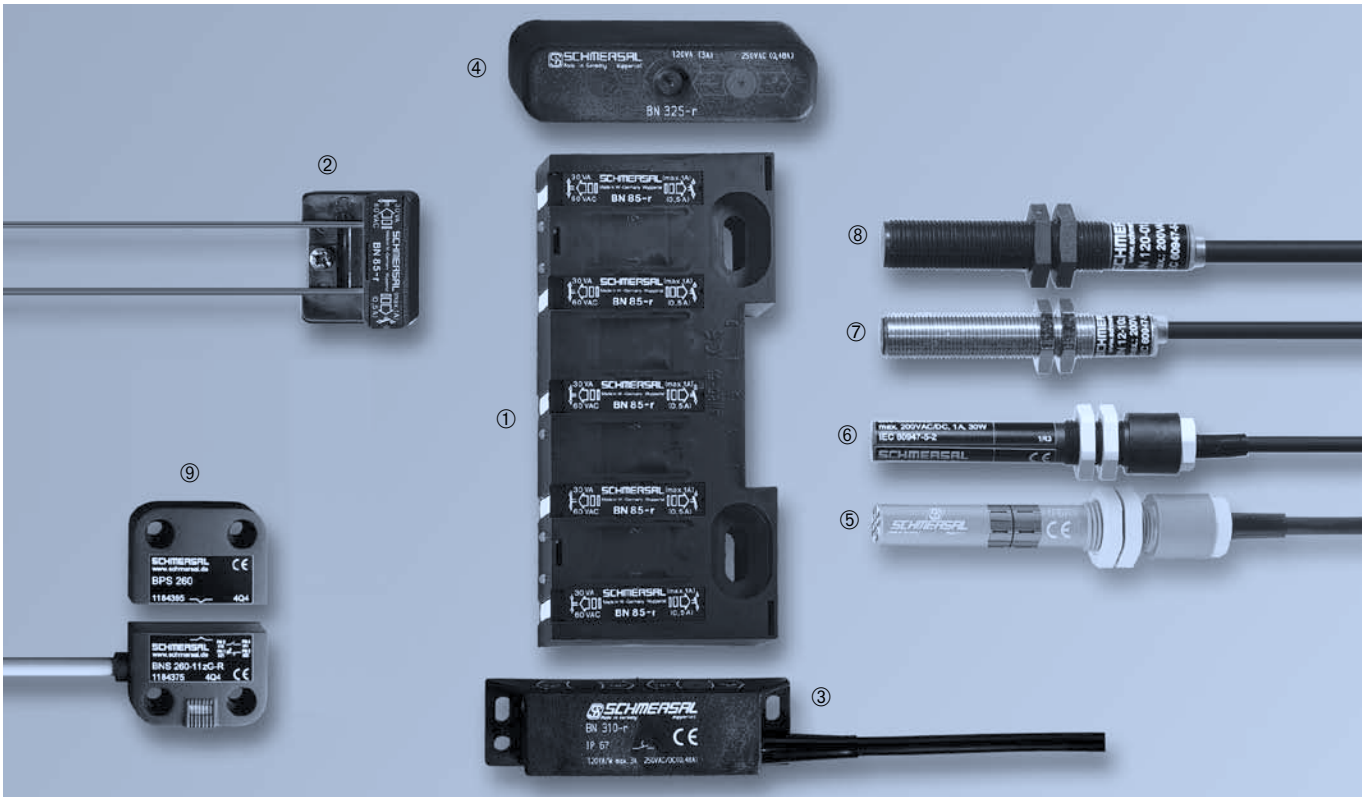
Magnetic reed switches



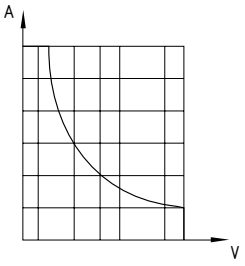
Application
Magnetic reed switches are often used to replace mechanically actuated limit switches with plungers, roller and turning levers and as important connecting element for non-contact limit switches. They can be regarded as a complement to the plunger, roller and turning head-operated limit switches and as an important addition to non-contact proximity switches. They are preferably used where mechanically actuated limit switches no longer function satisfactorily due to unfavourable operating conditions such as high or low start-up speeds, high switching frequencies, strong dust or dirt influence, high humidity, chemical atmospheres or large fluctuations in operation intervals.

The magnetic reed switches consist of two units, the switch and the actuating magnet. The contacts of the switch are protected from dust, humidity and corrosion through the enclosed glass tube. Magnetic reed switches thus have an extraordinarily high contact reliability. The enclosures are made of thermoplastic; the versions for the different applications are rectangular, cylindrical or flat. Magnetic reed switches are fitted with mounting holes, threaded bolts, screwed flanges or on C-rails. They are provided with a central fixing screw or slotted holes for the adjustment. BN 260 is highly insensitive to transverse misalignment.

Design and function
There are normally open (NO), normally closed (NC) and bistable contacts; with some types, the switching conditions are indicated by LED. The switches are actuated with actuating magnets with and without enclosure.
The switching distances are different depending on the strength. In order to avoid malfunctions, the actuating planes are provided with symbols. Depending on the application, magnetic reed switches with pre-wired cable, cable entry or connectors are available. Protection class is up to IP 67.

Technological background
The switches of magnet reed switches tend to sticking, when the specified maximum current intensity is exceeded. Contact stikking can also occur when very long connecting cables are used. To avoid this phenomenon, compensation coils can be used.
In the event of magnetic reed switches being fitted too close to one another, mutual interference can occur – this can be avoided by means of shielded plates. In the BN 85-5 and BN 325, these shielded plates are already integrated in the enclosure.
If magnetic reed switches are appropriately fitted and maintained, they can feature very long lifetimes. The non-contact, low-force operated switches are not subject to wear on the actuating surface either and therefore have an almost unlimited life.
Similar to mechanical snap action switches, magnet reed switches have a hysteresis, i.e. their switch-on and switch-off point do not coincide.
This feature is a result of the difference in the start and stop excitation of the reed contacts.

Voltage and current diagrams
Magnetic reed switches can switch different currents with different voltages.
As the switching delay is not uniform for each switch, these values are represented in the U-I diagrams. The X-axis represents the voltage, the Y-axis the corresponding current.

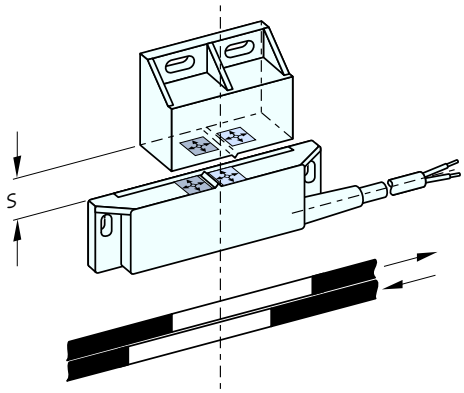


Actuating direction and switching

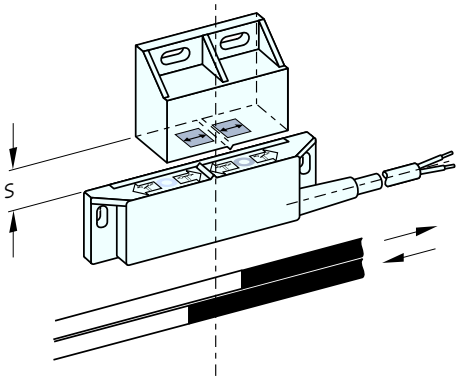
Depending on the version, magnetic reed switches can be actuated from different sides. For each type, the actuating direction between magnet and switch and the recommended distance between these components are indicated with arrows. Furthermore, the switching diagram is represented with the switching behaviour in the different directions. These switching points are not identical due to the hysteresis.

