E2 AHK 75,6° 34,8° 0° 13-14 23-24 22,9 11,8 6,9 [Ncm]	**6083000241** IN65-UV1Z AHK 45,1°⇢ 75,6° 34,8° 22° 0° 15-16 23-24 23,5 11,9 10,8 9,1 6,7 [Ncm]
Snap-action system	**6083000235** IN65-SU1Z AHK 66,2°⇢ 75,6° 38,7° 19,5° 0° 21-22 13-14 13-14 21-22 22,7 14,7 11,3 10,7 9,8 [Ncm]	**6083000237** IN65-SA2Z AHK 69,7°⇢ 75,6° 34,8° 17° 0° 11-12 21-22 11-12 21-22 22,5 13,8 11 12,4 8,9 [Ncm]	**6083000239** IN65-SE2 AHK 75,6° 41,2° 22° 0° 13-14 23-24 13-14 23-24 23,2 11,4 11,4 10,5 [Ncm]	

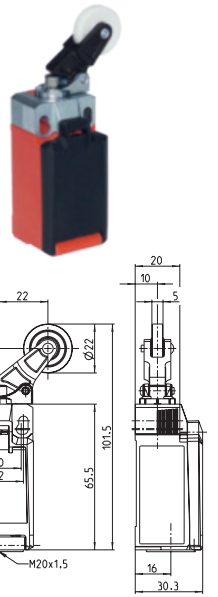
IN65-... AVK



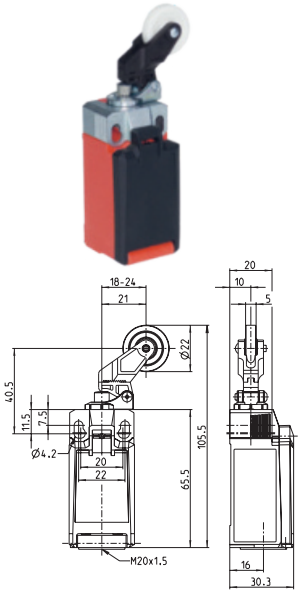
	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000284** IN65-U1 AVK 75,6 ° 34,8 ° 15,6 ° 0 ° 11-12 / 23-24 22,7 11,1 8,9 7,3 [Ncm]	**6083000279** IN65-A2 AVK 75,6 ° 15,6 ° 0 ° 11-12 / 21-22 22,7 8,8 7,1 [Ncm]	**6083000287** IN65-E2 AVK 75,6° 34,8 ° 0 ° 13-14 / 23-24 22,9 11,8 6,9 [Ncm]	**6083000285** IN65-UV1 AVK 75,6 ° 34,8 ° 22 ° 0 ° 15-16 / 23-24 23,5 10,8 9,1 6,7 [Ncm]
Snap-action system	**6083000280** IN65-SU1 AVK 75,6 ° 38,7 ° 19,5 ° 0 ° 21-22 / 13-14 / 13-14 / 21-22 22,7 11,3 10,7 9,8 [Ncm]	**6083000286** IN65-SA2 AVK 75,6 ° 34,8 ° 17 ° 0 ° 11-12 / 21-22 / 11-12 / 21-22 22,5 11 12,4 8,9 [Ncm]	**6083000288** IN65-SE2 AVK 75,6 ° 41,2 ° 22 ° 0 ° 13-14 / 23-24 / 13-14 / 23-24 23,2 11,4 11,4 10,5 [Ncm]	

IN65-... KNK

Replacement actuator: 3918262349



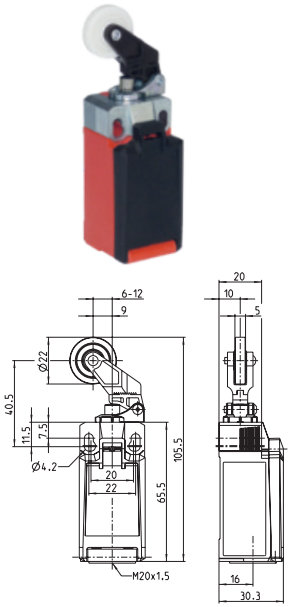
	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000262** IN65-U1Z KNK 3,2 → 10,1 4,4 1,9 0 [mm] 11-12 / 23-24 18 5 [N]	**6083000264** IN65-A2Z KNK 10,1 3,2 → 1,9 0 [mm] 11-12 / 21-22 17 4 [N]	**6083000266** IN65-E2 KNK 10,1 4,4 0 [mm] 13-14 / 23-24 19 6 [N]	**6083000267** IN65-UV1Z KNK 10,1 5,8 → 4,4 2,7 0 [mm] 15-16 / 23-24 18 5 [N]
Snap-action system	**6083000261** IN65-SU1Z KNK 8,7 → 10,1 4,9 2,4 0 [mm] 21-22 / 13-14 / 13-14 / 21-22 13 10 [N]	**6083000263** IN65-SA2Z KNK 9,2 → 10,1 4,4 2,0 0 [mm] 11-12 / 21-22 / 11-12 / 21-22 13 10 [N]	**6083000265** IN65-SE2 KNK 10,1 5,2 2,7 0 [mm] 13-14 / 23-24 / 13-14 / 23-24 13 10 [N]	



IN65-... DGKK

Replacement actuator: 3918202348

	1 NC / 1 NO ⊖	2 NC ⊖	2 NO	1 NC / 1 NO overlapping ⊖
Slow-action system	**6083000255** IN65-U1Z DGKK 3,8⊖ 11,8 5,2 2,2 0 [mm] 11-12 / 23-24 18 5 [N]	**6083000257** IN65-A2Z DGKK 11,8 3,8⊖ 2,2 0 [mm] 11-12 / 21-22 17 4 [N]	**6083000259** IN65-E2 DGKK 11,8 5,2 0 [mm] 13-14 / 23-24 19 6 [N]	**6083000260** IN65-UV1Z DGKK 11,8 6,8⊖ 5,2 3,2 0 [mm] 15-16 / 23-24 18 5 [N]
Snap-action system	**6083000254** IN65-SU1Z DGKK 10,2⊖ 11,8 5,8 2,8 0 [mm] 21-22 / 13-14 / 13-14 / 21-22 13 10 [N]	**6083000256** IN65-SA2Z DGKK 10,4⊖ 11,8 5,2 2,4 0 [mm] 11-12 / 21-22 / 11-12 / 21-22 13 10 [N]	**6083000258** IN65-SE2 DGKK 11,8 6,2 3,2 0 [mm] 13-14 / 23-24 / 13-14 / 23-24 13 10 [N]	



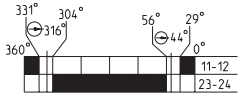
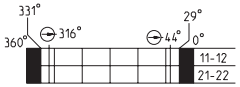
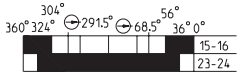
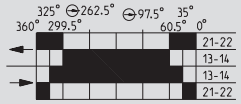
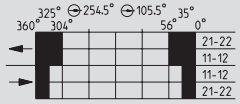
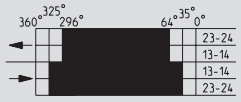
IN65-... DGHK

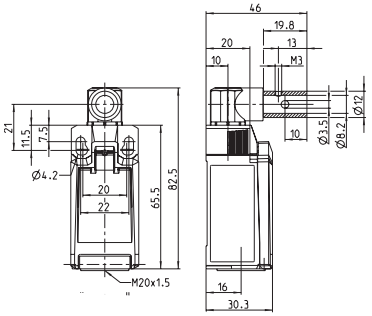
Replacement actuator: 3918202344

	1 NC / 1 NO ⊖	2 NC ⊖	2 NO	1 NC / 1 NO overlapping ⊖
Slow-action system	**6083000229** IN65-U1Z DGHK 3,7⊖ 12,7 5,2 2,1 0 [mm] 11-12 / 23-24 18 5 [N]	**6083000231** IN65-A2Z DGHK 12,7 3,7⊖ 2,1 0 [mm] 11-12 / 21-22 17 4 [N]	**6083000233** IN65-E2 DGHK 12,7 5,2 0 [mm] 13-14 / 23-24 19 6 [N]	**6083000234** IN65-UV1Z DGHK 12,7 6,9⊖ 5,2 3,1 0 [mm] 15-16 / 23-24 18 5 [N]
Snap-action system	**6083000228** IN65-SU1Z DGHK 10,7⊖ 12,7 5,8 2,7 0 [mm] 21-22 / 13-14 / 13-14 / 21-22 13 10 [N]	**6083000230** IN65-SA2Z DGHK 11,4⊖ 12,7 5,2 2,3 0 [mm] 11-12 / 21-22 / 11-12 / 21-22 13 10 [N]	**6083000232** IN65-SE2 DGHK 12,7 6,2 3,1 0 [mm] 13-14 / 23-24 / 13-14 / 23-24 13 10 [N]	

Replacement actuator: 3918352406

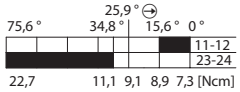
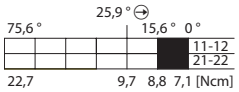
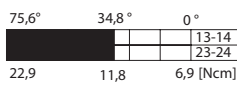
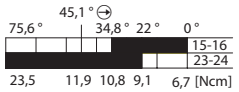
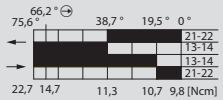
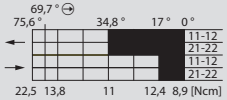
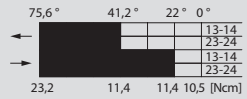
IN65-... AHDB

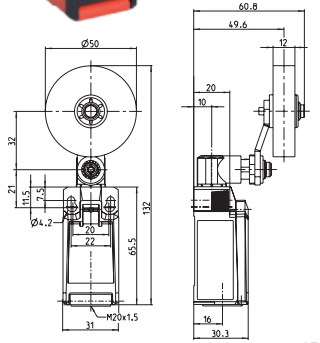
	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000345** IN65-U1Z AHDB 	**6083000347** IN65-A2Z AHDB 	**6083000349** IN65-E2 AHDB 	**6083000350** IN65-UV1Z AHDB 
Snap-action system	**6083000344** IN65-SU1Z AHDB 	**6083000346** IN65-SA2Z AHDB 	**6083000348** IN65-SE2 AHDB 	

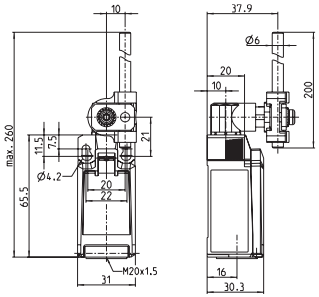


Replacement actuator: 3918352359

IN65-... AHSGU RO50

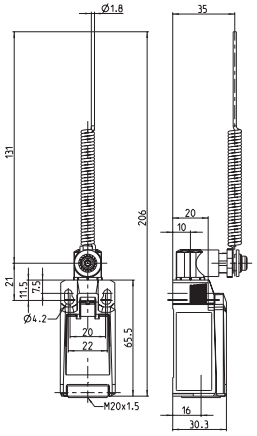
	1 NC / 1 NO →	2 NC →	2 NO	1 NC / 1 NO overlapping →
Slow-action system	**6083000296** IN65-U1Z AHSGU RO50 	**6083000297** IN65-A2Z AHSGU RO50 	**6083000298** IN65-E2 AHSGU RO50 	**6083000299** IN65-UV1Z AHSGU RO50 
Snap-action system	**6083000300** IN65-SU1Z AHSGU RO50 	**6083000301** IN65-SA2Z AHSGU RO50 	**6083000302** IN65-SE2 AHSGU RO50 	





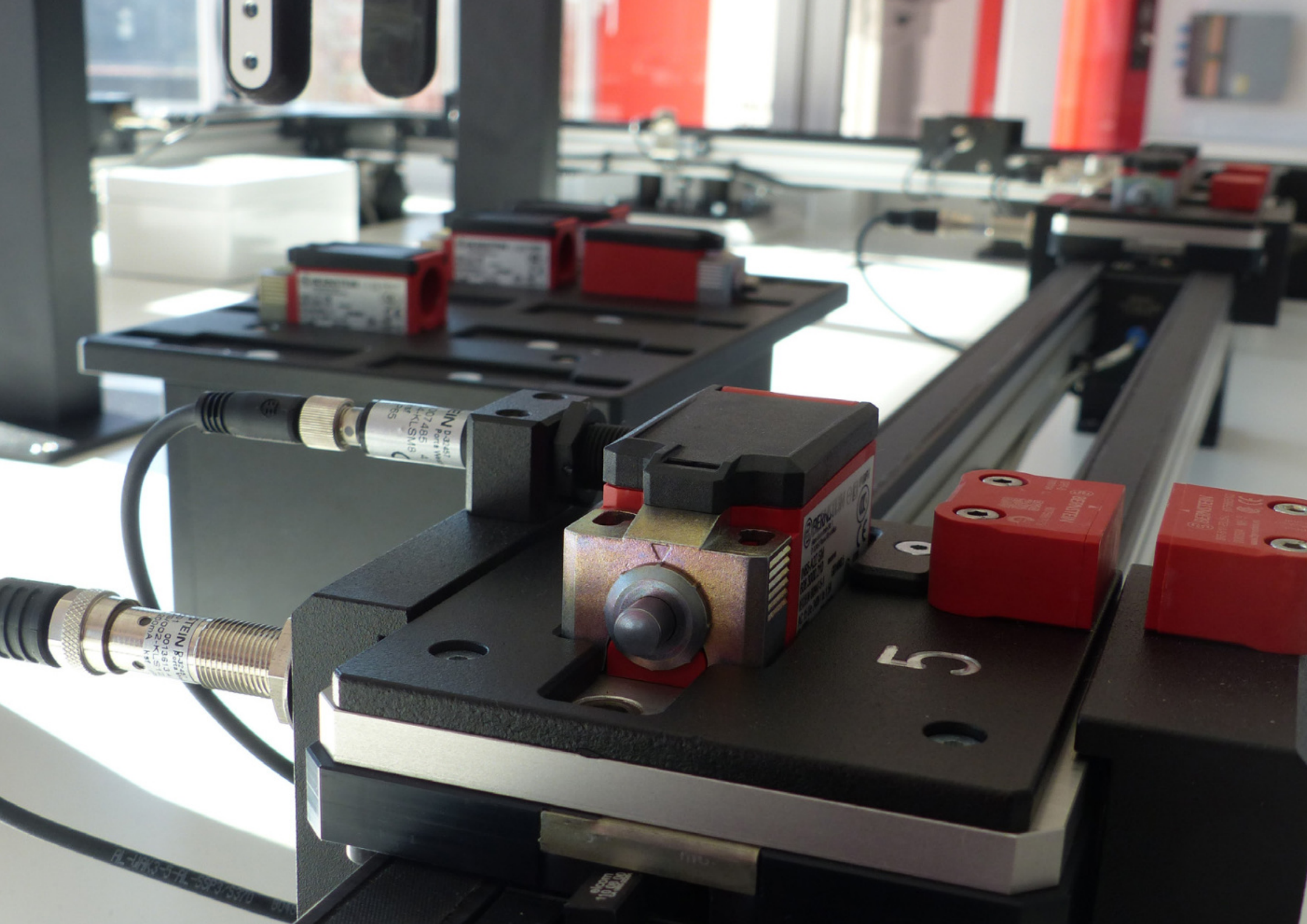
IN65-... AHDM

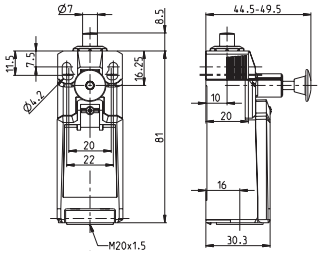
	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6083000303** IN65-U1 AHDM 75,6 ° 34,8 ° 15,6 ° 0 ° 11-12 / 23-24 22,7 11,1 8,9 7,3 [Ncm]	**6083000304** IN65-A2 AHDM 75,6 ° 15,6 ° 0 ° 11-12 / 21-22 22,7 8,8 7,1 [Ncm]	**6083000305** IN65-E2 AHDM 75,6° 34,8 ° 0 ° 13-14 / 23-24 22,9 11,8 6,9 [Ncm]	**6083000306** IN65-UV1 AHDM 75,6 ° 34,8 ° 22 ° 0 ° 15-16 / 23-24 23,5 10,8 9,1 6,7 [Ncm]
Snap-action system	**6083000307** IN65-SU1 AHDM 75,6 ° 38,7 ° 19,5 ° 0 ° 21-22 / 13-14 / 13-14 / 21-22 22,7 11,3 10,7 9,8 [Ncm]	**6083000308** IN65-SA2 AHDM 75,6 ° 34,8 ° 17 ° 0 ° 11-12 / 21-22 / 11-12 / 21-22 22,5 11 12,4 8,9 [Ncm]	**6083000309** IN65-SE2 AHDM 75,6 ° 41,2 ° 22 ° 0 ° 13-14 / 23-24 / 13-14 / 23-24 23,2 11,4 11,4 10,5 [Ncm]	



IN65-... AF

	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6083000338** IN65-U1 AF 75,6 ° 34,8 ° 15,6 ° 0 ° 11-12 / 23-24 22,7 11,1 8,9 7,3 [Ncm]	**6083000340** IN65-A2 AF 75,6 ° 15,6 ° 0 ° 11-12 / 21-22 22,7 8,8 7,1 [Ncm]	**6083000342** IN65-E2 AF 75,6° 34,8 ° 0 ° 13-14 / 23-24 22,9 11,8 6,9 [Ncm]	**6083000343** IN65-UV1 AF 75,6 ° 34,8 ° 22 ° 0 ° 15-16 / 23-24 23,5 10,8 9,1 6,7 [Ncm]
Snap-action system	**6083000337** IN65-SU1 AF 75,6 ° 38,7 ° 19,5 ° 0 ° 21-22 / 13-14 / 13-14 / 21-22 22,7 11,3 10,7 9,8 [Ncm]	**6083000339** IN65-SA2 AF 75,6 ° 34,8 ° 17 ° 0 ° 11-12 / 21-22 / 11-12 / 21-22 22,5 11 12,4 8,9 [Ncm]	**6083000341** IN65-SE2 AF 75,6 ° 41,2 ° 22 ° 0 ° 13-14 / 23-24 / 13-14 / 23-24 23,2 11,4 11,4 10,5 [Ncm]	



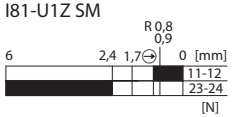


I81-... SM

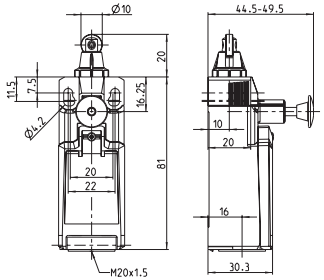
1 NC / 1 NO

Slow-action system

6083000242
I81-U1Z SM



Replacement actuator: 3918052341

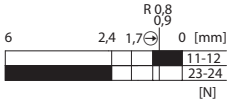


I81-... RK

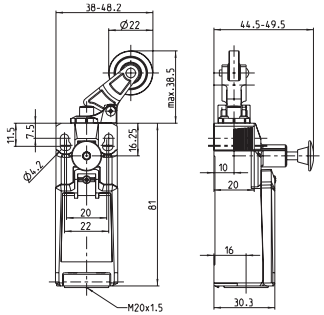
1 NC / 1 NO

Slow-action system

6083000243
I81-U1Z RK



Replacement actuator: 3918172342

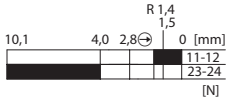


I81-... KNK

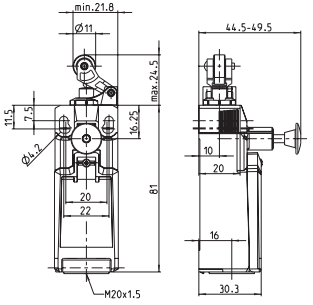
1 NC / 1 NO

Slow-action system

6083000269
I81-U1Z KNK



Replacement actuator: 3918262349

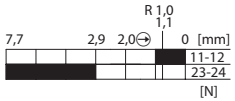


I81-... HK

1 NC / 1 NO

Slow-action system

6083000244
I81-U1Z HK



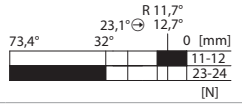
Replacement actuator: 3918202343

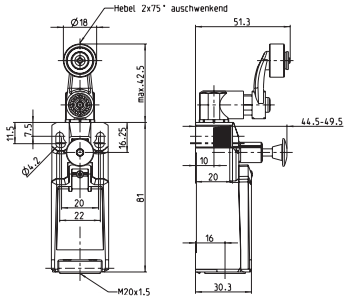
I81-... AHK

1 NC / 1 NO

Slow-action system

6083000246
I81-U1Z AHK





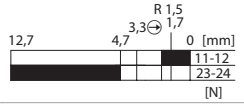
Replacement actuator: 3918352345

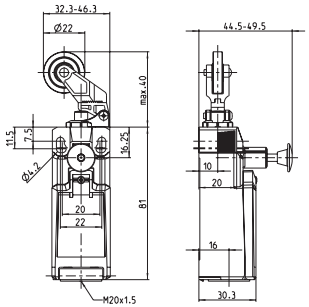
I81-... DGHK

1 NC / 1 NO

Slow-action system

6083000245
I81-U1Z DGHK





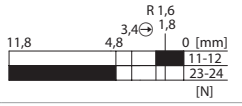
Replacement actuator: 3918202344

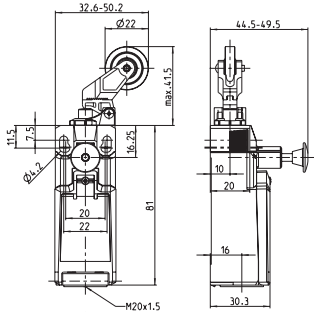
I81-... DGKK

1 NC / 1 NO

Slow-action system

6083000268
I81-U1Z DGKK





Replacement actuator: 3918202348

Plastic enclosures

Position switches Plastic IN73

NEW

2 OR 4 CONTACTS

Good to know …

Our new standard switch, the IN73, is the latest in our ENK-series. It offers a modular, robust enclosure and a wide range of actuators made of metal. In mechanical and plant engineering, it is used as a position and safety switch in rough environments as it features additional fixing holes to achieve a better installation.

The “big brother” of the IN65, it has a similar modular design, however there is an important difference: Whereas the C14 switch insert (introduced on page 37) has 2 contacts, the IN73 can be equipped with the C17 switch insert with 4 contacts.

The modular design and the easy way to change the actuator allows for a great variety of applications, for example for monitoring doors, hoods, and flaps, or for detecting the position of moving machine parts. The IN73 is as cost effective as a plastic enclosed switch, robust to install like a metal switch, and clever due to its modular design and easy to change actuators.

Technical design

- Slow- and snap-action
- **Versions:**
  With C14 switch insert: 2 NC, 2 NO, 1 NC/1 NO
  With C17 switch insert: 4 NO, 4 NC, 2 NO/2 NC
  1 NC/3 NO and 3 NC/1 NO

Technical data

Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current	(up to) I_{the}	5 A
Rated operating voltage	U_e max.	240 V AC
Utilisation category (up to)		AC-15, U_e/I_e 240 V/3 A DC-13 U_e/I_e 24 V/1.5 A
Short-circuit protection (up to)		Safety fuse 4 A gG
Protection class		II, protective insulation
Mechanical data		
Enclosure/Cover material	Thermoplastics, glass-fibre reinforced (UL 94-V0)	
Ambient temperature	–30 °C to +75 °C	
Mechanical lifetime (up to)	10×10^6 switching cycles	
B10d NC Contact cycles (up to) B10d NO Contact cycles (up to)	20 million 1 million	
Switching frequency	≤ 60/min.	
Type of connection	4 screwed connections (M3)	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm² or strand with wire-end ferrule 0.5 – 1.5 mm²	
Cable entry	1 × M20 × 1.5	
Protection class	IP66/IP67 according to EN 60529; DIN VDE 0470 T1	
Standards		
VDE 0660 T211, DIN EN 60947-5-4, IEC 60947-5-4 DIN EN ISO 13849-1, DIN EN ISO 13849-2		

① Depending on switching system

Product characteristics

- High reliability at low currents (1 mA/24 VDC)
- Up to 4 contacts
- Actuator and installation collar with mounting holes made of metal
- Easy turning (8 x 45°) and changing of the actuators without a tool
- Standard switch and standard actuator according to DIN EN 50041
- Protection class IP66 and IP67 according to EN 60529

Options

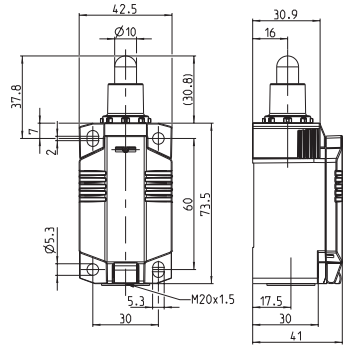
- Available with an M12 connector
- On request, available with customised cables and connectors

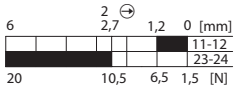
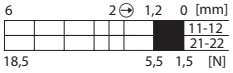
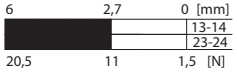
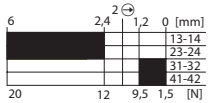
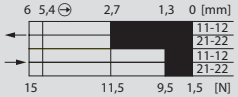
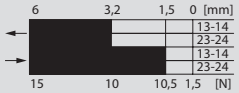
Mounting

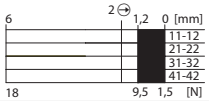
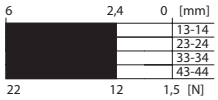
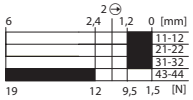
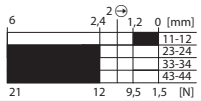
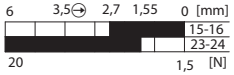
- 2 oval holes for adjustment for M5 screws
- 2 round holes for M5 screws for fixing when used for safety applications

IN73-... SM

Replacement actuator: 3918022415

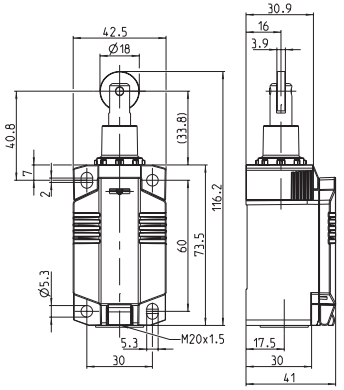


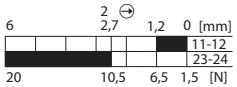
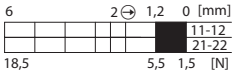
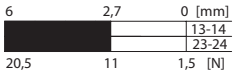
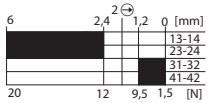
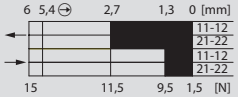
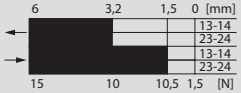
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000002** IN73-11 SM 	**6081000004** IN73-20 SM 	**6081000006** IN73-02 SM 	**6081000008** IN73-22 SM 
Snap-action system	**6081000001** IN73-S11 SM 	**6081000003** IN73-S20 SM 	**6081000005** IN73-S02 SM 	

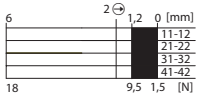
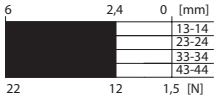
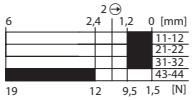
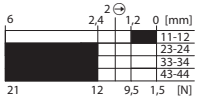
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000009** IN73-40 SM 	**6081000010** IN73-04 SM 	**6081000011** IN73-31 SM 	**6081000012** IN73-13 SM 	**6081000007** IN73-V11 SM 

Replacement actuator: 3918172417

IN73-... RM

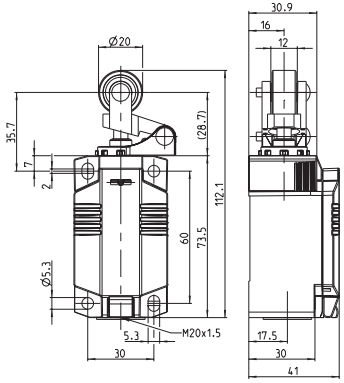


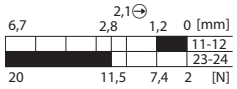
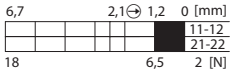
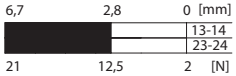
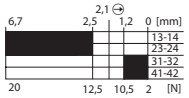
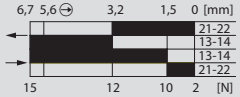
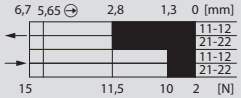
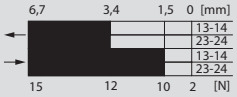
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000014** IN73-11 RM 	**6081000016** IN73-20 RM 	**6081000018** IN73-02 RM 	**6081000020** IN73-22 RM 
Snap-action system	**6081000013** IN73-S11 RM 	**6081000015** IN73-S20 RM 	**6081000017** IN73-S02 RM 	

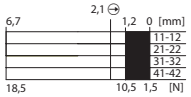
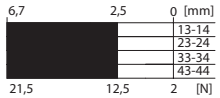
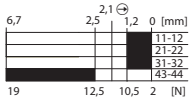
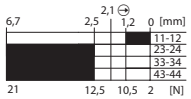
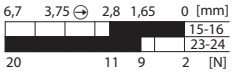
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000021** IN73-40 RM 	**6081000022** IN73-04 RM 	**6081000023** IN73-31 RM 	**6081000024** IN73-13 RM 	**6081000019** IN73-V11 RM 

IN73-... HK

Replacement actuator: 3918202432

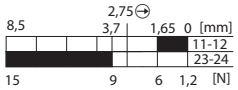
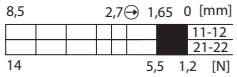
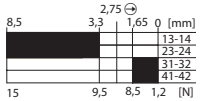
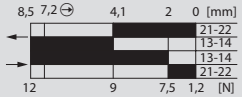
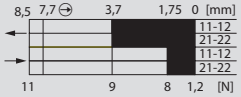
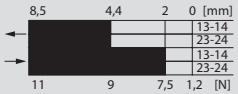


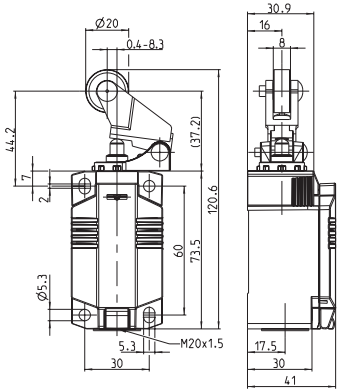
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000026** IN73-11 HK 	**6081000028** IN73-20 HK 	**6081000030** IN73-02 HK 	**6081000032** IN73-22 HK 
Snap-action system	**6081000025** IN73-S11 HK 	**6081000027** IN73-S20 HK 	**6081000029** IN73-S02 HK 	

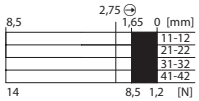
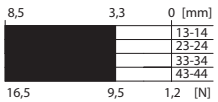
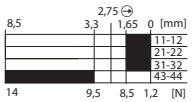
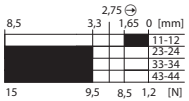
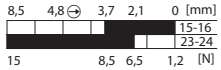
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000033** IN73-40 HK 	**6081000034** IN73-04 HK 	**6081000035** IN73-31 HK 	**6081000036** IN73-13 HK 	**6081000031** IN73-V11 HK 

Replacement actuator: 3918202428

IN73-... DGHK

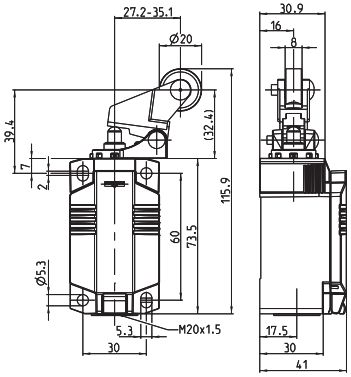
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000038** IN73-11 DGHK 	**6081000040** IN73-20 DGHK 	**6081000042** IN73-02 DGHK 	**6081000044** IN73-22 DGHK 
Snap-action system	**6081000037** IN73-S11 DGHK 	**6081000039** IN73-S20 DGHK 	**6081000041** IN73-S02 DGHK 	

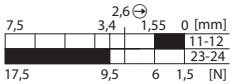
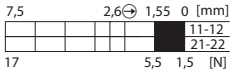
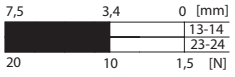
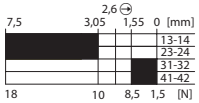
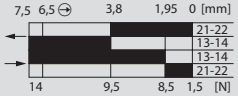
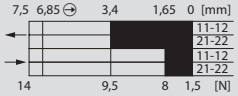
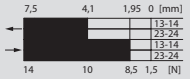


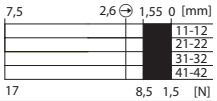
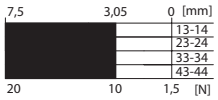
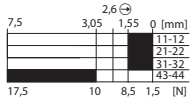
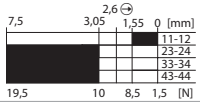
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000045** IN73-40 DGHK 	**6081000046** IN73-04 DGHK 	**6081000047** IN73-31 DGHK 	**6081000048** IN73-13 DGHK 	**6081000043** IN73-V11 DGHK 

IN73-... DGKK

Replacement actuator: 3918202430

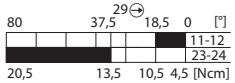
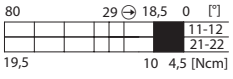
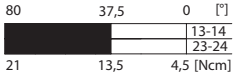
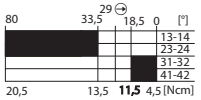
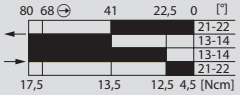
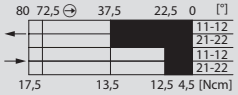
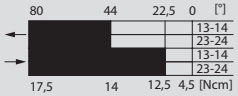


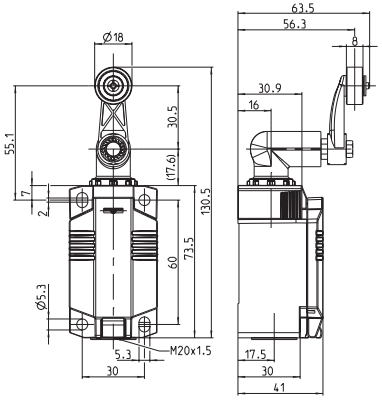
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000050** IN73-11 DGKK 	**6081000052** IN73-20 DGKK 	**6081000054** IN73-02 DGKK 	**6081000056** IN73-22 DGKK 
Snap-action system	**6081000049** IN73-S11 DGKK 	**6081000051** IN73-S20 DGKK 	**6081000053** IN73-S02 DGKK 	

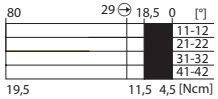
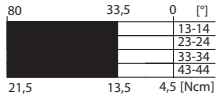
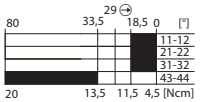
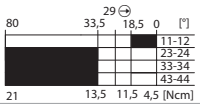
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000057** IN73-40 DGKK 	**6081000058** IN73-04 DGKK 	**6081000059** IN73-31 DGKK 	**6081000060** IN73-13 DGKK 	**6081000055** IN73-V11 DGKK 

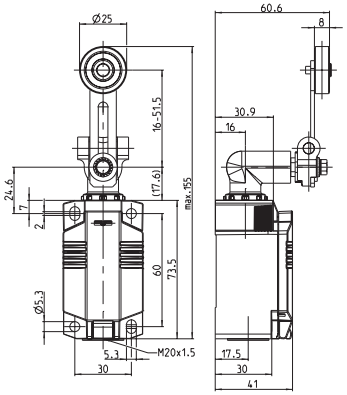
Replacement actuator: 3918352393

IN73-... AHK

	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000062** IN73-11 AHK 	**6081000064** IN73-20 AHK 	**6081000066** IN73-02 AHK 	**6081000068** IN73-22 AHK 
Snap-action system	**6081000061** IN73-S11 AHK 	**6081000063** IN73-S20 AHK 	**6081000065** IN73-S02 AHK 	

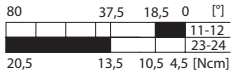
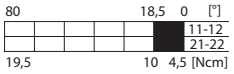
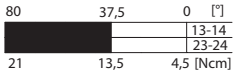
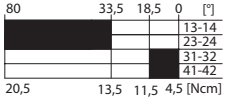
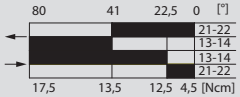
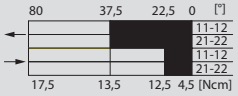
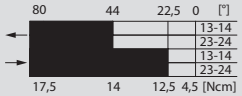


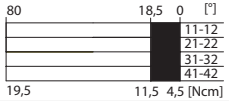
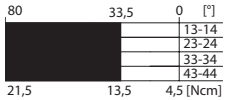
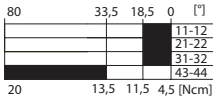
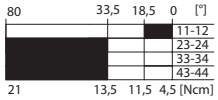
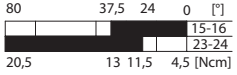
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000069** IN73-40 AHK 	**6081000070** IN73-04 AHK 	**6081000071** IN73-31 AHK 	**6081000072** IN73-13 AHK 	**6081000067** IN73-V11 AHK 



IN73-... AVK

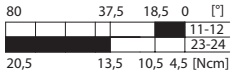
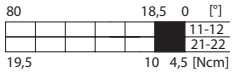
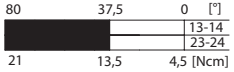
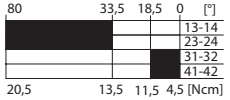
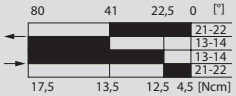
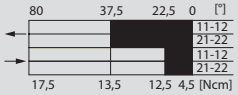
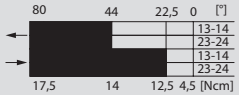
Replacement actuator: 3918362424

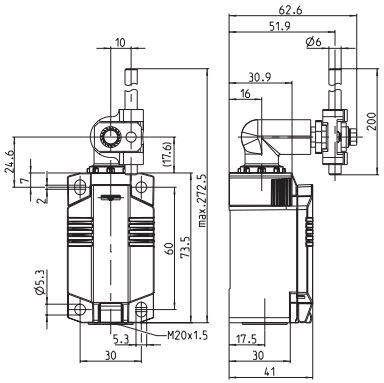
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000074** IN73-11 AVK 	**6081000076** IN73-20 AVK 	**6081000078** IN73-02 AVK 	**6081000080** IN73-22 AVK 
Snap-action system	**6081000073** IN73-S11 AVK 	**6081000075** IN73-S20 AVK 	**6081000077** IN73-S02 AVK 	

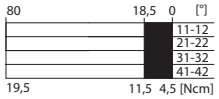
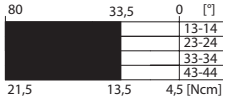
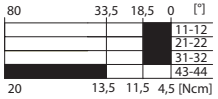
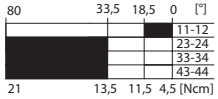
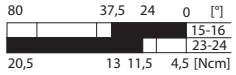
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000081** IN73-40 AVK 	**6081000082** IN73-04 AVK 	**6081000083** IN73-31 AVK 	**6081000084** IN73-13 AVK 	**6081000079** IN73-V11 AVK 

Replacement actuator: 3918372421

IN73-... AHDM

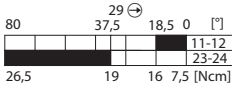
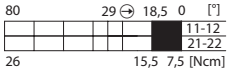
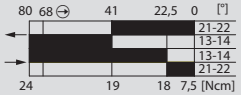
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6081000086** IN73-11 AHDM 	**6081000088** IN73-20 AHDM 	**6081000090** IN73-02 AHDM 	**6081000092** IN73-22 AHDM 
Snap-action system	**6081000085** IN73-S11 AHDM 	**6081000087** IN73-S20 AHDM 	**6081000089** IN73-S02 AHDM 	

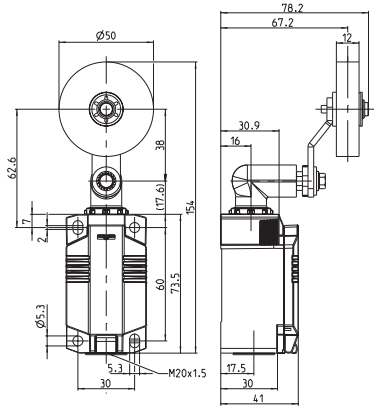


	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6081000093** IN73-40 AHDM 	**6081000094** IN73-04 AHDM 	**6081000095** IN73-31 AHDM 	**6081000096** IN73-13 AHDM 	**6081000091** IN73-V11 AHDM 

IN73-... AHGU RO50

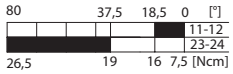
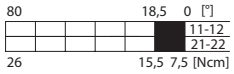
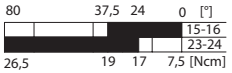
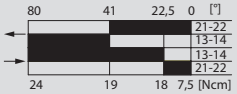
Replacement actuator: 3918352422

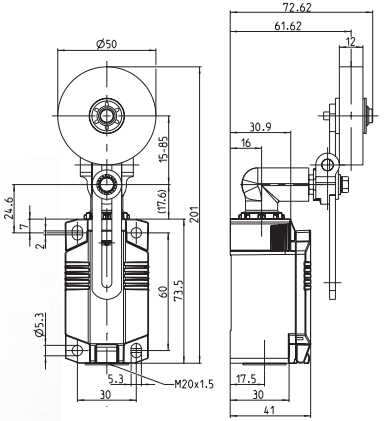
	1 NC / 1 NO	2 NC	1 NC / 1 NO overlapping
Slow-action system	**6081000109** IN73-11 AHGU Ro50 	**6081000110** IN73-20 AHGU Ro50 	**6081000111** IN73-V11 AHGU Ro50 
Snap-action system	**6081000108** IN73-S11 AHGU Ro50 		



IN73-... AVGU RO50

Replacement actuator: 3918362423

	1 NC / 1 NO	2 NC	1 NC / 1 NO overlapping
Slow-action system	**6081000105** IN73-11 AVGU Ro50 	**6081000106** IN73-20 AVGU Ro50 	**6081000107** IN73-V11 AVGU Ro50 
Snap-action system	**6081000104** IN73-S11 AVGU Ro50 		



Metal enclosures

Position switches Metal M49

NEW

Product characteristics

- Flat and compact design
- Pre-installed connecting cable (1m length) for quick and easy installation
- Top-mounting versions available
- Cable or M12-connector outlet on the side or at the bottom
- High protection class IP67
- Suitable for safety applications according to DIN EN 60947-5-1 (positive break)

Good to know …

Due to the space-saving enclosures and the high protection class IP67 the position switches of the M49 series are perfect for an installation where a flat design and a high protection class of IP67 is required. The switches are often used for the monitoring of covers and inspection doors, for position monitoring applications and similar applications. The high protection class allows outdoor applications.

