



EN Operating instructions.pages 1 to 4
Original

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1. About this document

1.1 Function

This operating instructions manual provides all the information required for the mounting, set-up and commissioning to ensure the safe operation and disassembly of the safety switchgear. The operating instructions must be available in a legible condition and a complete version in the vicinity of the device.

1.2 Target group: authorised qualified personnel

All operations described in this operating instructions manual must be carried out by trained specialist personnel, authorised by the plant operator only.

Please make sure that you have read and understood these operating instructions and that you know all applicable legislations regarding occupational safety and accident prevention prior to installation and putting the component into operation.

The machine builder must carefully select the harmonised standards to be complied with as well as other technical specifications for the selection, mounting and integration of the components.

1.3 Explanation of the symbols used



Information, hint, note:

This symbol is used for identifying useful additional information.



Caution: Failure to comply with this warning notice could lead to failures or malfunctions.

Warning: Failure to comply with this warning notice could lead to physical injury and/or damage to the machine.

1.4 Appropriate use

The Schmersal range of products is not intended for private consumers.

The product must be exclusively used in accordance with the versions listed below or for the applications authorised by the manufacturer. Detailed information regarding the range of applications can be found in the chapter "Product description".

1.5 General safety instructions

The user must observe the safety instructions in this operating instructions manual, the country specific installation standards as well as all prevailing safety regulations and accident prevention rules.



Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: products.schmersal.com.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

1.6 Warning about misuse



In case of inadequate or improper use or manipulations of the component, personal hazards or damage to machinery or plant components cannot be excluded.

1.7 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorised spare parts or accessories.

For safety reasons, invasive work on the device as well as arbitrary repairs, conversions and modifications to the device are strictly forbidden; the manufacturer shall accept no liability for damages resulting from such invasive work, arbitrary repairs, conversions and/or modifications to the device.

2. Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

EX-BN 20-①Z-3G/D

No.	Insert	Description
①	01	1 NC
	02	2 NC
	10	1 NO
	20	2 NO
	11	1 NC / 1 NO
	R	1 bistable contact
	2R	2 bistable contact
	11R	2 bistable contact NC / NO

2.2 Special versions

For special versions, which are not listed in the order code below 2.1, these specifications apply accordingly, provided that they correspond to the standard version.

2.3 Purpose

The magnetic reed switch can be used for monitoring the position of movable guards and flaps in explosion-endangered areas of Zone 2 and 22 category 3GD. Installation and maintenance requirements to the standard series 60079 must be met.

Actuation of the magnetic reed switch is only possible with the actuators listed. Faultless operation and repeat accuracy is only assured with these actuators.



The user must evaluate and design the safety chain in accordance with the relevant standards and the required safety level.

Conditions for safe operation

Due to the specific impact energy, the components must be fitted with a protection against mechanical stresses. The specific ambient temperature range must be observed. The user must provide for a protection against the permanent influence of UV rays.

2.4 Technical data

Marking in accordance with the ATEX Directive:	⊕ II 3G ⊕ II 3D
Marking in accordance with standards:	Ex nC IIC T5 Gc X, Ex tc IIIC T90°C Dc X
Applied standards:	EN IEC 60079-0, EN IEC 60079-15, EN 60079-31
Enclosure:	AISI 12 die-casting, painted
Max. impact energy:	4 J
Degree of protection:	IP67 to EN 60529
Connection:	screw terminals
Cable section:	max. 1.5 mm ² (incl. conductor ferrules)
Cable entry:	2x M16
Operating principle:	magnetic
Switching voltage:	max. 250 VAC/DC
Switching current:	max. 3 A
Switching capacity:	max. 120 VA/W
Dielectric strength:	> 600 VAC (50 Hz)
Actuating 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 ms ... 0.6 ms
Ambient temperature:	-15 °C ... +70 °C

Storage temperature:	-25 °C ... +70 °C
Mechanical life:	10 ⁸ 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
Resistance to shock:	30 g / 11 ms
Resistance to vibration:	10 ... 55 Hz, amplitude 1 mm
EX cable glands:	⊕ II 2GD
Cable cross-section of the EX cable glands:	Ø 6 ... 10 mm
Tightening force:	
– Cover screws:	min. 0.6 Nm
– EX cable gland:	min. 5 Nm
– EX blocking screws:	min. 6 Nm
– Earth screws:	PE 1,0 Nm, PA 1,2 Nm

3. Mounting

3.1 General mounting instructions



Fitting is only authorised in a de-energised condition

- Any mounting position, provided that the active surfaces are opposite.
- Do not use the magnetic reed switch as limit stop.
- Two elongated holes are available for fastening the enclosure.
- Ensure the magnetic reed switch is mounted on a flat surface to avoid tensile stresses that could damage the sensor or lead to varying switching distances.
- Do not install magnetic reed switches and actuators in strong magnetic fields.
- If possible do not install the magnetic reed switch and actuator on ferromagnetic material.
- Do not expose the magnetic reed switch and actuator to strong vibrations or heavy shocks.
- Inseparably fix the magnetic reed switch and actuator to the safety guard.
- The use of a protective ground wire is imperative.
- Keep away from metal chips.



Please observe the recommendations regarding maximum impact energy, actuating speed and tightening torque in the technical data.