In other words:
Bistable contacts usually are only actuated with one magnetic pole (north or south). All other magnetic reed switches are actuated with the north and the south pole.

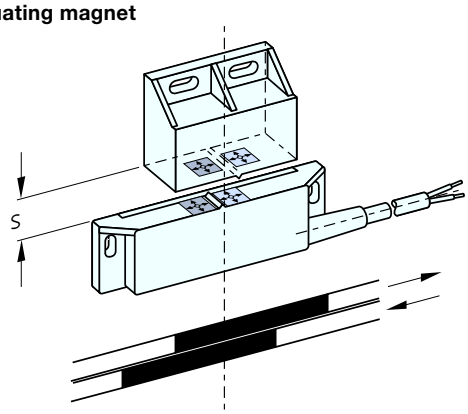
1 NC contact with
N-S actuating magnet



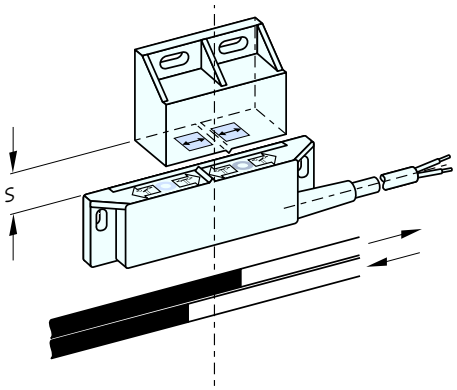
1 bistable contact with
N actuating magnet



1 NO contact with
N-S actuating magnet



1 bistable contact with
S actuating magnet



Legend BN

BN:	(non-contact) magnetic reed switch
E:	electromagnet
P:	magnet pole
N:	North (green)
S:	South (red)
r:	latching
_2:	non-encapsulated magnet
s:	switching distance

If the magnet is installed onto a metal plate, the switching distance for the bistable contact increases.

Switching

Contact open  **Contact closed**

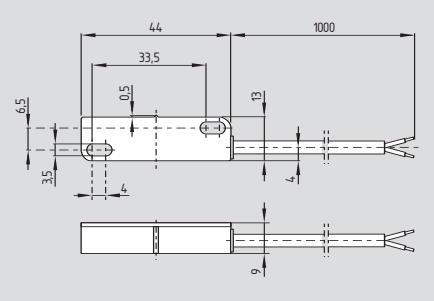
Selection table: Magnetic reed switches

Actuating distances

Actuating magnets	BN 80-10z	BN 80-01z	BN 80-rz	BN 85-r	BN 310-10z BN 310-01z	BN 310-rz	BN 32-10 BN 32-01 BN 32-11
Page 2-84	Page 2-72	Page 2-72	Page 2-72	Page 2-73	Page 2-76	Page 2-76	Page 2-77
BP 6 S			4-18	2-12			
BP 7 S			6-22				
BP 8	3-8	0-5					
BP 8 S				2-10			
BP 10	6-12	2-9	2-9		5		5
BP 10 N						15	
BP 10 S			10-30	5-20		15	
2 x BP 10	12-20	2-13	2-13		17		12
2 x BP 10 N						20	
2 x BP 10 S			12-36	6-27		20	
BP 15	8-14	2-10			6		6
BP 15 N						17	
BP 15 S			12-30	5-22		17	
2 x BP 15	12-22	2-15			17		12
2 x BP 15S			13-38	7-28			
2 x BP 15/2					17		12
2 x BP 15/2 N						22	
2 x BP 15/2 S						22	
BP 34					5-20		15
BP 34 N						15-30	
BP 34 S			20-50	10-40		15-30	
2 x BP 34	12-26	5-18					
2 x BP 34 S			22-60				
BP 20	12-24	0-14			20		15
BP 20 N						3-25	
BP 20 S			10-38	3-28		3-25	
BP 31	12-24	0-14			20		15
BP 31 N						3-25	
BP 31 S			12-40	4-30		3-25	
BP 11	22-28	2-16			8-20		5-15
BP 11 N						15	
BP 11 S			10-30	4-23		15	
2 x BP 11 N						3-25	
2 x BP 11 S						3-25	
BP 12	24-32	4-20			10-30		10-25
BP 12 N						20	
BP 12 S			10-34	5-27		20	
2 x BP 12 N						10-30	
2 x BP 12 S						10-30	
BP 21					25-50		20-40
BP 21 N						15-45	
BP 21 S						15-45	
2 x BP 21 N						20-60	
2 x BP 21 S						20-60	
BP 22 S							
BP 22 N+BP 22 S							
2 x BP 22 S							
BE 20					20		15
BE 20 N						20	
BE 20 S						20	

BN 32-r BN 32-11r	BN 325-r	BN 65-10z BN 65-10z/1 BN 65-01z	BN 65-rz	BN 65-10z/V BN 65-01z/V BN 65-11z/V BN 65-11z/1V	BN 65-rz/V BN 65-11rz/V	BN 20-10z BN 20-20z BN 20-01z BN 20-02z BN 20-11z	BN 20-rz BN 20-2rz BN 20-11rz
Page 2-77	Page 2-78	Page 2-80	Page 2-80	Page 2-81	Page 2-81	Page 2-82	Page 2-82
		5					
10	10		15				5
10	10		15	5			5
		17			3	12	
15	15		20				10
15	15		20	10			10
		6					
12	12		17				7
12	12		17	6			7
		17					
		17				12	
17	17		22				15
17	17		22				15
		15-20			15		
10-25	10-25		15-30				10-25
10-25	10-25		15-30	20			10-25
		20			10	15	
5-20	5-20		25				15
5-20	5-20		25	15			15
		20			10	15	
5-20	5-20		25				15
5-20	5-20		25	15			15
		20			15	15	
10	10		15				5
10	10		15	5			5
20	20		25				15
20	20		25	15			15
		10-30			20	25	
15	15		20				10
15	15		20	10			10
10-25	10-25		10-30				5-2
10-25	10-25		10-30	25			5-20
		25-50			45		
15-40	15-40		15-45			20-45	10-35
15-40	15-40		15-45	30			10-35
20-55	20-55		20-60				15-50
20-55	20-55		20-60	20-55			15-50
				25			
					35		
				15-55			
	20				10	15	
15	15		20				10
15	15		20	6			10

BN 80



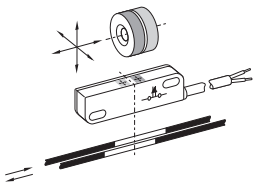
- Thermoplastic enclosure
- Flat design
- Long life
- Non-contacting principle
- 1 Reed contact
- Actuating distance up to 60 mm depending on actuating magnet and version
- Actuating surface marked by protrusion
- Pre-wired cable available, cable length 1 m
- Protection class IP 67

Technical data

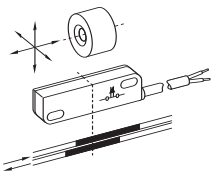
Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 67 to EN 60529
Termination:	cable LiYY 2 x 0.25 mm^2, length 1 m
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC
Switching current:	max. 0.5 A
Switching capacity:	max. 10 VA, 8 W
Dielectric strength:	> 450 VAC (50 Hz)
Switching time “Close”:	max. 2 ms
Switching time “Open”:	max. 0.07 ms
Bounce duration:	max. 0.5 ms
Ambient temperature:	– 25 °C … + 75 °C
Mechanical life:	1 billion operations
Electrical life:	5 million operations, depending on load
Resistance to shock:	15 g on sine wave oscillation
Resistance to vibration:	15 g on sine wave oscillation