Options

- Different cable lengths are available on request

Technical design

- Slow- and snap action
- **Versions:** 1 NC / 1 NO, 2 NC, 2 NO, 2 NC / 2 NO

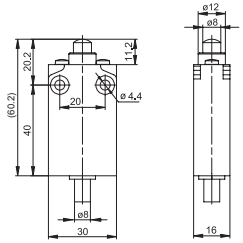
Technical data

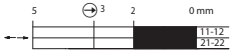
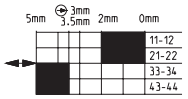
Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category		AC-15; 24 V / 10 A; 240 V / 3 A
Protection class		II, protective insulation
Mechanical data		
Ambient temperature	–25 °C to +70 °C (connecting cable firmly wired)	
Mechanical lifetime	10 x 10^6 switching cycles	
Switching frequency	≤ 60/min.	
Type of connection	Cable 4 x 0.75 mm²	
Protection class	IP67 conforming to IEC/EN 60529	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

Application examples

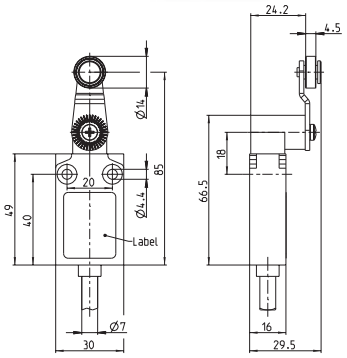
- Position monitoring of moving parts
- Object detection in conveying technology
- End position control of components
- Position monitoring on rolling doors
- Monitoring of sliding doors

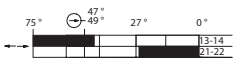
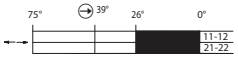
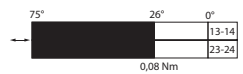
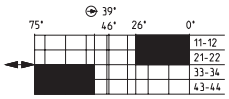
M49-... IW



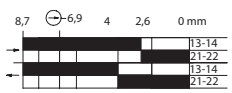
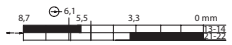
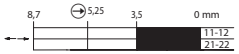
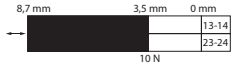
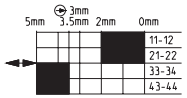
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000001** M49-SU1Z IW	**6023000003** M49-U1Z IW	**6023000005** M49-A2Z IW	**6023000007** M49-E2 IW	**6023000009** M49-U2Z IW
Cable outlet below	**6023000002** M49-SU1Z IW Z	**6023000004** M49-U1Z IW Z	**6023000006** M49-A2Z IW Z	**6023000008** M49-E2 IW Z	**6023000010** M49-U2Z IW Z
M12 connector right	**6023000011** M49-SU1Z IW M12	**6023000013** M49-U1Z IW M12	**6023000015** M49-A2Z IW M12	**6023000017** M49-E2 IW M12	
M12 connector below	**6023000012** M49-SU1Z IW Z M12	**6023000014** M49-U1Z IW Z M12	**6023000016** M49-A2Z IW Z M12	**6023000018** M49-E2 IW Z M12	

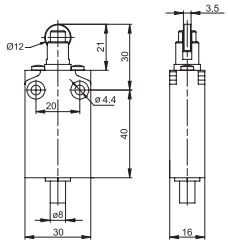
M49-... AH



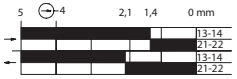
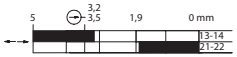
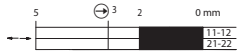
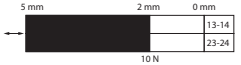
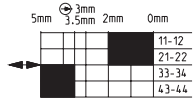
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000073** M49-SU1Z AH	**6023000075** M49-U1Z AH	**6023000077** M49-A2Z AH	**6023000079** M49-E2 AH	**6023000081** M49-U2Z AH
Cable outlet below	**6023000074** M49-SU1Z AH Z	**6023000076** M49-U1Z AH Z	**6023000078** M49-A2Z AH Z	**6023000080** M49-E2 AH Z	**6023000082** M49-U2Z AH Z
M12 connector right	**6023000083** M49-SU1Z AH M12	**6023000085** M49-U1Z AH M12	**6023000087** M49-A2Z AH M12	**6023000089** M49-E2 AH M12	
M12 connector below	**6023000084** M49-SU1Z AH Z M12	**6023000086** M49-U1Z AH Z M12	**6023000088** M49-A2Z AH Z M12	**6023000090** M49-E2 AH Z M12	

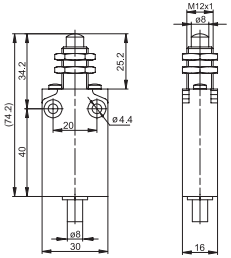
M49-... RIW

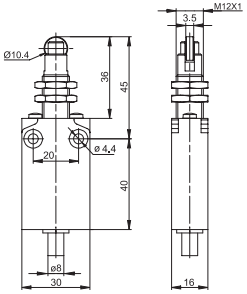
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000019** M49-SU1Z RIW	**6023000021** M49-U1Z RIW	**6023000023** M49-A2Z RIW	**6023000025** M49-E2 RIW	**6023000027** M49-U2Z RIW
Cable outlet below	**6023000020** M49-SU1Z RIW Z	**6023000022** M49-U1Z RIW Z	**6023000024** M49-A2Z RIW Z	**6023000026** M49-E2 RIW Z	**6023000028** M49-U2Z RIW Z
M12 connector right	**6023000029** M49-SU1Z RIW M12	**6023000031** M49-U1Z RIW M12	**6023000033** M49-A2Z RIW M12	**6023000035** M49-E2 RIW M12	
M12 connector below	**6023000030** M49-SU1Z RIW Z M12	**6023000032** M49-U1Z RIW Z M12	**6023000034** M49-A2Z RIW Z M12	**6023000036** M49-E2 RIW Z M12	



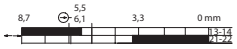
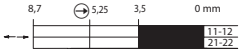
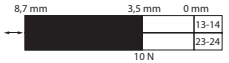
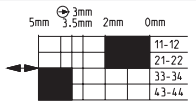
M49-... IWF

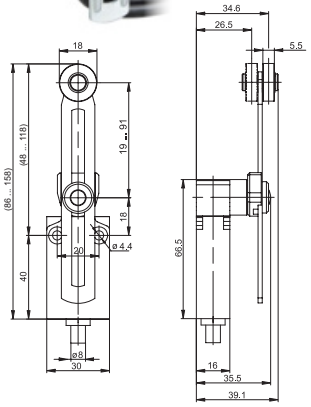
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000037** M49-SU1Z IWF	**6023000039** M49-U1Z IWF	**6023000041** M49-A2Z IWF	**6023000043** M49-E2 IWF	**6023000045** M49-U2Z IWF
Cable outlet below	**6023000038** M49-SU1Z IWF Z	**6023000040** M49-U1Z IWF Z	**6023000042** M49-A2Z IWF Z	**6023000044** M49-E2 IWF Z	**6023000046** M49-U2Z IWF Z
M12 connector right	**6023000047** M49-SU1Z IWF M12	**6023000049** M49-U1Z IWF M12	**6023000051** M49-A2Z IWF M12	**6023000053** M49-E2 IWF M12	
M12 connector below	**6023000048** M49-SU1Z IWF Z M12	**6023000050** M49-U1Z IWF Z M12	**6023000052** M49-A2Z IWF Z M12	**6023000054** M49-E2 IWF Z M12	



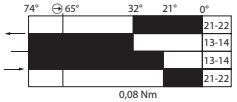
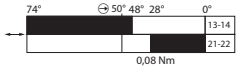
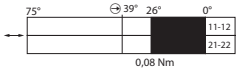
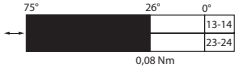
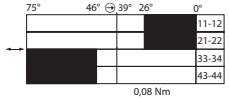


M49-... RIWF

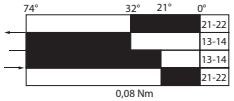
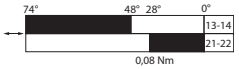
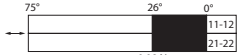
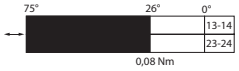
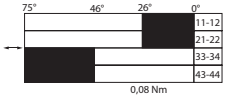
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000055** M49-SU1Z RIWF	**6023000057** M49-U1Z RIWF	**6023000059** M49-A2Z RIWF	**6023000061** M49-E2 RIWF	**6023000063** M49-U2Z RIWF
Cable outlet below	**6023000056** M49-SU1Z RIWF Z	**6023000058** M49-U1Z RIWF Z	**6023000060** M49-A2Z RIWF Z	**6023000062** M49-E2 RIWF Z	**6023000064** M49-U2Z RIWF Z
M12 connector right	**6023000065** M49-SU1Z RIWF M12	**6023000067** M49-U1Z RIWF M12	**6023000069** M49-A2Z RIWF M12	**6023000071** M49-E2 RIWF M12	
M12 connector below	**6023000066** M49-SU1Z RIWF Z M12	**6023000068** M49-U1Z RIWF Z M12	**6023000070** M49-A2Z RIWF Z M12	**6023000072** M49-E2 RIWF Z M12	

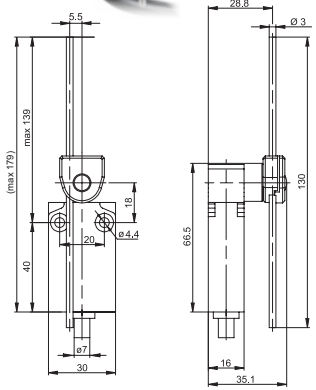


M49-... AV

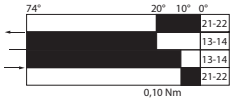
	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000091** M49-SU1 AV	**6023000093** M49-U1 AV	**6023000095** M49-A2 AV	**6023000097** M49-E2 AV	**6023000099** M49-U2 AV
Cable outlet below	**6023000092** M49-SU1 AV Z	**6023000094** M49-U1 AV Z	**6023000096** M49-A2 AV Z	**6023000098** M49-E2 AV Z	**6023000100** M49-U2 AV Z
M12 connector right	**6023000101** M49-SU1 AV M12	**6023000103** M49-U1 AV M12	**6023000105** M49-A2 AV M12	**6023000107** M49-E2 AV M12	
M12 connector below	**6023000102** M49-SU1 AV Z M12	**6023000104** M49-U1 AV Z M12	**6023000106** M49-A2 AV Z M12	**6023000108** M49-E2 AV Z M12	

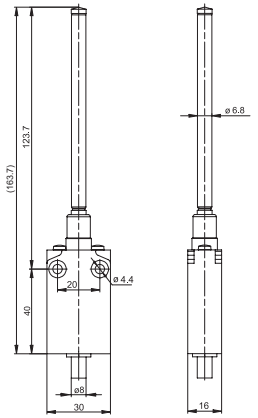
M49-... AD

	1 NC / 1 NO Snap-action	1 NC / 1 NO Slow-action	2 NC Slow-action	2 NO Slow-action	2 NC / 2 NO Slow-action
Switching diagram					
Cable outlet right	**6023000113** M49-SU1 AD	**6023000115** M49-U1 AD	**6023000117** M49-A2 AD	**6023000119** M49-E2 AD	**6023000121** M49-U2 AD
Cable outlet below	**6023000114** M49-SU1 AD Z	**6023000116** M49-U1 AD Z	**6023000118** M49-A2 AD Z	**6023000120** M49-E2 AD Z	**6023000122** M49-U2 AD Z
M12 connector right	**6023000123** M49-SU1 AD M12	**6023000125** M49-U1 AD M12	**6023000127** M49-A2 AD M12	**6023000129** M49-E2 AD M12	
M12 connector below	**6023000124** M49-SU1 AD Z M12	**6023000126** M49-U1 AD Z M12	**6023000128** M49-A2 AD Z M12	**6023000130** M49-E2 AD Z M12	



M49-... FF

	1 NC / 1 NO Snap-action
Switching diagram	
Cable outlet right	**6023000109** M49-SU1 FF
Cable outlet below	**6023000110** M49-SU1 FF Z
M12 connector right	**6023000111** M49-SU1 FF M12
M12 connector below	**6023000112** M49-SU1 FF Z M12



Metal enclosure

Position switches Metal MN78

NEW

2 OR 4 CONTACTS

Product characteristics

- Standard switch according to DIN EN 50041, standard actuator according to DIN EN 50041
- Protection class IP66 and IP67 conforming to EN 60529
- Enclosure: Die-cast aluminium
- Cover: Aluminium
- Actuator rotatable by 8 × 45°
- Cable entry M20 × 1.5

Good to know …

The MN78 is the metal version of the IN73 and designed for the use in very rough environments. A modular, robust metal enclosure with a wide range of Metalast actuators. Just as with the IN73, the MN78 offers additional fixing holes for safe installation.

It can be equipped with the C14 or C17 switch insert (2 contacts or 4 contacts).

Rough environments, outdoor areas, or high mechanical loads are all no problem for the MN78.

Technical design

- Slow- and snap action
- **Versions:**
  With C14 switch insert: 2 NC, 2 NO, 1 NC/1 NO
  With C17 switch insert: 4 NO, 4 NC, 2 NO/2 NC
  1 NC/3 NO and 3 NC/1 NO

Technical data

Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current	(up to) I_{the}	5 A
Rated operating voltage	U_e max.	240 V AC/24 V DC
Utilisation category (up to)		AC-15, U_e/I_e 240 V/3 A DC-13 U_e/I_e 24 V/1.5 A (B300 Table A.1)
Short circuit protection (up to)		Safety fuse 4 A gG
Protection class		II, protective insulation
Mechanical data		
Enclosure material	Metal, glass-fibre reinforced (UL 94-V0)	
Ambient temperature	–30 °C to +75 °C	
Mechanical lifetime (up to)	30×10^6 switching cycles	
B10d NC Contact cycles (up to) B10d NO Contact cycles (up to)	20 million 1 million	
Switching frequency	≤ 60/min.	
Type of connection	4 screwed connections (M3)	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm^2 or strand with wire-end ferrule 0.5 – 1.5 mm^2	
Cable entry	1 × M20 × 1.5	
Protection class	IP66/IP67 according to EN 60529; DIN VDE 0470 T1	
Standards		
VDE 0660 T211, DIN EN 60947-5-4, IEC 60947-5-4 DIN EN ISO 13849-1, DIN EN ISO 13849-2		

① Depending on switching system

Options

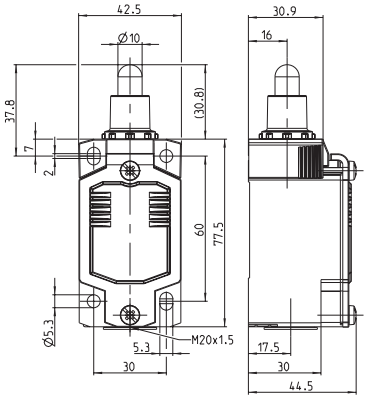
- Available with M12 connector
- Customised cables and connectors are available on request

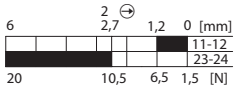
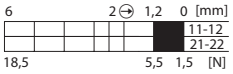
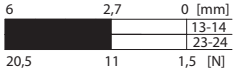
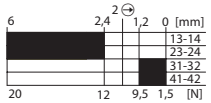
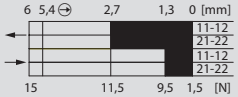
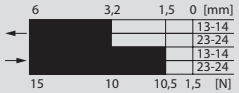
Mounting

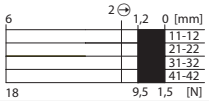
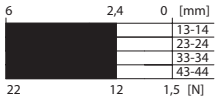
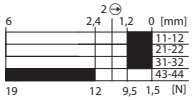
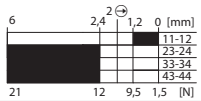
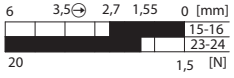
- 2 screws M5, adjustment with oval holes
- 2 screws M5 for safety applications without additional fixation required

MN78-... SM

Replacement actuator: 3918022415

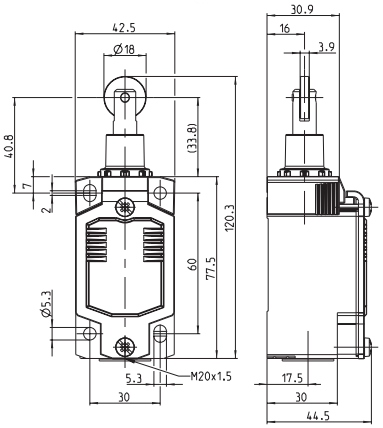


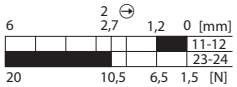
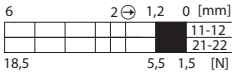
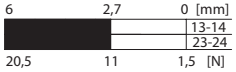
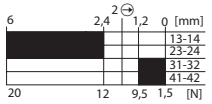
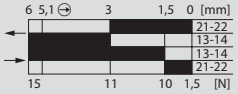
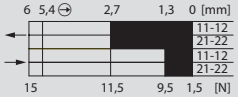
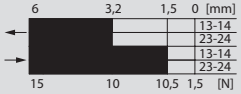
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000002** MN78-11 SM 	**6087000004** MN78-20 SM 	**6087000006** MN78-02 SM 	**6087000008** MN78-22 SM 
Snap-action system	**6087000001** MN78-S11 SM 	**6087000003** MN78-S20 SM 	**6087000005** MN78-S02 SM 	

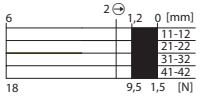
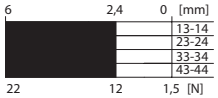
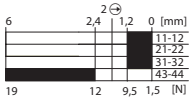
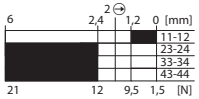
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000009** MN78-40 SM 	**6087000010** MN78-04 SM 	**6087000011** MN78-31 SM 	**6087000012** MN78-13 SM 	**6087000007** MN78-V11 SM 

Replacement actuator: 3918172417

MN78-... RM

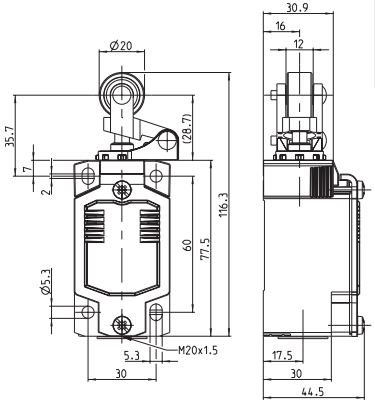


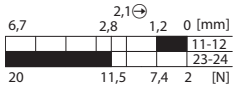
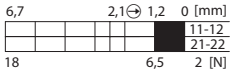
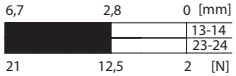
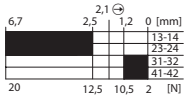
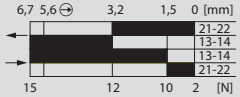
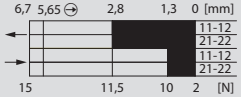
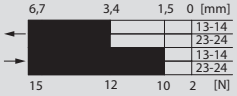
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000014** MN78-11 RM 	**6087000016** MN78-20 RM 	**6087000018** MN78-02 RM 	**6087000020** MN78-22 RM 
Snap-action system	**6087000013** MN78-S11 RM 	**6087000015** MN78-S20 RM 	**6087000017** MN78-S02 RM 	

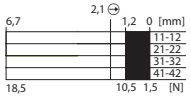
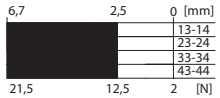
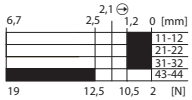
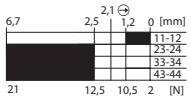
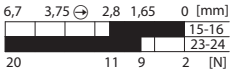
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000021** MN78-40 RM 	**6087000022** MN78-04 RM 	**6087000023** MN78-31 RM 	**6087000024** MN78-13 RM 	**6087000019** MN78-V11 RM 

MN78-... HK

Replacement actuator: 3918202432

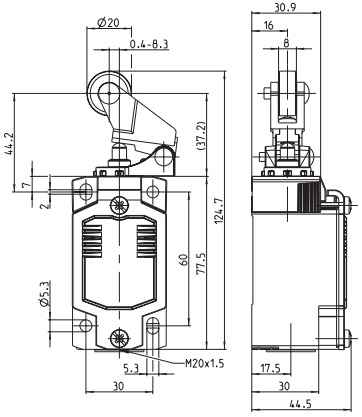


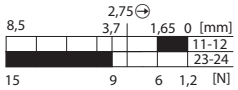
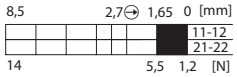
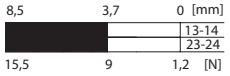
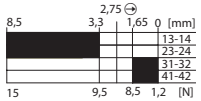
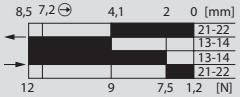
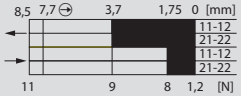
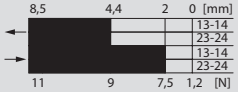
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000026** MN78-11 HK 	**6087000028** MN78-20 HK 	**6087000030** MN78-02 HK 	**6087000032** MN78-22 HK 
Snap-action system	**6087000025** MN78-S11 HK 	**6087000027** MN78-S20 HK 	**6087000029** MN78-S02 HK 	

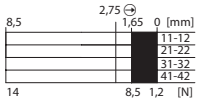
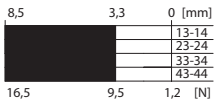
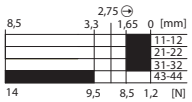
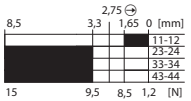
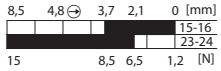
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000033** MN78-40 HK 	**6087000034** MN78-04 HK 	**6087000035** MN78-31 HK 	**6087000036** MN78-13 HK 	**6087000031** MN78-V11 HK 

Replacement actuator: 3918202428

MN78-... DGHK

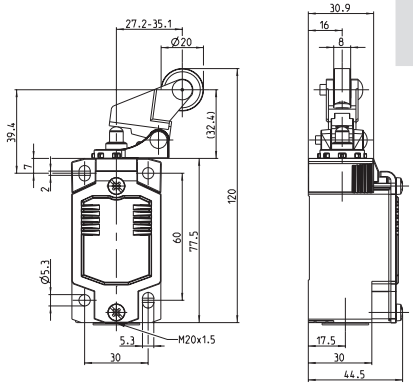


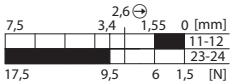
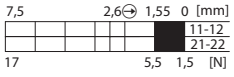
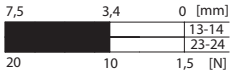
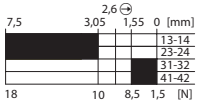
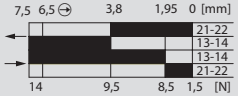
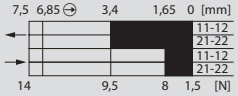
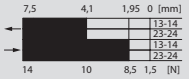
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000038** MN78-11 DGHK 	**6087000040** MN78-20 DGHK 	**6087000042** MN78-02 DGHK 	**6087000044** MN78-22 DGHK 
Snap-action system	**6087000037** MN78-S11 DGHK 	**6087000039** MN78-S20 DGHK 	**6087000041** MN78-S02 DGHK 	

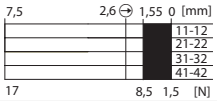
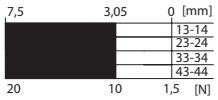
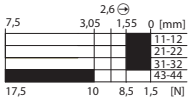
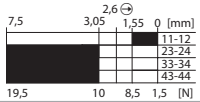
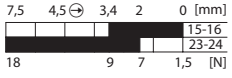
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000045** MN78-40 DGHK 	**6087000046** MN78-04 DGHK 	**6087000047** MN78-31 DGHK 	**6087000048** MN78-13 DGHK 	**6087000043** MN78-V11 DGHK 

MN78-... DGKK

Replacement actuator: 3918202430

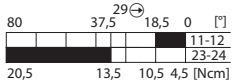
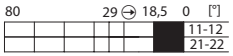
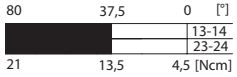
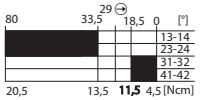
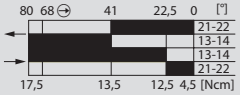
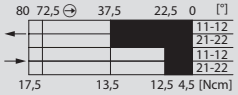
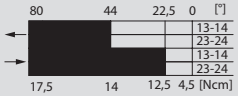


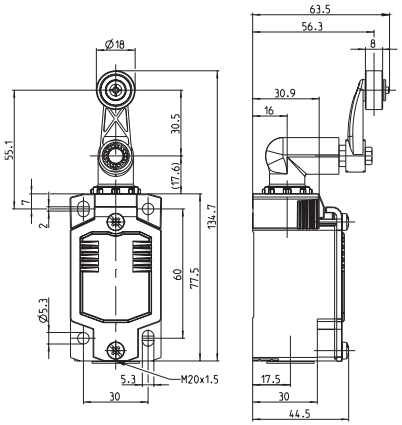
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000050** MN78-11 DGKK 	**6087000052** MN78-20 DGKK 	**6087000054** MN78-02 DGKK 	**6087000056** MN78-22 DGKK 
Snap-action system	**6087000049** MN78-S11 DGKK 	**6087000051** MN78-S20 DGKK 	**6087000053** MN78-S02 DGKK 	

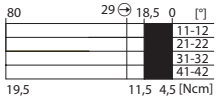
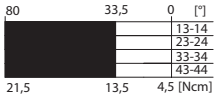
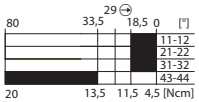
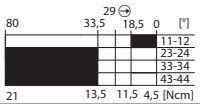
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000057** MN78-40 DGKK 	**6087000058** MN78-04 DGKK 	**6087000059** MN78-31 DGKK 	**6087000060** MN78-13 DGKK 	**6087000055** MN78-V11 DGKK 

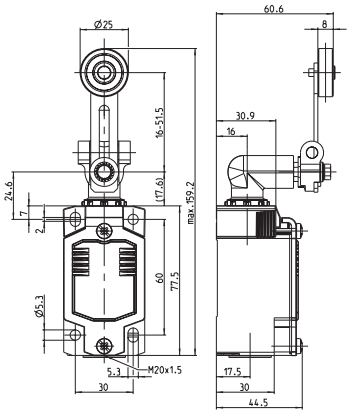
Replacement actuator: 3918352393

MN78-... AHK

	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000062** MN78-11 AHK 	**6087000064** MN78-20 AHK 	**6087000066** MN78-02 AHK 	**6087000068** MN78-22 AHK 
Snap-action system	**6087000061** MN78-S11 AHK 	**6087000063** MN78-S20 AHK 	**6087000065** MN78-S02 AHK 	

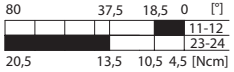
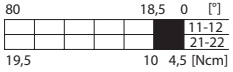
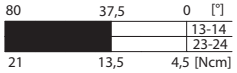
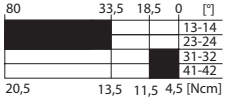
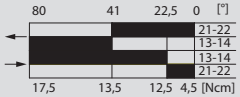
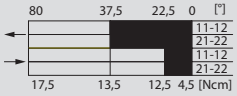
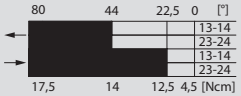


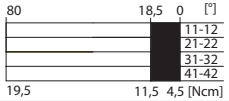
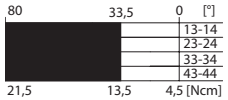
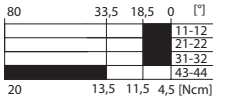
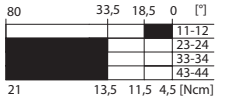
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000069** MN78-40 AHK 	**6087000070** MN78-04 AHK 	**6087000071** MN78-31 AHK 	**6087000072** MN78-13 AHK 	**6087000067** MN78-V11 AHK 



MN78-... AVK

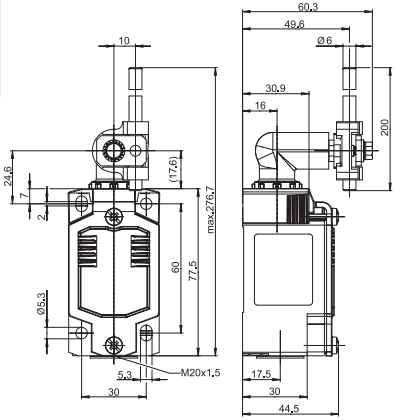
Replacement actuator: 3918362424

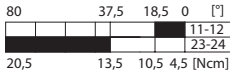
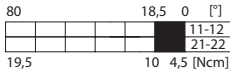
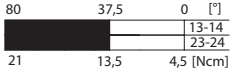
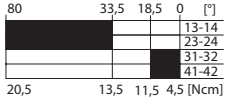
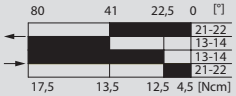
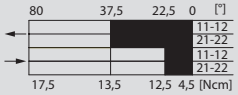
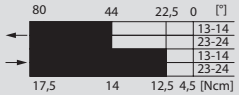
	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000074** MN78-11 AVK 	**6087000076** MN78-20 AVK 	**6087000078** MN78-02 AVK 	**6087000080** MN78-22 AVK 
Snap-action system	**6087000073** MN78-S11 AVK 	**6087000075** MN78-S20 AVK 	**6087000077** MN78-S02 AVK 	

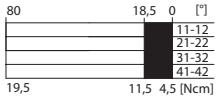
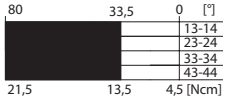
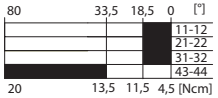
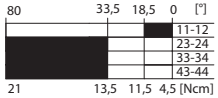
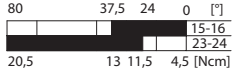
	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000081** MN78-40 AVK 	**6087000082** MN78-04 AVK 	**6087000083** MN78-31 AVK 	**6087000084** MN78-13 AVK 	**6087000079** MN78-V11 AVK 

Replacement actuator: 3918372421

MN78-... AHDM

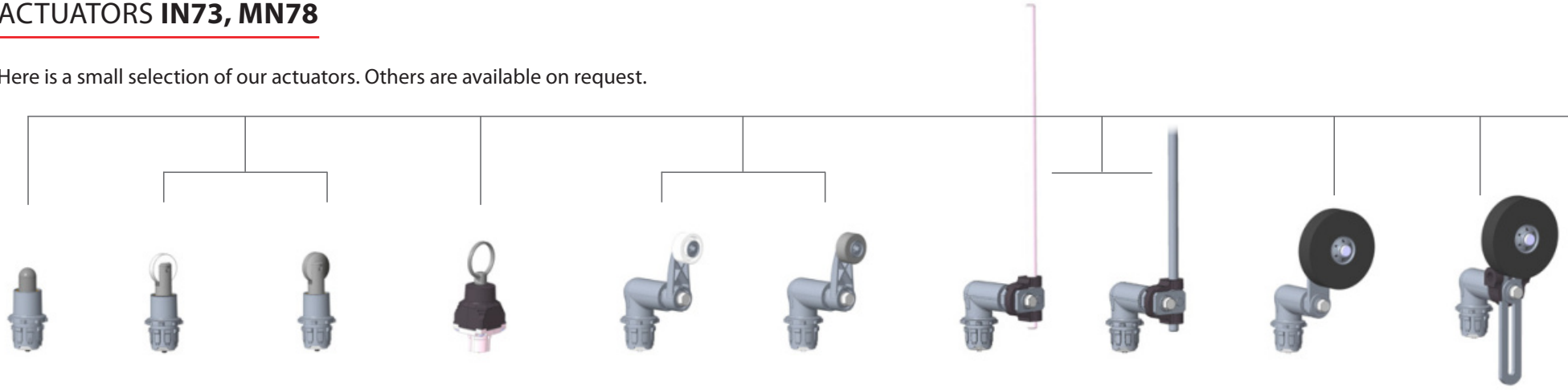


	1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	**6087000086** MN78-11 AHDM 	**6087000088** MN78-20 AHDM 	**6087000090** MN78-02 AHDM 	**6087000092** MN78-22 AHDM 
Snap-action system	**6087000085** MN78-S11 AHDM 	**6087000087** MN78-S20 AHDM 	**6087000089** MN78-S02 AHDM 	

	4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	**6087000093** MN78-40 AHDM 	**6087000094** MN78-04 AHDM 	**6087000095** MN78-31 AHDM 	**6087000096** MN78-13 AHDM 	**6087000091** MN78-V11 AHDM 

ACTUATORS **IN73, MN78**

Here is a small selection of our actuators. Others are available on request.



SM
3918022415
(Metal plunger)

RK
3918172416
(Plastic roller)

RM
3918172417
(Metal roller)

RP *
3911042418
(Pull switch attachment)

AHK
3918352393
(Plastic roller)

AHM
3918352419
(Metal roller)

AHDK
3918372420
(Plastic)

AHDM
3918372421
(Metal)

AHGU RO
3918352422
(Rubber roller)

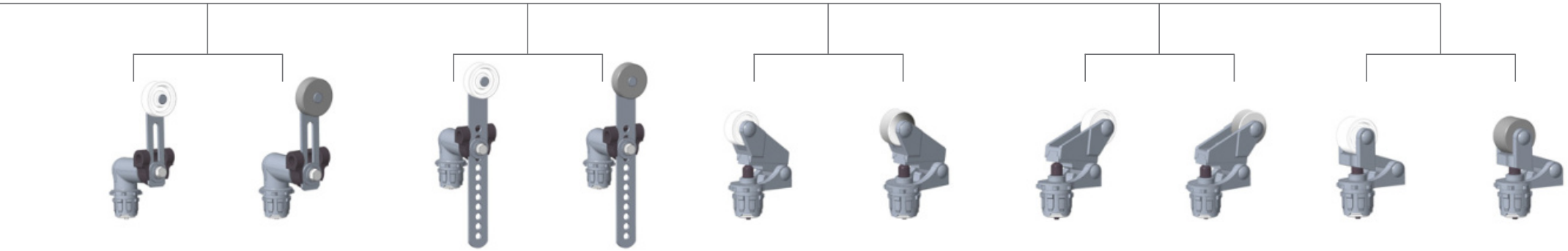
AVGU RO
3918362423
(Rubber roller)

IN73 partially assembled with a switching unit and M20-threaded connection **or** with switching system and M12 plug

		1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	M20	**6081000113** IN73-11 M20	**6081000115** IN73-20 M20	**6081000117** IN73-02 M20	**6081000119** IN73-22 M20
	M12	**6081000126** IN73-11 03	**6081000128** IN73-20 03	**6081000130** IN73-02 03	**6081000132** IN73-22 05
Snap-action system	M20	**6081000112** IN73-S11 M20	**6081000114** IN73-S20 M20	**6081000116** IN73-S02 M20	
	M12	**6081000125** IN73-S11 03	**6081000127** IN73-S20 03	**6081000129** IN73-S02 03	

		4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	M20	**6081000120** IN73-40 M20	**6081000121** IN73-04 M20	**6081000122** IN73-31 M20	**6081000123** IN73-13 M20	**6081000118** IN73-V11 M20
	M12	**6081000133** IN73-40 05	**6081000134** IN73-04 05	**6081000135** IN73-31 05	**6081000136** IN73-13 05	**6081000131** IN73-V11 03

*** Can only be used with slow-action systems.**



AVK
3918362424
(Plastic roller)

AVM
3918362425
(Metal roller)

AVZK
3918362426
(Plastic roller)

AVZM
3918362427
(Metal roller)

DGHK
3918202428
(Plastic roller)

DGHM
3918202429
(Metal roller)

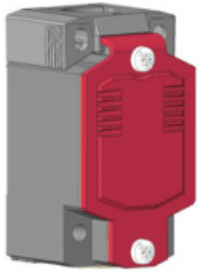
DGKK
3918202430
(Plastic roller)

DGKM
3918202431
(Metal roller)

HK
3918202432
(Plastic roller)

HM
3918202433
(Metal roller)

MN78 partially assembled with a switching unit and M20-threaded connection **or** with switching system and M12 plug



		1 NC / 1 NO	2 NC	2 NO	2 NC / 2 NO
Slow-action system	M20	**6087000103** MN78-11 M20	**6087000105** MN78-20 M20	**6087000107** MN78-02 M20	**6087000109** MN78-22 M20
	M12	**6087000115 *** MN78-11 04	**6087000117 *** MN78-20 04	**6087000119 *** MN78-02 04	**6087000121 *** MN78-22 05
Snap-action system	M20	**6087000102** MN78-S11 M20	**6087000104** MN78-S20 M20	**6087000106** MN78-S02 M20	
	M12	**6087000114 *** MN78-S11 04	**6087000116 *** MN78-S20 04	**6087000118 *** MN78-S02 04	

		4 NC	4 NO	3 NC / 1 NO	1 NC / 3 NO	1 NC / 1 NO overlapping
Slow-action system	M20	**6087000110** MN78-40 M20	**6087000111** MN78-04 M20	**6087000112** MN78-31 M20	**6087000113** MN78-13 M2	**6087000108** MN78-V11 M20
	M12	**6087000122 *** MN78-40 05	**6087000123 *** MN78-04 05	**6087000124 *** MN78-31 05	**6087000125 *** MN78-13 05	**6087000120 *** MN78-V11 04

Metal enclosure

Position switches Metal GC

Product characteristics

- Protection class IP65 conforming to VDE 0470 T1
- Enclosure: Die-cast aluminium
- Cover: Sheet aluminium
- Actuator can be repositioned by 4 x 90°
- Cable entry M20 x 1.5
- Connection designation conforming to DIN EN 50013
- Metal actuators for high loads
- Graduated adjustment of the AH lever
- Selectable direction-dependent contact-making of the AH actuator (basic setting: contact-making on both sides)

Good to know …

Thanks to its compact design, this metal-enclosed switch is ideally suited for virtually all safety and position monitoring applications.