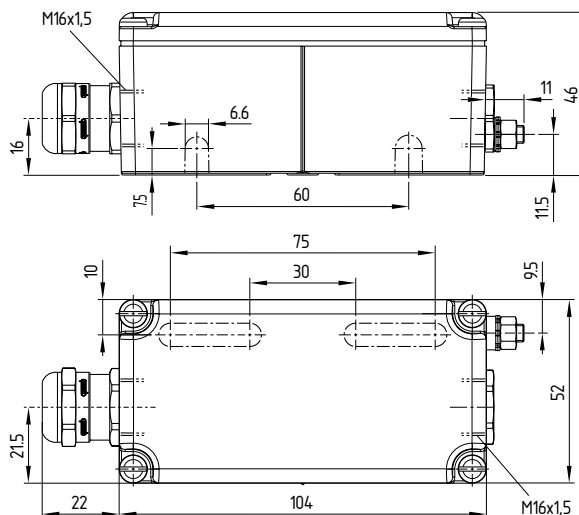
Any changes and alterations that limit the explosion protection are not allowed.



Please observe the relevant requirements of the standards EN ISO 12100, EN ISO 14119 und EN ISO 14120.

3.2 Dimensions

All measurements in mm.



4. Electrical connection

4.1 General information for electrical connection



The electrical connection may only be carried out by authorised personnel in a de-energised condition.

The contact labelling can be found in the wiring compartment of the switch.

Settle length x of the conductor: 6 mm

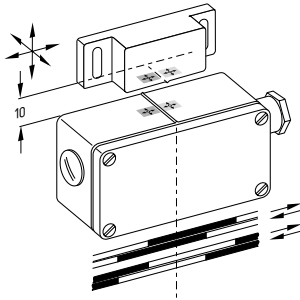


EX cable glands (included in delivery) are only authorised for permanent cables. The constructor must provide for the necessary strain relief. After wiring, dust and soiling must be removed from the wiring compartment.

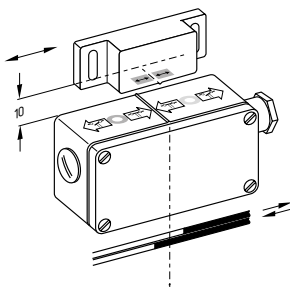


Connection to the external protective conductor terminal must be carried out in accordance with EN 60079-14 section 6.3. A ring cable lug of size M5 must be used for connection of the wire.

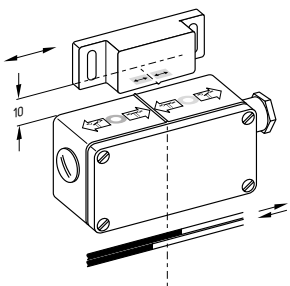
4.2 Contact variants and switch travel



1 NO contact EX-BN 20-10Z-3G/D or 1 NC contact EX-BN 20-01Z-3G/D with switching magnet BP 20



1 bistable contact EX-BN 20-RZ -3G/D with N actuating magnet BP 20N

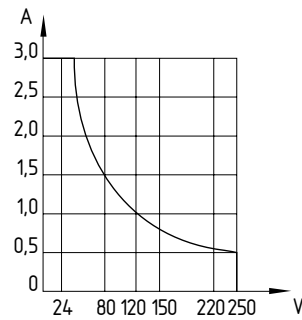


1 bistable contact EX-BN 20-RZ -3G/D with N actuating magnet BP 20S



In version -10 and -01: When the switches and actuators come together, the colours must coincide: Red (S) to red (S) and green (N) to green (N).

4.3 Switching capacity



5. Set-up and maintenance

5.1 Commissioning

- The magnetic reed switch is not damaged.
- The installation is executed according to the instructions.
- The connection is executed correctly.
- The cable is correctly executed and connected.
- The cable gland is correctly screwed-in and tightened.
- The cover is correctly screwed and closed.

5.2 Maintenance

In case of correct installation in accordance with the instructions described above, the component requires little maintenance. For use in extreme conditions, we recommend routine maintenance including the following steps:

- Check the actuator and the magnetic reed switch for correct seating
- Remove particles of dust and soiling.
- Check that the cable glands are fitted in accordance with the applicable operating instructions manual



Do not open the device when live.

Damaged or defective components must be replaced.

6. Disassembly and disposal


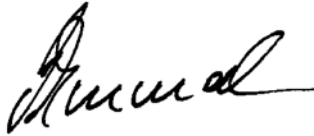
6.1 Disassembly

The switch must be disassembled in a de-energised condition only.

6.2 Disposal

The switch must be disposed of in an appropriate manner in accordance with the national prescriptions and legislations.

7. EU Declaration of conformity

EU Declaration of conformity		
Original	K.A. Schmersal GmbH & Co. KG Mödinghofe 30 42279 Wuppertal Germany Internet: www.schmersal.com	
We hereby certify that the hereafter described components both in their basic design and construction conform to the applicable European Directives.		
Name of the component:	EX-BN 20	
Type:	See ordering code	
Marking:	Ⓢ II 3G Ex nC IIC T5 Gc X Ⓢ II 3D Ex tc IIIC T90°C Dc X	
Description of the component:	Magnetic reed switches	
Relevant Directives:	Explosion Protection Directive (ATEX)	2014/34/EU
	RoHS-Directive	2011/65/EU
Applied standards:	EN IEC 60079-0:2018 EN IEC 60079-15:2019 EN 60079-31:2014	
Notified body, which approved the full quality assurance system, referred to in Appendix IV, 2014/34/EU:	TÜV Rheinland Industrie Service GmbH Am Grauen Stein 51105 Köln ID n°: 0035	
Person authorised for the compilation of the technical documentation:	Oliver Wacker Mödinghofe 30 42279 Wuppertal	
Place and date of issue:	Wuppertal, September 21, 2023	
		
	Authorised signature Philip Schmersal Managing Director	

EX-BN20-D-EN



The currently valid declaration of conformity can be downloaded from the internet at products.schmersal.com.