Contact variants

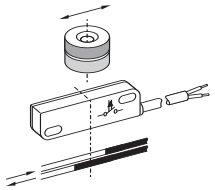
1 NC contact BN 80-01z with N-S actuating magnet



1 NO contact BN 80-10z with N-S actuating magnet



1 bistable contact BN 80-rz with S actuating magnet



Approvals

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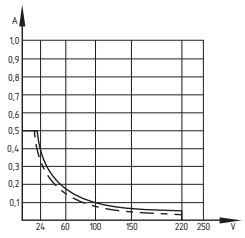
Ordering details

BN 80-①z

No.	Replace	Description
①	01	1 NC contact
	10	1 NO contact
	r	1 bistable contact

Note



Switching capacity:

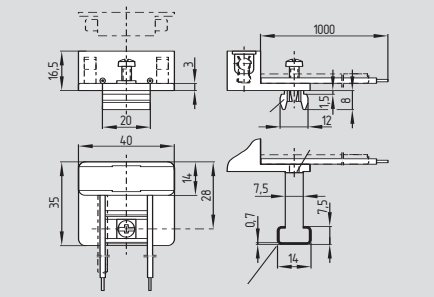
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

BN 85



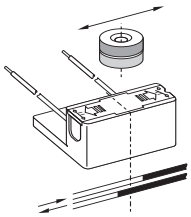
- Thermoplastic enclosure
- Long life
- Non-contacting principle
- Mounting with clamping feet and screw clamp
- Reed-contact to clip-in, on-location assembly
- Adjustment by loosening the central mounting screw
- Actuating distance up to 40 mm depending on actuating magnet and version
- Two individual wires LiYY 0.75 mm^2
- Protection class IP 40

Technical data

Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 40 to EN 60529
Termination:	2 individual wires LiY 0.75 mm^2, length 1 m
Mode of operation:	magnetic
Switching voltage:	max. 60 VAC/DC
Switching current:	max. 1 A
Switching capacity:	max. 30 VA/W
Dielectric strength:	400 VDC
Switching time “Close”:	max. 2 ms
Switching time “Open”:	max. 0.07 ms
Bounce duration:	max. 0.2 ms
Ambient temperature:	0 °C ... + 75 °C
Mechanical life:	1 billion operations
Electrical life:	500 million operations, depending on load
Resistance to shock:	60 g on sine wave oscillation
Resistance to vibration:	60 g on sine wave oscillation

Contact variants

1 bistable contact BN 85-rz with S actuating magnet



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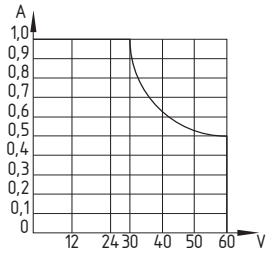
Ordering details

BN 85-①-②

No.	Replace	Description
①	r	1 bistable contact
②		Mounting with clamping brackets + 2 single wires
	1831-1	Mounting on C DIN rail and 2 single wires without screws
	1831-2	like above with screws
	1824-1	Mounting on C DIN rail and sheathed cable without screws
	1824-2	like above with screws
	1824-3	Mounting with clamping brackets and sheathed cable

Note



Switching capacity:

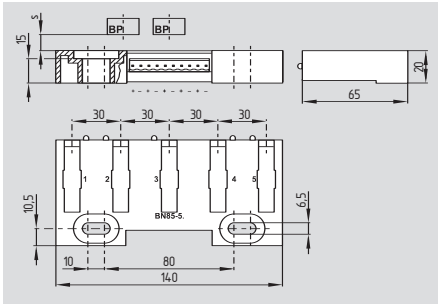
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

BN 85-5



- Thermoplastic enclosure
- Long life
- Non-contacting principle
- For triggering of relays
- 5 reed-contacts to clip-on
- Reciprocal switch function through rotating the individual switching elements by 180°
- LEDs to indicate the switching condition
- Unused plugs can be filled with blank elements
- With 10-pole plug-in connection
- Protection class IP 30

Technical data

Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 30 to EN 60529
Termination:	connector, 10-pole
Mode of operation:	magnetic
Switching conditions indicator:	LED
Actuating magnet:	BP 7
Switching voltage:	12 … 60 VDC
Switching current:	max. 1 A
Switching capacity:	max. 30 W
Dielectric strength:	400 VDC
Switching time “Close”:	max. 2 ms
Switching time “Open”:	max. 0.07 ms
Ambient temperature:	– 10 °C … + 75 °C
Mechanical life:	1 billion operations
Electrical life:	500 million operations, depending on load
Resistance to shock:	60 g on sine wave oscillation
Resistance to vibration:	60 g on sine wave oscillation

Actuating distances:

With mounting on ferromagnetic material:

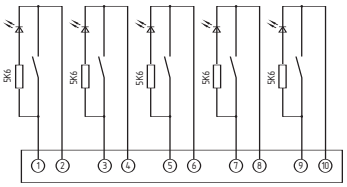
average max. actuating distance s:	14 mm
max. actuating distance under unfavourable conditions s_{max}:	11 mm
min. actuating distance s_{min}:	1 mm
effective actuating distance s_{nenn}:	6 mm

With mounting on non-ferrous material (e.g. plastic rail):

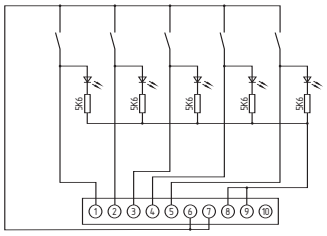
actuating distance s:	0 … 9 mm
effective actuating distance s_{nenn}:	5 mm

Contact variants

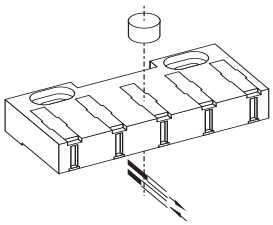
BN 85-5



BN 85-5-2031



1 bistable contact



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Ordering details

BN 85-5-①

No.	Replace	Description
①		1 bistable contact activation of relays
	2031	1 bistable contact for connection to control units Suitable switch insert BN 85-re must be ordered separately !