Options

- Customised cables and connectors available on request

Technical data

Electrical data		
Design insulation voltage (up to) ①	U_i max.	400 V AC
Conventional thermoelectric current (up to) ①	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category (up to) ①		AC-15, U_e/I_e 240 V/3 A
Short circuit protection (up to) ①		Safety fuse 10 A gL/gG
Protection class		I
Mechanical data		
Enclosure material	Die-cast aluminium	
Ambient temperature	–30 °C to + 80 °C	
Mechanical lifetime (up to) ①	10 x 10^6 switching cycles	
B10d (up to) ①	20 million	
Switching frequency	≤ 100/min.	
Type of connection	Screwed connections	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm^2 or strand with wire-end ferrule 0.5 – 1.5 mm^2	
Cable entry	1 x M20 x 1.5	
Protection class	IP65 conforming to IEC/EN 60529	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

① Depending on switching system

Technical design

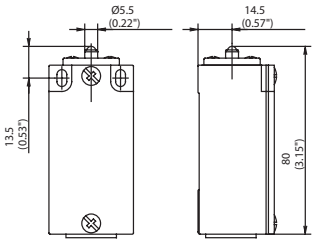
- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC/2 NO, 2 NC, overlapping contacts
- All NC contacts with ⊖ in the circuit diagram are positively opening contacts
- Type: Zb (galvanically isolated changeover contact)
- Latching function available on request

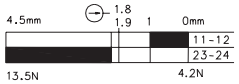
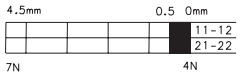
Mounting

- 2 M4 oval holes for adjustment (for safety applications there is a blind hole for a Ø 4.0 mm fitted pin in the enclosure base or an enclosure with holes for M5)

GC-... IW

Replacement actuator: 3912020520

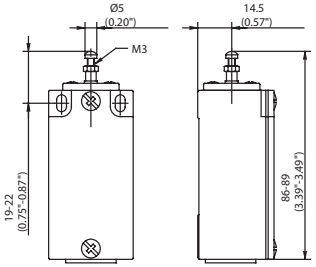


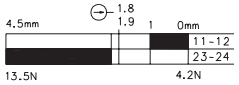
	1 NC / 1 NO	2 NC
Slow-action system	**6021102001** GC-U1Z IW 	**6021802189** GC-A2Z IW 
Snap-action system	**6021352620** GC-SU12 IW 	

Special features: on request

GC-... STIW

Replacement actuator: 3912050523

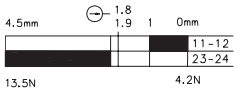
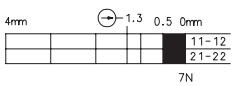
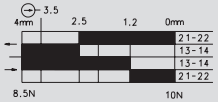


	1 NC / 1 NO	1 NC / 1 NO overlapping
Slow-action system	**602 1105015** GC-U1Z STIW 	**6021305016** GC-UV1Z STIW 
Snap-action system	**6021155017** GC-SU1Z STIW 	

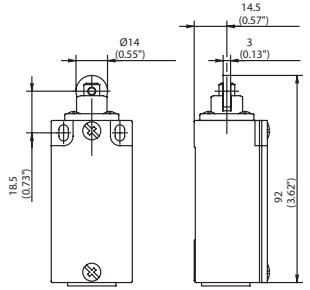
Special feature: Actuator length adjustable with adjusting screw

Replacement actuator: 3912170518

GC-... RIW

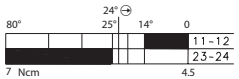
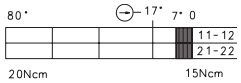
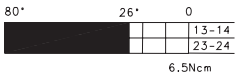
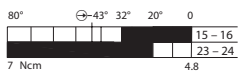
	1 NC / 1 NO	2 NC	1 NC / 1 NO overlapping
Slow-action system	**6021117029** GC-U1Z RIW 	**6021817172** GC-A2Z RIW 	**6021317030** GC-UV1Z RIW 
Snap-action system	**6021367626** GC-SU1Z RIW 		

Special features (on request): available for high temperature range and the following contacts: 2 NC / 1 NO; 2 NC / 2 NO (larger enclosure)

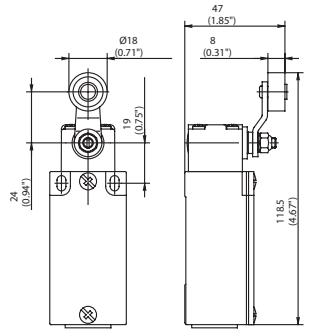


Replacement actuator: 3912350722

GC-... AH

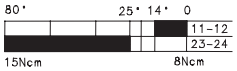
	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6021135102** GC-U1Z AH 	**6121835833** siehe gesondertes Datenblatt GC-A2Z AHS Datenblatt 	**6021835160** GC-E2 AH 	**6021335133** GC-UV1Z AH 
Snap-action system	**6021385634** GC-SU1Z AH 			

Special feature (on request): available with various roller diameters, cranked or straight lever and with various lever lengths with roller over switch and with the following contacts: 2 NC / 2 NO (larger enclosure)

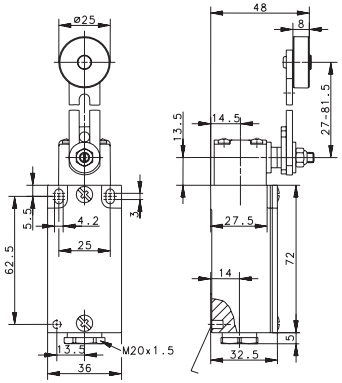


GC-... AV

Replacement actuator: 3912360723

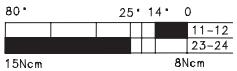
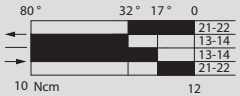
	1 NC / 1 NO
Slow-action system	**6021136104** GC-U1 AV 
Snap-action system	**6021186118** GC-SU1 AV 

Special features (on request): various roller diameters; different lever lengths;
with roller over switch and with the following contacts: 2 NC / 2 NO

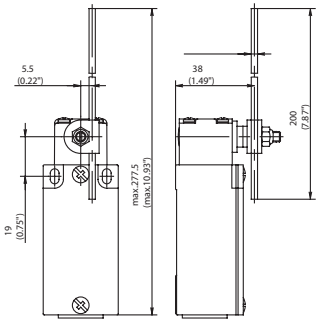


GC-... AD

Replacement actuator: 3912370724

	1 NC / 1 NO
Slow-action system	**6021137103** GC-U1 AD 
Snap-action system	**6021187125** GC-SU1 AD 

Special features (on request): available with various actuator lengths and actuator directions;
with the following contacts: 2 NC / 1 NO with overlap (larger enclosure)

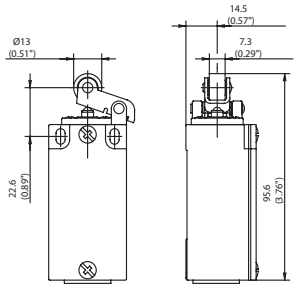


Replacement actuator: 3912200552

GC-... HIW

	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6021120057** GC-U1Z HIW	**6021820175** GC-A2Z HIW	**6021820157** GC-E2 HIW	**6021320058** GC-UV1Z HIW
Snap-action system	**6021370629** GC-SU1Z HIW			

Special features (on request): available with different actuating directions; available with a steel roller; with the following contacts: 2 NC / 2 NO; 1 NC / 2 NO with overlap (larger enclosure)

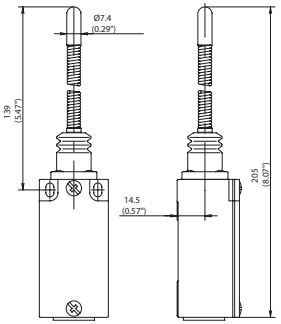


Replacement actuator: 3912400510

GC-... FF

	1 NC / 1 NO
Slow-action system	**6021140476** GC-U1 FF
Snap-action system	**6021190100** GC-SU1 FF

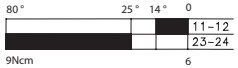
Special features (on request): different spring lengths; different spring versions or spring rod

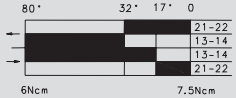


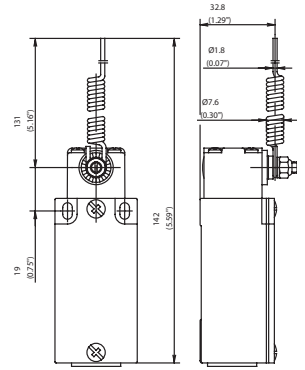
GC-... AF

Replacement actuator: 3912390725

	1 NC / 1 NO
Slow-action system	**6021139106** GC-U1 AF
Snap-action system	**6021189128** GC-SU1 AF





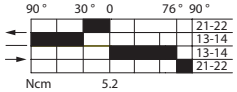


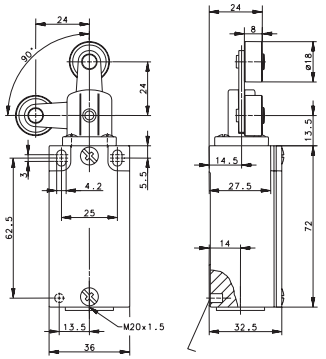
Special features (on request): available with various actuator lengths and actuator directions

GC-... DR

Replacement actuator: 3912410593

	1 NC / 1 NO
Snap-action system	**6021191099** GC-SU1Z DR





Special features (on request)

Notes

Diagrams. Sketches. Ideas.

Metal enclosure

Position switches Metal SN2

Product characteristics

- Protection class IP65 conforming to VDE 0470 T1
- Enclosure: Die-cast aluminium
- Cover: Sheet aluminium
- Actuator can be repositioned by 4 x 90°
- Cable entry 3 x M20 x 1.5
- Connection designation conforming to DIN EN 50013
- Metal actuators for high loads
- Graduated adjustment of the AH lever
- Selectable direction-dependent contact-making of the AH actuator (basic setting: contact-making on both sides)

Good to know …

With its three cable entries and spacious connection area, the SN2 limit switch is the optimum solution for through-wiring or even for branching off electrical circuits.

Options

- Customised cables and connectors are available on request

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC
- All NC contacts with ⊖ in the circuit diagram are positively opening contacts
- Type: Zb (galvanically isolated changeover contact)
- Latching function available on request

Technical data

Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category		AC-15, A300, U_e/I_e 240 V/3 A
Short circuit protection (up to) ①		Safety fuse 10 A gL/gG
Protection class		I
Mechanical data		
Enclosure material	Die-cast aluminium	
Ambient temperature	–30 °C to + 80 °C	
Mechanical lifetime	10 x 10^6 switching cycles	
B10d (up to) ①	20 million	
Switching frequency	max. 100/min.	
Type of connection	Screwed connections	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm^2 or strand with wire-end ferrule 0.5 – 1.5 mm^2	
Cable entry	3 x M20 x 1.5	
Protection class	IP65 conforming to EN 60529, DIN VDE 0470 T1	
Standards		
conforms to EN 60947-1; EN 60947-5-1		

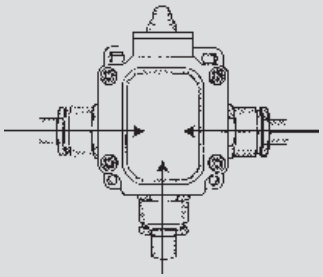
① Depending on switching system

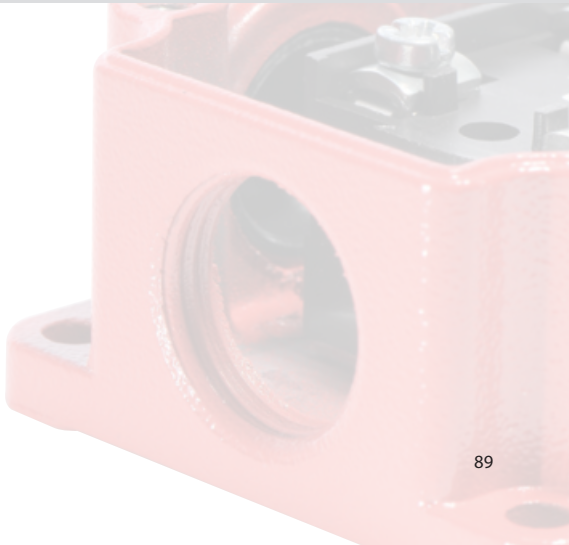
Mounting

- 2 M5 oval holes for adjustment
- 2 additional holes for M5 mounting screws in safety applications

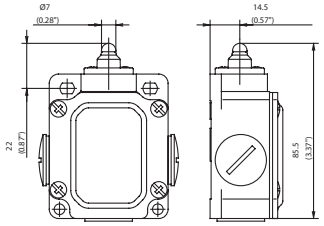
Installation advantages

- 3 cable entries for through-wiring
- Generously dimensioned connection space
- Screw connections with self-lifting clamping plates
- Easy-to-change switching system thanks to snap-in retainer
- Finely adjustable switching point with adjusting screw

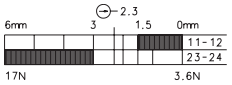


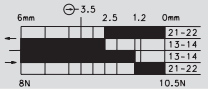


SN2-... W



	1 NC / 1 NO
Slow-action system	**6033103023** SN2-U1Z W
Snap-action system	**6033353016** SN2-SU1Z W

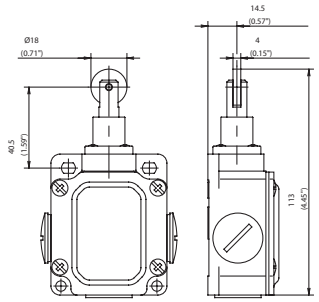




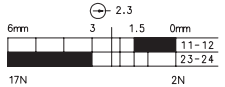
Special features (on request)

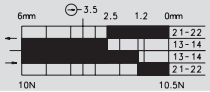
Replacement actuator: 3913030537

SN2-... RIW



	1 NC / 1 NO
Slow-action system	**6033117025** SN2-U1Z RIW
Snap-action system	**6033367017** SN2-SU1Z RIW

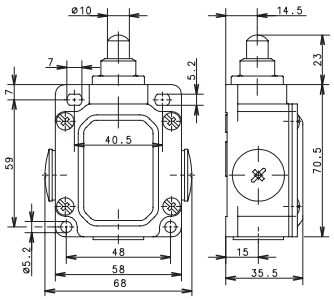




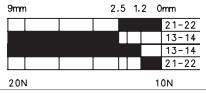
Special feature (on request): available with different actuating directions; with latching function

Replacement actuator: 3918170587

SN2-... LIW



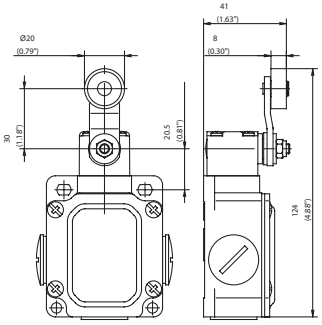
	1 NC / 1 NO
Snap-action system	**6033194022** SN2-SU1 LIW



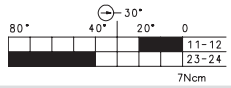
Special feature: Telescopic plunger, particularly long actuation travel of 9 mm

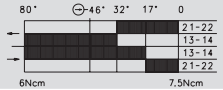
Replacement actuator: 3912440536

SN2-... AHS



	1 NC / 1 NO
Slow-action system	**6033135002** SN2-U1Z AHS
Snap-action system	**6033385018** SN2-SU1Z AHS





Special feature (on request): available with different actuating directions

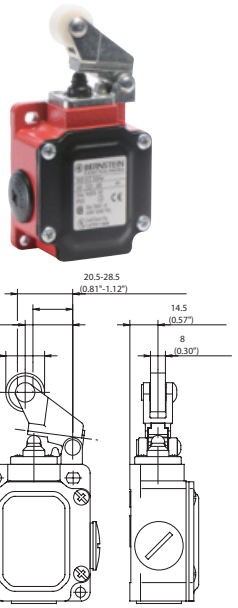
Replacement actuator: 3913351913

SN2-... DGHW

1 NC / 1 NO	
Slow-action system	**6033121005** SN2-U1Z DGHW
Snap-action system	**6033371004** SN2-SU1Z DGHW

Special feature (on request): available with different actuating directions

Replacement actuator: 3918211656

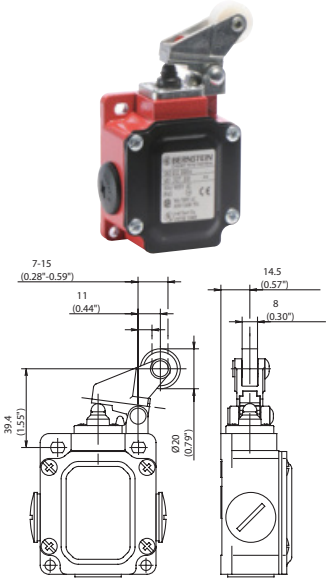


SN2-... DGKW

1 NC / 1 NO	
Slow-action system	
Snap-action system	**6033377011** SN2-SU1Z DGKW

Special feature (on request): available with different actuating directions

Replacement actuator: 3918271655

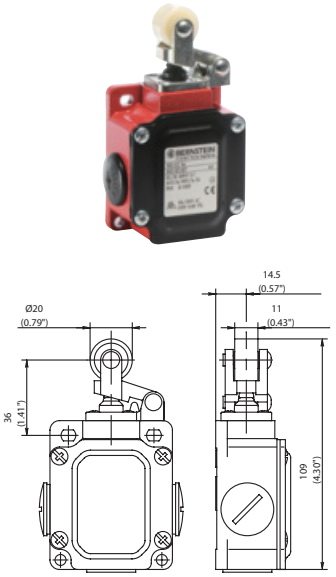


SN2-... HW

1 NC / 1 NO	
Slow-action system	**6033121007** SN2-U1Z HW
Snap-action system	**6033371006** SN2-SU1Z HW

Special feature (on request): available with different actuating directions

Replacement actuator: 3913210553



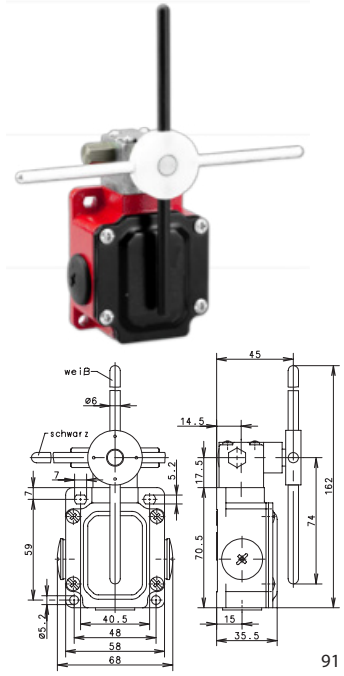
SN2-... AD4K

2 NC	
Snap-action system	**6133887022** SN2-SA2Z AD4K

Special feature (on request)

Replacement actuator: **3913371712**
without screws, without seals

3992000042
accessory bag (40 screws, 10 seals)



Metal enclosure

Position switches Metal D

Product characteristics

- Protection class IP65 according to VDE 0470 T1
- Enclosure: Die-cast aluminium
- Cover: Sheet aluminium
- Actuator rotable by 4 x 90° (depending on type)
- Cable entries 2 x M20 x 1.5
- Connection designation conforming to DIN EN 50013
- Sturdy contacts
- Hard wearing guide bushes

Good to know …

Heavy duty enclosure for harsh operating conditions with a particularly tough design of the actuator and switching systems.

Technical design

- Slow- and snap action
- **Versions:** 1 NC/1 NO, 2 NC, 2 NO, 3 NC, 3 NO, overlapping contacts
- All NC contacts with ⊖ in the circuit diagram are positively opening contacts
- Latching function available on request

Technical data

Electrical data		
Design insulation voltage	U_i max.	400 V AC
Conventional thermoelectric current (up to) ①	I_{the}	10 A
Rated operating voltage	U_e max.	240 V
Utilisation category		AC-15, U_e/I_e 240 V/3 A
Short circuit protection (up to) ①		Safety fuse 10 A gL/gG
Protection class		I
Mechanical data		
Enclosure material	Die-cast aluminium	
Ambient temperature	–30 °C to + 80 °C	
Mechanical lifetime	10 x 10^6 switching cycles	
B10d	20 million	
Switching frequency	≤ 100/min.	
Type of connection	Screwed connections	
Conductor cross-sections	Single-wire 0.5 – 1.5 mm² or strand with wire-end ferrule 0.5 – 1.5 mm²	
Cable entry	2 x M20 x 1.5	
Protection class	IP65 conforming to IEC/EN 60529	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		

① Depending on switching system

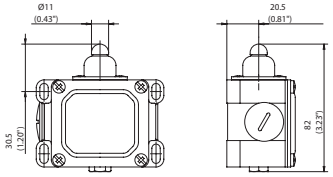
Mounting

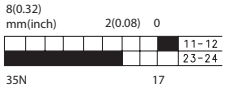
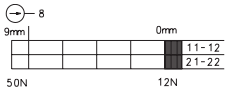
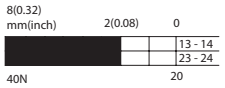
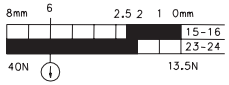
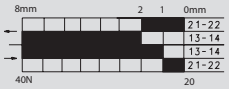
- 4 M5 oval holes

Options

- Customised cables and connectors are available on request

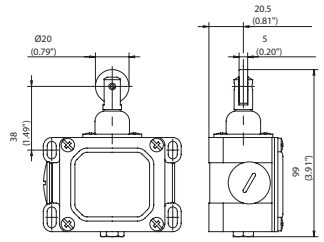
D-... W

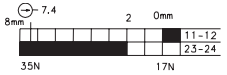
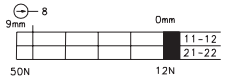
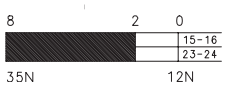
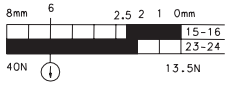
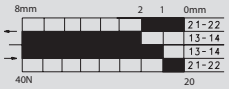


	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6041103002** D-U1 W 	**6041803090** D-A2 W 	**6041803046** D-E2 W 	**6041303134** D-UV1Z W 
Snap-action system	**6041153156** D-SU1 W 			

Special feature (on request): Also available with the following contacts: 3 NC, 3 NO, 2 NC / 2 NO (larger enclosure)

D-... RW

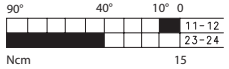
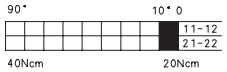
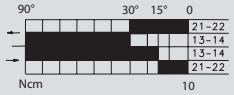


	1 NC / 1 NO	2 NC	2 NO	1 NC / 1 NO overlapping
Slow-action system	**6041118229** D-U1Z RW 	**6041818741** D-A2Z RW 	**6041818052** D-E2 RW 	**6041318140** D-UV1Z RW 
Snap-action system	**6041168162** D-SU1 RW 			

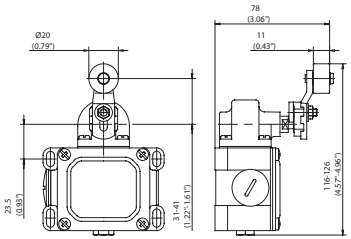
Special feature (on request): Available for high temperature range
With the following contacts: 3 NC, 3 NO, 2 NC / 2 NO (larger enclosure)

Replacement actuator: 3914350924

D-... AH

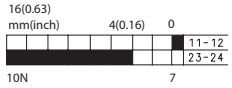
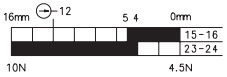
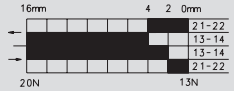
	1 NC / 1 NO	2 NC
Slow-action system	**6041135019** D-U1 AH 	**6041835107** D-A2 AH 
Snap-action system	**6041185173** D-SU1 AH 	

Special feature (on request): with steel roller, various roller diameters; cranked or straight lever; different lever lengths
Also available with the following contacts: 3 NC; 2 NC / 2 NO

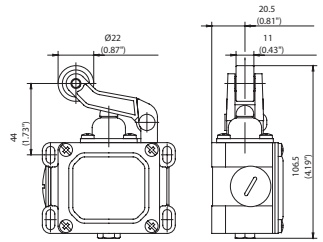


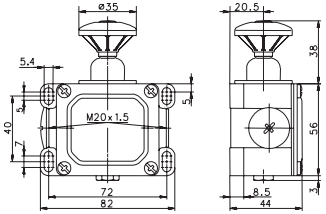
Replacement actuator: 3914211065

D-... HW

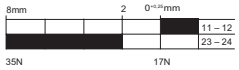
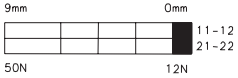
	1 NC / 1 NO	1 NC / 1 NO overlapping
Slow-action system	**6041121010** D-U1 HW 	**6041321142** D-UV1Z HW 
Snap-action system	**6041171164** D-SU1 HW 	

Special feature (on request): Available for high temperature range
Also available with the following contacts: 3 NC, 2 NC / 2 NO (larger enclosure)





D-... PW

	1 NC / 1 NO	2 NC
Slow-action system	**6041113006** D-U1 PW 	**6041813835** D-A2Z PW 
Special feature (on request):	Also available with the following contacts: 3 NC, 3 NO, 2 NC / 2 NO (larger enclosure)	

Accessories

Finger guard

The Finger guard helps to prevent the user from receiving an electric shock.

Product range	
Article number	**Series**
3595900060	Bi2

Guide element

The guide element provides additional support to the rear of the switches IN62 / IN65 / I81.

Product range	
Article number	**Series**
3515900209	IN62 / IN65 / I81

Mounting plate, control cabinet

The mounting plate allows IN62 / IN65 / I81 switches to be din rail mounted in control enclosures.

Product range	
Article number	**Series**
3595900087	IN62 / IN65

Sealed cable gland

Product range	
Article number	**Series**
3998000120	M16
3998000121	M20

NPT adapter M16 on 1/2“ (NPT 14)

Product range	
Article number	**Series**
3998000115	various families

NPT adapter M20 on 1/2“ (NPT 14)

Product range	
Article number	**Series**
3998000116	various families

POSITION SENSORS

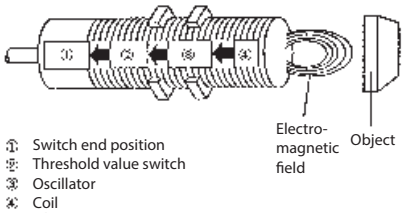
POSITION SENSORS
Functional principle of the sensor system

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.

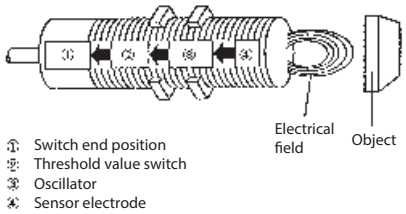
The oscillator generates a high-frequency alternating magnetic field that exits the coil at the active surface. When a metal object enters this field, eddy currents are induced in it. These eddy currents draw energy from the magnetic field and thus from the oscillator; it is damped. The energy withdrawal 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

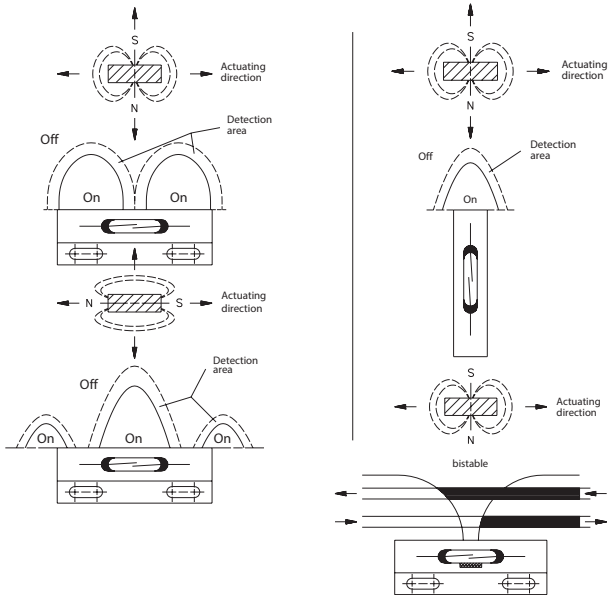
Capacitive proximity switches detect conductive and non-conductive materials in a solid or liquid state. The sensors consist of 4 functional groups: a sensor electrode, an oscillator, a threshold value switch and a switching output stage.

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.

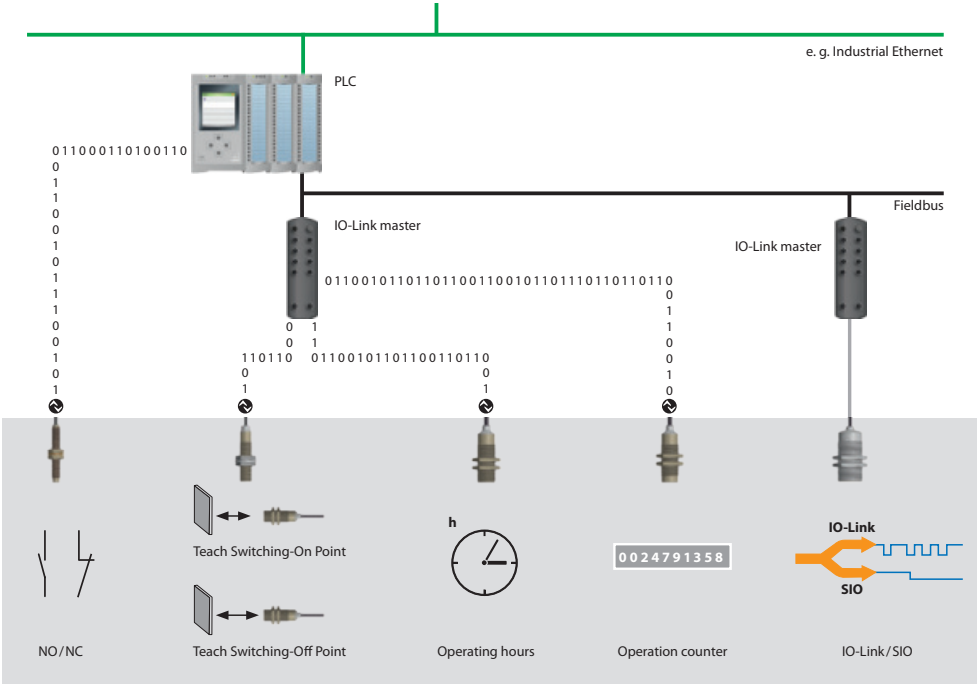
For flexible use, sensors are also offered which permit one or two freely programmable and independent switching points, as well as IO-Link sensors which permit an analog output between two teach-in end positions.

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.

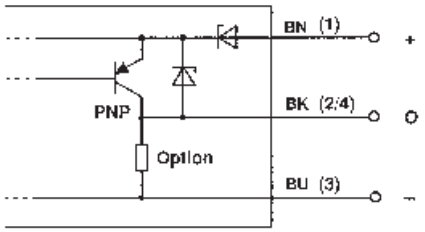
Namur

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

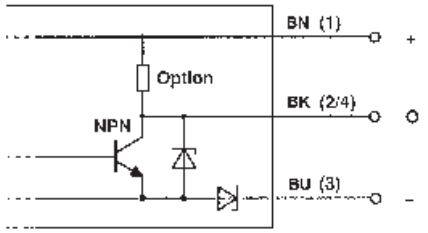
PNP output / Source output

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.

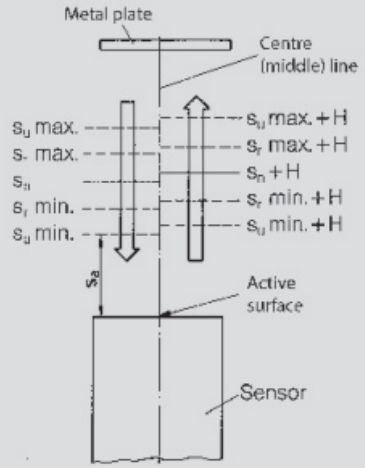
Bistable

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 (Sn)

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

Real sensing distance (Sr)

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 (Su)

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 (Sa)

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 clocked 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

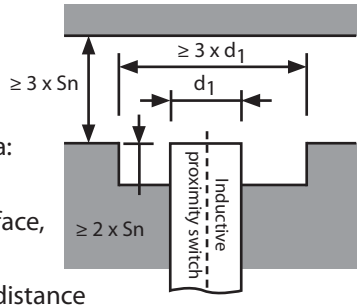
Is a time function integrated in the sensor which delays the switching of the output when an object leaves the active field.

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.

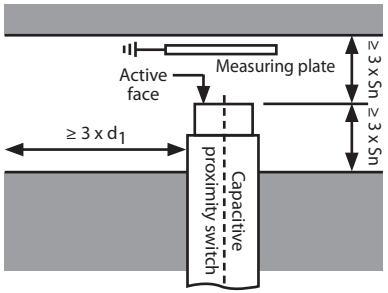
Non-flush

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



- parallel to the active surface, a free zone at a distance of ≥ 3 x rated switching distance
- laterally to the active surface, a free zone at a distance of ≥ 1 x housing diameter
- free zone of a depth to the active surface ≥ 2 x rated switching distance

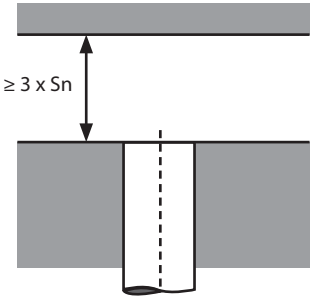
Capacitive sensors must maintain a free zone with the following criteria:



- parallel to the active surface, a free zone at a distance of ≥ 3 x rated switching distance
- laterally to the active surface, a free zone at a distance of ≥ 3 x housing diameter
- free zone of a depth to the active surface ≥ 3 x 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

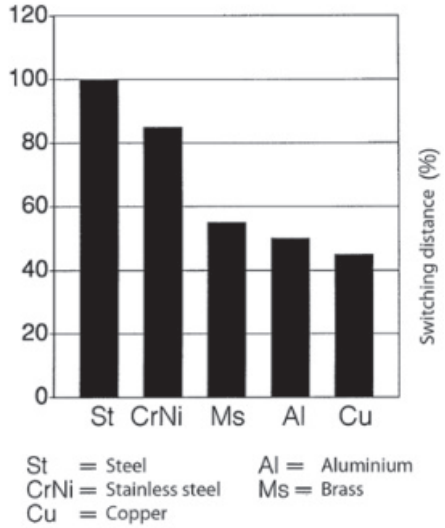
Good to know …

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 IODD 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.



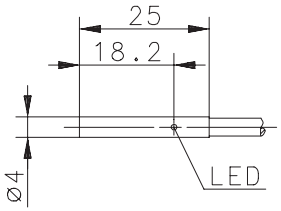
Options

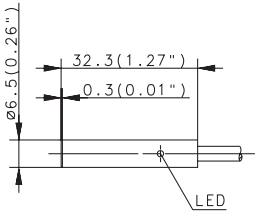
- Cable and connector assembly
- Adaptation of the enclosures
- Product adaptations and modifications
- Customized development

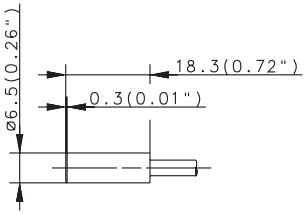
INDUCTIVE SENSORS **Type Ø 4 mm, Ø 6.5 mm**

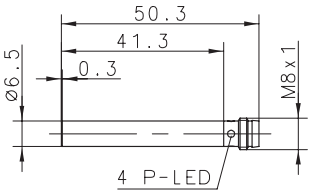
Type			**Ø 4 mm**	**Ø 6.5 mm**	**Ø 6.5 mm**	**Ø 6,5 mm**
Enclosure material			**Stainless steel 1.4401**	**Stainless steel 1.4401**	**Stainless steel 1.4401**	**Stainless steel 1.4401**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**0.8 mm**	**1.5 mm**	**1.5 mm**	**1.5 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Cable 2 m**	**Connector M8**
Special feature						
PNP	**DC**	**NO contact**	**6532999001** KIB-D04PS/001-KL2I	**6502999010** KIB-D06PS/1,5-KL2	**6502999034** KIB-D06PS/1,5-K2VPU	**6502999012** KIB-D06PS/1,5-KLSM8
PNP	**DC**	**NC contact**	**6532799001** KIB-D04PÖ/001-KL2I	**6502799011** KIB-D06PÖ/1,5-KL2		
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
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/–
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	3 x 0.14 mm²	3 x 0.14 mm²	M8 x 1
Approvals				c UL us		

= **IO**-Link







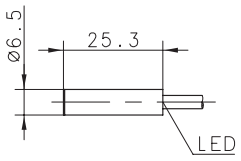


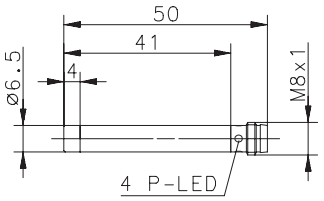
Cable couplings and other accessories can be found from p. 230

INDUCTIVE SENSORS **Type Ø 6.5 mm**

Type			**Ø 6,5 mm**	**Ø 6,5 mm**
Enclosure material			**Stainless steel 1.4401**	**Stainless steel 1.4401**
Type of installation			**flush**	**non-flush**
Nominal sensing distance			**1.5 mm**	**2 mm**
Type of connection			**Cable 5 m**	**Connector M8**
Special feature			**Short type**	
PNP	**DC**	**NO contact**	**6602999460** KIB-D06PS/1,5-KL5V	**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	10–36 VDC
Rated operating current	I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage	F	1000 Hz	750 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 mm²	M8 x 1
Approvals			



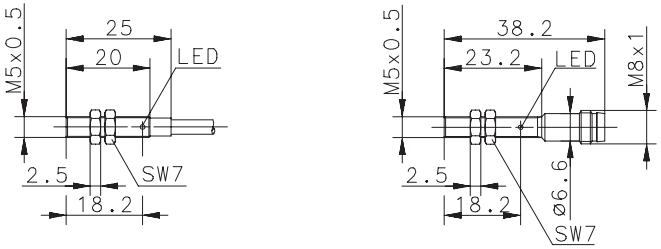


You can find detailed product data sheets at www.bernstein.eu

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	**6532999003** KIB-M05PS/001-KLSM8I
PNP	**DC**	**NC contact**		**6532799002** KIB-M05PÖ/001-KL2I	**6532799003** KIB-M05PÖ/001-KLSM8I
NPN	**DC**	**NO contact**		**6532399002** KIB-M05NS/001-KL2	**6532399003** KIB-M05NS/001-KLSM8
NPN	**DC**	**NC contact**		**6532199002** KIB-M05NÖ/001-KL2	**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 mm²	M8 x 1
Approvals				c UL us	c UL us

= **IO**-Link

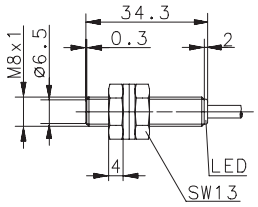


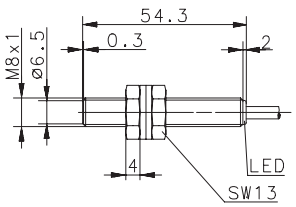
Cable couplings and other accessories can be found from p. 230

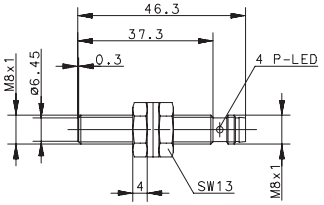
INDUCTIVE SENSORS **Type M8**

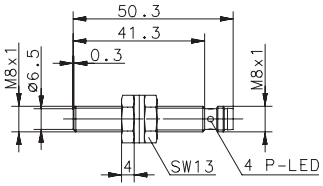
Type			**M8**	**M8**	**M8**	**M8**
Enclosure material			**Stainless steel 1.4305**	**Stainless steel 1.4305**	**Stainless steel 1.4305**	**Stainless steel 1.4305**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**1 mm**	**1 mm**	**1 mm**	**1 mm**
Type of connection			**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 mm²	3 x 0.14 mm²	M8 x 1	M8 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO-**Link





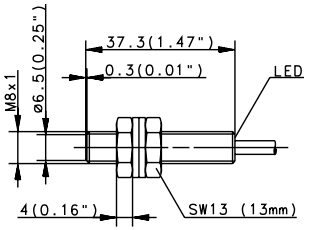


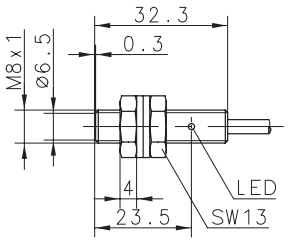


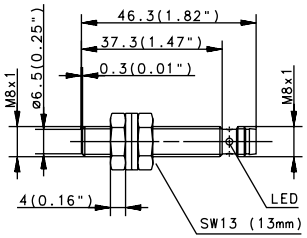
You can find detailed product data sheets at www.bernstein.eu

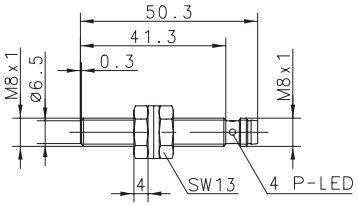
INDUCTIVE SENSORS **Type M8**

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	10–36 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 mm²	3 x 0.14 mm²	M8 x 1	M8 x 1





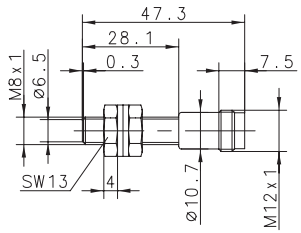




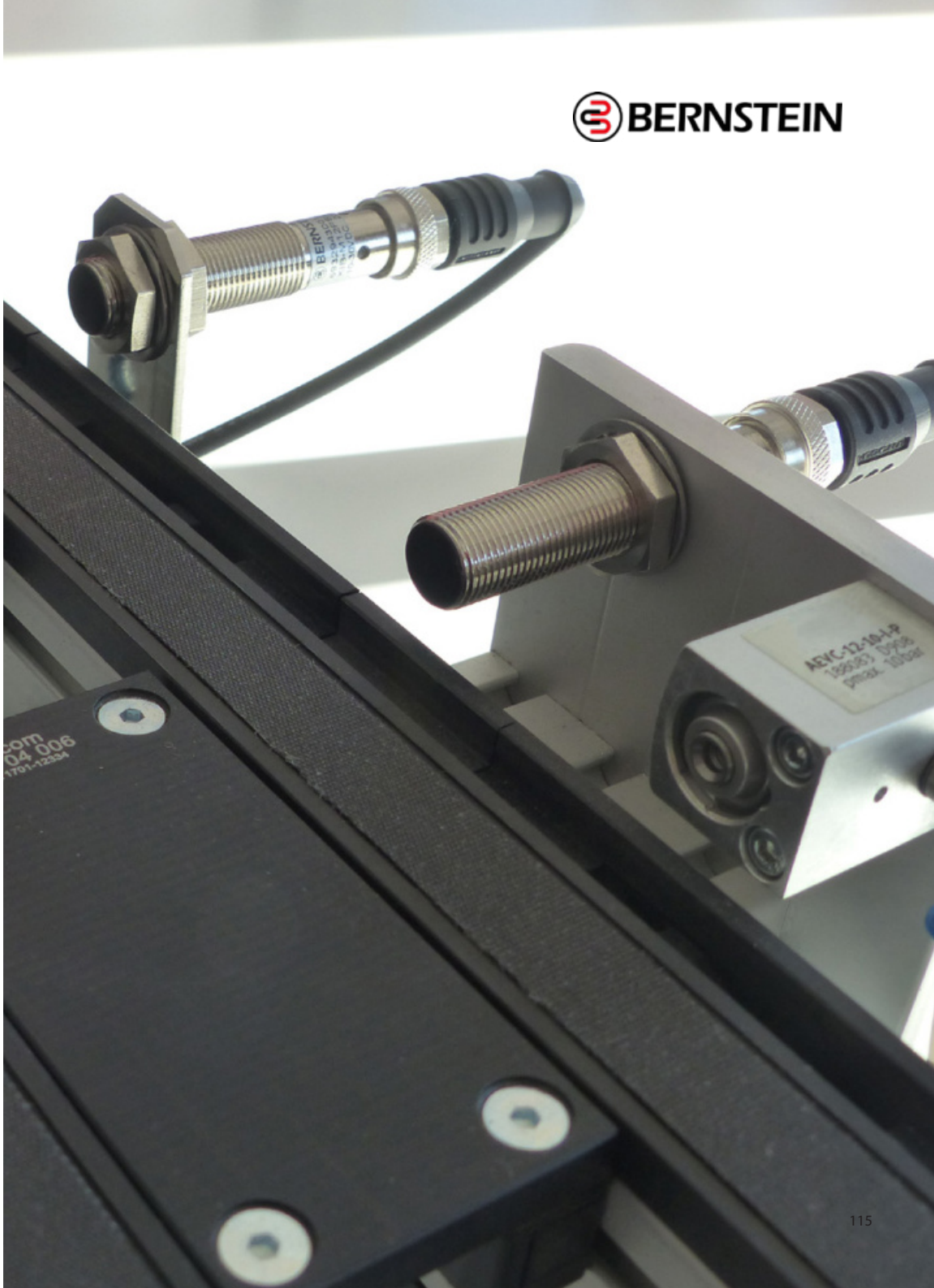
Cable couplings and other accessories can be found from p. 230

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



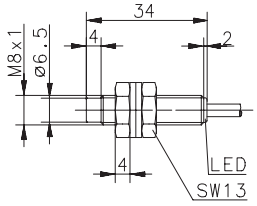
You can find detailed product data sheets at www.bernstein.eu

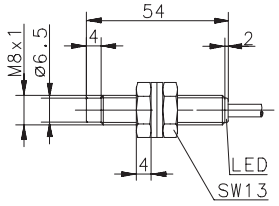


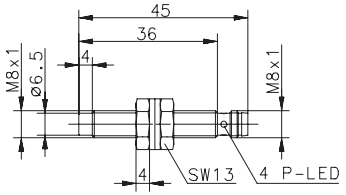
INDUKTIVE SENSOREN **Type M8**

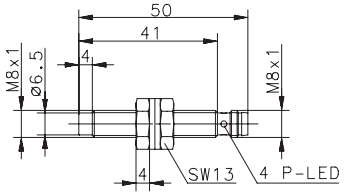
Type			**M8**	**M8**	**M8**	**M8**
Enclosure material			**Stainless steel 1.4305**	**Stainless steel 1.4305**	**Stainless steel 1.4305**	**Stainless steel 1.4305**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**2 mm**	**2 mm**	**2 mm**	**2 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
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	750 Hz	750 Hz	750 Hz	750 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 mm²	3 x 0.14 mm²	M8 x 1	M8 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO**-Link



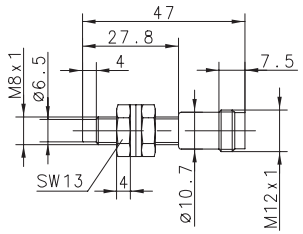






Cable couplings and other accessories can be found from p. 230

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			

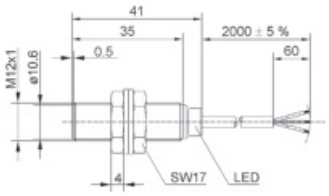


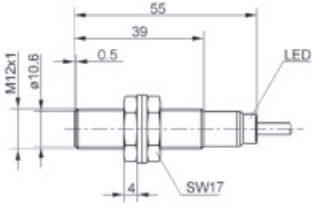
You can find detailed product data sheets at www.bernstein.eu

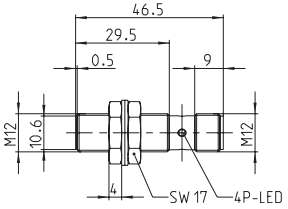
INDUCTIVE SENSORS **Type M12**

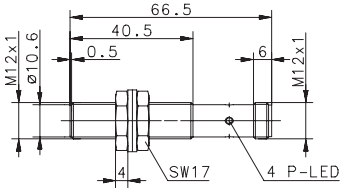
Type			**M12**	**M12**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**2 mm**	**2 mm**	**2 mm**	**2 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Connector 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
Rated operating current	I_e		≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F		800 Hz	800 Hz	800 Hz	800 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 mm²	3 x 0.14 mm²	M12 x 1	M12 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO**-Link





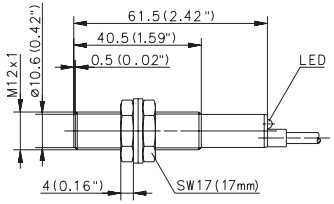


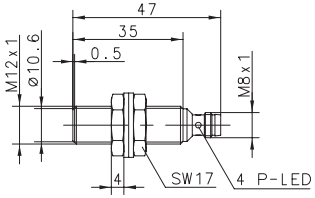


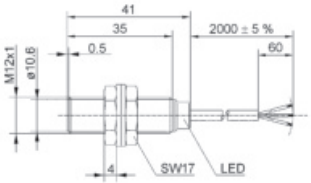
Cable couplings and other accessories can be found from p. 230

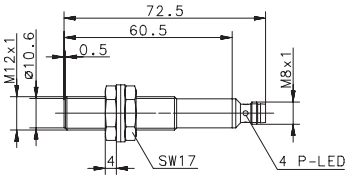
Type			**M12**	**M12**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**2 mm**	**2 mm**	**4 mm**	**4 mm**
Type of connection			**Cable 2 m**	**Connector M8**	**Cable 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	**6532903003** KIB-M12PS/004-KL2EVI	**6602343366** KIB-M12NS/004-KLSM8E
PNP	**DC**	**NC contact**				
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range	U_B		10–60 VDC	10–30 VDC	10–30 VDC	10–36 VDC
Rated operating current	I_e		≤ 200 mA	≤ 200 mA	200 mA	≤ 200 mA
Max. switching voltage	F		4000 Hz	800 Hz	800 Hz	800 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 mm²	M8 x 1	3 x 0.14 mm²	M8 x 1
Approvals					c UL us	

= **IO**-Link







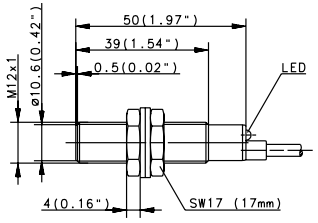


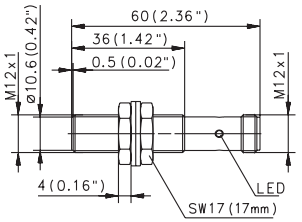
You can find detailed product data sheets at www.bernstein.eu

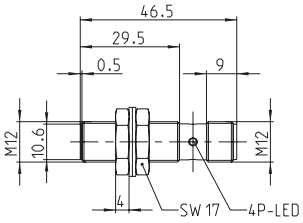
INDUCTIVE SENSORS **Type M12**

Type			**M12**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**
Nominal sensing distance			**4 mm**	**4 mm**	**4 mm**
Type of connection			**Cable 2 m**	**Connector M12**	**Connector M12**
Special feature			**Sensing distance**	**Sensing distance**	**Sensing distance**
PNP	**DC**	**NO contact**	**6502903025** KIB-M12PS/004-KL2E	**6502943015** KIB-M12PS/004-KLS12E	**6532943004** KIB-M12PS/004-KLS12EVI
PNP	**DC**	**NC contact**		**6602743764** KIB-M12PÖ/004-KLS12E	
NPN	**DC**	**NO contact**		**6602343869** KIB-M12NS/004-KLES12	
NPN	**DC**	**NC contact**			
Technical data					
Rated operating voltage range		U_B	10–30 VDC	10–36 VDC	10–30 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	800 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 mm²	M12 x 1	M12 x 1
Approvals					c UL us

= IO-Link



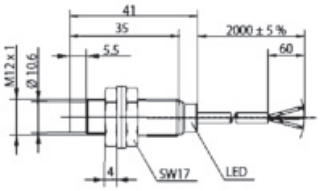


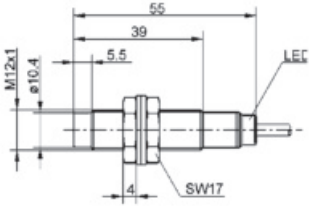


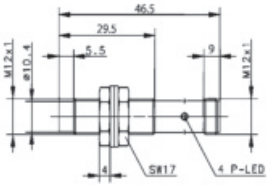
Cable couplings and other accessories can be found from p. 230

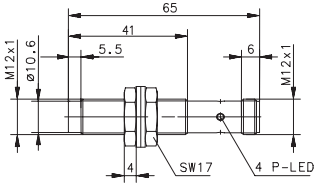
Type			**M12**	**M12**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**4 mm**	**4 mm**	**4 mm**	**4 mm**
Type of connection			**Cable 2 m**	**Cable 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
Rated operating current	I_e		≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F		400 Hz	400 Hz	400 Hz	400 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 mm²	3 x 0.14 mm²	M12 x 1	M12 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO**-Link





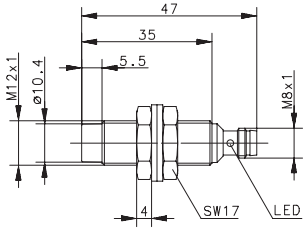


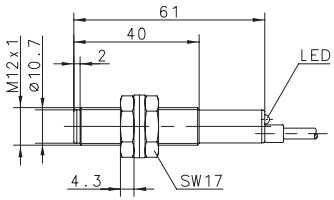


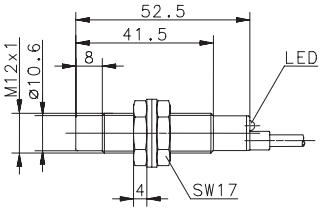
You can find detailed product data sheets at www.bernstein.eu

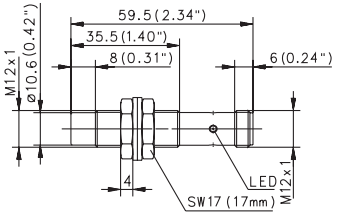
INDUCTIVE SENSORS **Type M12**

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	**6502944013** KIN-M12PS/008-KLS12E
PNP	**DC**	**NC contact**	**6502744006** KIN-M12PÖ/004-KLSM8V			
NPN	**DC**	**NO contact**				**6602344458** KIN-M12NS/008-KLS12E
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–36 VDC	10–30 VDC	10–36 VDC	10–36 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	400 Hz	400 Hz	400 Hz	400 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			M8 x 1	3 x 0.14 mm²	3 x 0.14 mm²	M12 x 1
Approvals						





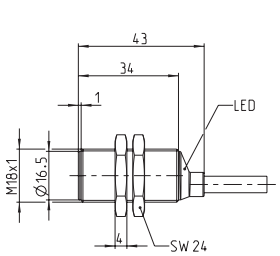


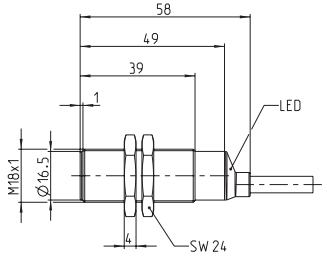


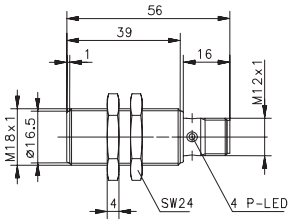
Cable couplings and other accessories can be found from p. 230

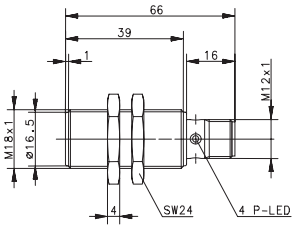
Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**5 mm**	**5 mm**	**5 mm**	**5 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Connector 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
Rated operating current	I_e		≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F		500 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)			–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 0.34 mm²	3 x 0.34 mm²	M12 x 1	M12 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO-Link**





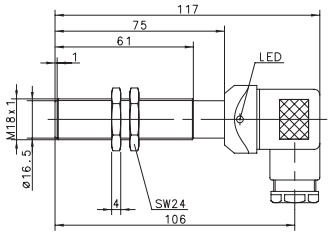


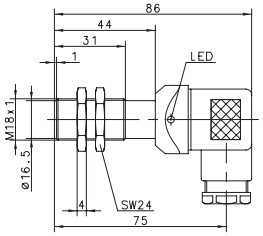


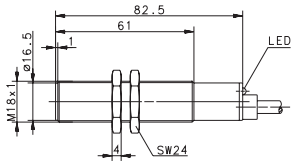
You can find detailed product data sheets at www.bernstein.eu

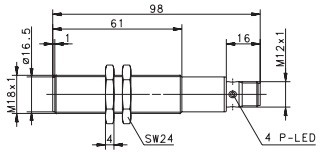
INDUCTIVE SENSORS **Type M18**

Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
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**	**Connector M12**
Special feature					**Temperature**	**Temperature**
PNP	**DC**	**NO contact**	**6602905662** KIB-M18PS/005-KLSD	**6502940001** KIB-M18PS/005-KLSDV	**6502905023** KIB-M18PS/005-KL2PUT	**6502940006** KIB-M18PS/005-KLS12T
PNP	**DC**	**NC contact**	**6502705001** KIB-M18PÖ/005-KLSD			
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–60 VDC	10–60 VDC	10–30 VDC	10–30 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	500 Hz	500 Hz	500 Hz	500 Hz
Short circuit-protection			–	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	–40°C/+100°	–40°C/+100°
Protection class in accordance with IEC 529, EN 60529			IP65	IP65	IP67	IP67
Connection			Plug connector DIN EN 175301-803	Plug connector DIN EN 175301-803	3 x 0.5 mm²	M12 x 1



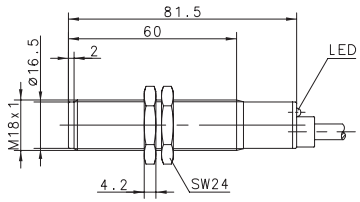


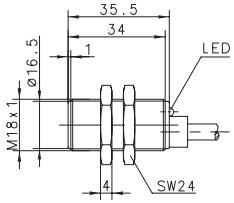


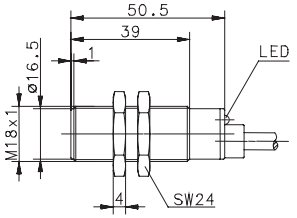


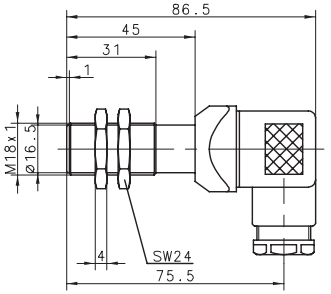
Cable couplings and other accessories can be found from p. 230

Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**PA, red**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**5 mm**	**8 mm**	**8 mm**	**8 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Cable 2 m**	**DIN Connector**
Special feature				**Sensing distance**	**Sensing distance**	**Sensing distance**
PNP	**DC**	**NO contact**	**6502920990** KIB-T18PS/005-KL2	**6502905010** KIB-M18PS/008-KL2VE	**6502905022** KIB-M18PS/008-KL2E	
PNP	**DC**	**NC contact**				
PNP	**DC**	**antivalent NO/NC**				**6602840128** KIB-M18PU/008-KSDVE
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–60 VDC	10–36 VDC	10–36 VDC	12–48 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 400 mA
Max. switching voltage		F	500 Hz	500 Hz	500 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	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529			IP67	IP67	IP67	IP65
Connection			3 x 0.5 mm²	3 x 0.5 mm²	3 x 0.5 mm²	Plug connector DIN EN 175301-803







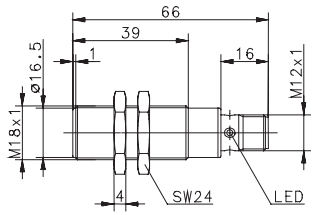


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS **Type M18**

Type			**M18**
Enclosure material			**CuZn39Pb3**
Type of installation			**flush**
Nominal sensing distance			**8 mm**
Type of connection			**Connector**
Special feature			**Sensing distance**
PNP	**DC**	**NO contact**	**6502940005** KIB-M18PS/008-KLS12E
PNP	**DC**	**NC contact**	
NPN	**DC**	**NO contact**	
NPN	**DC**	**NC contact**	

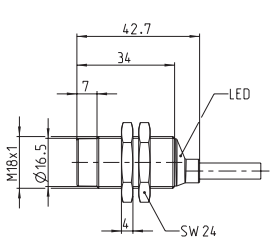
Technical data		
Rated operating voltage range	U_B	10–36 VDC
Rated operating current	I_e	≤ 200 mA
Max. switching voltage	F	500 Hz
Short circuit-protection		cyclic
Function/operating voltage indicator		–/–
Mechanical data		
Ambient temperature (min/max)		–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67
Connection		M12 x 1
Approvals		

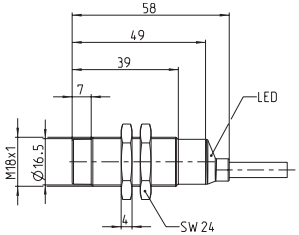


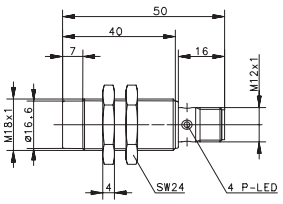
Cable couplings and other accessories can be found from p. 230

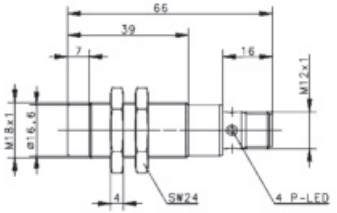
Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**8 mm**	**8 mm**	**8 mm**	**8 mm**
Type of connection			**Cable 2 m**	**Cable 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
Rated operating current	I_e		≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage	F		200 Hz	200 Hz	200 Hz	200 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 0.34 mm²	3 x 0.34 mm²	M12 x 1	M12 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO**-Link





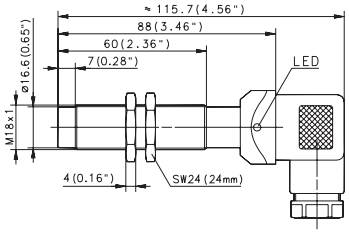


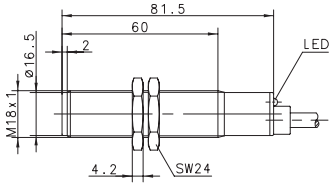


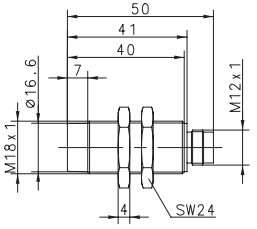
You can find detailed product data sheets at www.bernstein.eu

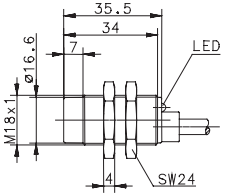
INDUCTIVE SENSORS **Type M18**

Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**CuZn39Pb3**	**PA, red**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**8 mm**	**8 mm**	**8 mm**	**12 mm**
Type of connection			**DIN Connector**	**Cable 2 m**	**Connector M12**	**Cable 2 m**
Special feature					**Sensing distance / Short type**	**Sensing distance**
PNP	**DC**	**NO contact**	**6502941001** KIN-M18PS/008-KLSD	**6502921975** KIN-T18PS/008-KL2	**6502906009** KIN-M18PS/008-KS12V	**6502906011** KIN-M18PS/012-KL2VE
PNP	**DC**	**NC contact**	**6502741001** KIN-M18PÖ/008-KLSD			
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–60 VDC	10–60 VDC	10–60 VDC	10–36 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	200 Hz	200 Hz	200 Hz	200 Hz
Short circuit-protection			cyclic	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	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529			IP65	IP67	IP67	IP67
Connection			Plug connector DIN EN 175301-803	3 x 0.5 mm²	M12 x 1	3 x 0.5 mm²



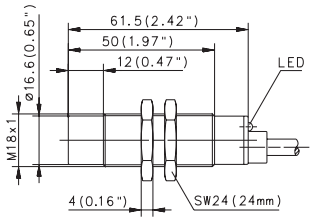


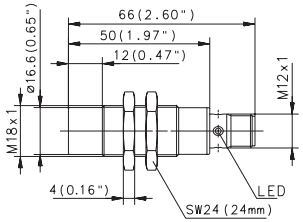




Cable couplings and other accessories can be found from p. 230

Type			**M18**	**M18**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**
Nominal sensing distance			**16 mm**	**16 mm**
Type of connection			**Cable 2 m**	**Connector M12**
Special feature			**Sensing distance**	**Sensing distance**
PNP	**DC**	**NO contact**	**6502906018** KIN-M18PS/016-KL2E	**6502941004** KIN-M18PS/016-KLS12E
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
Rated operating current		I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	200 Hz	200 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 mm²	M12 x 1



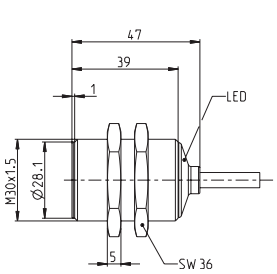


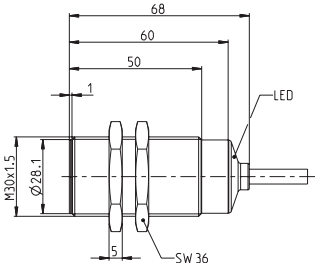
You can find detailed product data sheets at www.bernstein.eu

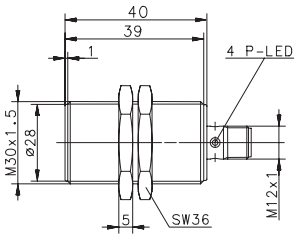
INDUCTIVE SENSORS **Type M30**

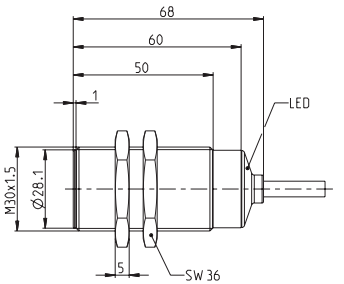
Type			**M30**	**M30**	**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**10 mm**	**10 mm**	**10 mm**	**10 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Connector 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
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	300 Hz	300 Hz	300 Hz	300 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 0.34 mm²	3 x 0.34 mm²	M12 x 1	M12 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO**-Link



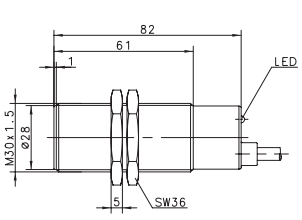


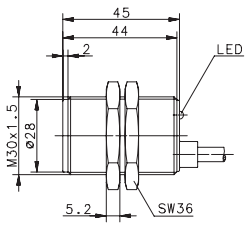


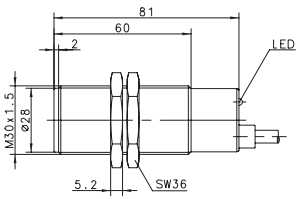


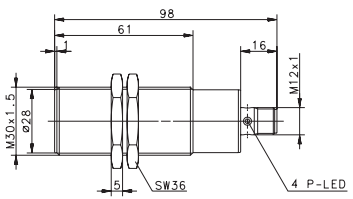
Cable couplings and other accessories can be found from p. 230

Type			**M30**	**M30**	**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**PA, red**	**PA, red**	**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 3 m**	**Cable 2 m**	**Connector M12**
Special feature			**Temperature**	**Short type**		**Temperature**
PNP	**DC**	**NO contact**	**6502907013** KIB-M30PS/010-KL2PUT	**6502922001** KIB-T30PS/010-KL3V		**6502939006** KIB-M30PS/010-KLS12T
PNP	**DC**	**NC contact**			**6502722708** KIB-T30PÖ/010-KL2	
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–30 VDC	10–60 VDC	10–60 VDC	10–30 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	300 Hz	300 Hz	300 Hz	300 Hz
Short circuit-protection			cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator			LED/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)			–40°C/+100°	–25°C/+70°C	–25°C/+70°C	–40°C/+100°
Protection class in accordance with IEC 529, EN 60529			IP67	IP67	IP67	IP67
Connection			3 x 0.5 mm²	3 x 0.75 mm²	3 x 0.5 mm²	M12 x 1
Approvals						





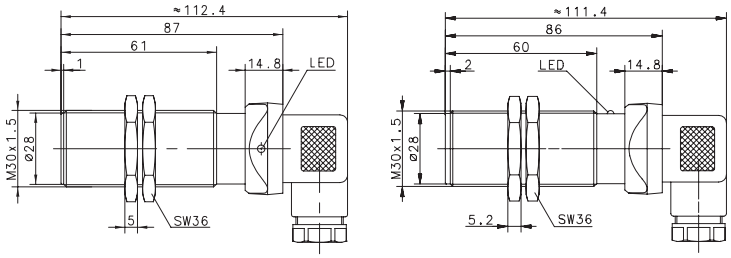




You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS **Type M30**

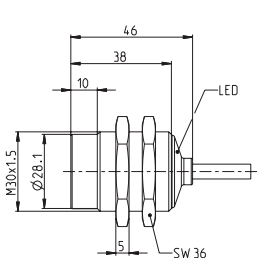
Type			**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**PA, red**
Type of installation			**flush**	**flush**
Nominal sensing distance			**10 mm**	**10 mm**
Type of connection			**DIN Connector**	**DIN Connector**
Special feature				
PNP	**DC**	**NO contact**	**6502939001** KIB-M30PS/010-KLSD	
PNP	**DC**	**NC contact**	**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	10–60 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	300 Hz	300 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			IP65	IP65
Connection			Plug connector DIN EN 175301-803	Plug connector DIN EN 175301-803
Approvals				

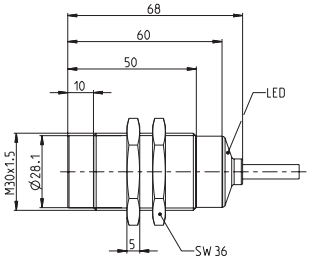


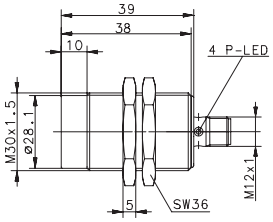
Cable couplings and other accessories can be found from p. 230

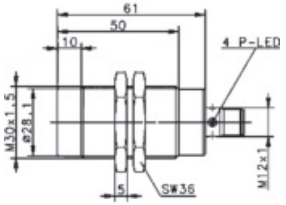
Type			**M30**	**M30**	**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**15 mm**	**15 mm**	**15 mm**	**15 mm**
Type of connection			**Cable 2 m**	**Cable 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
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	100 Hz	100 Hz	100 Hz	100 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 0.34 mm²	3 x 0.34 mm²	M12 x 1	M12 x 1
Approvals			c UL us	c UL us	c UL us	c UL us

= **IO**-Link





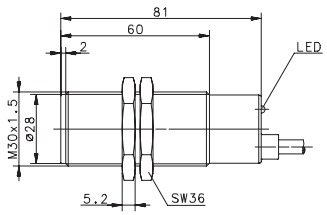


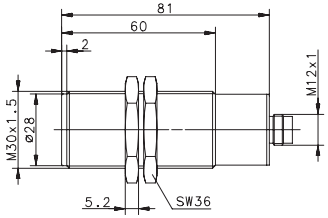


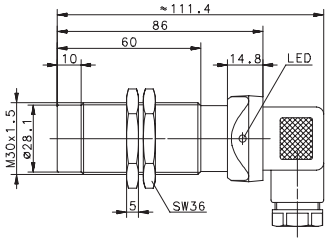
You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS **Type M30**

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	**6502923002** KIN-T30PS/015-KS12	**6502935001** KIN-M30PS/015-KLSD
PNP	**DC**	**NC contact**			
NPN	**DC**	**NO contact**			
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	≤ 200 mA
Max. switching voltage		F	100 Hz	100 Hz	100 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	IP65
Connection			3 x 0.5 mm²	M12 x 1	Plug connector DIN EN 175301-803

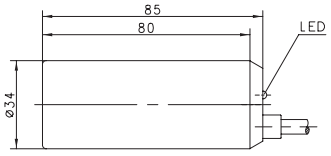


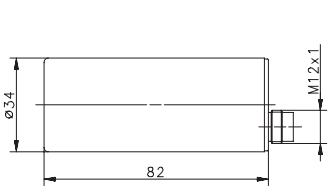


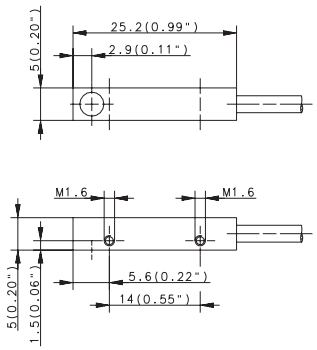


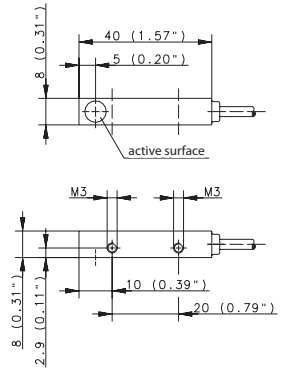
Cable couplings and other accessories can be found from p. 230

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	**6502999026** KIB-Q05PS/001-K2PU	**6502980004** KIB-Q08PS/1,5-K2
PNP	**DC**	**NC contact**			**6502799010** KIB-Q05PÖ/001-K2PU	**6502780001** KIB-Q08PÖ/1,5-K2
PNP	**DC**	**antivalent NO/NC**				
NPN	**DC**	**NO contact**				
Technical data						
Rated operating voltage range		U_B	10–60 VDC	10–60 VDC	10–30 VDC	10–36 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	200 mA	≤ 200 mA
Max. switching voltage		F	100 Hz	100 Hz	1000 Hz	1000 Hz
Short circuit-protection			cyclic	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	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529			IP67	IP67	IP67	IP67
Connection			3 x 0.5 mm²	M12 x 1	3 x 0.05 mm²	3 x 0.14 mm²





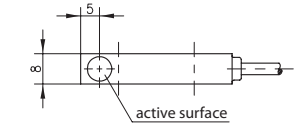


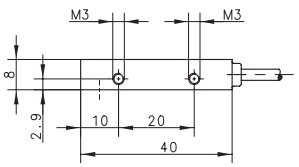


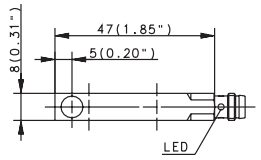
You can find detailed product data sheets at www.bernstein.eu

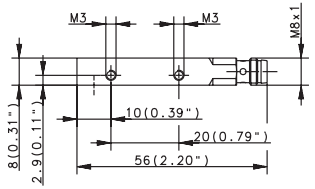
INDUCTIVE SENSORS **Type 8 x 8 x 40 mm, 8 x 8 x 56 mm, 12 x 12 x 55 mm**

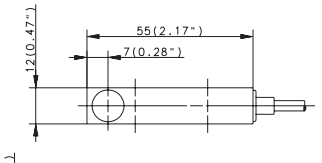
Type			**8 x 8 x 40 mm**	**8 x 8 x 56 mm**	**12 x 12 x 55 mm**	**12 x 12 x 55 mm**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**1.5 mm**	**1.5 mm**	**4 mm**	**4 mm**
Type of connection			**Cable 2 m**	**Connector M8**	**Cable 2 m**	**Connector M8**
Special feature			**Temperature**			
PNP	**DC**	**NO contact**	**6602980087** KIB-Q08PS/1,5-K2T	**6502980002** KIB-Q08PS/1,5-KLSM8	**6502999028** KIB-Q12PS/004-KL2E	**6502999030** KIB-Q12PS/004-KLSM8E
PNP	**DC**	**NC contact**		**6502780002** KIB-Q08PÖ/1,5-KLSM8		
NPN	**DC**	**NO contact**				**6502399021** KIB-Q12NS/004-KLSM8E
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–36 VDC	10–36 VDC	10–60 VDC	10–60 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	1000 Hz	1000 Hz	800 Hz	800 Hz
Short circuit-protection			cyclic	cyclic	cyclic	cyclic
Function/operating voltage indicator			–/–	LED/–	LED/–	LED/–
Mechanical data						
Ambient temperature (min/max)			0°C/+100°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 mm²	M8 x 1	3 x 0.14 mm²	M8 x 1

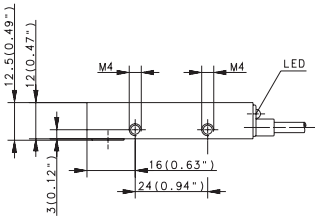


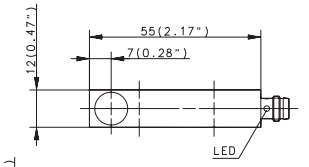


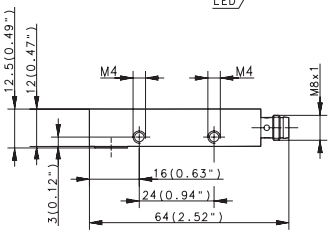








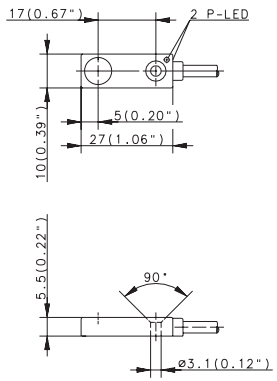


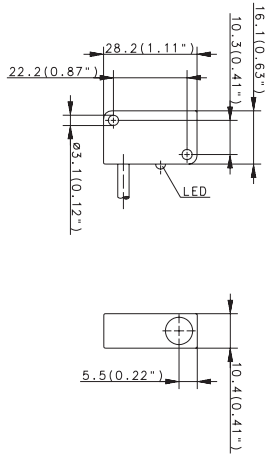


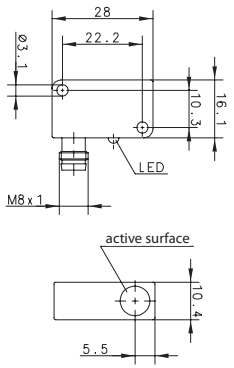
Cable couplings and other accessories can be found from p. 230

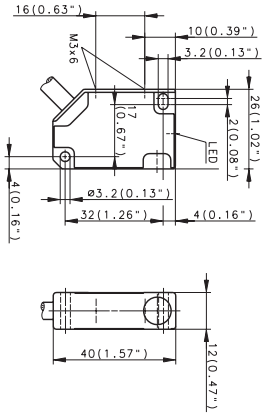
BERNSTEIN

Type			**27 x 10 x 5 mm**	**28 x 16 x 11 mm**	**28 x 16 x 11 mm**	**40 x 26 x 12 mm**
Enclosure material			**PA, black**	**PA, black**	**PA, black**	**PBT, black**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**1.5 mm**	**2 mm**	**2 mm**	**2 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Connector M8**	**Cable 2 m**
Special feature						
PNP	**DC**	**NO contact**	**6502993001** KIB-E27PS/1,5-KL2PU	**6502973001** KIB-E28PS/002-KL2	**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	10–30 VDC	10–30 VDC	10–36 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	1000 Hz	800 Hz	800 Hz	800 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 mm²	3 x 0.14 mm²	M8 x 1	3 x 0.5 mm²





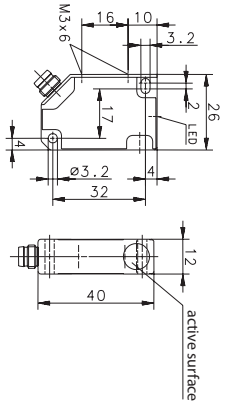


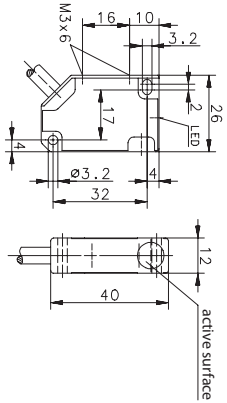


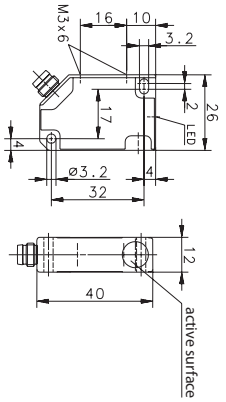
You can find detailed product data sheets at www.bernstein.eu

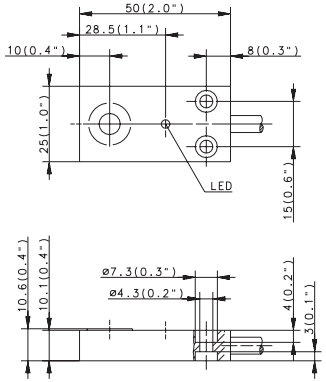
INDUCTIVE SENSORS **Type 40 x 26 x 12 mm, 50 x 25 x 10 mm**

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	**6502984026** KIN-E40PS/004-KLSM8	**6502990001** KIB-E50PS/005-KL2
PNP	**DC**	**NC contact**		**6502784007** KIN-E40PÖ/004-KL2	**6502784008** KIN-E40PÖ/004-KLSM8	
NPN	**DC**	**NO contact**				**6502390001** KIB-E50NS/005-KL2
NPN	**DC**	**NC contact**				
Technical data						
Rated operating voltage range		U_B	10–36 VDC	10–36 VDC	10–36 VDC	10–60 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	800 Hz	400 Hz	400 Hz	500 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			M8 x 1	3 x 0.5 mm²	M8 x 1	3 x 0.5 mm²



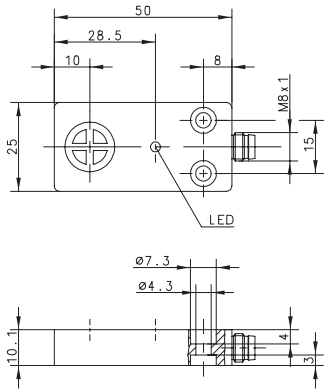


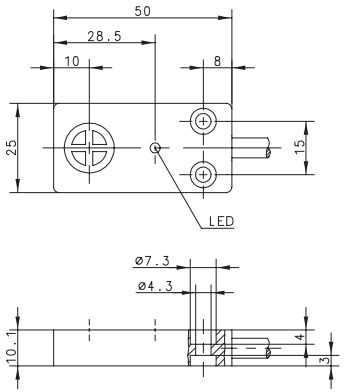


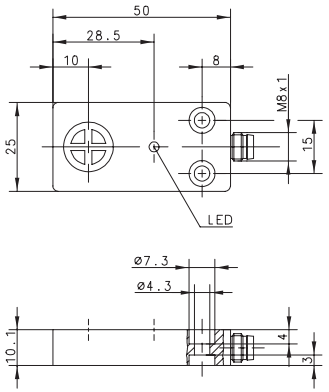


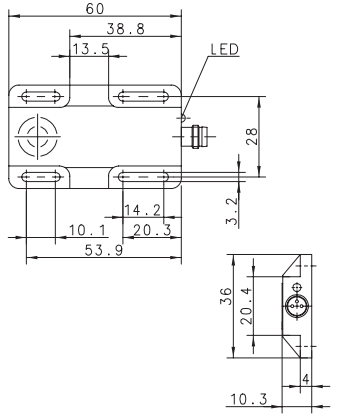
Cable couplings and other accessories can be found from p. 230

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**		**6502790002** KIN-E50PÖ/008-KL2		**6602799048** 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
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 400 mA
Max. switching voltage		F	500 Hz	200 Hz	200 Hz	200 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			M8 x 1	3 x 0.5 mm²	M8 x 1	M8 x 1





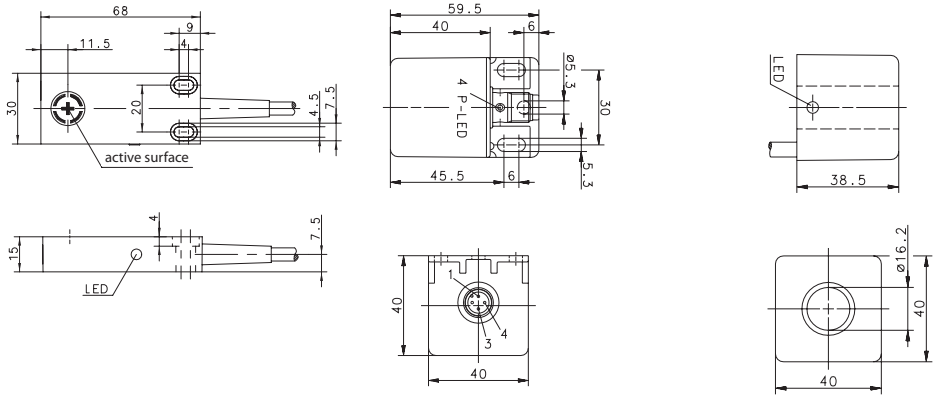




You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS **Type 68 x 30 x 15 mm, 40 x 40 mm**

Type			**68 x 30 x 15 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	**6502982003** KIN-N40PS/020-KLS12	**6502999036** KIR-N40PS/000-KL6
PNP	**DC**	**NC contact**			
NPN	**DC**	**NO contact**			
NPN	**DC**	**NC contact**	**6502156058** KIN-E68NÖ/007-KL6		
Technical data					
Rated operating voltage range		U_B	10–60 VDC	10–36 VDC	10–30 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA
Max. switching voltage		F	200 Hz	50 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 0.5 mm²	M12 x 1	3 x 0.5 mm²



Cable couplings and other accessories can be found from p. 230

Notes

Diagrams. Sketches. Ideas.