Note

Included in delivery:
- 2 blank inserts
- Unit without switch inserts

The LED is illuminated when the switch is open. The LED is illuminated when the switch is closed. (ordering suffix -2031)

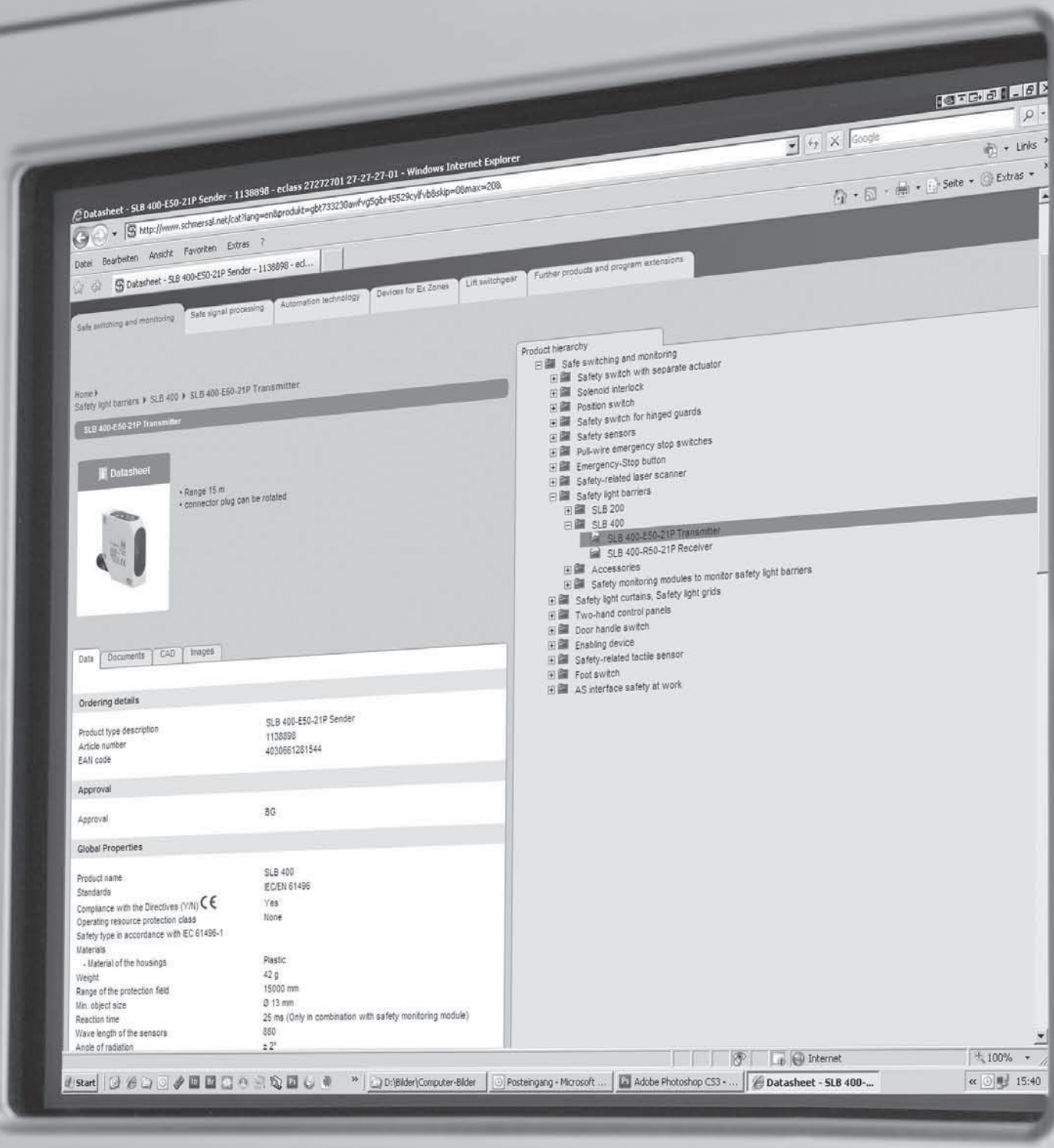
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

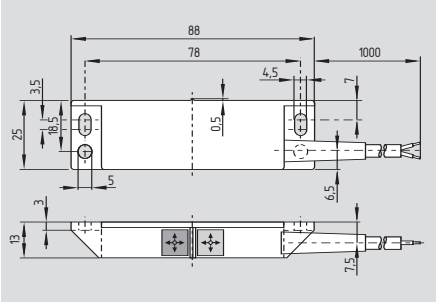
To choose the appropriate actuating magnets, please use the tables on page 2-84.

Download now



Data sheets, mounting and wiring instructions, declarations of conformity and other information at:
www.schmersal.com

BN 310



- Thermoplastic enclosure
- Flat design
- Long life
- Non-contacting principle
- 1 Reed contact
- Actuating distance up to 60 mm depending on actuating magnet and version
- Actuating surface and direction of actuation marked by switch symbol
- Pre-wired cable available, cable length 1 m
- Protection class IP 67

Approvals

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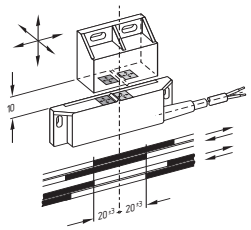
Technical data

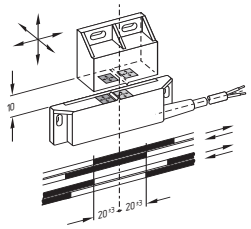
Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 67 to EN 60529
Termination:	cable H03VV-F 2 x 0.75 mm², length 1 m
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC
Switching current:	max. 3 A
Switching capacity:	max. 120 VA/W
Dielectric strength:	> 600 VAC (50 Hz)
Switching speed:	max. 18 m/s
Switching frequency:	max. 300/s for BN 310-01z, -10z
Switching time “Close”:	0.3 ms - 1.5 ms
Switching time “Open”:	max. 0.5 ms
Bounce duration:	0.3 ... 0.6 ms
Ambient temperature:	– 25 °C … + 75 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load
Resistance to shock:	30 g / 11 ms
Resistance to vibration:	30 g / 11 ms
Resistance to vibration:	10 … 55 Hz, amplitude 1 mm
Switching point accuracy:	± 0.25 mm, T = constant

Contact variants

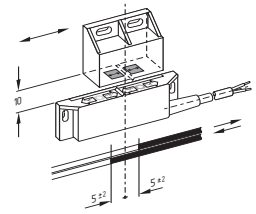
1 NC contact BN 310-01z with N-S actuating magnet



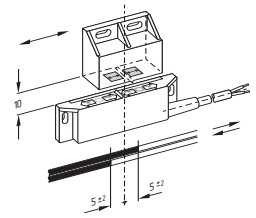
1 NO contact BN 310-10z with N-S actuating magnet



1 bistable contact BN 310-rz with N actuating magnet



1 bistable contact BN 310-rz with S actuating magnet

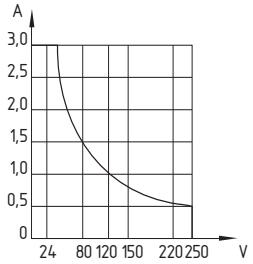


Ordering details

BN 310-①z

No.	Replace	Description
①	01	1 NC contact
	10	1 NO contact
	r	1 bistable contact

Note



Switching capacity:

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

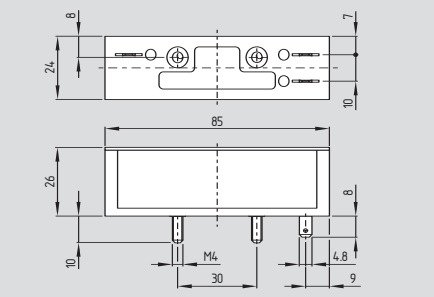
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

When the switches and actuators come together, the colours must coincide:
Red (S) to red (S) and green (N) to green (N).
This does not apply to the bistable contact.

The switch is to be mounted on iron with a non-magnetic layer of at least 20 mm.