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

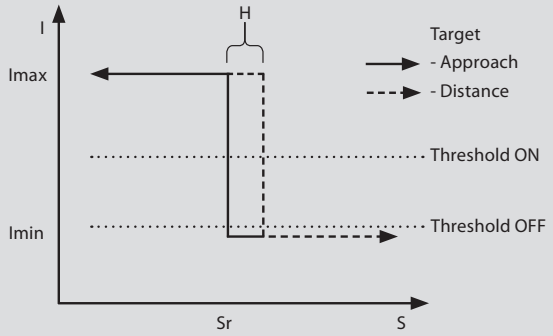
Good to know …

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

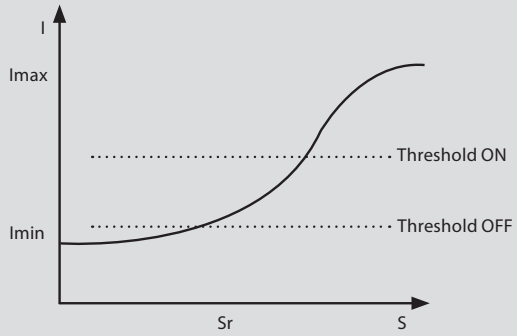
Options

- 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. 156



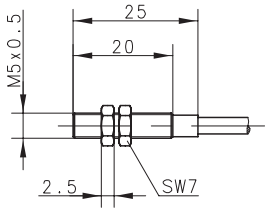
• non-continuous characteristic curve

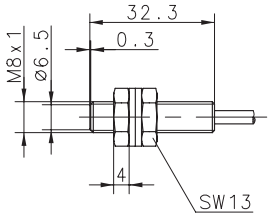


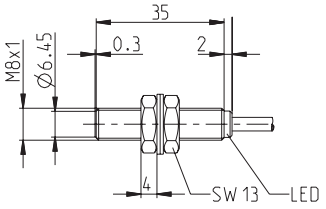
• continuous characteristic curve

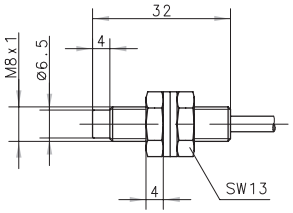
INDUCTIVE SENSORS NAMUR **Type M5, M8**

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	≈ 3 kHz	≈ 1 kHz	≈ 1.5 kHz	≈ 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 mm²	2 x 0.25 mm²	2 x 0.34 mm²	2 x 0.25 mm²





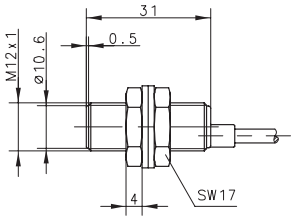


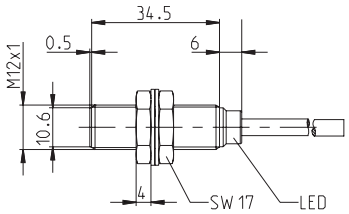


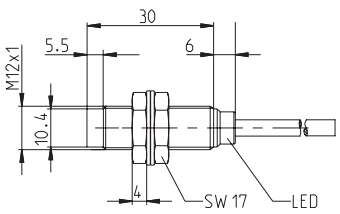
You can find detailed product data sheets at www.bernstein.eu

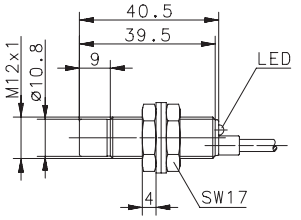
INDUCTIVE SENSORS NAMUR **Type M12**

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	**6601625418** KIN-M12EA/006-L2E
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 mm²	2 x 0.34 mm²	2 x 0.34 mm²	2 x 0.25 mm²





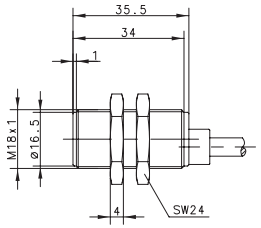


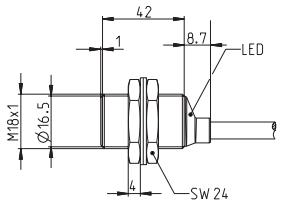


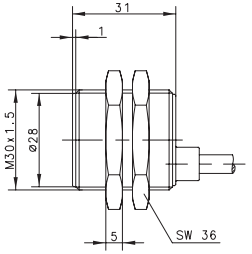
Cable couplings and other accessories can be found from p. 230

INDUCTIVE SENSORS NAMUR **Type M18, M30**

Type		**M18**	**M18**	**M30**
Enclosure material		**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation		**flush**	**flush**	**flush**
Nominal sensing distance		**5 mm**	**8 mm**	**10 mm**
Type of connection		**Cable 2 m**	**Cable 2 m**	**Cable 2 m**
Special feature		**continuous characteristic curve**	**NO contact / non-contin. charact. curve**	**continuous characteristic curve**
NAMUR DC		**6501626762** KIB-M18EA/005-2	**6501638001** KIB-M18ES/008-L2	**6501699012** KIB-M30EA/010-2
Technical data				
Rated operating voltage range	U_B	5–25 VDC	5–25 VDC	5–25 VDC
Rated operating current	I_e	–	–	–
Max. switching voltage	F	≤ 400 Hz	≈ 500 Hz	≤ 300 Hz
Short circuit-protection		–	–	–
Function/operating voltage indicator		–/–	LED/–	–/–
Mechanical data				
Ambient temperature (min/max)		–25°C/+70°C	–25°C/+75°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		2 x 0.5 mm²	2 x 0.34 mm²	2 x 0.5 mm²







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

Inductive Sensors
AC-Sensors

Product features

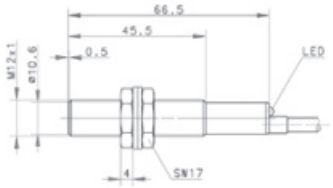
- Metric types: M12 – M30
- Voltage range: from 20 V AC to 265 V AC
- Sensing distance: 2 mm – 20 mm
- Switching function: NO contact/NC contact
- Enclosure material: plastic, brass

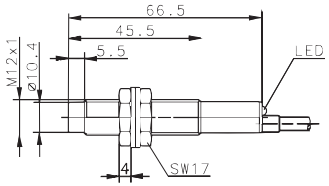
Options

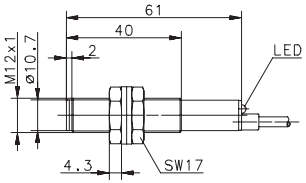
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

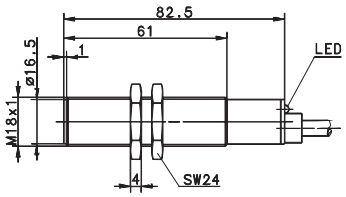
INDUCTIVE SENSORS **AC 2-WIRE Type M12, M18**

Type			**M12**	**M12**	**M12**	**M18**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**PA, red**	**CuZn39Pb3**
Type of installation			**flush**	**non-flush**	**non-flush**	**flush**
Nominal sensing distance			**2 mm**	**4 mm**	**4 mm**	**5 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Cable 2 m**	**Cable 2 m**
Special feature						
2-wire	**AC**	**NO contact**	**6503503001** KIB-M12AS/002-L2	**6503504001** KIN-M12AS/004-L2	**6503519001** KIN-T12AS/004-L2	**6503505004** KIB-M18AS/005-L2
2-wire	**AC**	**NC contact**		**6503404001** KIN-M12AÖ/004-L2		**6503405001** KIB-M18AÖ/005-L2
Technical data						
Rated operating voltage range		U_B	76–250 V AC	76–250 V AC	76–250 V AC	20–250 V AC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 400 mA
Max. switching voltage		F	≈ 10 Hz	≈ 10 Hz	≈ 25 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 mm²	2 x 0.14 mm²	2 x 0.14 mm²	2 x 0.5 mm²





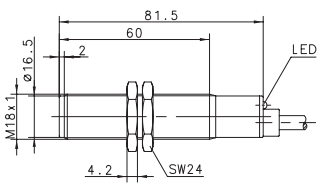


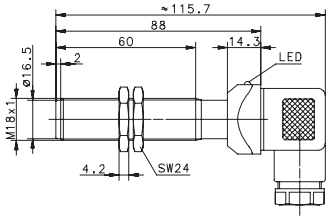


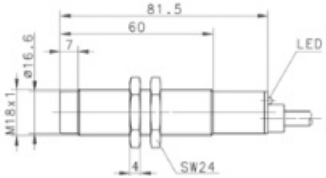
You can find detailed product data sheets at www.bernstein.eu

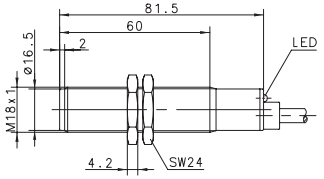
INDUCTIVE SENSORS **AC 2-WIRE Type M18**

Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**PA, red**	**PA, red**	**CuZn39Pb3**	**PA, red**
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**	**Cable 2 m**	**Cable 2 m**
Special feature						
2-wire	**AC**	**NO contact**	**6503520697** KIB-T18AS/005-L2		**6503506002** KIN-M18AS/008-L2	**6503521705** KIN-T18AS/008-L2
2-wire	**AC**	**NC contact**		**6503438976** KIB-T18AÖ/005-LSD	**6503406001** KIN-M18AÖ/008-L2	**6503421704** KIN-T18AÖ/008-L2
Technical data						
Rated operating voltage range		U_B	24–250 V AC	20–250 V AC	20–250 V AC	24–250 V AC
Rated operating current		I_e	≤ 200 mA	400 mA	≤ 400 mA	≤ 200 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	IP65	IP67	IP67
Connection			2 x 0.5 mm²	Plug connector DIN EN 175301-803	2 x 0.5 mm²	2 x 0.5 mm²





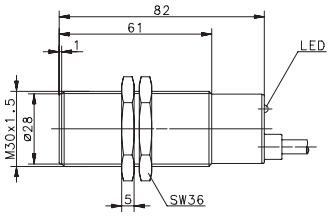


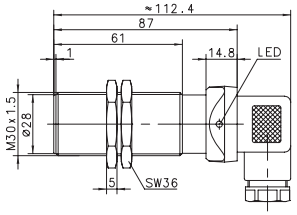


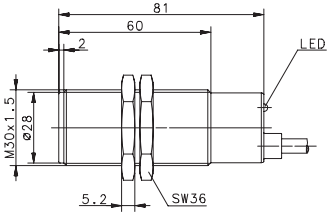
Cable couplings and other accessories can be found from p. 230

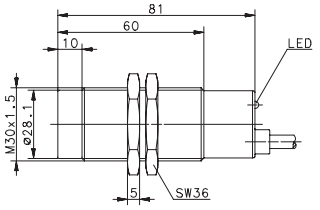
INDUCTIVE SENSORS **AC 2-WIRE Type M30**

Type			**M30**	**M30**	**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**PA, red**	**CuZn39Pb3**
Type of installation			**flush**	**flush**	**flush**	**non-flush**
Nominal sensing distance			**10 mm**	**10 mm**	**10 mm**	**15 mm**
Type of connection			**Cable 2 m**	**DIN Connector**	**Cable 2 m**	**Cable 2.5 m**
Special feature						
2-wire	**AC**	**NO contact**	**6503507378** KIB-M30AS/010-L2	**6503535960** KIB-M30AS/010-LSD	**6503522713** KIB-T30AS/010-L2	**6503508246** KIN-M30AS/015-L2,5
2-wire	**AC**	**NC contact**	**6503407240** KIB-M30AÖ/010-L2	**6503435959** KIB-M30AÖ/010-LSD		
Technical data						
Rated operating voltage range		U_B	20–250 V AC	20–265 V AC	48–250 V AC	20–250 V AC
Rated operating current		I_e	≤ 400 mA	≤ 500 mA	≤ 400 mA	≤ 400 mA
Max. switching voltage		F	≈ 10 Hz	20 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	IP65	IP67	IP67
Connection			2 x 0.5 mm²	Plug connector DIN EN 175301-803	2 x 0.5 mm²	2 x 0.5 mm²





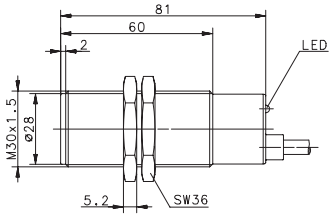


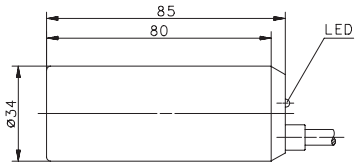


You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS **AC 2-WIRE Type M30, Ø 34**

Type			**M30**	**Ø 34**
Enclosure material			**PA, red**	**PBT, red**
Type of installation			**non-flush**	**non-flush**
Nominal sensing distance			**15 mm**	**20 mm**
Type of connection			**Cable 2.5 m**	**Cable 2 m**
Special feature				
2-wire	**AC**	**NO contact**	**6503523956** KIN-T30AS/015-L2,5	**6503515001** KIN-R34AS/020-L2
2-wire	**AC**	**NC contact**		
Technical data				
Rated operating voltage range		U_B	20–250 V AC	20–250 V AC
Rated operating current		I_e	≤ 400 mA	≤ 400 mA
Max. switching voltage		F	≈ 10 Hz	≈ 10 Hz
Short circuit-protection			–	–
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			2 x 0.5 mm²	2 x 0.5 mm²





Cable couplings and other accessories can be found from p. 230

Notes

Diagrams. Sketches. Ideas.

Inductive Sensors
Analogue Sensors

Product features

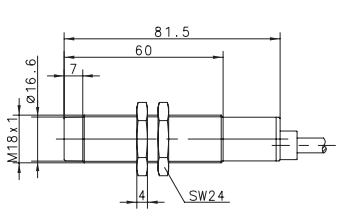
- Metric types: M18 / M30
- Sensing distance: 8 mm – 15 mm
- Current output: 0 – 10 mA / 0 – 20 mA
- Enclosure material: Brass

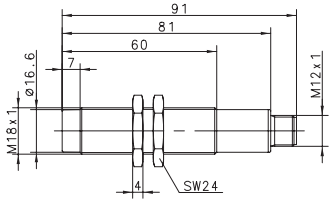
Options

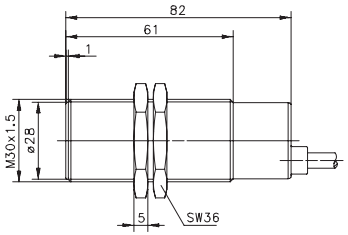
- Cable and connector assembly
- Adaptation of the enclosures
- Product adaptations and modifications
- Customized development

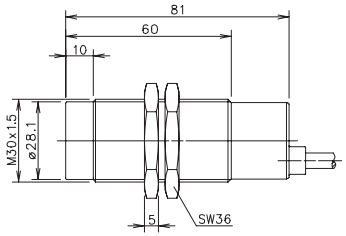
INDUCTIVE SENSORS **ANALOGUE Type M18, M30**

Type		M18	M18	M30	M30
Enclosure material		CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation		non-flush	non-flush	flush	non-flush
Nominal sensing distance		8 mm	8 mm	10 mm	15 mm
Type of connection		Cable 2 m	Connector M12	Cable 2 m	Cable 2m
Special feature					
Analogue DC		**6502006001** KIN-M18PA/008-2	**6602006111** KIN-M18PA/008-S12	**6502007001** KIB-M30PA/010-2	**6502008001** KIN-M30PA/015-2
Technical data					
Rated operating voltage range	U_B	10–36 VDC	10–36 VDC	10–30 VDC	10–30 VDC
Rated operating current	I_e	–	–	–	–
Max. switching voltage	F	–	–	–	–
Short circuit-protection		cyclic	cyclic	cyclic	cyclic
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		3 x 0.5 mm²	M12 x 1	3 x 0.5 mm²	3 x 0.5 mm²





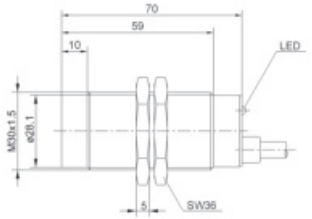




You can find detailed product data sheets at www.bernstein.eu

INDUCTIVE SENSORS **ANALOGUE Type M30**

Type		**M30**
Enclosure material		**CuZn39Pb3**
Type of installation		**non-flush**
Nominal sensing distance		**15 mm**
Type of connection		**Cable 5 m**
Special feature		
Analogue DC		**6602008332** KIN-M30PA/015-5V
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



Cable couplings and other accessories can be found from p. 230

Inductive Sensors
ATEX Sensors

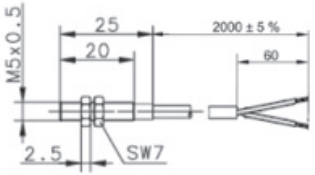
Product features

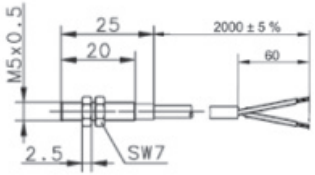
- Metric types: M05 – M30
- Sensing distance: 1 mm – 15 mm
- Switching function: NO contact/NC contact, NAMUR
- Enclosure material: plastic, brass, stainless steel

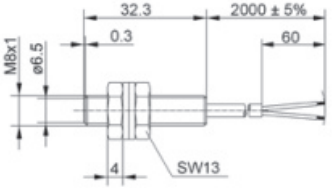
Good to know …

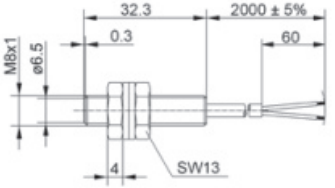
The term: **"ATEX"** is a derivative of **At**mosphères **Ex**plosibles, which is French for explosive atmosphere.

Type			**M05**	**M05**	**M08**	**M08**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**Stainless steel 1.4305**	**Stainless steel 1.4305**
Type of installation			**flush**	**flush**	**flush**	**flush**
Nominal sensing distance			**1 mm**	**1 mm**	**1.5 mm**	**1.5 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 G Ex ib IIC T6 Gb**	**II 3 G Ex ib IIC T6 Gc** **II 3 D Ex ib IIIC T70°C Dc**	**II 2 G Ex ib IIC T6 Gb**
Special feature			**NAMUR**	**NAMUR**	**NAMUR**	**NAMUR**
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
PNP	**DC**	**NO contact**				
PNP	**DC**	**NC contact**				
DC			**6521699002** KIB-M05EA/001-2G	**6581699013** KIB-M05EA/001-2G	**6521601003** KIB-M08EA/1,5-2G	**6581631014** KIB-M08EA/1,5-2G
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	≈ 3 kHz	≈ 3 kHz	≈ 1 kHz	≈ 1 kHz
Short circuit-protection			–	–	–	–
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			2 x 0.14 mm²	2 x 0.14 mm²	2 x 0.25 mm²	2 x 0.25 mm²





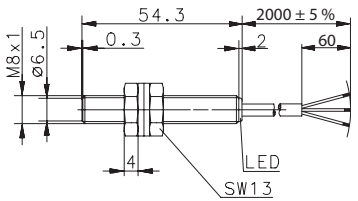


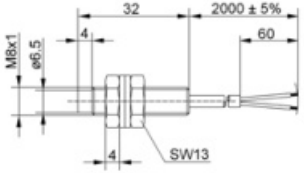


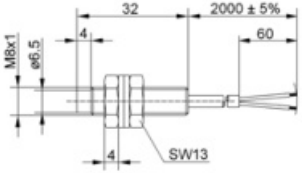
You can find detailed product data sheets at www.bernstein.eu

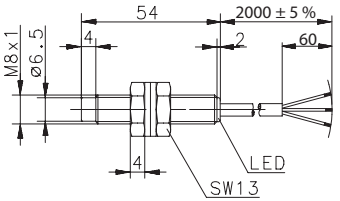
INDUCTIVE SENSORS **ATEX Type M08**

Type			M08	M08	M08	M08
Enclosure material			Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305
Type of installation			flush	non-flush	non-flush	non-flush
Nominal sensing distance			1 mm	2 mm	2 mm	2 mm
Type of connection			Cable 2 m	Cable 2 m	Cable 2 m	Cable 2 m
ATEX			II 2 D Ex tb IIIC T100°C Db	II 3 G Ex ib IIC T6 Gc II 3 D Ex ib IIIC T70°C Dc	II 2 G Ex ib IIC T6 Gb	II 2 D Ex tb IIIC T100°C Db
Special feature				NAMUR	NAMUR	
NPN	**DC**	**NO contact**	**6522302025** KIB-M08NS/001-KL2D			**6522302040** KIN-M08NS/002-KL2D
NPN	**DC**	**NC contact**	**6522102024** KIB-M08NÖ/001-KL2D			**6522102039** KIN-M08NÖ/002-KL2D
PNP	**DC**	**NO contact**	**6522902027** KIB-M08PS/001-KL2D			**6522902042** KIN-M08PS/002-KL2D
PNP	**DC**	**NC contact**	**6522702026** KIB-M08PÖ/001-KL2D			**6522702041** KIN-M08PÖ/002-KL2D
DC				**6521601007** KIN-M08EA/002-2G	**6581645015** KIN-M08EA/002-2G	
Technical data						
Rated operating voltage range		U_B	10–30 VDC	5–25 VDC	5–25 VDC	10–30 VDC
Rated operating current		I_e	≤ 200 mA	–	–	≤ 200 mA
Max. switching voltage		F	≈ 1 kHz	≈ 1 kHz	≈ 1 kHz	750 Hz
Short circuit-protection			cyclic	–	–	cyclic
Function/operating voltage indicator			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			3 x 0.14 mm²	2 x 0.25 mm²	2 x 0.25 mm²	3 x 0.14 mm²



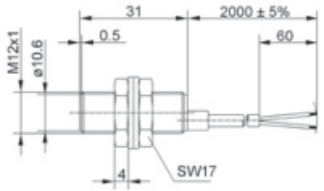


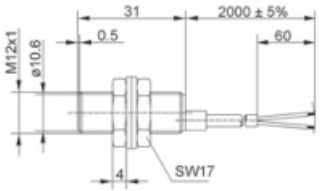


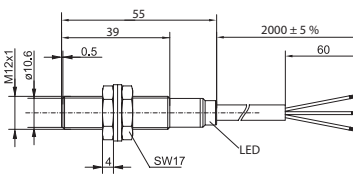


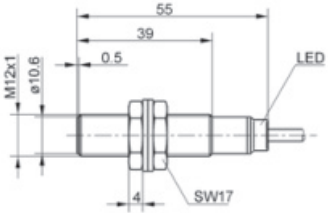
Cable couplings and other accessories can be found from p. 230

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**	**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 G Ex ib IIC T6 Gb**	**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**	**NAMUR**		
NPN	**DC**	**NO contact**			**6522303029** KIB-M12NS/002-KL2D	
NPN	**DC**	**NC contact**			**6522103028** KIB-M12NÖ/002-KL2D	
PNP	**DC**	**NO contact**			**6522903022** KIB-M12PS/002-KL2D	**6522903009** KIB-M12PS/002-KL2D
PNP	**DC**	**NC contact**			**6522703030** KIB-M12PÖ/002-KL2D	
DC			**6521624004** KIB-M12EA/002-2G	**6581699016** KIB-M12EA/002-2G		
Technical data						
Rated operating voltage range		U_B	5–25 VDC	5–25 VDC	10–30 VDC	10–36 VDC
Rated operating current		I_e	–	–	≤ 200 mA	200 mA
Max. switching voltage		F	800 Hz	800 Hz	800 Hz	800 Hz
Short circuit-protection			–	–	cyclic	cyclic
Function/operating voltage indicator			–/–	–/–	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 0.25 mm²	2 x 0.25 mm²	3 x 0.14 mm²	3 x 0.14 mm²





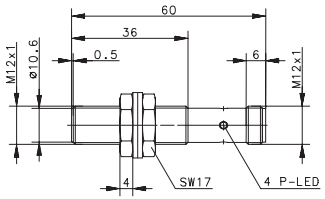


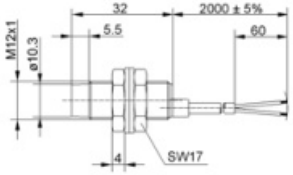


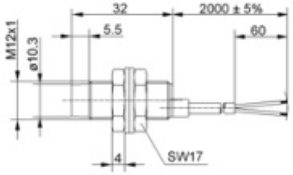
You can find detailed product data sheets at www.bernstein.eu

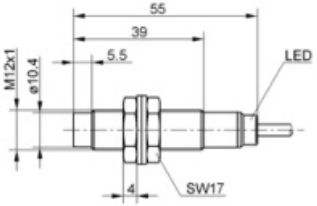
INDUCTIVE SENSORS **ATEX Type M12**

Type			**M12**	**M12**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**2 mm**	**4 mm**	**4 mm**	**4 mm**
Type of connection			**Connector M12**	**Cable 2 m**	**Cable 2 m**	**Cable 2 m**
ATEX			**II 3G Ex nA IIC T6 Gc X** **II 3D Ex tc IIIC T80°C Dc X**	**II 3 G Ex ib IIC T6 Gc** **II 3 D Ex ib IIIC T70°C Dc**	**II 2 G Ex ib IIC T6 Gb**	**II 3G Ex nA IIC T6 Gc X** **II 3D Ex tc IIIC T80°C Dc X**
Special feature				**NAMUR**	**NAMUR**	
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
PNP	**DC**	**NO contact**	**6522943011** KIB-M12PS/002-KLS12D			**6522904010** KIN-M12PS/004-KL2D
PNP	**DC**	**NC contact**				
DC				**6521625008** KIN-M12EA/004-2G	**6581699017** KIN-M12EA/004-2G	
Technical data						
Rated operating voltage range		U_B	10–36 VDC	5–25 VDC	5–25 VDC	10–36 VDC
Rated operating current		I_e	200 mA	–	–	200 mA
Max. switching voltage		F	800 Hz	400 Hz	400 Hz	400 Hz
Short circuit-protection			cyclic	–	–	cyclic
Function/operating voltage indicator			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			M12 x 1	2 x 0.25 mm²	2 x 0.25 mm²	3 x 0.14 mm²



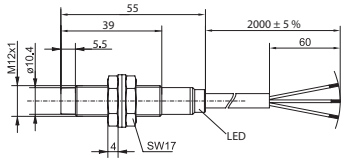


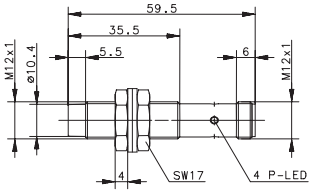


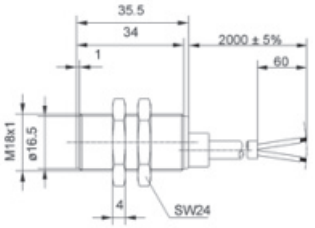


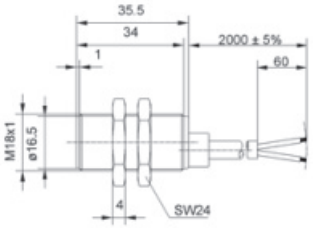
Cable couplings and other accessories can be found from p. 230

Type			**M12**	**M12**	**M18**	**M18**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**	**flush**	**flush**
Nominal sensing distance			**4 mm**	**4 mm**	**5 mm**	**5 mm**
Type of connection			**Cable 2 m**	**Connector M12**	**Cable 2 m**	**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 3 G Ex ib IIC T6 Gc** **II 3 D Ex ib IIIC T70°C Dc**	**II 2 G Ex ib IIC T6 Gb**
Special feature					**NAMUR**	**NAMUR**
NPN	**DC**	**NO contact**	**6522304044** KIN-M12NS/004-KL2D			
NPN	**DC**	**NC contact**	**6522104043** KIN-M12NÖ/004-KL2D			
PNP	**DC**	**NO contact**	**6522904023** KIN-M12PS/004-KL2D	**6522944012** KIN-M12PS/004-KLS12D		
PNP	**DC**	**NC contact**	**6522704045** KIN-M12PÖ/004-KL2D			
DC					**6521626005** KIB-M18EA/005-2G	**6581638018** KIB-M18EA/005-2G
Technical data						
Rated operating voltage range		U_B	10–30 VDC	10–36 VDC	5–25 VDC	5–25 VDC
Rated operating current		I_e	≤ 200 mA	200 mA	–	–
Max. switching voltage		F	450 Hz	400 Hz	400 Hz	400 Hz
Short circuit-protection			cyclic	cyclic	–	–
Function/operating voltage indicator			LED	LED	–/–	–/–
Mechanical data						
Ambient temperature (min/max)			–20°C/+60°C	–25°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 mm²	12 x 1	2 x 0.5 mm²	2 x 0.5 mm²





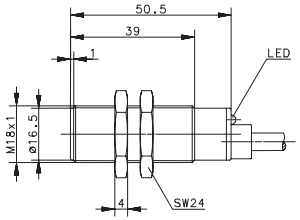


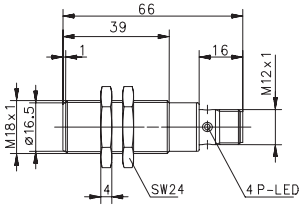


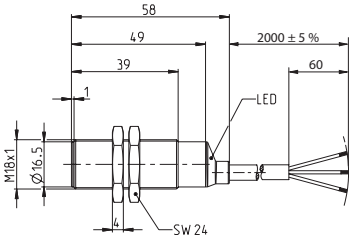
You can find detailed product data sheets at www.bernstein.eu

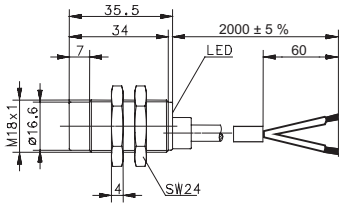
INDUCTIVE SENSORS **ATEX Type M18**

Type			M18	M18	M18	M18
Enclosure material			CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Type of installation			flush	flush	flush	non-flush
Nominal sensing distance			5 mm	5 mm	5 mm	8 mm
Type of connection			Cable 2 m	Connector M12	Cable 2 m	Cable 2 m
ATEX			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	II 3G Ex ib IIC T6 Gc II 3D Ex i IIIC T70°C Dc
Special feature						NAMUR
NPN	**DC**	**NO contact**			**6522305032** KIB-M18NS/005-KL2D	
NPN	**DC**	**NC contact**			**6522105031** KIB-M18NÖ/005-KL2D	
PNP	**DC**	**NO contact**	**6522905013** KIB-M18PS/005-KL2D	**6522905015** KIB-M18PS/005-KLS12D	**6522905034** KIB-M18PS/005-KL2D	
PNP	**DC**	**NC contact**			**6522705033** KIB-M18PÖ/005-KL2D	
DC						**6521627001** KIN-M18EA/008-2G
Technical data						
Rated operating voltage range		U_B	10–36 VDC	10–36 VDC	10–30 VDC	5–25 VDC
Rated operating current		I_e	≤ 200 mA	200 mA	≤ 200 mA	–
Max. switching voltage		F	500 Hz	500 Hz	500 Hz	200 Hz
Short circuit-protection			cyclic	cyclic	cyclic	–
Function/operating voltage indicator			LED	LED	LED	–/–
Mechanical data						
Ambient temperature (min/max)			–20°C/+60°C	–25°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			3 x 0.5 mm²	M12 x 1	3 x 0.34 mm²	2 x 0.5 mm²



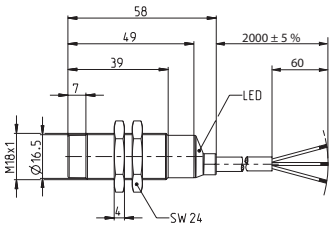


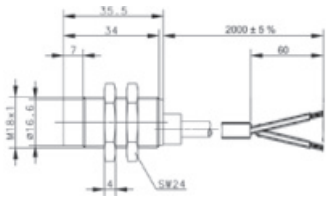


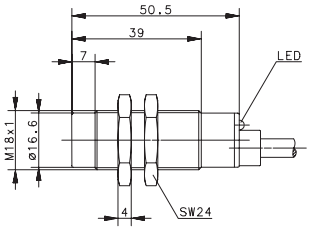


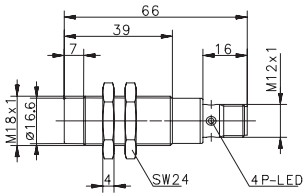
Cable couplings and other accessories can be found from p. 230

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**	**Cable 2 m**	**Connector M12**
ATEX			**II 2 D Ex tb IIIC T100°C Db**	**II 2 G Ex ib IIC T6 Gb**	**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**
Special feature				**NAMUR**		
NPN	**DC**	**NO contact**	**6522306047** KIN-M18NS/008-KL2D			
NPN	**DC**	**NC contact**	**6522106046** KIN-M18NÖ/008-KL2D			
PNP	**DC**	**NO contact**	**6522906049** KIN-M18PS/008-KL2D		**6522906014** KIN-M18PS/008-KL2D	**6522906016** KIN-M18PS/008-KLS12D
PNP	**DC**	**NC contact**	**6522706048** KIN-M18PÖ/008-KL2D			
DC				**6581699019** KIN-M18EA/008-2G		
Technical data						
Rated operating voltage range		U_B	10–30 VDC	5–25 VDC	10–36 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	200 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	–25°C/+60°C	–25°C/+60°C
Protection class in accordance with IEC 529, EN 60529			IP67	IP67	IP67	IP67
Connection			3 x 0.34 mm²	2 x 0.5 mm²	2 x 0.5 mm²	M12 x 1





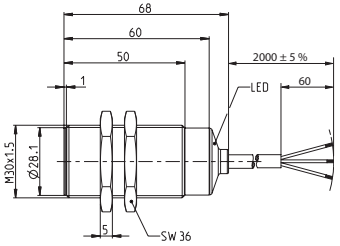


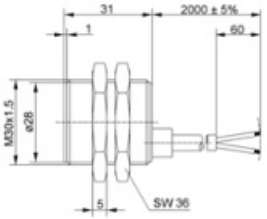


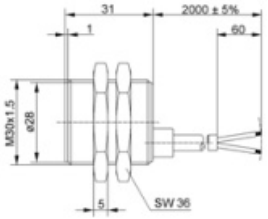
You can find detailed product data sheets at www.bernstein.eu

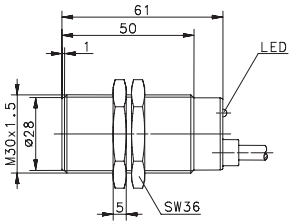
INDUCTIVE SENSORS **ATEX Type M30**

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**	**Cable 2 m**	**Cable 2 m**
ATEX			**II 2 D Ex tb IIIC T100°C Db**	**II 3 G Ex ib IIC T6 Gc** **II 3 D Ex ib IIIC T70°C Dc**	**II 2 G Ex ib IIC T6 Gb**	**II 3G Ex nA IIC T6 Gc X** **II 3D Ex tc IIIC T80°C Dc X**
Special feature				**NAMUR**	**NAMUR**	
NPN	**DC**	**NO contact**	**6522307036** KIB-M30NS/010-KL2D			
NPN	**DC**	**NC contact**	**6522107035** KIB-M30NÖ/010-KL2D			
PNP	**DC**	**NO contact**	**6522907038** KIB-M30PS/010-KL2D			**6522907017** KIB-M30PS/010-KL2D
PNP	**DC**	**NC contact**	**6522707037** KIB-M30PÖ/010-KL2D			
DC				**6521699006** KIB-M30EA/010-2G	**6581699020** KIB-M30EA/010-2G	
Technical data						
Rated operating voltage range		U_B	10–30 VDC	5–25 VDC	5–25 VDC	10–36 VDC
Rated operating current		I_e	≤ 200 mA	–	–	200 mA
Max. switching voltage		F	300 Hz	300 Hz	300 Hz	300 Hz
Short circuit-protection			cyclic	–	–	cyclic
Function/operating voltage indicator			LED	–/–	–/–	LED
Mechanical data						
Ambient temperature (min/max)			–20°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			3 x 0.34 mm²	2 x 0.5 mm²	2 x 0.5 mm²	3 x 0.5 mm²









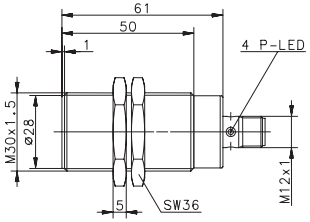
Cable couplings and other accessories can be found from p. 230

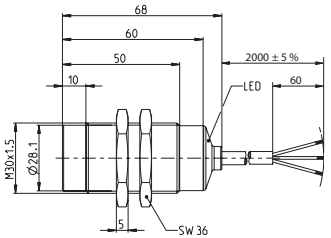
INDUCTIVE SENSORS **ATEX Type M30**

Type			**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**
Type of installation			**flush**	**non-flush**
Nominal sensing distance			**10 mm**	**15 mm**
Type of connection			**Connector M12**	**Cable 2 m**
ATEX			**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**		**6522308051** KIN-M30NS/015-KL2D
NPN	**DC**	**NC contact**		**6522108050** KIN-M30NÖ/015-KL2D
PNP	**DC**	**NO contact**	**6522907019** KIB-M30PS/010-KLS12D	**6522908053** KIN-M30PS/015-KL2D
PNP	**DC**	**NC contact**		**6522708052** KIN-M30PÖ/015-KL2D

DC

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	300 Hz	100 Hz
Short circuit-protection		cyclic	cyclic
Function/operating voltage indicator		LED	LED
Mechanical data			
Ambient temperature (min/max)		–25°C/+60°C	–20°C/+60°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67
Connection		M12 x 1	3 x 0.34 mm²





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

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

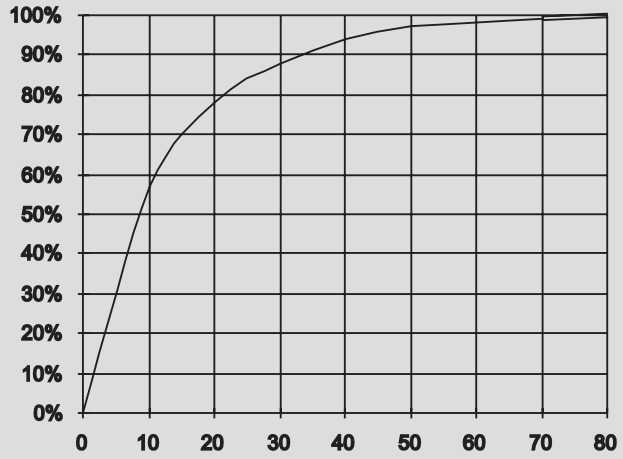
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

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.

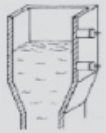


Variance of sensing distance as a function of ε

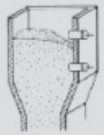
Examples of dielectric constants	
Glass	3 ... 14
Rubber	2.5 ... 3
Laminated paper	3.5 ... 6
Wood	2.5 ... 6.8
Marble	8.4 ... 14
Mineral oil	2.15
Epoxy resin	3.3 ... 3.6
Petroleum	2.2
Plexiglas	3.6
Polyamide	3 ... 8
PVC	3.3 ... 4.1
Porcelain	4.2 ... 6.5
Teflon PTFE	2
Air	1
Water	80.8
Paper (dry)	2

Capacitive Sensors
Standard range

Level monitoring in non-metallic containers



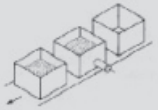
Level monitoring of bulk material, e.g. granulated material, fodder



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

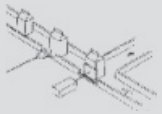


Detecting, positioning in sequence control systems

Detection in woodworking applications

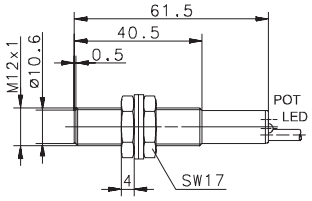
Belt breakage signalling

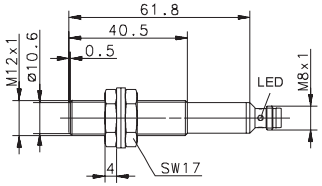
Level monitoring in packing systems

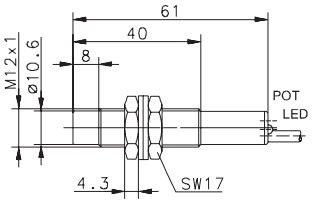


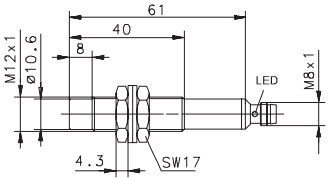
CAPACITIVE SENSORS **Type M12**

Type			**M12**	**M12**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**PBT, black**	**PBT, black**
Type of installation			**flush**	**flush**	**non-flush**	**non-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			**PTFE Front cap**	**PTFE Front cap**		
PNP	**DC**	**NO contact**	**6507903001** KCB-M12PS/002-KLP2	**6507903004** KCB-M12PS/002-KLSM8	**6507919001** KCN-T12PS/004-KLP2	**6507919004** KCN-T12PS/004-KLSM8
PNP	**DC**	**NC contact**	**6507703001** KCB-M12PÖ/002-KLP2	**6507703004** KCB-M12PÖ/002-KLSM8		
NPN	**DC**	**NO contact**	**6507303001** KCB-M12NS/002-KLP2	**6507303004** KCB-M12NS/002-KLSM8	**6507319001** KCN-T12NS/004-KLP2	**6507319004** KCN-T12NS/004-KLSM8
NPN	**DC**	**NC contact**				**6507119004** KCN-T12NÖ/004-KLSM8
Technical data						
Rated operating voltage range		U_B	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
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/–
Sensing distance, adjustable			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	IP65	IP65	IP65
Connection			3 x 0.14 mm²	M8 x 1	3 x 0.14 mm²	M8 x 1





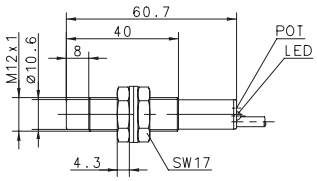


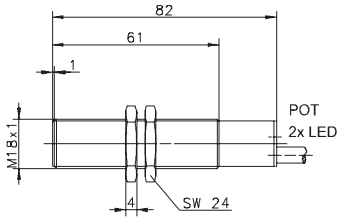


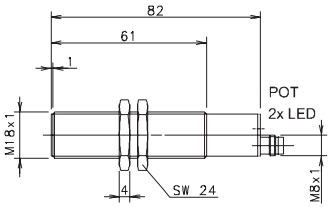
Cable couplings and other accessories can be found from p. 230

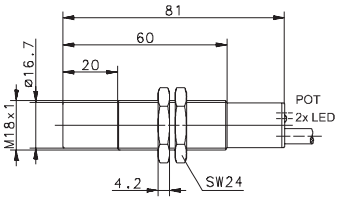
BERNSTEIN

Type			**M12**	**M18**	**M18**	**M18**
Enclosure material			**PBT, black**	**CuZn39Pb3**	**CuZn39Pb3**	**PBT, black**
Type of installation			**non-flush**	**flush**	**flush**	**non-flush**
Nominal sensing distance			**6 mm**	**5 mm**	**5 mm**	**8 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**	**Connector M8**	**Cable 2 m**
Special feature			**Sensing distance**	**PTFE Front cap**	**PTFE Front cap**	
PNP	**DC**	**NO contact**	**6607919110** KCN-T12PS/006-KLP2E	**6507905001** KCB-M18PS/005-KLP2	**6507905004** KCB-M18PS/005-KLPSM8	**6507921724** KCN-T18PS/008-KLP2
PNP	**DC**	**NC contact**				
PNP	**DC**	**antivalent NO/NC**				
NPN	**DC**	**NO contact**		**6507305001** KCB-M18NS/005-KLP2		**6507321723** KCN-T18NS/008-KLP2
Technical data						
Rated operating voltage range		U_B	10–36 VDC	10–60 VDC	10–60 VDC	10–60 VDC
Rated operating current		I_e	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 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/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	IP65	IP65	IP65
Connection			3 x 0.14 mm²	3 x 0.5 mm²	M8 x 1	3 x 0.5 mm²





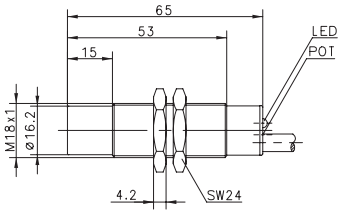


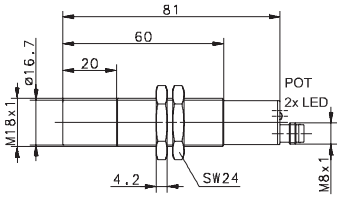


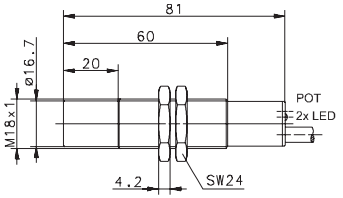
You can find detailed product data sheets at www.bernstein.eu

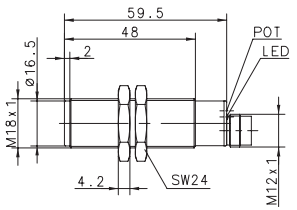
CAPACITIVE SENSORS **Type M18**

Type			**M18**	**M18**	**M18**	**M18**
Enclosure material			**PA, red**	**PBT, black**	**PBT, black**	**PBT, black**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**non-flush**
Nominal sensing distance			**8 mm**	**8 mm**	**13,5 mm**	**13,5 mm**
Type of connection			**Cable 2 m**	**Connector M8**	**Cable 3 m**	**Connector M12**
Special feature			**Short type**		**Sensing distance**	**Sensing distance / Short type**
PNP	**DC**	**NO contact**		**6507921002** KCN-T18PS/008-KLPSM8	**6607921461** KCN-T18PS/013-KLP3	**6507921004** KCN-T18PS/013-KLPS12V
PNP	**DC**	**NC contact**				
NPN	**DC**	**NO contact**				
NPN	**DC**	**NC contact**				
PNP	**DC**	**Changeover contact**	**6507821001** KCN-T18PU/008-KLP2V			
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	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 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	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	IP65	IP65	IP65
Connection			4 x 0.34 mm²	M8 x 1	3 x 0.5 mm²	M12 x 1





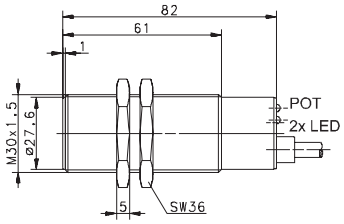


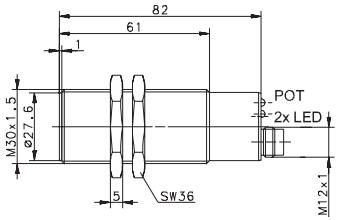


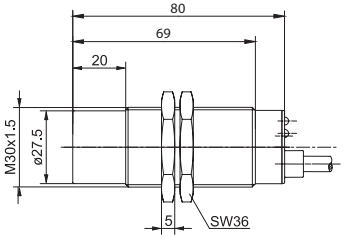
Cable couplings and other accessories can be found from p. 230

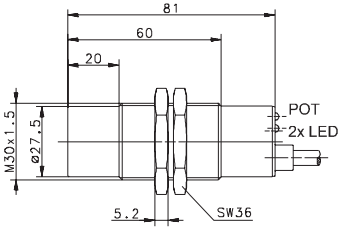
BERNSTEIN

Type			**M30**	**M30**	**M30**	**M30**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**Stainless steel 1.4305**	**PBT, black**
Type of installation			**flush**	**flush**	**non-flush**	**non-flush**
Nominal sensing distance			**10 mm**	**10 mm**	**20 mm**	**20 mm**
Type of connection			**Cable 2 m**	**Connector M12**	**Cable 2 m**	**Cable 2 m**
Special feature			**PTFE Front cap**	**PTFE Front cap**	**PTFE Front cap / Stainless steel enclosure**	
PNP	**DC**	**NO contact**	**6507907001** KCB-M30PS/010-KLP2	**6507907004** KCB-M30PS/010-KLPS12	**6507908001** KCN-M30PS/020-KLP2	**6507923727** KCN-T30PS/020-KLP2
PNP	**DC**	**NC contact**	**6507707001** KCB-M30PÖ/010-KLP2			**6507723001** KCN-T30PÖ/020-KLP2
NPN	**DC**	**NO contact**			**6507308001** KCN-M30NS/020-KLP2	**6507323001** KCN-T30NS/020-KLP2
NPN	**DC**	**NC contact**				**6507123001** KCN-T30NÖ/020-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	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	IP65	IP67	IP65
Connection			3 x 0.5 mm²	M12 x 1	3 x 0.5 mm²	3 x 0.5 mm²





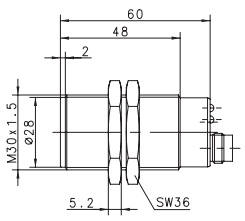


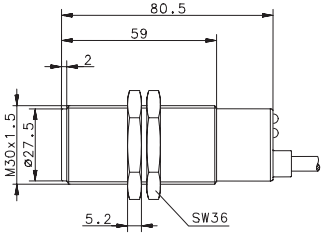


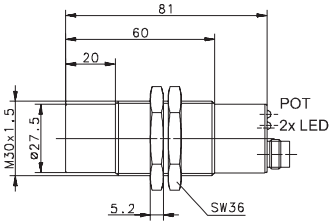
You can find detailed product data sheets at www.bernstein.eu

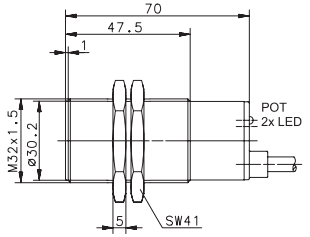
CAPACITIVE SENSORS **Type M30, M32**

Type			**M30**	**M30**	**M30**	**M32**
Enclosure material			**PBT, black**	**PBT, black**	**PBT, black**	**CuZn39Pb3**
Type of installation			**non-flush**	**non-flush**	**non-flush**	**flush**
Nominal sensing distance			**20 mm**	**20 mm**	**20 mm**	**15 mm**
Type of connection			**Connector M12**	**Cable 2 m**	**Connector M12**	**Cable 2 m**
Special feature			**Short type**	**Pickup delay / Relais**		**PTFE Front cap**
PNP	**DC**	**NO contact**	**6507923006** KCN-T30PS/020-KLPS12V		**6507923004** KCN-T30PS/020-KLPS12	
NPN	**DC**	**NO contact**				
PNP/NPN	**DC**	**NO/NC prog.**				**6507013011** KCB-M32DP/015-KLP2
PNP/NPN	**DC**	**Push-pull operation**				**6507013012** KCB-M32GP/015-KLP2
Relay		**Changeover contact**		**6509023001** KCN-T30RU/020-LP2		
Technical data						
Rated operating voltage range		U_B	10–60 VDC	20 V–250 V AC/DC	10–60 VDC	10–60 VDC
Rated operating current		I_e	≤ 400 mA	≤ 1 A	≤ 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	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	IP67
Connection			M12 x 1	5 x 0.5 mm²	M12 x 1	3 x 0.5 mm²





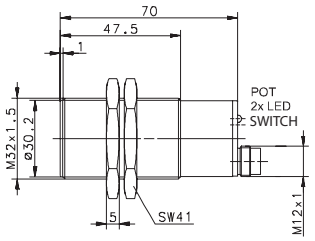


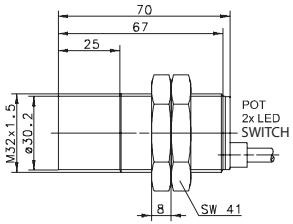


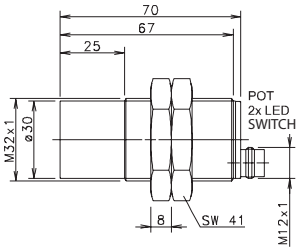
Cable couplings and other accessories can be found from p. 230

BERNSTEIN

Type			**M32**	**M32**	**M32**
Enclosure material			**CuZn39Pb3**	**PBT, black**	**PBT, black**
Type of installation			**flush**	**non-flush**	**non-flush**
Nominal sensing distance			**15 mm**	**30 mm**	**30 mm**
Type of connection			**Connector M12**	**Cable 2 m**	**Connector M12**
Special feature			**PTFE Front cap**		
PNP	**DC**	**NO contact**			
NPN	**DC**	**NO contact**			
PNP/NPN	**DC**	**NO/NC prog.**	**6507013015** KCB-M32DP/015-KLPS12	**6507013001** KCN-T32DP/030-KLP2	**6507013004** KCN-T32DP/030-KLPS12
PNP/NPN	**DC**	**Push-pull operation**			
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/–
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			M12 x 1	3 x 0.5 mm²	M12 x 1



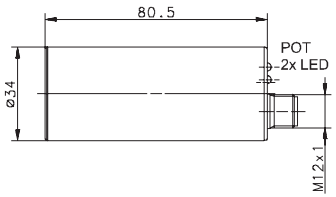


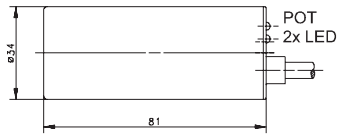


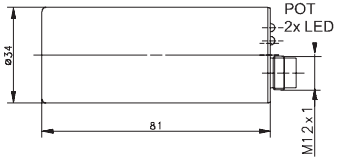
You can find detailed product data sheets at www.bernstein.eu

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	**6507915001** KCN-R34PS/030-KLP2	**6507915004** KCN-R34PS/030-KLPS12
PNP	**DC**	**NC contact**			**6507715004** KCN-R34PÖ/030-KLPS12
NPN	**DC**	**NO contact**			
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	≤ 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			IP65	IP65	IP65
Connection			M12 x 1	3 x 0.-5 mm²	M12 x 1

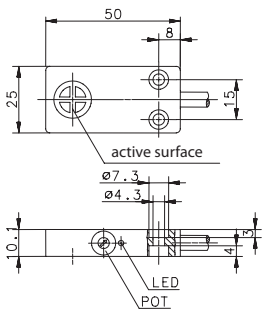


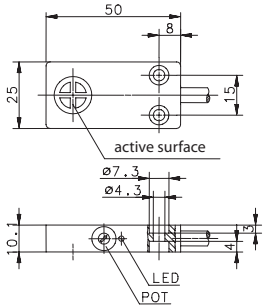


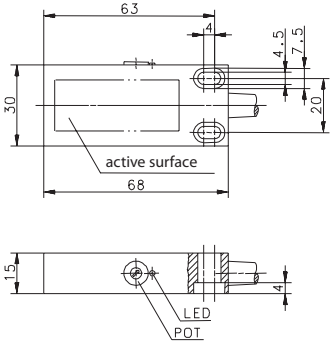


Cable couplings and other accessories can be found from p. 230

Type			**15 x 25 x 10 mm**	**15 x 25 x 10 mm**	**68 x 30 x 15 mm**
Enclosure material			**PBT, black**	**PBT, black**	**PBT, black**
Type of installation			**flush**	**flush**	**flush**
Nominal sensing distance			**8 mm**	**8 mm**	**10 mm**
Type of connection			**Cable 2 m**	**Connector M8**	**Cable 2 m**
Special feature					
PNP	**DC**	**NO contact**	**6507990001** KCB-E50PS/008-KLP2	**6607990842** KCB-E50PS/008-KLPSM8	**6507956001** KCB-E68PS/010-KLP2
PNP	**DC**	**NC contact**			
NPN	**DC**	**NO contact**	**6507390001** KCB-E50NS/008-KLP2		
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
Switching frequency (max)		F	25 Hz	25 Hz	25 Hz
Short circuit-protection			cyclic	cyclic	cyclic
Function/operating voltage indicator			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 0.34 mm²	M8 x 1	3 x 0.5 mm²

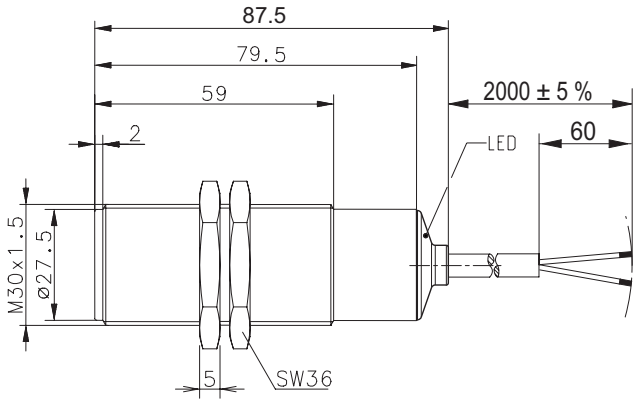


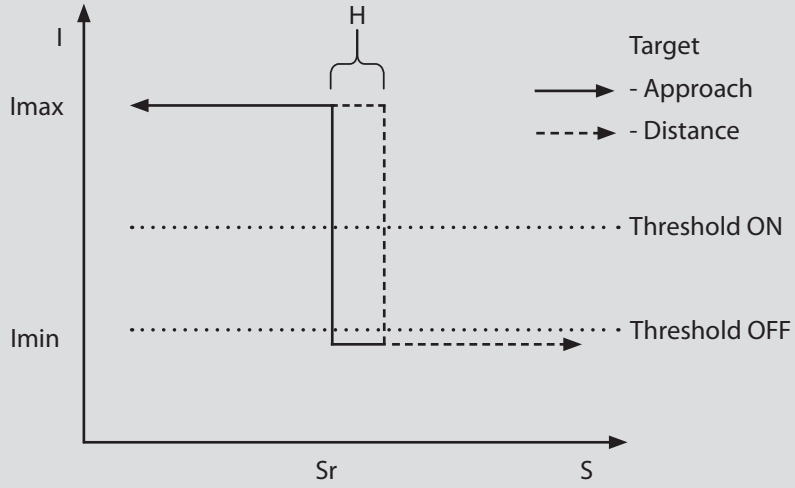




You can find detailed product data sheets at www.bernstein.eu

Capacitive Sensors
NAMUR-Sensors





non-continuous characteristic curve

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 (Un = 8 V und Ri = 1 kΩ) sensing face damping < 1.2 mA (Un = 8 V und Ri = 1 kΩ) 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. 230

Capacitive Sensors
AC-Sensors

Product features

- Types: M30 / Ø 34 mm
- Operating voltage range : 20 – 250 V AC
- Sensing distance: 20 mm – 30 mm
- Switching function: NO contact, NC contact
- Enclosure material: plastic

Good to know …

The AC 2-wire sensors can be connected directly to the power supply and do not require a power supply unit to reduce the voltage.

Options

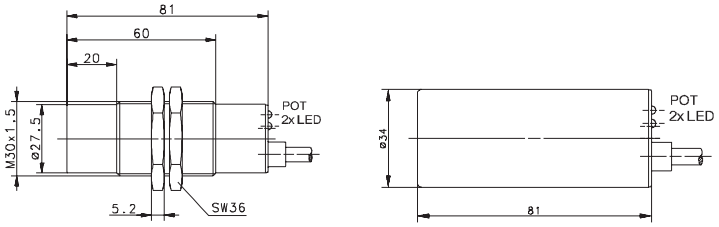
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

CAPACITIVE SENSORS **AC 2-WIRE Type M30, Ø 34 mm**

BERNSTEIN

Type			**M30**	**Ø 34 mm**
Enclosure material			**PBT, black**	**PBT, red**
Type of installation			**non-flush**	**non-flush**
Nominal sensing distance			**20 mm**	**30 mm**
Type of connection			**Cable 2 m**	**Cable 2 m**
Special feature				
2-wire	**AC**	**NO contact**	**6508523001** KCN-T30AS/020-LP2	**6508515001** KCN-R34AS/030-LP2
2-wire	**AC**	**NC contact**	**6508423001** KCN-T30AÖ/020-LP2	**6508415001** KCN-R34AÖ/030-LP2
2-wire	**AC**	**Changeover contact**		

Technical data			
Rated operating voltage range	U_B	20–250 V AC	20–250 V AC
Rated operating current	I_e	≤ 300 mA	≤ 300 mA
Switching frequency (max)	F	15 Hz	15 Hz
Short circuit-protection		–	–
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		2 x 0.5 mm²	2 x 0.5 mm²



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

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 …

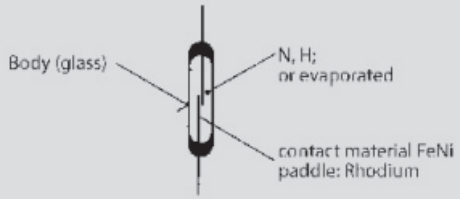
Magnetic sensors with reed contacts can be connected to both DC and AC voltage and do not consume power in passive operation.

Options

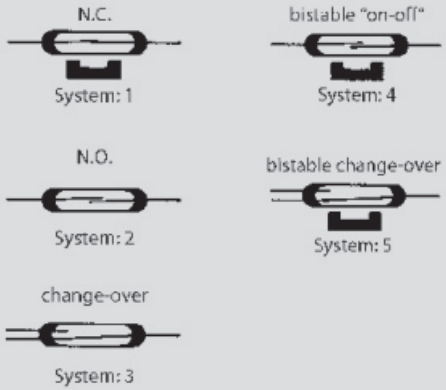
- Cable and connector assembly
- The enclosures can be adapted
- Product adaptations and modifications
- Customized development

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



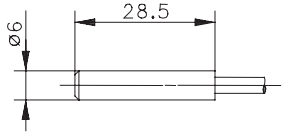
Design of a reed contact

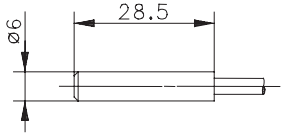


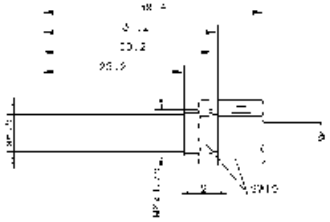
Types of reed contact switches

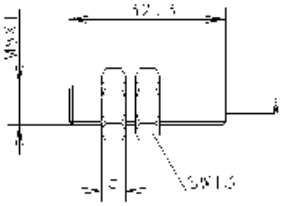
ELECTROMECHANICAL MAGNETIC SENSORS **Type Ø 6 mm, Ø 6.5 mm, M8**

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	UL	UL	UL	UL



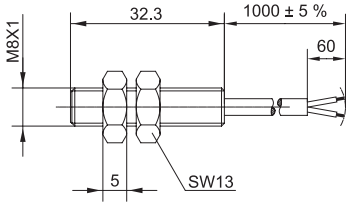


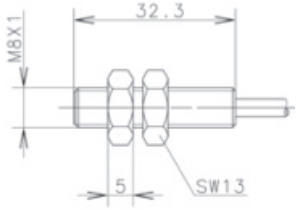




Cable couplings and other accessories can be found from p. 230

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 mm²	2 x AWG 26
Approval – observe the restricted electrical data in the data sheet		UL

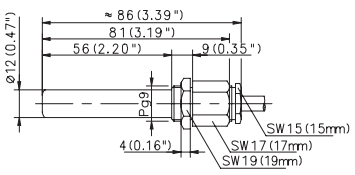


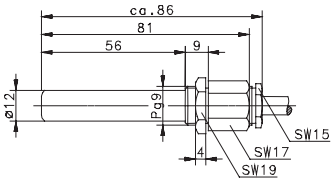


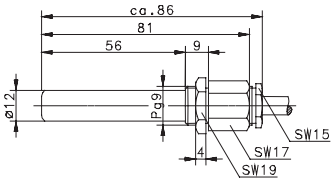
You can find detailed product data sheets at www.bernstein.eu

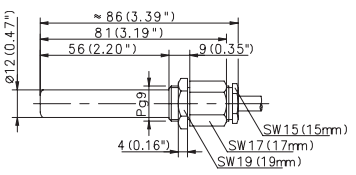
ELECTROMECHANICAL MAGNETIC SENSORS **Type Ø 12 mm**

Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	Aluminium	Aluminium	Aluminium	Al / CuZn39Pb3
Nominal sensing distance (San)	6 mm	7 mm	20 mm	7 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	**6317306315** MAA-0613-M-1			
bistable			**6310406685** MAA-0614-A-1	
Technical data				
Switching voltage (max)	230 V AC / DC	250 V AC / DC	250 V AC / DC	250 V
Switching current (max)	1 A	3 A	3 A	3 A
Max. switching capacity	60 VA	120 VA	120 VA	100 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 0.75 mm²	2 x AWG 20	2 x AWG 20	3 x 0.75 mm²
Approval – observe the restricted electrical data in the data sheet		UL	UL	



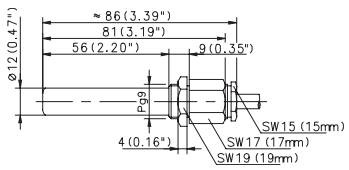


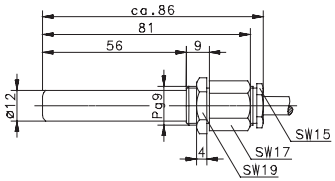


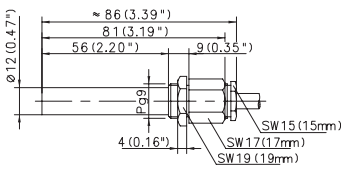


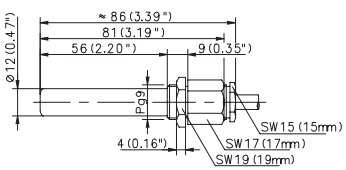
Cable couplings and other accessories can be found from p. 230

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)	8 mm	11 mm	16 mm	19 mm
Type of connection	Cable 1 m	Cable 2 m	Cable 4 m	Cable 1 m
Reference magnet	T-62 N/S	T-62 N/S	T-62 N/S	T-69 N/S
Special feature			Temperature	
NO contact			**6410206399** MAA-0612-NT-4	
NC contact		**6415106001** MAA–0611		
Changeover contact	**6315306314** MAA-0613-K-1			**6316306248** MAA-0613-L-1
bistable				
Technical data				
Switching voltage (max)	250 V	250 V	250 V AC / 200 V DC	250 V
Switching current (max)	0.5 A	0.5 A	1.5 A	1 A
Max. switching capacity	30 VA	30 VA	50 VA	60 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°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	4 x 0.75 mm²	2 x 0.75 mm²	3 x 0.75 mm²	4 x 0.75 mm²
Approval – observe the restricted electrical data in the data sheet				





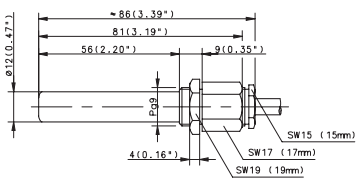


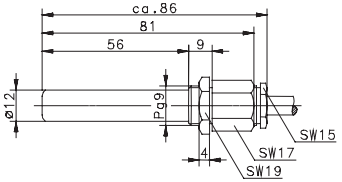


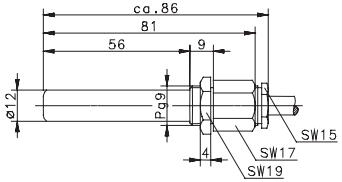
You can find detailed product data sheets at www.bernstein.eu

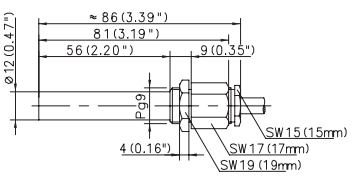
ELECTROMECHANICAL MAGNETIC SENSORS **Type Ø 12 mm**

Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	Al / CuZn39Pb3	Al / CuZn39Pb3	Stainless steel 1.4305	Stainless steel 1.4305
Nominal sensing distance (San)	19 mm	20 mm	6 mm	7 mm
Type of connection	Cable 1 m	Cable 4 m	Cable 3 m	Cable 8 m
Reference magnet	T-69 N/S	T-62 N/S	T-62 N/S	T-62 N/S
Special feature	Temperature			Temperature
NO contact		**6310206680** MAA-0612-F-4	**6314216734** MAN-1612-A-3	**6314216585** MAN-1612-FT-8
NC contact				
Changeover contact	**6316306004** MAA-0613-LT-1			
bistable				
Technical data				
Switching voltage (max)	250 V	250 V AC / DC	250 V AC / DC	250 V
Switching current (max)	1 A	1 A	3 A	3 A
Max. switching capacity	60 VA	100 VA	120 VA	100 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–40°C/+150°C	–5°C/+70°C	–5°C/+70°C	–40°C/+150°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	4 x 0.75 mm²	2 x AWG 20	2 x AWG 20	3 x 0.75 mm²
Approval – observe the restricted electrical data in the data sheet		UL	UL	



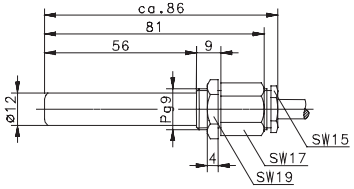


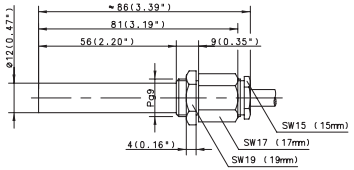


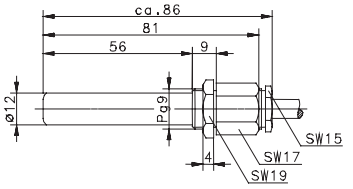


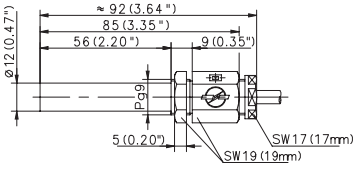
Cable couplings and other accessories can be found from p. 230

Type	Ø 12 mm	Ø 12 mm	Ø 12 mm	Ø 12 mm
Enclosure material	Stainless steel 1.4305	Stainless steel 1.4305	PA, red	PA, red
Nominal sensing distance (San)	7 mm	12 mm	7 mm	10 mm
Type of connection	Cable 10 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	Temperature			
NO contact			**6314226700** MAK-2612-A-1	
NC contact				
Changeover contact	**6316316628** MAN-1613-LT-10	**6316316259** MAN-1613-L-1		**6316326426** MAK-2613-L-1
bistable				
Technical data				
Switching voltage (max)	250 V	250 V	250 V AC / DC	250 V
Switching current (max)	1 A	1 A	3 A	1 A
Max. switching capacity	60 VA	60 VA	120 VA	60 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–40°C/+150°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 0.75 mm²	4 x 0.75 mm²	2 x AWG 20	3 x 0.5 mm²
Approval – observe the restricted electrical data in the data sheet			UL	





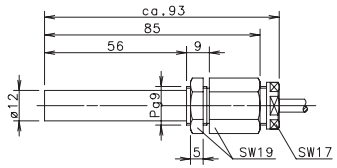


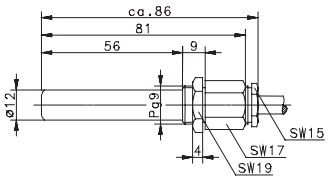


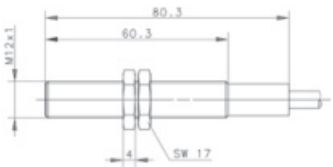
You can find detailed product data sheets at www.bernstein.eu

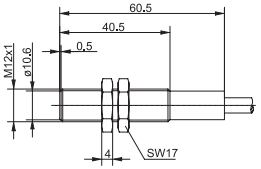
ELECTROMECHANICAL MAGNETIC SENSORS **Type Ø 12 mm, M12**

Type	Ø 12 mm	Ø 12 mm	M12	M12
Enclosure material	PA, red	PA, red	CuZn39Pb3	CuZn39Pb3
Nominal sensing distance (San)	16 mm	29 mm	6 mm	10 mm
Type of connection	Cable 2 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			**6314223730** MAK-2312-A-1	
NC contact				
Changeover contact		**6315326701** MAK-2613-D-1		**6316318002** MAM-1813-L-1
1 NO contact / 1 NC contact	**6420626354** MAK-2626-2			
Technical data				
Switching voltage (max)	30 V AC / DC	125 V AC / 175 V DC	250 V AC / DC	250 V
Switching current (max)	0.25 A	280 mA AC / 400 mA DC	3 A	1 A
Max. switching capacity	5 VA	5 VA	120 VA	60 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C	–25°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67	IP67
Connection	4 x 0.25 mm²	3 x AWG 20	2 x AWG 20	3 x 0.5 mm²
Approval – observe the restricted electrical data in the data sheet		UL	UL	



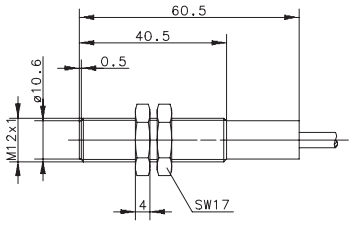


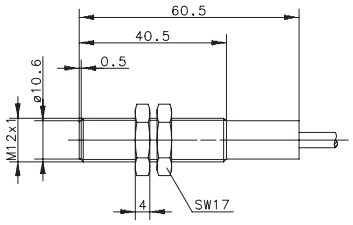


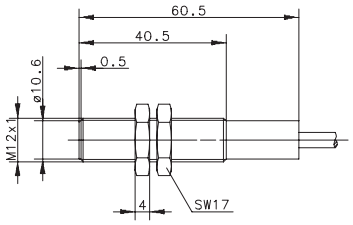


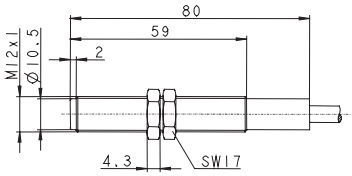
Cable couplings and other accessories can be found from p. 230

Type	M12	M12	M12	M12
Enclosure material	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3	PA, red
Nominal sensing distance (San)	18 mm	20 mm	29 mm	7 mm
Type of connection	Cable 6 m	Cable 1 m	Cable 6 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		**6311218728** MAM-1812-F-1		**6314233708** MAK-3312-A-2
NC contact	**6420218189** MAM-1822-6		**6310118727** MAM-1811-D-2	
Changeover contact				
bistable				
Technical data				
Switching voltage (max)	60 V	250 V AC / DC	125 V AC / 175 V DC	250 V AC / DC
Switching current (max)	0.5 A	1 A	280 mA AC / 400 mA DC	3 A
Max. switching capacity	10 VA	100 VA	5 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	4 x 0.25 mm²	2 x AWG 20	2 x AWG 20	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet		UL	UL	UL





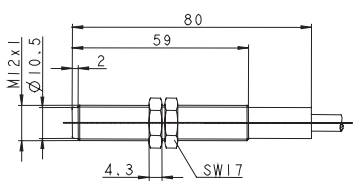


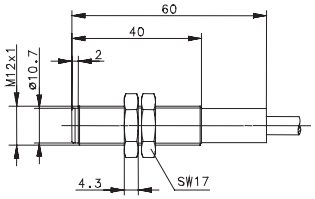


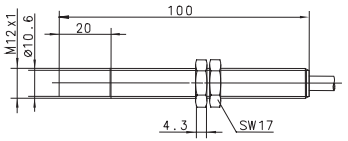
You can find detailed product data sheets at www.bernstein.eu

ELECTROMECHANICAL MAGNETIC SENSORS **Type M12**

Type	**M12**	**M12**	**M12**
Enclosure material	**PA, red**	**PA, red**	**PBT, black**
Nominal sensing distance (San)	**22 mm**	**29 mm**	**29 mm**
Type of connection	**Cable 2 m**	**Cable 3 m**	**Cable 2 m**
Reference magnet	**T-62 N/S**	**T-62 N/S**	**T-62 N/S**
Special feature			
NO contact		**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	125 V AC / 175 V DC	200 V
Switching current (max)	3 A	280 mA AC / 400 mA DC	0.5 A
Max. switching capacity	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
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67
Connection	2 x AWG 20	2 x AWG 20	2 x 0.5 mm²
Approval – observe the restricted electrical data in the data sheet			

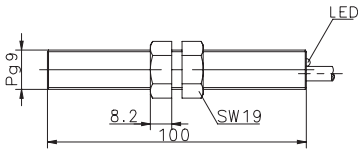


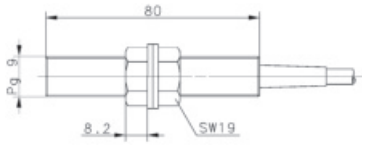


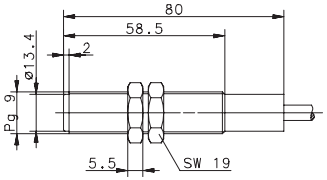


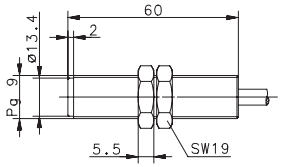
Cable couplings and other accessories can be found from p. 230

Type	PG9	PG9	PG9	PG9
Enclosure material	**CuZn39Pb3**	**CuZn39Pb3**	**PA, red**	**PA, red**
Nominal sensing distance (San)	**20 mm**	**29 mm**	**7 mm**	**11 mm**
Type of connection	**Cable 2 m**	**Cable 2 m**	**Cable 2 m**	**Cable 3 m**
Reference magnet	**T-62 N/S**	**T-62 N/S**	**T-62 N/S**	**T-62 N/S**
Special feature				
NO contact			**6314221250** MAK-2112-F-2	
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	250 V
Switching current (max)	1 A	280 mA AC / 400 mA DC	3 A	0,5 A
Max. switching capacity	120 VA	5 VA	100 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	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP65	IP67	IP67	IP67
Connection	2 x 0.5 mm²	3 x AWG 20	2 x 0.5 mm²	3 x 0.5 mm²
Approval – observe the restricted electrical data in the data sheet		UL		





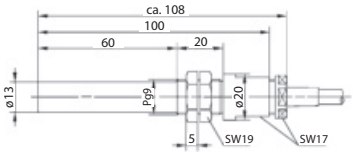


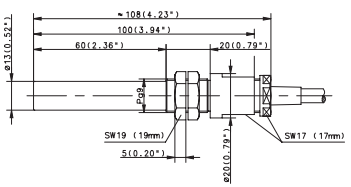


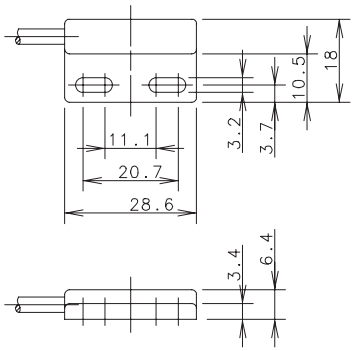
You can find detailed product data sheets at www.bernstein.eu

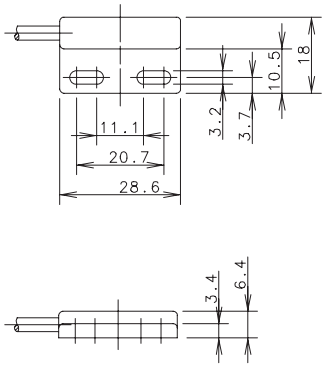
ELECTROMECHANICAL MAGNETIC SENSORS **Type Ø 13 mm, 28.6 x 18 x 6.4 mm**

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			**6311111665** MAK-1111-10
Changeover contact			**6410311368** MAK-1113-1,5	
bistable		**6310536617** MAK-3615-L-1		
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 mm²	3 x 0.14 mm²	2 x 0.14 mm²
Approval – observe the restricted electrical data in the data sheet	UL			





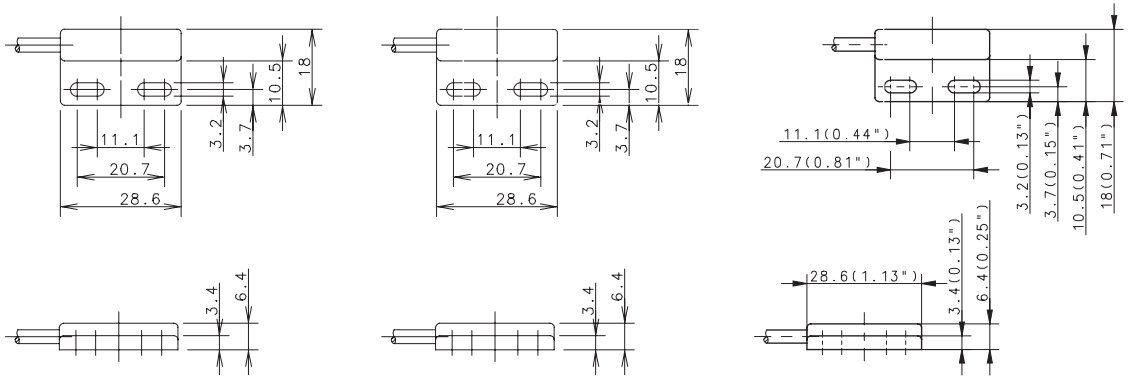




Cable couplings and other accessories can be found from p. 230

BERNSTEIN

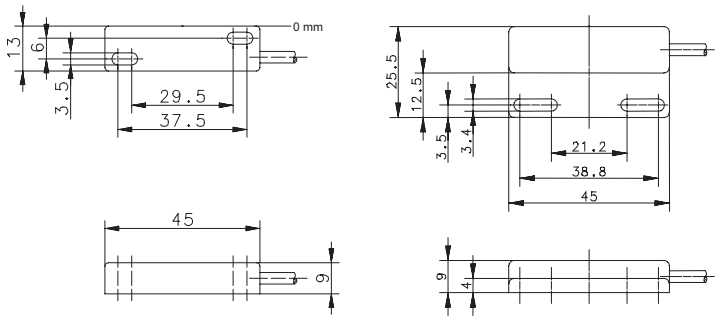
Type	**28.6 x 18 x 6.4 mm**	**28.6 x 18 x 6.4 mm**	**28.6 x 18 x 6.4 mm**
Enclosure material	**PA, black**	**PA, black**	**PA, black**
Nominal sensing distance (San)	**10 mm**	**12 mm**	**30 mm**
Type of connection	**Cable 1 m**	**Cable 1 m**	**Cable 5 m**
Reference magnet	**TK-11-11**	**TK-11-11**	**T-67 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 mm²
Approval – observe the restricted electrical data in the data sheet	UL	UL	



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

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

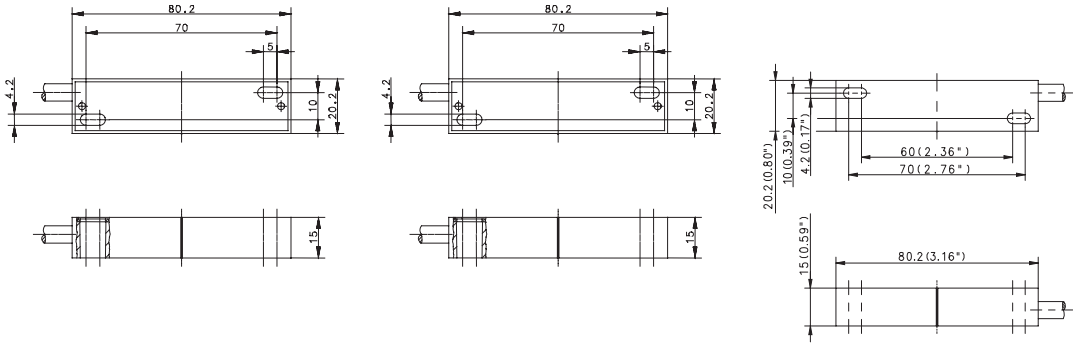
Type	**45 x 13 x 9 mm**	**45 x 25.5 x 9 mm**
Enclosure material	**PA, black**	**PA, black**
Nominal sensing distance (San)	**10 mm**	**12 mm**
Type of connection	**Cable 3 m**	**Cable 1 m**
Reference magnet	**TK-11-01**	**TK-45**
Special feature		
NO contact		
NC contact		
Changeover contact	**6310301666** MAK-0113-3	**6316345722** MAK-4513-D-1
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 mm²	3 x AWG 26
Approval – observe the restricted electrical data in the data sheet		UL