BN 32



- Thermoplastic enclosure
- Long life
- Non-contacting principle
- 1 Reed contact
- Actuating distance up to 55 mm depending on actuating magnet and version
- Actuating surface and direction of actuation marked by switch symbol
- Mounting with two threaded bolts
- Spade connector 4.8 mm
- Protection class IP 67

Approvals

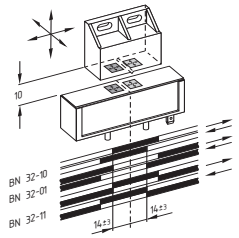
CE

Technical data

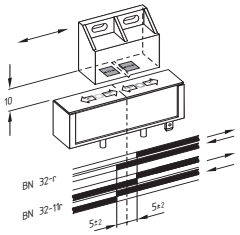
Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 00 ... IP 67 to EN 60529
Termination:	spade connector 4.8 mm spade connector 6.3 mm (ordering suffix -1389)
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC BN 32-11, -11r: max. 220 VAC, 150 VDC
Switching current:	max. 3 A BN 32-11, -11r: max. 1 A
Switching capacity:	max. 120 VA/W BN 32-11, -11r: max. 60 VA/W
Dielectric strength:	> 600 VAC (50 Hz) BN 32-11, -11r: > 350 VAC (50 Hz)
Switching speed:	max. 18 m/s
Switching frequency:	max. 300/s BN 32-11, -11r: max. 200/s
Switching time “Close”:	0.3 ms - 1.5 ms
Switching time “Open”:	max. 0.5 ms
Bounce duration:	0.3 ... 0.6 ms
Ambient temperature:	– 25 °C ... + 90 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load
Resistance to shock:	–
Resistance to vibration:	15 g on sine wave oscillation
Resistance to vibration:	–
Switching point accuracy:	± 0.25 mm, T = constant

Contact variants

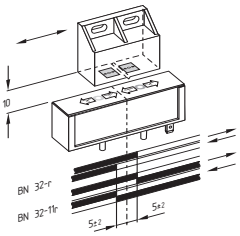
1 NO contact BN 32-10
1 NC contact BN 32-01
1 change-over contact BN 32-11
with N-S actuating magnet



1 bistable contact BN 32-r
1 bistable change-over contact BN 32-11r
with N actuating magnet



1 bistable contact BN 32-r
1 bistable change-over contact BN 32-11r
with S actuating magnet

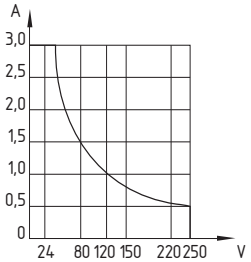


Ordering details

BN 32-①

No.	Replace	Description
①	01	1 NC contact
	10	1 NO contact
	11	1 change-over contact
	r	1 bistable contact
	11r	1 bistable change-over contact

Note

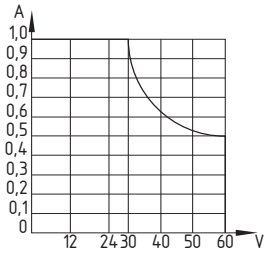


Switching capacity:
NC, NO, bistable contact

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

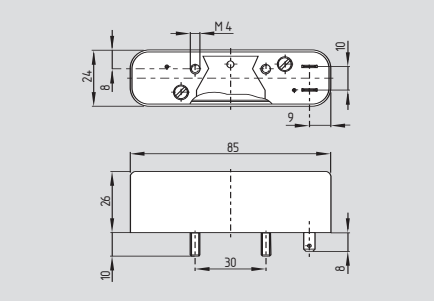
Note



Switching capacity:
change-over, bistable change-over contact

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

BN 325



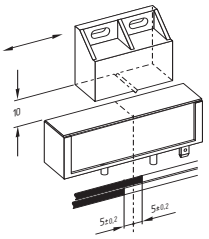
- Thermoplastic enclosure
- Long life
- Non-contacting principle
- 1 Reed contact
- Actuating surface and direction of actuation marked by switch symbol
- Mounting with two threaded bolts
- Spade connector 4.8 mm
- Protection class IP 40

Technical data

Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 00 IP 40 with insulated plug IP 67 with cable output and additional shielding plate (ordering suffix -1279 and -1297-2) to EN 60529
Termination:	spade connector 4.8 mm (ordering suffix -1239) spade connector 6.3 mm (ordering suffix -1389) cable output (ordering suffix -1279 and -1279-2)
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC
Switching current:	max. 3 A
Switching capacity:	max. 120 VA
Dielectric strength:	> 600 VAC (50 Hz)
Switching speed:	max. 18 m/s
Switching frequency:	max. 300/s
Switching time “Close”:	max. 1.5 ms
Switching time “Open”:	max. 0.5 ms
Bounce duration:	0.3 ... 0.6 ms
Ambient temperature:	– 25 °C … + 75 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load
Resistance to shock:	50 g / 11 ms
Resistance to vibration:	30 g on sine wave oscillation
Resistance to vibration:	10 … 55 Hz, amplitude 1 mm
Switching point accuracy:	± 0.25 mm, T = constant

Contact variants

1 bistable contact BN 325-r with N actuating magnet



Approvals

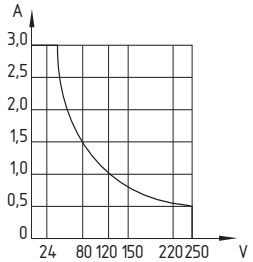
CE

Ordering details

BN 325-r-①

No.	Replace	Description
①		Spade terminal 4.8 mm and 1 shielding plate
	1239	Spade terminal 4.8 mm and 2 shielding plates
	1389	Spade terminal 6.3 mm and 2 shielding plates
	1279	Cable output left and 2 shielding plates
	1279-2	Cable output right and 2 shielding plates

Note



Switching capacity:

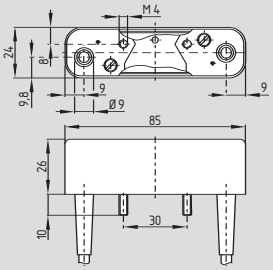
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

BN 325 special versions



- additional shielding plate and cable output left or right (ordering suffix -1279 and -1279-2)

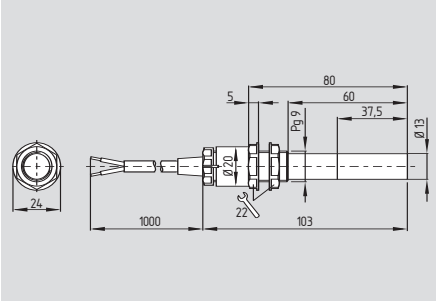
Approvals

CE

Ordering details

see left

BN 65



- **Actuation from side**
- Thermoplastic enclosure
- Central mounting
- Long life
- Non-contacting principle
- Pre-wired cable available, cable length 1 m
- Protection class IP 67

When the switches and actuators come together, the colours must coincide:
Red (S) to red (S) and green (N) to green (N).

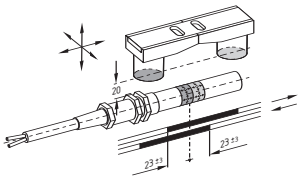
This does not apply to the bistable contact.