Cable couplings and other accessories can be found from p. 230

BERNSTEIN

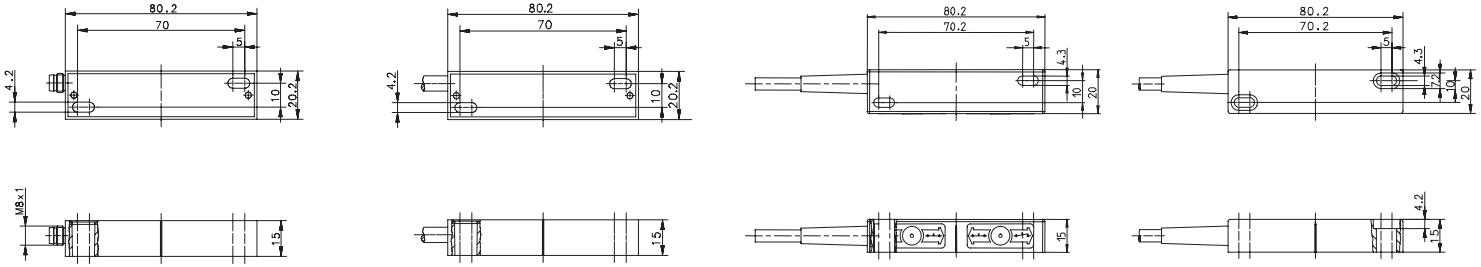
Type	**80 x 20 x 15 mm**	**80 x 20 x 15 mm**	**80 x 20 x 15 mm**
Enclosure material	**GDAISi12, red**	**GDAISi12, red**	**GDAISi12, red**
Nominal sensing distance (San)	**5-40 mm**	**18 mm**	**20 mm**
Type of connection	**Cable 3 m**	**Cable 5 m**	**Cable 3 m**
Reference magnet	**TK-21-02**	**TA-21-02**	**T-62 N/S**
Special feature		**Temperature**	**Temperature**
NO contact	**6314402674** MAA-0214-A-3	**6314202522** MAA-0212-FT-5	
NC contact			
Changeover contact			
bistable			**6314402566** MAA-0214-FT-3
Technical data			
Switching voltage (max)	250 V AC / DC	250 V	250 V
Switching current (max)	3 A	3 A	3 A
Max. switching power	120 VA	100 VA	100 VA
Function/operating voltage indicator	–	–	–
Mechanical data			
Ambient temperature (min/max)	–10°C/+80°C	–40°C/+150°C	–40°C/+150°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP67
Connection	2 x AWG 20	3 x 0.75 mm²	3 x 0.75 mm²
Approval – observe the restricted electrical data in the data sheet	UL		



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

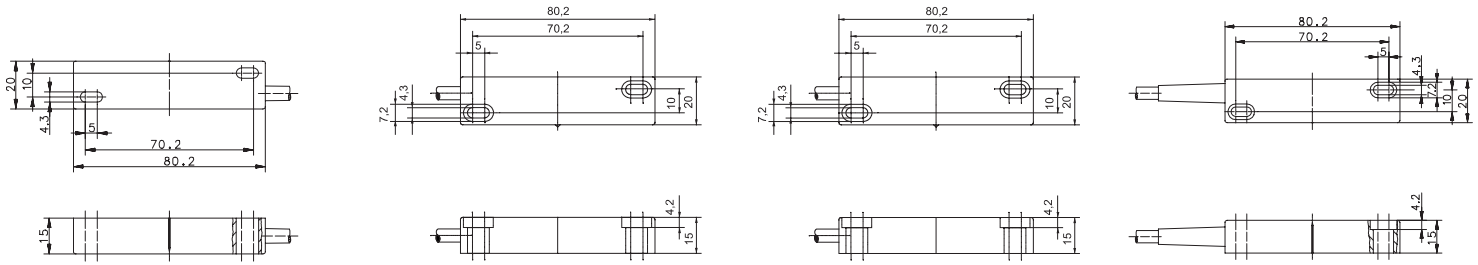
ELECTROMECHANICAL MAGNETIC SENSORS **Type 80 x 20 x 15 mm**

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	**GDAlSi12, red**	**GDAlSi12, red**	**PA, black**	**PA, red**
Nominal sensing distance (San)	**25 mm**	**30 mm**	**10 mm**	**12 mm**
Type of connection	**Connector M8**	**Cable 1 m**	**Cable 3 m**	**Cable 2 m**
Reference magnet	**TA-21-02**	**TA-21-02**	**T-67 N/S**	**TK-21-12**
Special feature		**Temperature**		
NO contact				
NC contact				**6314112214** MAK-1211-F-2
Changeover contact	**6310302636** MAA-0213-STK	**6316302389** MAA-0213-LT-1		
bistable			**6319402691** MAK-0214-A-3	
Technische Daten				
Switching voltage (max)	50 V AC / 75 V DC	250 V	250 V AC / DC	250 V
Switching current (max)	1 A	1 A	3 A	3 A
Max. switching power	3 VA	60 VA	120 VA	120 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–30°C/+80°C	–40°C/+150°C	–5°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP65	IP67	IP67	IP67
Connection	M8 x 1	4 x 0.75 mm²	2 x AWG 20	2 x 0.5 mm²
Approval – observe the restricted electrical data in the data sheet			UL	



Cable couplings and other accessories can be found from p. 230

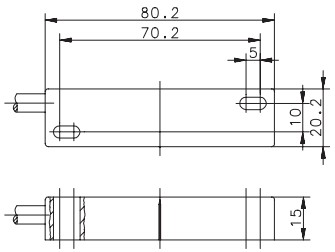
Type	**80 x 20 x 15 mm**	**80 x 20 x 15 mm**	**80 x 20 x 15 mm**	**80 x 20 x 15 mm**
Enclosure material	**PA, black**	**PA, red**	**PA, red**	**PA, red**
Nominal sensing distance (San)	**18 mm**	**18 mm**	**18 mm**	**–**
Type of connection	**Con. cable 0.9 m with plug connector**	**Cable 1 m**	**Cable 2 m**	**Cable 5 m**
Reference magnet	**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			**6310412698** MAK-1214-A-2	
Bistable Changeover contact				**6317512527** MAK-1215-M-5
Technical data				
Switching voltage (max)	250 V	125 V AC / 175 V DC	250 V AC / DC	250 V
Switching current (max)	1 A	280 mA AC / 400 mA DC	3 A	1 A
Max. switching power	60 VA	5 VA	120 VA	80 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–30°C/+70°C	–5°C/+70°C	–5°C/+70°C	–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP65	IP67	IP67	IP67
Connection	Connection cable with plug connector	3 x 1.5 mm²	2 x AWG 20	3 x 0.5 mm²
Approval – observe the restricted electrical data in the data sheet			UL	

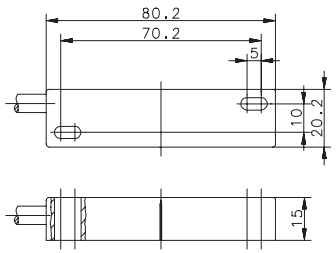


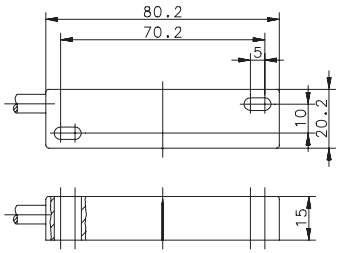
You can find detailed product data sheets at www.bernstein.eu

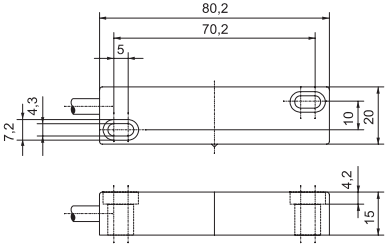
ELECTROMECHANICAL MAGNETIC SENSORS **Type 80 x 20 x 15 mm**

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 mm²	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet	UL	UL		UL



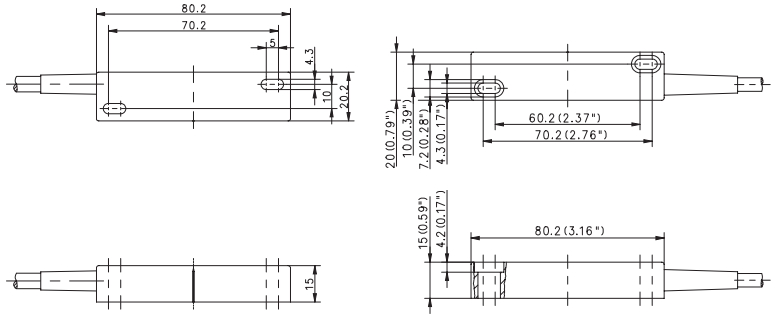






Cable couplings and other accessories can be found from p. 230

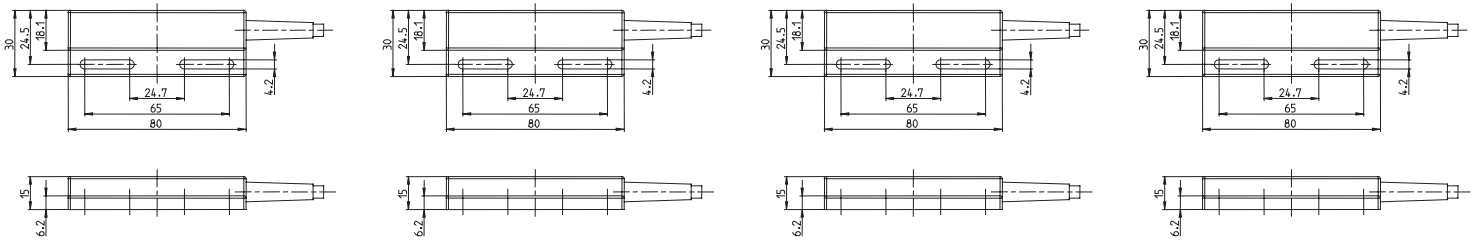
Type	**80 x 20 x 15 mm**	**80 x 20 x 15 mm**
Enclosure material	**PA, black**	**PA, red**
Nominal sensing distance (San)	**24 mm**	**24 mm**
Type of connection	**Cable 1 m**	**Cable 1 m**
Reference magnet	**TA-21-02**	**TK-21-12**
Special feature		
NO contact		
NC contact		
Changeover contact	**6316302206** MAK-0213-L-1	**6316312220** MAK-1213-L-1
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 mm²	3 x 0.5 mm²
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 80 x 30 x 15 mm**

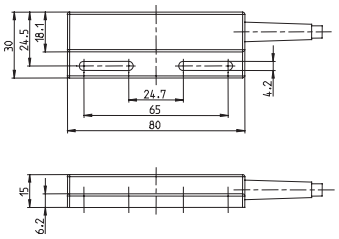
Type	**80 x 30 x 15 mm**	**80 x 30 x 15 mm**	**80 x 30 x 15 mm**	**80 x 30 x 15 mm**
Enclosure material	**PA, black**	**PA, black**	**PA, black**	**PA, black**
Nominal sensing distance (San)	**8 mm**	**18 mm**	**7-23 mm**	**19 mm**
Type of connection	**Cable 1 m**	**Cable 1 m**	**Cable 2 m**	**Cable 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 mm²	2 x AWG 20
Approval – observe the restricted electrical data in the data sheet	UL	UL		UL

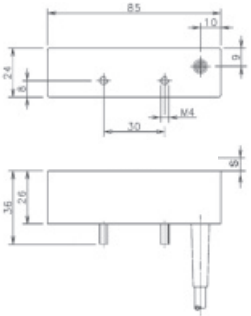


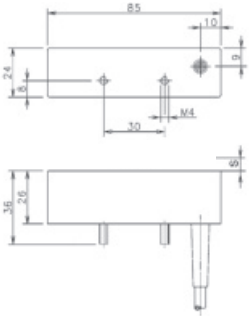
Cable couplings and other accessories can be found from p. 230

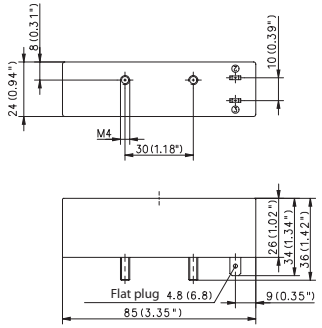
BERNSTEIN

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	UL	UL	UL	





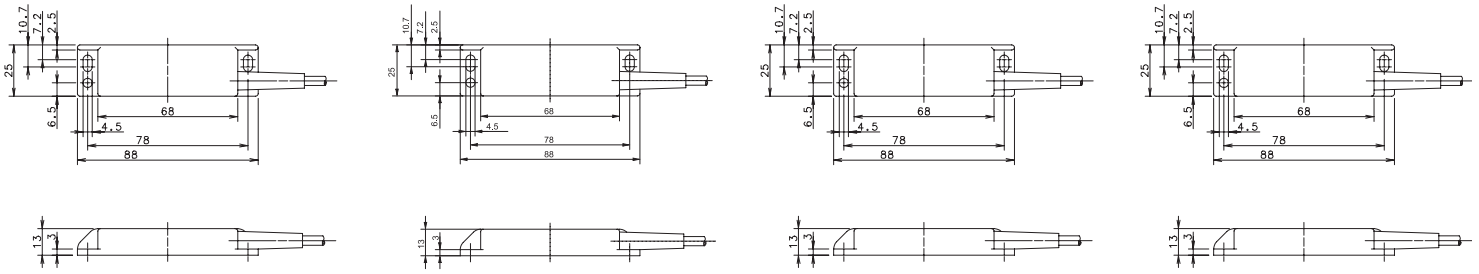




You can find detailed product data sheets at www.bernstein.eu

ELECTROMECHANICAL MAGNETIC SENSORS **Type 88 x 25 x 13 mm**

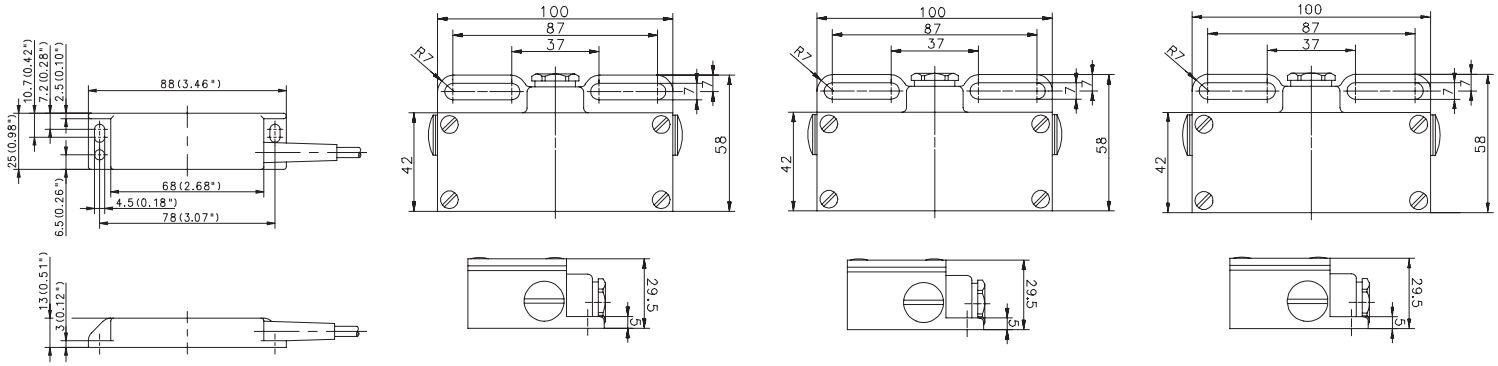
Type	**88 x 25 x 13 mm**	**88 x 25 x 13 mm**	**88 x 25 x 13 mm**	**88 x 25 x 13 mm**
Enclosure material	**PA, black**	**PA, black**	**PA, black**	**PA, black**
Nominal sensing distance (San)	**18 mm**	**19 mm**	**2-20 mm**	**22 mm**
Type of connection	**Cable 5 m**	**Cable 1 m**	**Cable 1 m**	**Cable 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 mm²	2 x AWG 20	2 x AWG 20	3 x AWG 20
Approval – observe the restricted electrical data in the data sheet		UL	UL	UL



Cable couplings and other accessories can be found from p. 230

BERNSTEIN

Type	**88 x 25 x 13 mm**	**100 x 58 x 29.5 mm**	**100 x 58 x 29.5 mm**	**100 x 58 x 29.5 mm**
Enclosure material	**PA, black**	**Aluminium**	**Aluminium**	**GDAlSi12**
Nominal sensing distance (San)	**5-25 mm**	**10 mm**	**20 mm**	**15 mm**
Type of connection	**Cable 3 m**	**Screw terminal**	**Screw terminal**	**Screw terminal**
Reference magnet	**T-69 N/S**	**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	**6310442622** MAK-4214-P-3			**6319403677** MAA-0314-A
Technical data				
Switching voltage (max)	250 V	250 V DC / AC	250 V DC / AC	250 V DC / AC
Switching current (max)	5 A	1 A	3 A	3 A
Max. switching power	250 VA	80 VA	120 VA	120 VA
Function/operating voltage indicator	–	–	–	–
Mechanical data				
Ambient temperature (min/max)	–5°C/+70°C	–5°C/+70°C	–15°C/+70°C	–15°C/+70°C
Protection class in accordance with IEC 529, EN 60529	IP67	IP67	IP65	IP65
Connection	2 x 0.5 mm²	Screw terminal	Screw terminal	Screw terminal
Approval – observe the restricted electrical data in the data sheet				



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

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

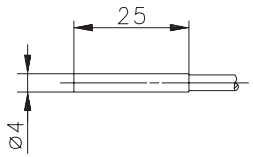
Standard programme magnetoresistive

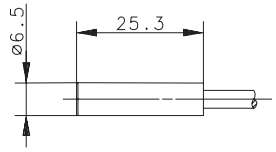
Magnetoresistive sensors are about 10 times more sensitive than sensors with the Hall effect. They can not only be very small, but they can also detect particularly low field strengths.
At the same time, they are characterised by a high measuring accuracy - even at high ambient temperatures - a special 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.

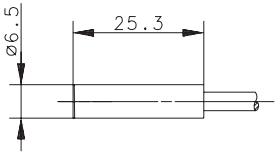
Magnet	Dimensions	Article number	Sn for Hall sensors	Sn for magnetoresistive sensors
T 75	Ø 5 mm	**6301175057**	5 mm	10 mm
T 06	Ø 6 mm	**6301106065**	5 mm	15 mm
T 61	Ø 20 mm	**6301261035**	10 mm	35 mm
T 62	Ø 23 mm	**6301262039**	17 mm	45 mm
T 67	Ø 20 mm	**6301167054**	15 mm	40 mm
T 69	Ø 31 mm	**6301269031**	20 mm	60 mm

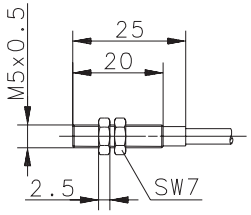
ELECTRONIC MAGNETIC SENSORS **Type D04, D06, M05**

Type			D04	D06	D06	M05
Enclosure material			Stainless steel 1.4401	Stainless steel 1.4401	Stainless steel 1.4401	CuZn39Pb3
Operating mode			MR	Hall	MR	MR
Magnetic sensitivity (mT)			3 mT	10 mT	1.5 mT	3 mT
Sensing distance (Sn)			30 mm	17 mm	45 mm	30 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						
PNP	**NO contact**		**6373299132** MEN-D04PS/M03-K2		**6373270105** MEN-D06PS/M02-K2	**6373299133** MEM-M05PS/M03-K2
NPN	**NO contact**			**6362670001** MEN-D06NS/H10-K2		
NPN	**bistable**			**6363870032** MEN-D06NB/H11-K2		
Technical data						
Rated operating voltage range		U_B	4.5–30 VDC	4.5–24 VDC	10–30 VDC	4.5–30 VDC
Rated operating current		I_e	200 mA	25 mA	200 mA	200 mA
Max. switching voltage		F	10 kHz	20 kHz	1500 Hz	10 kHz
Function/operating voltage indicator			–/–	–/–	–/–	–/–
Sensitivity adjustable						
Short circuit-protection			Current limiter	Current limiter	cyclic	Current limiter
Mechanical data						
Ambient temperature (min/max)			–20°C/+70°C	–25°C/+70°C	–25°C/+70°C	–20°C/+70°C
Protection class in accordance with IEC 529, EN 60529			IP67	IP67	IP67	IP67
Connection			3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²





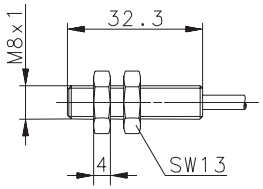


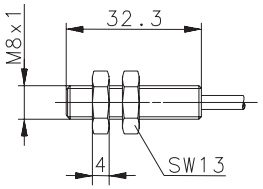


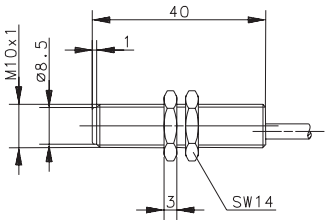
Cable couplings and other accessories can be found from p. 230

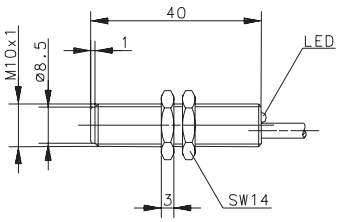
ELECTRONIC MAGNETIC SENSORS **Type M08, M10**

Type		**M08**	**M08**	**M10**	**M10**
Enclosure material		**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Operating mode		**Hall**	**MR**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**10 mT**	**1.5 mT**	**10 mT**	**10 mT**
Sensing distance (Sn)		**17 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**
PNP	**NO contact**		**6373260107** MEM-M08PS/M02-K2		**6372261085** MEM-M10PS/H10-KL2
PNP	**NC contact**		**6373160162** MEM-M08PÖ/M02-K2		**6372161086** MEM-M10PÖ/H10-KL2
PNP	**bistable**				**6373461124** MEM-M10PB/H11-KL2
NPN	**NO contact**	**6362660002** MEM-M08NS/H10-K2		**6362661003** MEM-M10NS/H10-K2	
NPN	**bistable**	**6363860033** MEM-M08NB/H11-K2		**6363861034** MEM-M10NB/H11-K2	
Technical data					
Rated operating voltage range	U_B	4.5–24 V	10–30 V	4.5–24 V	10–39 V
Rated operating current	I_e	25 mA	200 mA	25 mA	400 mA
Max. switching voltage	F	20 kHz	1500 Hz	20 kHz	10 kHz
Function/operating voltage indicator		–/–	–/–	–/–	LED/–
Sensitivity adjustable					
Short circuit-protection		Current limiter	cyclic	Current limiter	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 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²





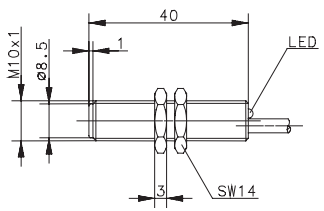


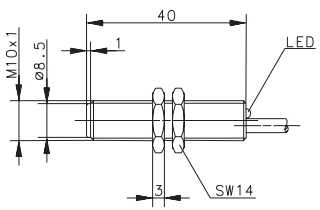


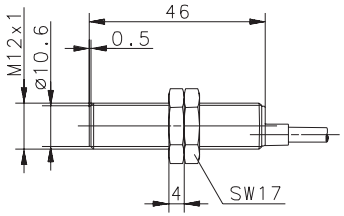
You can find detailed product data sheets at www.bernstein.eu

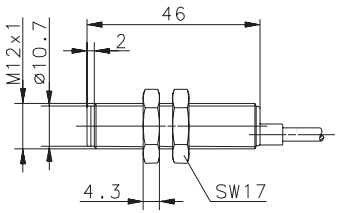
ELECTRONIC MAGNETIC SENSORS **Type M10, M12**

Type			**M10**	**M10**	**M12**	**M12**
Enclosure material			**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**PA, red**
Operating mode			**Hall**	**MR**	**Hall**	**Hall**
Magnetic sensitivity (mT)			**10 mT**	**1 mT**	**10 mT**	**10 mT**
Sensing distance (Sn)			**17 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			**Temperature**	**All-metal**		
PNP	**NO contact**		**6472261080** MEM-M10PS/H10-KL2T	**6373261087** MEM-M10PS/M01-KL2		
PNP	**NC contact**			**6373161088** MEM-M10PÖ/M01-KL2		
PNP	**bistable**					
NPN	**NO contact**				**6362662004** MEM-M12NS/H10-K2	**6362662005** MEK-M12NS/H10-K2
NPN	**bistable**				**6363862035** MEM-M12NB/H11-K2	**6363862036** MEK-M12NB/H11-K2
Technical data						
Rated operating voltage range		U_B	10–39 V	10–39 V	4.5–24 V	4.5–24 V
Rated operating current		I_e	400 mA	400 mA	25 mA	25 mA
Max. switching voltage		F	1500 Hz	10 kHz	20 kHz	20 kHz
Function/operating voltage indicator			LED/–	LED/–	–/–	–/–
Sensitivity adjustable						
Short circuit-protection			cyclic	cyclic	Current limiter	Current limiter
Mechanical data						
Ambient temperature (min/max)			–40°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 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²



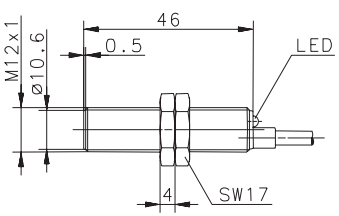


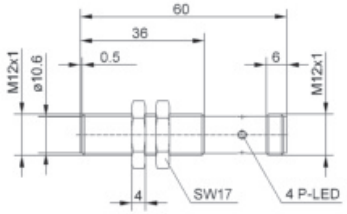


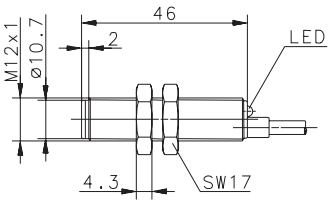


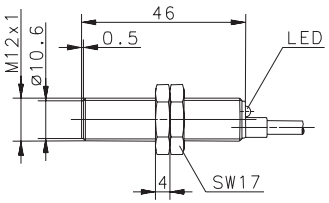
Cable couplings and other accessories can be found from p. 230

Type		**M12**	**M12**	**M12**	**M12**
Enclosure material		**CuZn39Pb3**	**CuZn39Pb3**	**PA, red**	**CuZn39Pb3**
Operating mode		**Hall**	**Hall**	**Hall**	**MR**
Magnetic sensitivity (mT)		**10 mT**	**10 mT**	**10 mT**	**1 mT**
Sensing distance (Sn)		**17 mm**	**17 mm**	**17 mm**	**45 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**	**Connector M12 x 1**	**Cable 2 m**	**Cable 2 m**
Special feature					
PNP	**NO contact**	**6372262090** MEM-M12PS/H10-KL2	**6372262160** MEM-M12PS/H10-KLS12	**6372262089** MEK-M12PS/H10-KL2	**6373262094** MEM-M12PS/M01-KL2
PNP	**NC contact**	**6372162092** MEM-M12PÖ/H10-KL2		**6372162091** MEK-M12PÖ/H10-KL2	**6373162096** MEM-M12PÖ/M01-KL2
PNP	**bistable**	**6373462126** MEM-M12PB/H11-KL2		**6373462125** MEK-M12PB/H11-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	10 kHz	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 mm²	M12 x 1	3 x 0.14 mm²	3 x 0.14 mm²





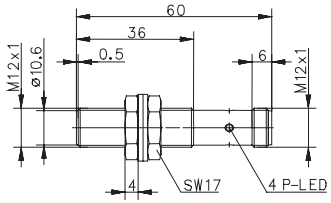


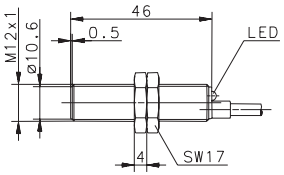


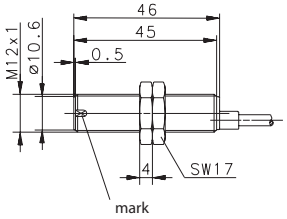
You can find detailed product data sheets at www.bernstein.eu

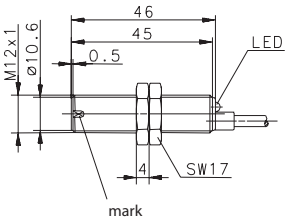
ELECTRONIC MAGNETIC SENSORS **Type M12**

Type		**M12**	**M12**	**M12**	**M12**
Enclosure material		**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Operating mode		**MR**	**MR**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**1 mT**	**1 mT**	**–**	**–**
Sensing distance (Sn)		**45 mm**	**45 mm**	**0-2 mm**	**0-2 mm**
Reference magnet (Side)		**T-62 N/S**	**T-62 N/S**	**–**	**–**
Type of connection		**Connector M12 x 1**	**Cable 5 m**	**Cable 2 m**	**Cable 2 m**
Special feature		**Temperature**		**Speed sensor**	**Speed sensor**
PNP	**NO contact**		**6373262123** MEM-M12PS/M01-KL5		**6379262120** MEM-M12PD/H-KL2
PNP	**NC contact**	**6373162161** MEM-M12PÖ/M01-KLS12T			
PNP	**bistable**				
NPN	**NO contact**			**6369662028** MEM-M12ND/H-K2	
NPN	**NC contact**				
Technical data					
Rated operating voltage range	U_B	10–39 VDC	10–39 VDC	10–36 VDC	10–39 VDC
Rated operating current	I_e	400 mA	400 mA	20 mA	400 mA
Max. switching voltage	F	10 kHz	1500 Hz	20 kHz	10 kHz
Function/operating voltage indicator		LED/–	LED/–	–	LED/–
Sensitivity adjustable					
Short circuit-protection		cyclic	cyclic	cyclic	cyclic
Mechanical data					
Ambient temperature (min/max)		–40°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		M12 x 1	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²





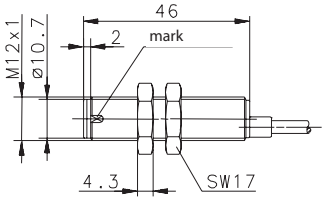


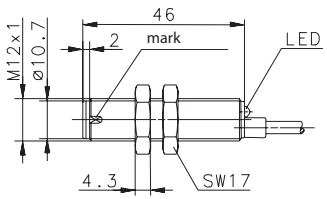


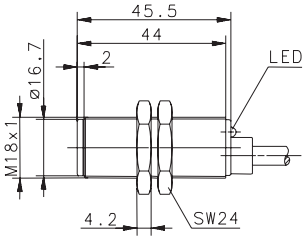
Cable couplings and other accessories can be found from p. 230

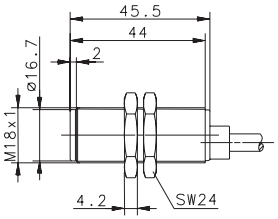
ELECTRONIC MAGNETIC SENSORS **Type M12, M18**

Type		**M12**	**M12**	**M18**	**M18**
Enclosure material		**PA, red**	**PA, red**	**PBT, black**	**PBT, black**
Operating mode		**Hall**	**Hall**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**–**	**–**	**10 mT**	**10 mT**
Sensing distance (Sn)		**0-2 mm**	**0-2 mm**	**17 mm**	**17 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**			**6372263097** MEK-M18PS/H10-KL2	
PNP	**NC contact**		**6379262119** MEK-M12PD/H-KL2	**6372163099** MEK-M18PÖ/H10-KL2	
PNP	**bistable**			**6373463127** MEK-M18PB/H11-KL2	
NPN	**NO contact**				**6362663007** MEK-M18NS/H10-K2
NPN	**NC contact**	**6369662027** MEK-M12ND/H-K2			
Technical data					
Rated operating voltage range	U_B	10–36 VDC	10–39 VDC	10–39 V	4.5–24 V
Rated operating current	I_e	20 mA	400 mA	400 mA	< 5 mA
Max. switching voltage	F	20 kHz	10 kHz	10 kHz	20 kHz
Function/operating voltage indicator		–	LED/–	LED/–	–
Sensitivity adjustable					
Short circuit-protection		cyclic	cyclic	cyclic	Current limiter
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 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²





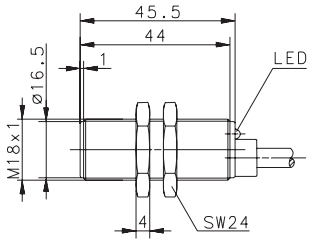


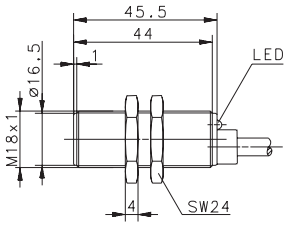


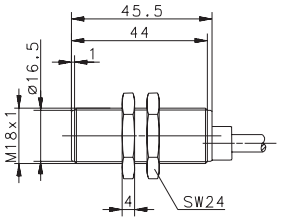
You can find detailed product data sheets at www.bernstein.eu

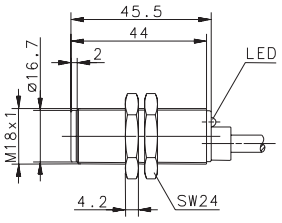
ELECTRONIC MAGNETIC SENSORS **Type M18**

Type		**M18**	**M18**	**M18**	**M18**
Enclosure material		**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**	**PBT, black**
Operating mode		**Hall**	**MR**	**Hall**	**MR**
Magnetic sensitivity (mT)		**11 mT**	**1 mT**	**11 mT**	**1 mT**
Sensing distance (Sn)		**17 mm**	**45 mm**	**17 mm**	**45 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					
PNP	**NO contact**		**6373263102** MEM-M18PS/M01-KL2	**6363863037** MEM-M18NB/H11-K2	**6373263101** MEK-M18PS/M01-KL2
PNP	**NC contact**		**6373163104** MEM-M18PÖ/M01-KL2	**6362663006** MEM-M18NS/H10-K2	**6373163103** MEK-M18PÖ/M01-KL2
NPN	**NO contact**	**6373463128** MEM-M18PB/H11-KL2			
NPN	**NC contact**				
NPN	**bistable**				
Technical data					
Rated operating voltage range	U_B	10–39 V	10–39 VDC	4.5–24 VDC	10–39 VDC
Rated operating current	I_e	400 mA	400 mA	25 mA	400 mA
Max. switching voltage	F	10 kHz	10 kHz	20 kHz	10 kHz
Function/operating voltage indicator		LED/–	LED/–	–	LED/–
Sensitivity adjustable					
Short circuit-protection		cyclic	cyclic	Current limiter	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 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²



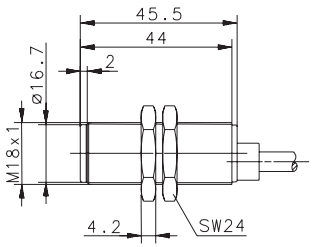


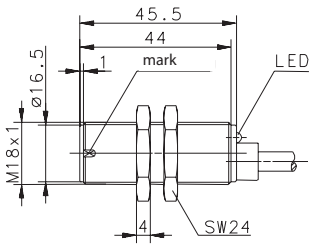


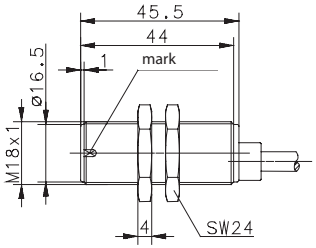


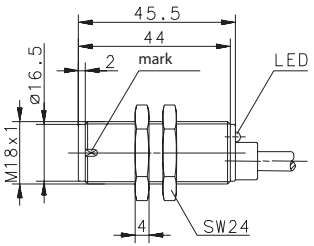
Cable couplings and other accessories can be found from p. 230

Type		**M18**	**M18**	**M18**	**M18**
Enclosure material		**PBT, black**	**CuZn39Pb3**	**CuZn39Pb3**	**PBT, black**
Operating mode		**Hall**	**Hall**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**11 mT**	**–**	**–**	**–**
Sensing distance (Sn)		**17 mm**	**0 – 2 mm**	**0 – 2 mm**	**0 – 2 mm**
Reference magnet (Side)		**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**	**Speed sensor**
PNP	**NO contact**		**6379263122** MEM-M18PD/H-KL2		**6379263121** MEK-M18PD/H-KL2
PNP	**NC contact**				
NPN	**NO contact**			**6369663030** MEM-M18ND/H-K2	
NPN	**NC contact**				
NPN	**bistable**	**6363863038** MEK-M18NB/H11-K2			
Technical data					
Rated operating voltage range	U_B	4.5–24 VDC	10–39 VDC	10–36 VDC	10–39 VDC
Rated operating current	I_e	25 mA	400 mA	20 mA	400 mA
Max. switching voltage	F	20 kHz	10 kHz	20 kHz	10 kHz
Function/operating voltage indicator		–	LED/–	LED/–	LED/–
Sensitivity adjustable					
Short circuit-protection		Current limiter	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 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²





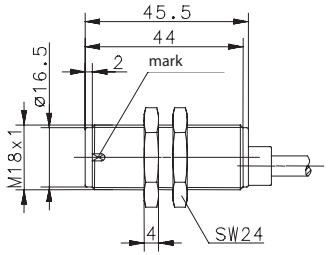


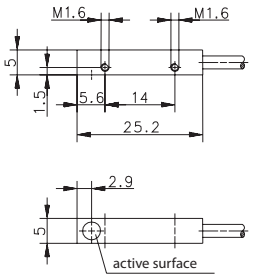


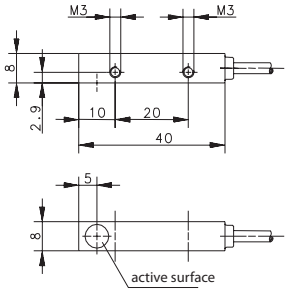
You can find detailed product data sheets at www.bernstein.eu

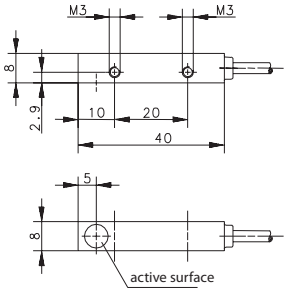
ELECTRONIC MAGNETIC SENSORS **Type M18, 5x5x25 mm, 8x8x40 mm**

Type		**M18**	**5 x 5 x 25 mm**	**8 x 8 x 40 mm**	**8 x 8 x 40 mm**
Enclosure material		**PBT, black**	**CuZn39Pb3**	**CuZn39Pb3**	**CuZn39Pb3**
Operating mode		**Hall**	**MR**	**Hall**	**MR**
Magnetic sensitivity (mT)		**–**	**3 mT**	**10 mT**	**2 mT**
Sensing distance (Sn)		**0 – 2 mm**	**10 mm**	**17 mm**	**45 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 2 m**	**Cable 2 m**
Special feature		**Speed sensor**			
PNP	**NO contact**		**6373299134** MEM-Q05PS/M03-K2		**6373280106** MEM-Q08PS/M02-K2
PNP	**NC contact**				
PNP	**bistable**	**6369663029** MEK-M18ND/H-K2			
NPN	**NO contact**			**6362680012** MEM-Q08NS/H10-K2	
NPN	**bistable**			**6363880043** MEM-Q08NB/H11-K2	
Technical data					
Rated operating voltage range	U_B	10–36 VDC	4.5–30 VDC	4.5–24 VDC	10–30 VDC
Rated operating current	I_e	20 mA	200 mA	25 mA	200 mA
Max. switching voltage	F	20 kHz	10 kHz	20 kHz	1500 Hz
Function/operating voltage indicator		–	–/–	–/–	–/–
Sensitivity adjustable					
Short circuit-protection		cyclic	Current limiter	Current limiter	cyclic
Mechanical data					
Ambient temperature (min/max)		–25°C/+70°C	–20°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 mm²	3 x 0.05 mm²	3 x 0.14 mm²	3 x 0.14 mm²



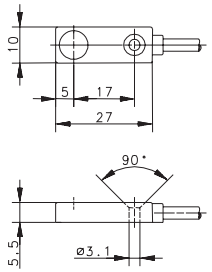


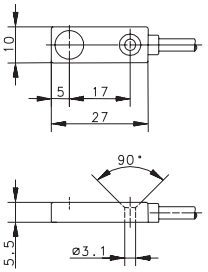


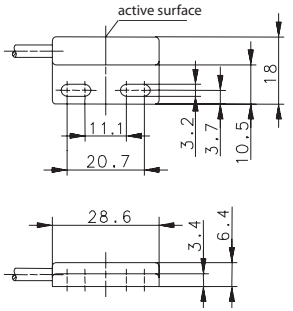


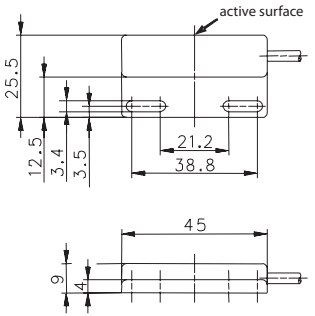
Cable couplings and other accessories can be found from p. 230

Type		**27 x 10 x 5 mm**	**27 x 10 x 5 mm**	**28.6 x 18 x 6.4 mm**	**45 x 25.5 x 9 mm**
Enclosure material		**PA, black**	**PA, black**	**PA, black**	**PA, black**
Operating mode		**Hall**	**Hall**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**10 mT**	**2 mT**	**10 mT**	**10 mT**
Sensing distance (Sn)		**17 mm**	**30 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					
PNP	**NO contact**				
PNP	**NC contact**				
PNP	**bistable**				
NPN	**NO contact**	**6362693010** MEK-E27NS/H10-K2		**6362611008** MEK-E29NS/H10-K2	**6362645009** MEK-E45NS/H10-K2
NPN	**bistable**		**6363893031** MEK-E27NB/H02-K2	**6363811039** MEK-E29NB/H11-K2	**6363845040** MEK-E45NB/H11-K2
Technical data					
Rated operating voltage range	U_B	4.5–24 VDC	4.5–24 VDC	4.5–24 VDC	4.5–24 VDC
Rated operating current	I_e	25 mA	25 mA	25 mA	25 mA
Max. switching voltage	F	20 kHz	20 kHz	20 kHz	20 kHz
Function/operating voltage indicator		–/–	–/–	–/–	–/–
Sensitivity adjustable					
Short circuit-protection		Current limiter	Current limiter	Current limiter	Current limiter
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 mm²	3 x 0.14 mm²	3 x 0.14 mm²	3 x 0.14 mm²





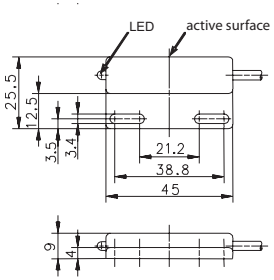


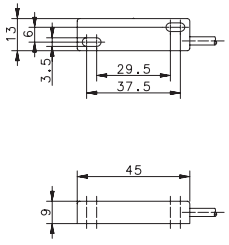


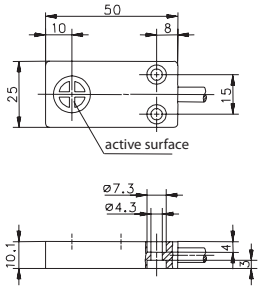
You can find detailed product data sheets at www.bernstein.eu

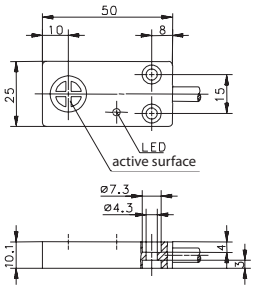
ELECTRONIC MAGNETIC SENSORS **Type 45 x 25.5 x 9 mm, 45 x 13 x 9 mm, 50 x 25 x 10 mm**

Type		**45 x 25.5 x 9 mm**	**45 x 13 x 9 mm**	**50 x 25 x 10 mm**	**50 x 25 x 10 mm**
Enclosure material		**PA, black**	**PA, black**	**PBT, black**	**PBT, black**
Operating mode		**Hall**	**MR**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**10 mT**	**3 mT**	**10 mT**	**10 mT**
Sensing distance (Sn)		**17 mm**	**20 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 1 m**	**Cable 2 m**	**Cable 2 m**
Special feature					
PNP	**NO contact**	**6372245079** MEK-E45PS/H10-KL2			**6372290081** MEK-E50PS/H10-KL2
PNP	**NC contact**	**6372145080** MEK-E45PÖ/H10-KL2			**6372190082** MEK-E50PÖ/H10-KL2
PNP	**bistable**	**6373445129** MEK-E45PB/H11-KL2	**6370401203** MEK-E45PB/M03-1		**6373490130** MEK-E50PB/H11-KL2
NPN	**NO contact**			**6362690011** MEK-E50NS/H10-K2	
NPN	**bistable**			**6363890042** MEK-E50NB/H11-K2	
Technical data					
Rated operating voltage range	U_B	10–39 VDC	10–60 VDC	4.5–24 VDC	10–39 VDC
Rated operating current	I_e	400 mA	200 mA	25 mA	400 mA
Max. switching voltage	F	10 kHz	20 Hz	20 kHz	10 kHz
Function/operating voltage indicator		LED/–	–/–	–/–	LED/–
Sensitivity adjustable					
Short circuit-protection		cyclic	–	Current limiter	cyclic
Mechanical data					
Ambient temperature (min/max)		–25°C/+70°C	–5°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 mm²	2 x 0.14 mm²	3 x 0.50 mm²	3 x 0.50 mm²





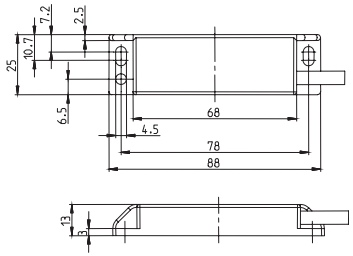




Cable couplings and other accessories can be found from p. 230

Type		**88 x 25 x 13 mm**
Enclosure material		**PA, black**
Operating mode		**MR**
Magnetic sensitivity (mT)		**3 mT**
Sensing distance (Sn)		**20 mm**
Reference magnet (Side)		**T-62 N/S**
Type of connection		**Cable 1 m**
Special feature		
PNP	**NO contact**	
PNP	**NC contact**	
PNP	**bistable**	**6370442204** MEK-E90PB/M03-1
NPN	**NO contact**	
NPN	**bistable**	

Technical data		
Rated operating voltage range	U_B	10–60 VDC
Rated operating current	I_e	200 mA
Max. switching voltage	F	20 Hz
Function/operating voltage indicator		–/–
Sensitivity adjustable		
Short circuit-protection		–
Mechanical data		
Ambient temperature (min/max)		–5°C/+70°C
Protection class in accordance with IEC 529, EN 60529		IP67
Connection		2 x 0.50 mm²



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

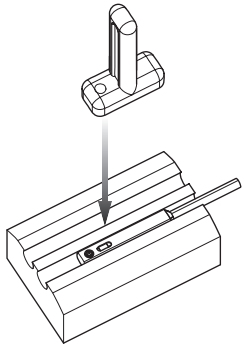
Magnetic cylinder sensors
Standard range

Product features

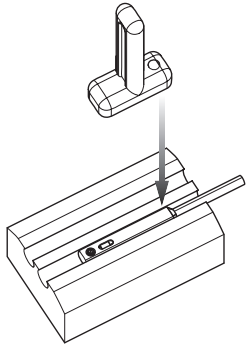
- Type: T-slot/C-slot
- Operating principle: Hall, magnetoresistive, Reed
- Sensitivity: 1.5 – 13.5 mT
- Enclosure material: plastic/aluminium
- Function: IO-Link
  Analogue output
  Switching points teachable

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.

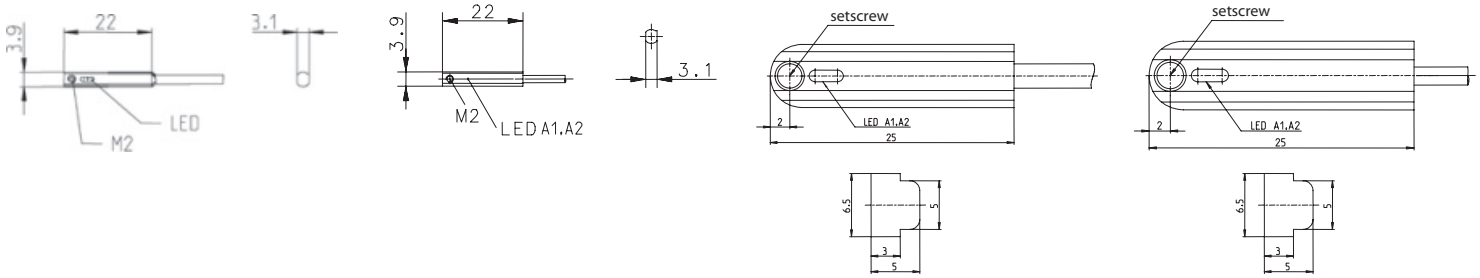


Teach-in output 1



Teach-in output 2

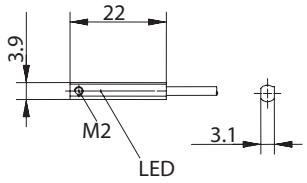
Type			C-slot	C-slot	T-slot	T-slot
Enclosure material			PA, smoking topaz	PA, smoking topaz	Aluminium	Aluminium
Operating mode			Hall	Hall	Hall	Hall
Magnetic sensitivity (mT)			1.5 – 13.5 mT	1.5 – 13.5 mT	1.5 – 13.5 mT	1.5 – 13.5 mT
Output			Double-channel	Double-channel	Double-channel	Double-channel
Type of connection			Cable 2 m	Connection cable with plug M8	Cable 2 m	Connection cable with plug M8
Special feature			Switching points programmable	Switching points programmable	Switching points programmable	Switching points programmable
PNP NO contact	**C-slot SMC**		**6370281183** MEK-E22PS/HP2-KL2	**6370281184** MEK-E22PS/HP2-KL0,3S8		
PNP NO contact	**C-slot Festo**		**6370281185** MEK-E22PS/HP2-KL2	**6370281186** MEK-E22PS/HP2-KL0,3S8		
PNP NO contact	**T-slot**				**6370299187** MEA-E30PS/HP2-KL2	**6370299188** MEA-E30PS/HP2-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
Teachable			yes	yes	yes	yes
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			4 x 0.05 mm²	Connection cable with plug M8 x 1	4 x 0.05 mm²	Connection cable with plug M8 x 1

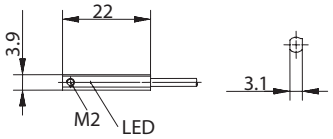


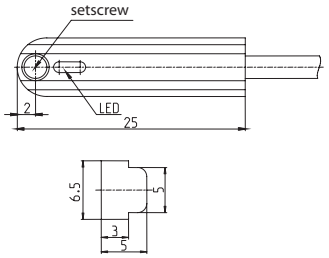
Cable couplings and other accessories can be found from p. 230

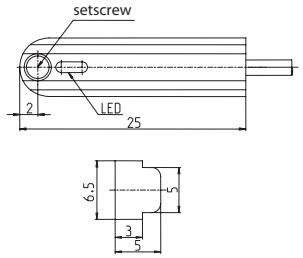
ELECTRONIC CYLINDER SENSORS **TEACHABLE SINGLE-CHANNEL Type C-slot, T-slot**

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)		1.5 – 13.5 mT	1.5 – 13.5 mT	1.5 – 13.5 mT	1.5 – 13.5 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**	**6372281177** MEK-E22PS/HP1-KL2	**6372281178** MEK-E22PS/HP1-KL0,3S8		
PNP NO contact	**C-slot Festo**	**6372281179** MEK-E22PS/HP1-KL2	**6372281180** MEK-E22PS/HP1-KL0,3S8		
PNP NO contact	**T-slot**			**6372299181** MEA-E30PS/HP1-KL2	**6372299182** MEA-E30PS/HP1-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
Teachable		yes	yes	yes	yes
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		4 x 0.05 mm²	Connection cable with plug M8 x 1	4 x 0.05 mm²	Connection cable with plug M8 x 1







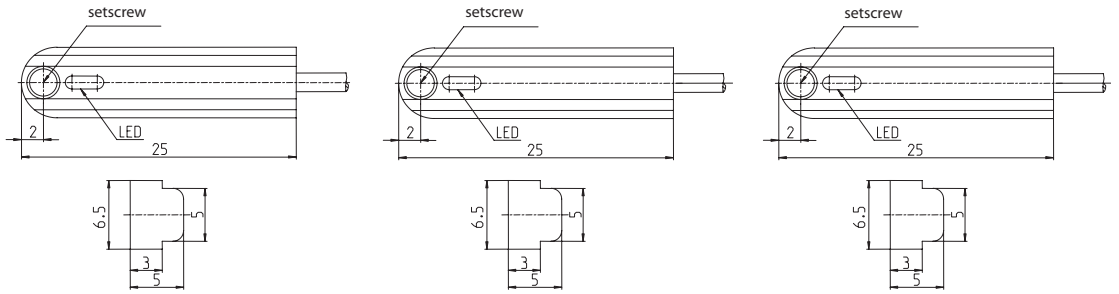


Cable couplings and other accessories can be found from p. 230

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

BERNSTEIN

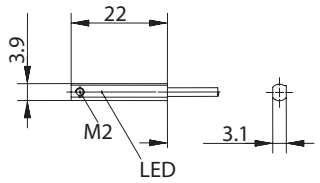
Type		**T-slot**	**T-slot**	**T-slot**
Enclosure material		**Aluminium**	**Aluminium**	**Aluminium**
Operating mode		**Hall**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**±5 – ±25 mT**	**±5 – ±25 mT**	**1.5 – 13.5 mT**
Output		**Single-channel**	**Single-channel**	**Single-channel**
Type of connection		**Cable 2 m**	**Connection cable with plug M12**	**Connection cable with plug M8**
Special feature		**IO-Link**	**IO-Link**	**Analogue**
PNP NO contact	**C-slot SMC**			
PNP NO contact	**C-slot Festo**			
PNP NO contact	**T-slot**	**6370099193** MEA-E30AIOL/H50-KL2	**6370099196** MEA-E30AIOL/H50-KL0,3S12	**6370099169** MEA-E30A10/H50-KL0,3S8
Technical data				
Rated operating voltage range	U_B	24 VDC	24 VDC	10–30 VDC
Rated operating current	I_e	–	–	≤ 50 mA
Function/operating voltage indicator		LED/–	LED/–	LED/–
Sensitivity adjustable		yes	yes	yes
Short circuit-protection		cyclic	cyclic	cyclic
Teachable		yes	yes	yes
Mechanical data				
Ambient temperature (min/max)		+5°C/+55°C	+5°C/+55°C	+5°C/+55°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67
Connection		3 x 0.5 mm²	Connection cable with plug M12 x 1	Connection cable with plug M8 x 1

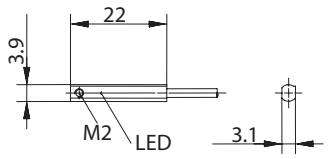


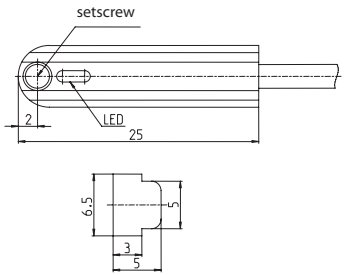
You can find detailed product data sheets at www.bernstein.eu

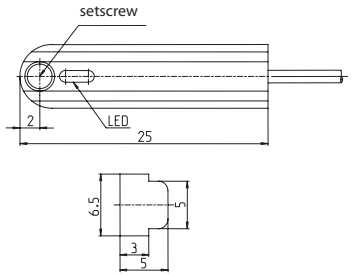
ELECTRONIC CYLINDER SENSORS **SINGLE-CHANNEL Type C-slot, T-slot**

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**	**6372281171** MEK-E22PS/H03-KL2	**6372281172** MEK-E22PS/H03-KL0,3S8		
PNP NO contact	**C-slot Festo**	**6372281173** MEK-E22PS/H03-KL2	**6372281174** MEK-E22PS/H03-KL0,3S8		
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 mm²	Connection cable with plug M8 x 1	3 x 0.05 mm²	Connection cable with plug M8 x 1



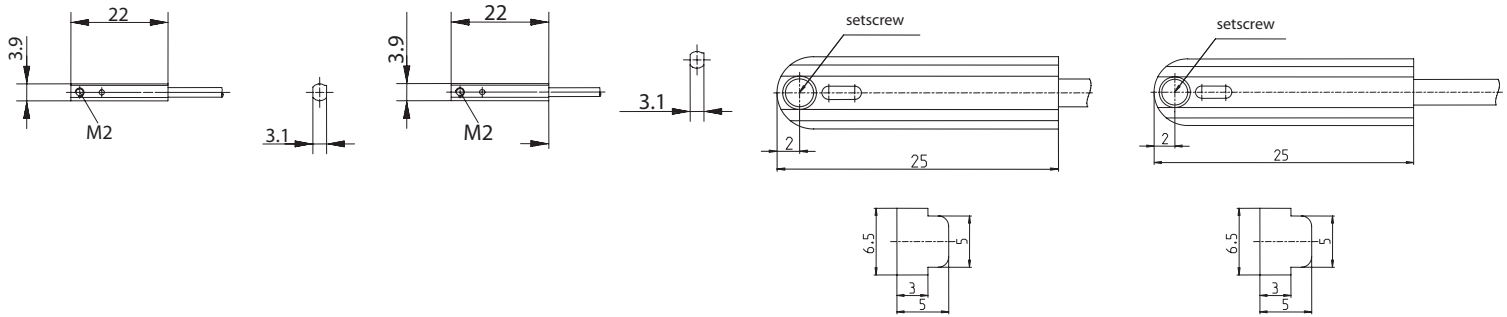






Cable couplings and other accessories can be found from p. 230

Type		**C-slot**	**C-slot**	**T-slot**	**T-slot**
Enclosure material		**PA, smoking topaz**	**PA, smoking topaz**	**Aluminium**	**Aluminium**
Operating mode		**Reed**	**Reed**	**Reed**	**Reed**
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					
NO contact	**C-slot SMC**	**6310281741** MAK-E22S/R20-2	**6310281742** MAK-E22S/R20-0,3S8		
NO contact	**C-slot Festo**	**6310281743** MAK-E22S/R20-2	**6310281744** MAK-E22S/R20-0,3S8		
NO contact	**T-slot**			**6310299745** MAA-E30S/R20-2	**6310299746** MAA-E30S/R20-0,3S8
Technical data					
Rated operating voltage range	U_B	120 V	120 V	120 V	120 V
Max. Switching power		10 VA	10 VA	10 VA	10 VA
Reproducibility		+/– 1 mm	+/– 1 mm	+/– 1 mm	+/– 1 mm
Mechanical service life (switching operations)		3 x 10^8	3 x 10^8	3 x 10^8	3 x 10^8
Mechanical data					
Ambient temperature (min/max)		–25°C/+80°C	–25°C/+80°C	–25°C/+80°C	–25°C/+80°C
Protection class in accordance with IEC 529, EN 60529		IP67	IP67	IP67	IP67
Connection		3 x 0.05 mm²	Connection cable with plug M8 x 1	3 x 0.05 mm²	Connection cable with plug M8 x 1



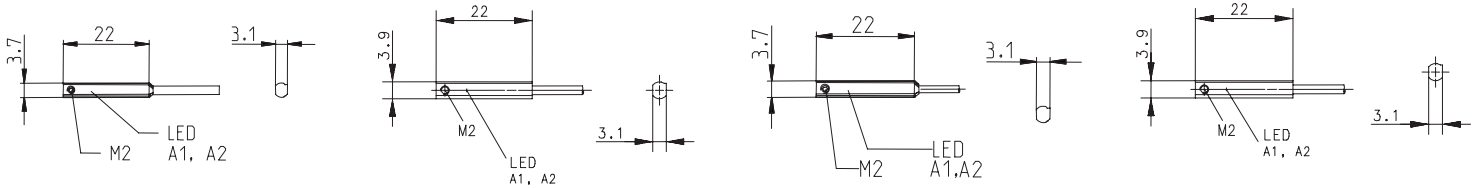
You can find detailed product data sheets at www.bernstein.eu

Magnetic ATEX sensors

Product features

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

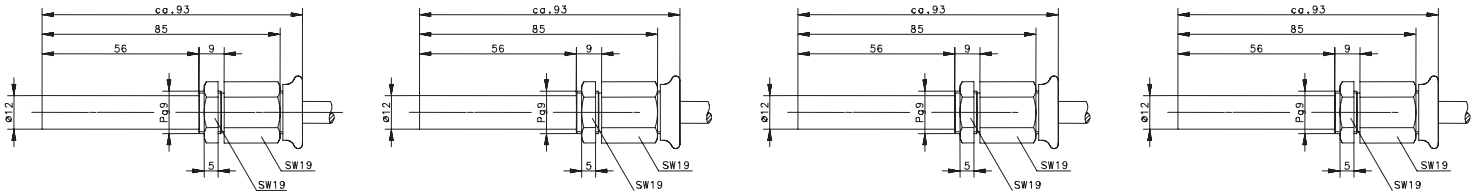
Type		**C-slot**	**C-slot**	**C-slot**	**C-slot**
Enclosure material		**PA, smoking topaz**	**PA, black**	**PA, smoking topaz**	**PA, black**
Operating mode		**Hall**	**Hall**	**Hall**	**Hall**
Magnetic sensitivity (mT)		**1.5 – 13.5 mT**	**1.5 – 13.5 mT**	**1.5 – 13.5 mT**	**1.5 – 13.5 mT**
Output		**Double-channel**	**Double-channel**	**Double-channel**	**Double-channel**
Type of connection		**Cable 2 m**	**Cable 2 m**	**Connection cable with plug M8**	**Connection cable with plug M8**
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 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	**6370281189** MEK-E22PS/HP2-KL2-EX	**6370281198** MEK-E22PS/HP2-KL0,3S-EX	**6370281190** MEK-E22PS/HP2-KL0,3S-EX
PNP NO contact	**C-slot Festo**				
PNP NO contact	**T-slot**				
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
Teachable		yes	yes	yes	yes
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		4 x 0.05 mm²	4 x 0.05 mm²	Connection cable with plug M8 x 1	Connection cable with plug M8 x 1



Cable couplings and other accessories can be found from p. 230

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 mm²	3 x 0.75 mm²	3 x 0.75 mm²	3 x 0.75 mm²



Accessories
Magnets

Product features

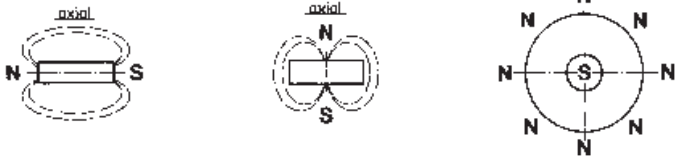
- Shapes: round Ø 5 mm – 31 mm / square
- Enclosure: with and without encapsulation / enclosure
- Enclosure material: PA 6.6, PBT, aluminium
- Temperature range: From –40°C to +150 °C

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 temperatureranges, 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 determine 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.

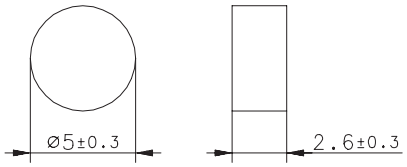
Strong magnetic fields

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.

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

T-75 Actuating magnet

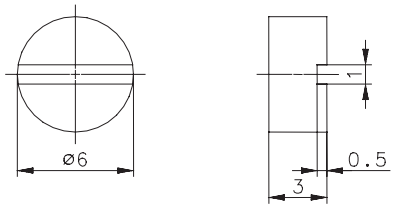
Product range	
Article number	**Designation**
6301175057	T-75



Mechanical data	
Magnet material	Sm_2Co_{17} (Samarium cobalt), axially magnetised
Ambient temperature	–20°C … +100 °C

T-06 N/S Actuating magnet

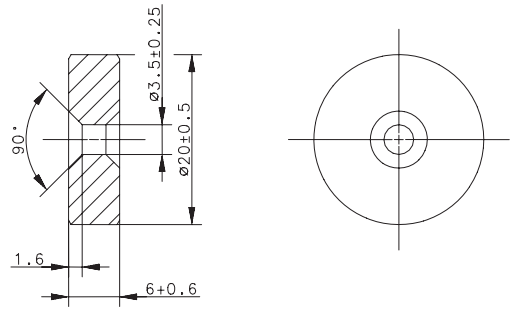
Product range	
Article number	**Designation**
6301106065	T-06 N/S



Mechanical data	
Magnet material	Neodymium iron boron (NdFeB) (Sn-Ni coating)
Ambient temperature	–40°C … +150 °C

T-61 N/S Actuating magnet

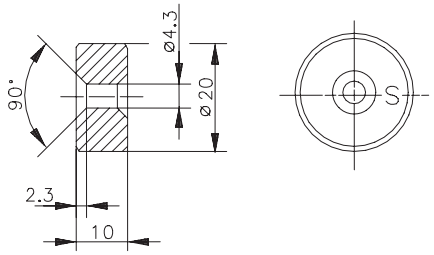
Product range	
Article number	**Designation**
6301261035	T-61 N/S



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

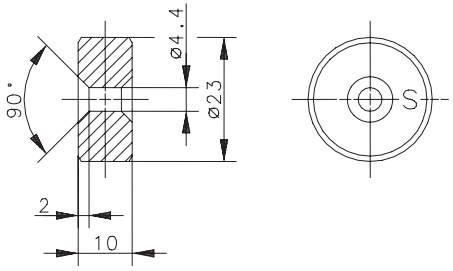
Product range	
Article number	**Designation**
6301167054	T-67 N/S



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

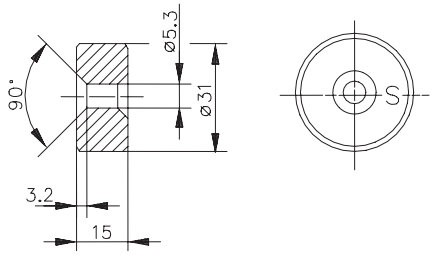
Product range	
Article number	**Designation**
6301262039	T-62 N/S



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

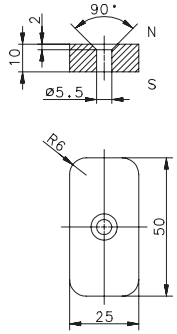
Product range	
Article number	**Designation**
6301269031	T-69 N/S



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

T-68 N Actuating magnet

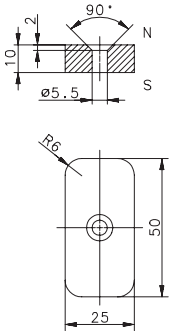
Product range	
Article number	**Designation**
6301268028	T-68 N



Mechanical data	
Magnet material	Hard ferrite 24/16; axially magnetised
Ambient temperature	–20°C … +80°C

T-68 S Actuating magnet

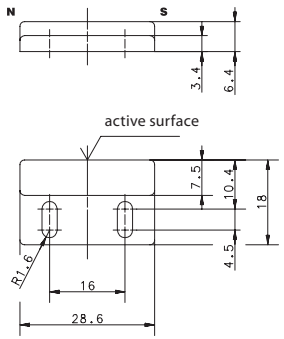
Product range	
Article number	**Designation**
6301368033	T-68 S



Mechanical data	
Magnet material	Hard ferrite 24/16; axially magnetised
Ambient temperature	–20°C … +80°C

TK-11-11 Actuating magnet

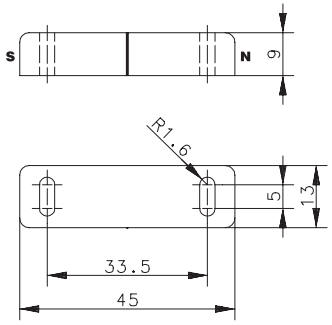
Product range	
Article number	**Designation**
6302111047	TK-11-11



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

TK-11-01 Actuating magnet

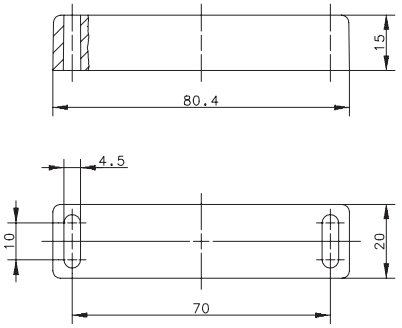
Product range	
Article number	**Designation**
6303111001	TK-11-01



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

TK-21-02 Actuating magnet

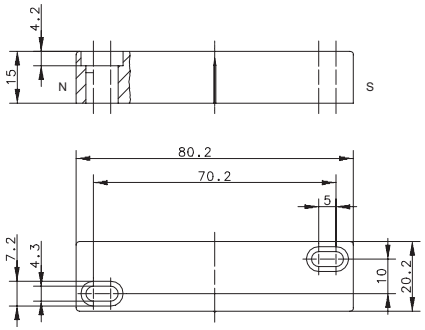
Product range	
Article number	**Designation**
6303121002	TK-21-02



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

TK-21-12 Actuating magnet

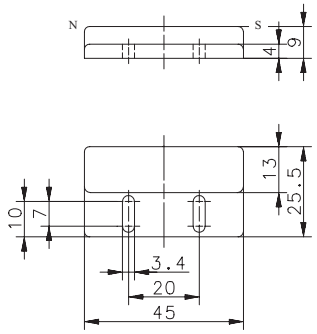
Product range	
Article number	**Designation**
6302121030	TK-21-12



Mechanical data	
Magnet material	AlNiCo – 500
Ambient temperature	–20°C … +80 °C
Enclosure material	PA 6.6, red

TK-45 Actuating magnet

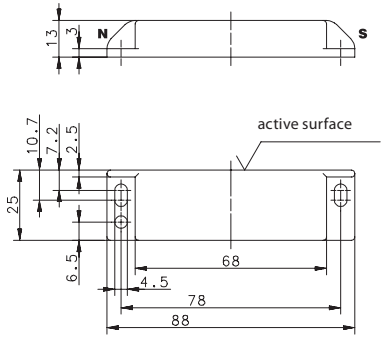
Product range	
Article number	**Designation**
6302145048	TK-45



Mechanical data	
Magnet material	AlNiCo – 500
Ambient temperature	–20°C … +70 °C
Enclosure material	PA 6.6, black

TK-42 Actuating magnet

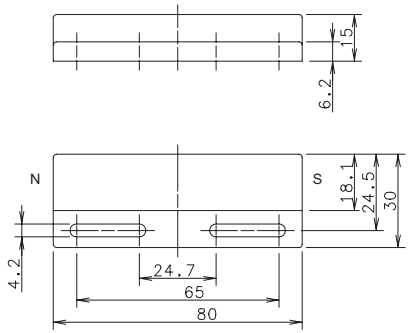
Product range	
Article number	**Designation**
6302142049	TK-42



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

TK-44 Actuating magnet

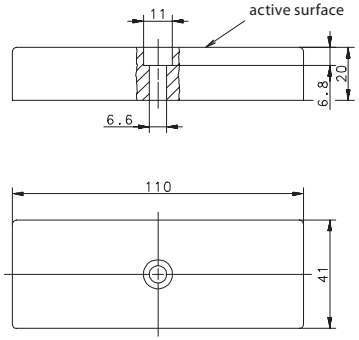
Product range	
Article number	**Designation**
6302144050	TK-44



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

TK-50 Actuating magnet

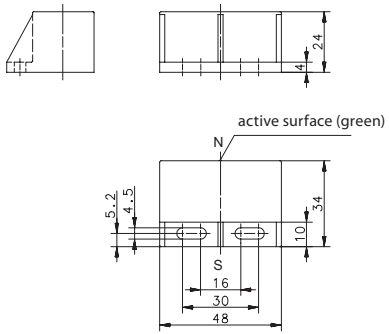
Product range	
Article number	**Designation**
6302100053	TK-50



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

TK-57 N Actuating magnet

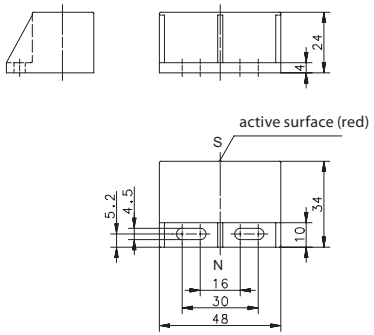
Product range	
Article number	**Designation**
6302257060	TK-57 N



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

TK-57 S Actuating magnet

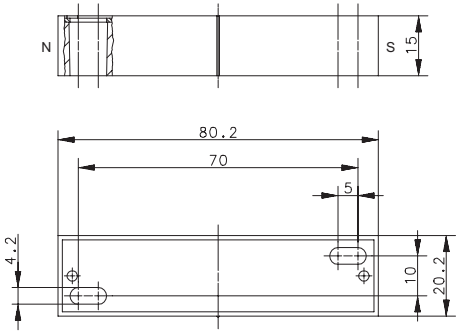
Product range	
Article number	**Designation**
6302357061	TK-57 S



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

TK-21-02 Actuating magnet

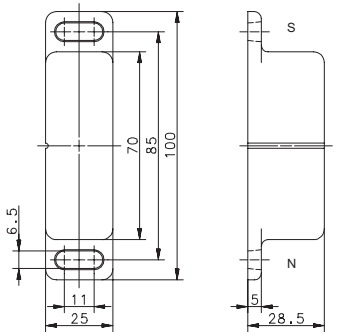
Product range	
Article number	**Designation**
6305121064	TK-21-02



Mechanical data	
Magnet material	AlNiCo – 500
Ambient temperature	–40°C … +150°C
Enclosure material	Al, red

TA-31 Actuating magnet

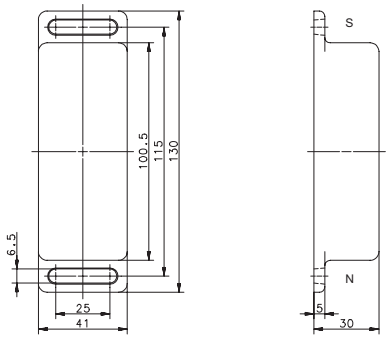
Product range	
Article number	**Designation**
6303131005	TA-31



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

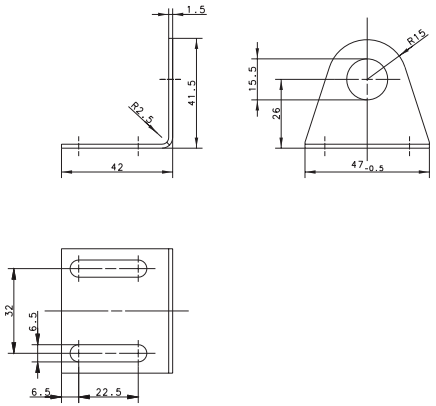


Mechanical data	
Magnet material	Hard ferrite 24/16
Ambient temperature	–20°C … +80°C
Enclosure material	Al, black

BWN-M06NI/40 x 47

Product range	
Article number	**Designation**
4102802001	BWN-M06NI/40 x 47

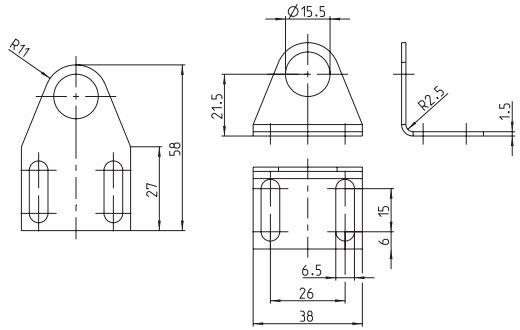
Mechanical data	
Material	Stainless steel 1.4301
for series	MA-06, MA-16, MA-26, MA-15



BWN-M06NI/27 x 38

Product range	
Article number	**Designation**
4102802002	BWN-M06NI/27x38

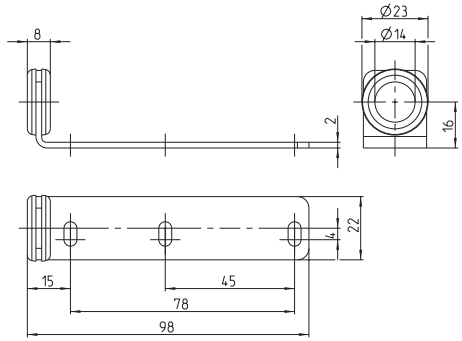
Mechanical data	
Material	Stainless steel 1.4301
for series	MA-06, MA-16, MA-26, MA-15



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 mm²
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 mm²
Protection class	IP67/NEMA 4

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 mm²
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 mm²
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 mm²
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 mm²
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 mm²
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 mm²
Protection class	IP67

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 mm²
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	**5 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. 251

TYPE CODE **CAPACITIVE SENSORS**

BERNSTEIN

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. 251

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	Ø 15.5 x 87 mm [MA-04] PC
	05	Currently not used
	06	Ø 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	Ø 12 x 81 mm [MA-15] PA
	16	Ø 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	Ø 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	Ø 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	Ø 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	Ø 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	Ø 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	Magnetoresistive
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. 251

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	-	Dash (fixed)

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												

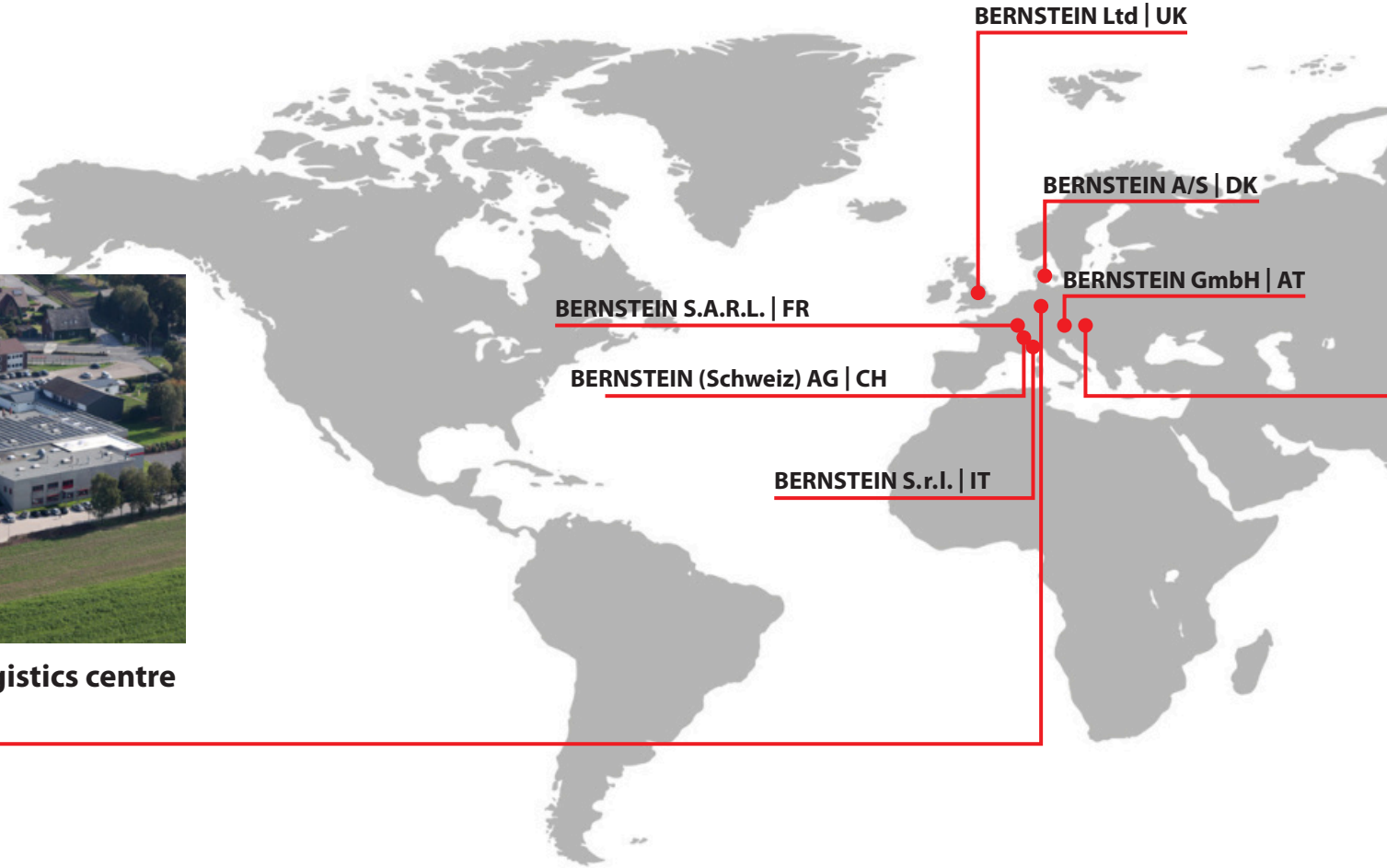
Product group		
1	B	Mounting material
2		Type of product
	K	Retaining bracket
	W	Mounting bracket
	H	Retaining plate
3		Specification
	S	Bracket, 2-piece
	B	Block, 1-piece
	R	Reducer
	N	90° elbow
4	-	Dash (fixed)

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

BERNSTEIN WORLDWIDE

Your contacts

BERNSTEIN AG – – Headquarters and Logistics centre Germany



Your contact partners

International Headquarters
BERNSTEIN AG
Hans-Bernstein-Str. 1
32457 Porta Westfalica
Phone +49 571 793-0
info@bernstein.eu
www.bernstein.eu

Denmark
BERNSTEIN A/S
Phone +45 7020 0522
info.denmark@bernstein.eu
www.bernstein.dk

Italy
BERNSTEIN S.r.l.
Phone +39 035 4549037
sales@bernstein.it
www.bernstein.it

France
BERNSTEIN S.A.R.L.
Phone +33 1 64 66 32 50
info.france@bernstein.eu
www.bernstein.fr

Austria
BERNSTEIN GmbH
Phone +43 2256 62070-0
office@bernstein.at
www.bernstein.at

United Kingdom
BERNSTEIN Ltd
Phone +44 1922 744999
sales@bernstein-ltd.co.uk
www.bernstein-ltd.co.uk

Switzerland
BERNSTEIN (Switzerland) AG
Phone +41 44 775 71-71
info.schweiz@bernstein.eu
www.bernstein-schweiz.ch

China
BERNSTEIN Safe Solutions (Taicang) Co., Ltd.
Phone +86 512 81608180
info@bernstein-safesolutions.cn
www.bernstein-safesolutions.cn

BERNSTEIN Kft. | Hungary

BERNSTEIN Safe Solutions
(Taicang) Co., Ltd. | China

8 **SUBSIDIARIES**
are at your disposal at our international locations

4 **PRODUCTION FACILITIES**
in Germany, China and Hungary are manufacturing products at the highest level for our international customers

1 **TEAM**
with one common objective — your satisfaction

www.bernstein.eu/en/contact

BERNSTEIN

DETECT We make safety happen.

PROTECT We keep your visions safe.

700 0001 210 . 01.2022 . We reserve the right to make changes

www.bernstein.eu