Technical data

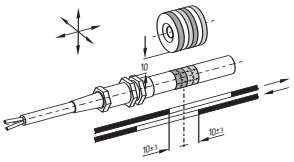
Standards:	IEC/EN 60947-5-1
Design:	cylindrical
Enclosure:	glass-fibre reinforced thermoplastic tightening force on nut 22 mm A/F max. 300 Ncm
Protection class:	IP 67 to EN 60529
Termination:	cable H03VV-F 2 x 0.75 mm², length 1 m
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC
Switching current:	max. 3 A
Switching capacity:	max. 120 VA/W
Dielectric strength:	> 600 VAC (50 Hz)
Switching speed:	max. 18 m/s
Switching frequency:	max. 300/s
Switching time “Close”:	0.3 ms - 1.5 ms
Switching time “Open”:	max. 0.5 ms
Bounce duration:	0.3 ... 0.6 ms max. 3 ms
Ambient temperature:	– 25 °C … + 75 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load
Resistance to shock:	30 g on sine wave oscillation
Resistance to vibration:	30 g on sine wave oscillation
Resistance to vibration:	10 … 55 Hz, amplitude 1 mm
Switching point accuracy:	± 0.25 mm, T = constant

Contact variants

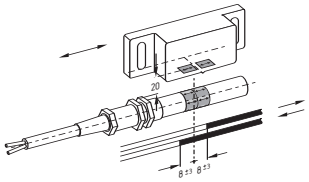
1 NO contact BN 65-10z with N-S actuating magnet



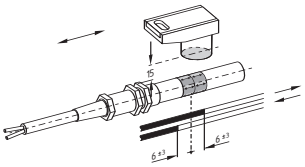
1 NC contact BN 65-01z with N-S actuating magnet



1 bistable contact BN 65-rz with N actuating magnet



1 bistable contact BN 65-rz with S actuating magnet



Approvals

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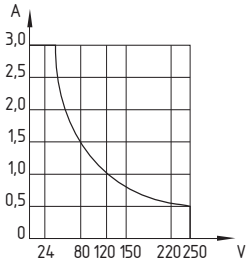
Ordering details

BN 65-①z②

No.	Replace	Description
①	01	1 NC contact
	10	1 NO contact
	r	1 bistable contact
②		With bias magnet
	/1	Without bias magnet

Note



Switching capacity

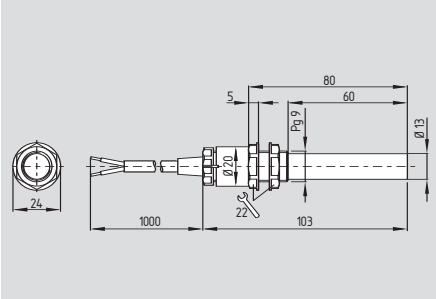
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

BN 65/V



- **Actuation from front**
- Thermoplastic enclosure
- Central mounting
- Long life
- Non-contacting principle
- Pre-wired cable available, cable length 1 m
- Protection class IP 67

When the switches and actuators come together, the colours must coincide:
Red (S) to red (S) and green (N) to green (N).

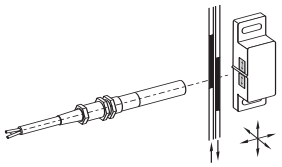
This does not apply to the bistable contact.

Technical data

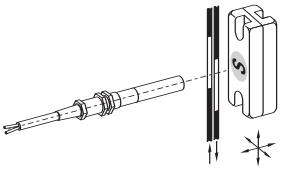
Standards:	IEC/EN 60947-5-1
Design:	cylindrical
Enclosure:	glass-fibre reinforced thermoplastic tightening force on nut 22 mm A/F max. 300 Ncm
Protection class:	IP 67 to EN 60529
Termination:	cable H03VV-F 2 x 0.75 mm², A03VV-F 3 x 0.75 mm², length 1 m
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC BN 65-rz/V: max. 230 VAC/DC
Switching current:	max. 3 A BN 65-rz/V: max. 1 A
Switching capacity:	max. 120 VA/W BN 65-rz/V: max. 60 W
Dielectric strength:	> 600 VAC (50 Hz) BN 65-rz/V: > 350 VAC (50 Hz)
Switching speed:	max. 18 m/s
Switching frequency:	max. 300/s BN 65-rz/V: max. 200/s
Switching time “Close”:	0.3 ms - 1.5 ms
Switching time “Open”:	max. 0.5 ms
Bounce duration:	0.3 ... 0.6 ms max. 3 ms
Ambient temperature:	– 25 °C … + 75 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load
Resistance to shock:	30 g on sine wave oscillation BN 65-rz/V: 15 g on sine wave oscillation
Resistance to vibration:	30 g on sine wave oscillation BN 65-rz/V: 15 g on sine wave oscillation
Resistance to vibration:	10 … 55 Hz, amplitude 1 mm
Switching point accuracy:	± 0.25 mm, T = constant

Contact variants

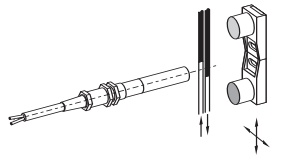
1 NO contact BN 65-10z/V with S actuating magnet



1 NC contact BN 65-01z/V with S actuating magnet



1 bistable contact BN 65-rz/V with N-S actuating magnet



Approvals

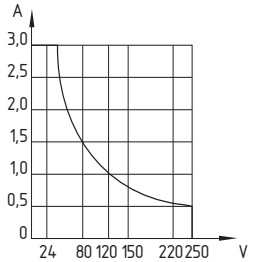
UL CE

Ordering details

BN 65-①z/②V

No.	Replace	Description
①	01	1 NC contact
	10	1 NO contact
	r	1 bistable contact
②		With bias magnet
	/1	Without bias magnet

Note



Switching capacity

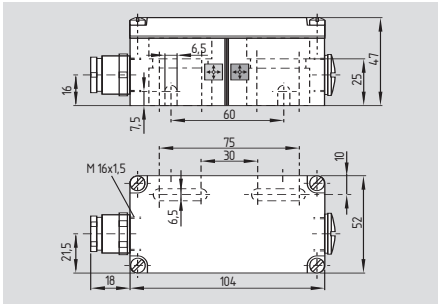
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

BN 20



- Aluminium enlosure
- Long life
- Non-contacting principle
- 1 Reed contact
- Particularly resistant to vibration
- Available for actuation from front or side
- Actuating distance up to 50 mm depending on actuating magnet and version
- Screw terminal
- Protection class IP 67

When the switches and actuators come together, the colours must coincide:
Red (S) to red (S) and green (N) to green (N).

Approvals

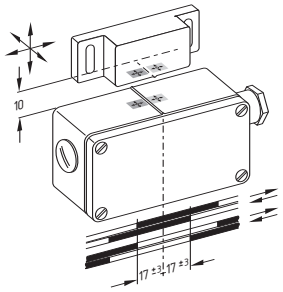
CE

Technical data

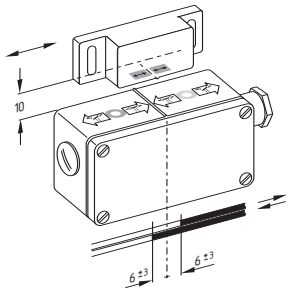
Standards:	IEC/EN 60947-5-1
Design:	rectangular
Enclosure:	Al Si12 die-casting, painted
Protection class:	IP 67 to EN 60529
Termination:	screw terminals
Mode of operation:	magnetic
Switching voltage:	max. 250 VAC
Switching current:	max. 3 A
Switching capacity:	max. 120 VA/W
Dielectric strength:	> 600 VAC (50 Hz)
Switching speed:	max. 18 m/s
Switching frequency:	max. 300/s
Switching time “Close”:	0.3 ms - 1.5 ms
Switching time “Open”:	max. 0.5 ms
Bounce duration:	0.3 ... 0.6 ms
Ambient temperature:	– 25 °C ... + 90 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load
Resistance to vibration:	50 g on sine wave oscillation
Switching point accuracy:	± 0.25 mm, T = constant

Contact variants

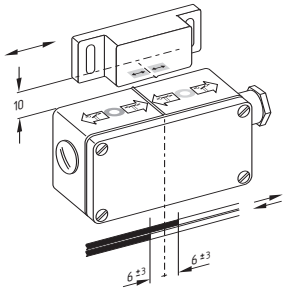
1 NO contact BN 20-10z
1 NC contact BN 20-01z
with N-S actuating magnet



1 bistable contact BN 20-rz
with N actuating magnet



1 bistable contact BN 20-rz
with S actuating magnet

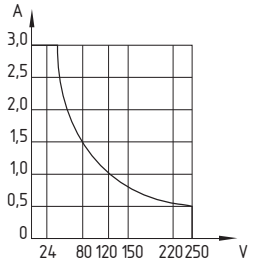


Ordering details

BN 20-①z

No.	Replace	Description
①	01	1 NC contact
	02	2 NC contacts
	10	1 NO contact
	20	2 NO contacts
	11	1 change-over contact
	r	1 bistable contact
	2r	2 bistable contacts
	11r	1 bistable change-over contact

Note



Switching capacity:

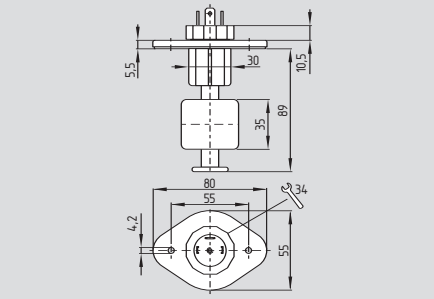
Note

The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

The actuating magnets are not included in delivery.

To choose the appropriate actuating magnets, please use the tables on page 2-70.

BN 75



- Float switch
- Thermoplastic enclosure
- Long life
- Non-contacting principle
- 1 Reed contact
- Available with plug-in connetor or pre-wired cable
- Protection class IP 68

Depending on how the floater is assembled, either a NO contact or a NC contact is possible.

The switching function is reversed accordingly, if the floater in a change-over contact element is turned upside-down.

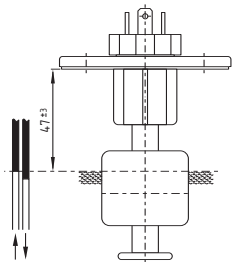
The operating points listed, apply for water.

Technical data

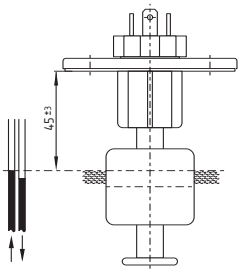
Standards:	IEC/EN 60947-5-1
Enclosure:	glass-fibre reinforced thermoplastic
Protection class:	IP 68 plug connection IP 65 IP 67 cable connection (ordering suffix -1391) to EN 60529
Termination:	plug-in connetor or pre-wired cable
Mode of operation:	magnetic
Switching voltage:	max. 220 VAC
Switching current:	max. 1 A
Switching capacity:	max. 60 VA/W
Hysteresis:	ca. 3 mm
Dielectric strength:	> 600 VAC (50 Hz) BN 75-11y: > 350 VAC (50 Hz)
Bounce duration:	0.3 ... 0.6 ms BN 75-11y: max. 0.2/0.5 ms
Ambient temperature:	– 25 °C ... + 80 °C
Mechanical life:	1 billion operations
Electrical life:	1 million - 1 billion operations, depending on load

Contact variants

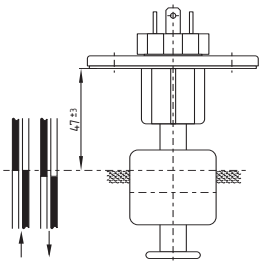
1 NO contact BN 75-10y



1 NC contact BN 75-01y



1 change-over contact BN 75-11y



Approvals

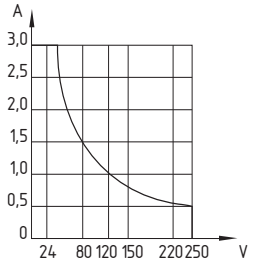
CE

Ordering details

BN 75-①y-②

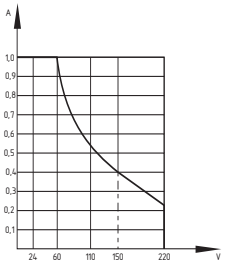
No.	Replace	Description
①	01	1 NC contact
	10	1 NO contact
	11	1 change-over contact
②		Plug-in connector to DIN 43650
	1391	Pre-wired cable

Note



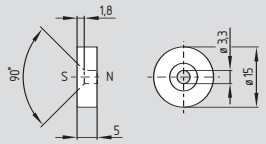
Switching capacity:
NC, NO, bistable contact

Note

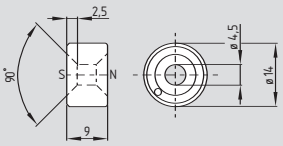


Switching capacity:
change-over, bistable change-over contact

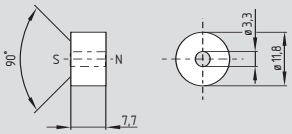
System components



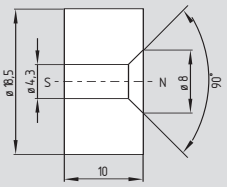
BP 6



BP 7

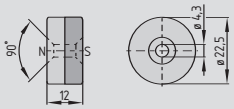


BP 8

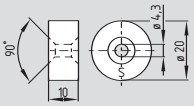


BP 10

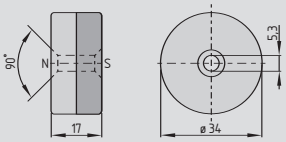
System components



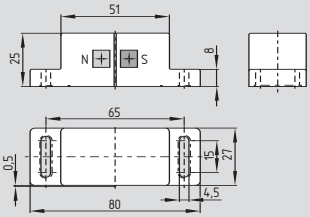
BP 15



BP 15/2

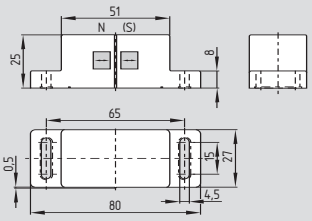


BP 34

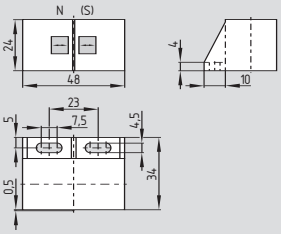


BP 20

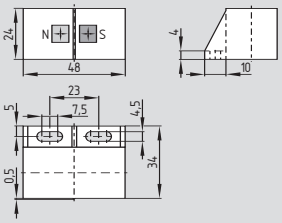
System components



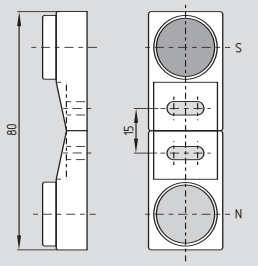
BP 20 N / BP 20 S



BP 31



BP 31 N / BP 31 S



BP 11

Ordering details

Actuating magnet

Unenclosed, N-S	**BP 6**
Unenclosed, N-S	**BP 7**
Unenclosed, N-S	**BP 8**
Unenclosed, N-S	**BP 10**

Ordering details

Actuating magnet

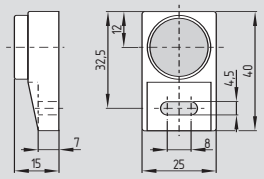
thermoplastic enclosure, N-S	**BP 15**
Unenclosed, N-S	**BP 15/2**
thermoplastic enclosure, N-S	**BP 34**
metal enclosure, N-S	**BP 20**

Ordering details

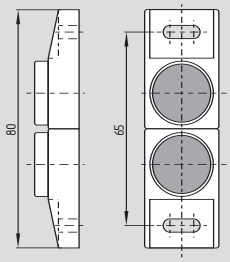
Actuating magnet

metal enclosure Al, N	**BP 20 N**
metal enclosure Al, S	**BP 20 S**
thermoplastic enclosure, N-S	**BP 31**
thermoplastic enclosure, N	**BP 31 N**
thermoplastic enclosure, S	**BP 31 S**
metal enclosure Al, N-S	**BP 11**

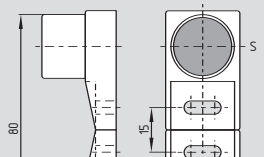
System components



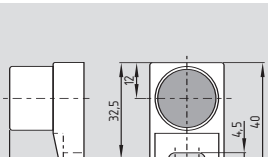
BP 11 N / BP 11 S



2x BP 11 N / 2x BP 11 S

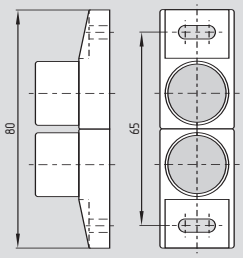


BP 12

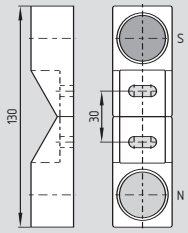


BP 12 N / BP 12 S

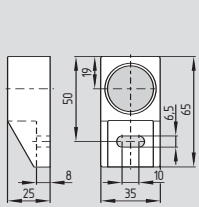
System components



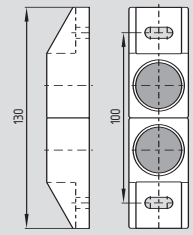
2x BP 12 N / 2x BP 12 S



BP 21

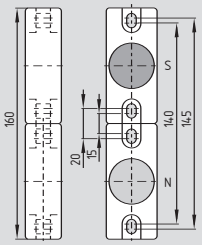


BP 21 N / BP 21 S

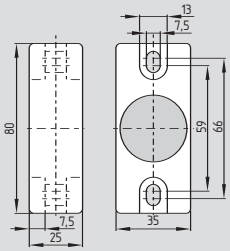


2x BP 21 N / 2x BP 21 S

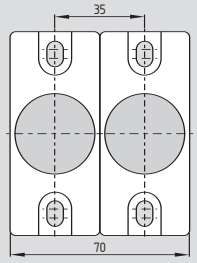
System components



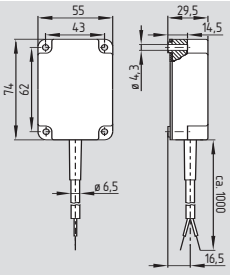
BP 22



BP 22 N / BP 22 S



2x BP 22 N / 2x BP 22 S



BE 20

Ordering details

Actuating magnet	
metal enclosure Al, N	**BP 11 N**
metal enclosure Al, S	**BP 11 S**
metal enclosure Al, 2x N	**2x BP 11 N**
metal enclosure Al, 2x S	**2x BP 11 S**
metal enclosure Al, N-S	**BP 12**
metal enclosure Al, N	**BP 12 N**
metal enclosure Al, S	**BP 12 S**

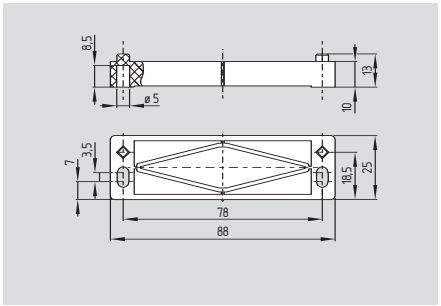
Ordering details

Actuating magnet	
metal enclosure Al, 2x N	**2x BP 12 N**
metal enclosure Al, 2x S	**2x BP 12 S**
metal enclosure Al, N-S	**BP 21**
metal enclosure Al, N	**BP 21 N**
metal enclosure Al, S	**BP 21 S**
metal enclosure Al, 2x N	**2x BP 21 N**
metal enclosure Al, 2x S	**2x BP 21 S**

Ordering details

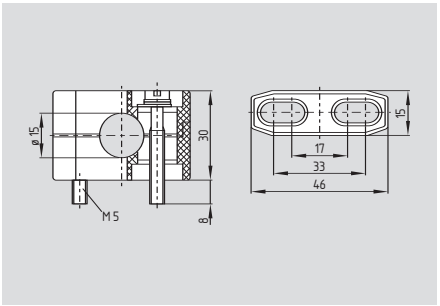
Actuating magnet	
metal enclosure Zn, N-S	**BP 22**
metal enclosure Zn, N	**BP 22 N**
metal enclosure Zn, S	**BP 22 S**
metal enclosure Zn, 2x N	**2x BP 22 N**
metal enclosure Zn, 2x S	**2x BP 22 S**
Electromagnet, thermo-plastic enclosure	**BE 20**

Spacer BN 31/33



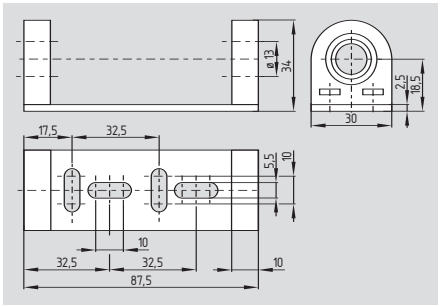
- To mount the magnetic safety sensor and actuator on ferromagnetic material

Terminal mounting H 15



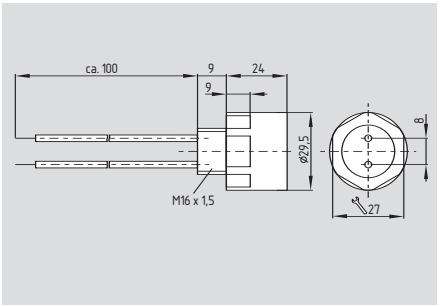
- For BN 65
- Material: thermoplastic

Holder H1/1



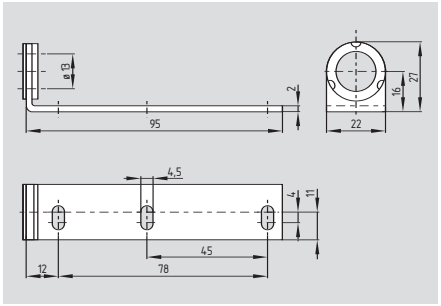
- For BN 65
- Metal holder with 2 elastic bearings
- Provides high resistance to vibration

Compensating coil KS 1



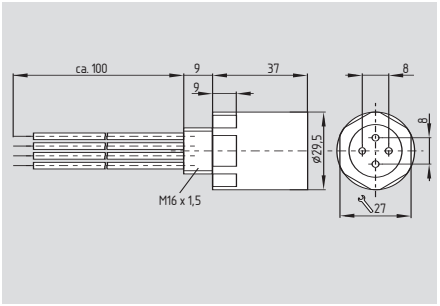
- Temperature range – 25 °C … + 90 °C
- For cable lengths up to 100 m
- Cable H05V-K 1 mm^2, cable length 100 mm
- The bucking coil is to be wired in series with the reed contact
- Version for high temperature – 25 °C … + 150 °C, ordering suffix -T

Holder H2



- For BN 65
- Metal holder with rubber washer

Compensating coil KS 2



- Temperature range – 25 °C … + 90 °C
- For cable lengths up to 200 m or 2 x 100 m
- Cable H05V-K 1 mm^2, cable length 100 mm
- The bucking coil is to be wired in series with the reed contact