



**EN** Operating instructions. . . . .pages 1 to 2  
Original

**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 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**

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

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

**1.3 Exclusion of liability**

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.

**1.4 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.

**2. Product description**

**2.1 Ordering code**

This operating instructions manual applies to the following types:

**BN 20-①Z-②**

No.	Option	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
②	11R	2 bistable contact NC / NO
	ST	2x cable entry M16 Connector plug M12, 5-pole (only for -2R)

**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 and use**

The magnetic reed switches BN 20 with two contacts are designed to monitor the position of movable safety guards according to EN ISO 14119.



The magnetic reed switches are classified according to EN ISO 14119 as uncoded type 3 switchgear.

Only the listed magnets may be used for actuation of the magnetic reed switch. Only these magnets can guarantee flawless function and repeat accuracy.

With suitable evaluation and concealed installation, the requirements for safety applications up to PL e in accordance with EN ISO 13849-1 can be satisfied.

**2.4 Technical data**

Standards:	EN 60947-5-1
Enclosure:	AlSi 12 die-casting, painted
Degree of protection:	IP67 to EN 60529
Operating principle:	magnetic
Cable entry:	2x M16
Connection:	screw terminals
Switching voltage:	max. 250 VAC/DC
- Ordering suffix -ST:	max. 120 VDC
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:	-25 °C ... + 90 °C
Mechanical life:	10 <sup>9</sup> operations
Electrical life:	10 <sup>6</sup> ... 10 <sup>9</sup> 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
Tightening force:	
- Cover screws:	min. 0.6 Nm
- Cable gland:	min. 1.2 Nm
- Blocking screws:	min. 1.2 Nm
B <sub>10D</sub> to ISO 13849-1:	
- NC contacts (at 20 % contact load):	20.000.000
- NO contacts (at 20 % contact load):	20.000.000



Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: [products.schmersal.com](http://products.schmersal.com).

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

**3. UL notice (does not apply to-ST)**



Field wiring terminals: Use Solid or Stranded, AWG 20-24.  
Temperature rating of wire insulation: min. 75 °C.  
Caution! The grounding screw is not suitable for cULus applications.  
Attention! Pour les applications cULus, l'utilisation de la vis de mise à la terre dans le produit n'est pas autorisée.  
Screw on Enclosure, 0.6 Nm or 5.3 Inch pounds.  
Terminal Screw, 0.5 Nm or 4.2 Inch pounds.  
Use cable gland and sealing plug with a rating of Type 4 or better.

**4. Mounting**

**4.1 General mounting instructions**



When mounting to protective equipment, the requirements of standard EN ISO 14119 must be taken into account.

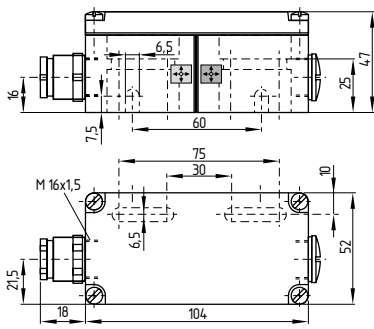
Two elongated holes are available for fastening the enclosure. Any mounting position, provided that the active surfaces are opposite. Keep away from metal chips.

**Magnetic reed switches and actuators**

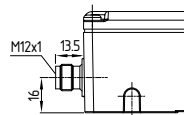
- Do not use as limit stops.
- Do not install in strong magnetic fields.
- Do not install on ferromagnetic material.
- Do not expose to strong vibrations or shocks.
- Inseparably fix to the safety guard.

## 4.2 Dimensions

All measurements in mm.



## Bestellindex -ST



## 5. Electrical connection

### 5.1 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.

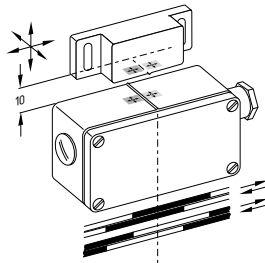
**Settle length x of the conductor:** 6 mm



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.

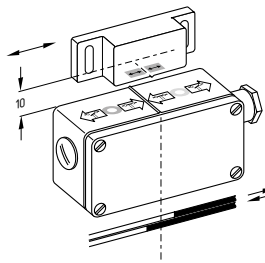
### 5.2 Contact variants and switch travel

1 NO contact BN 20-10Z  
or  
1 NC contact BN 20-01Z  
with actuating magnet BP 20

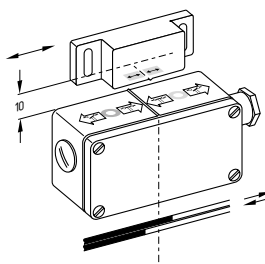


In version -10 and -01: When the switches and actuators come together, the colours must coincide: Red (S) to red (S) and green (N) to green (N).

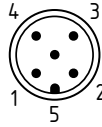
1 bistable contact BN 20-RZ  
with actuating magnet BP 20N



1 bistable contact BN 20-RZ  
with actuating magnet BP 20S

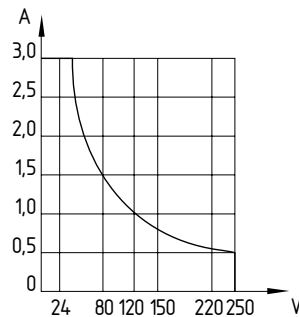


## BN 20-2RZ-ST



bistable contact 1	PIN 1 / PIN 2
bistable contact 2	PIN 4 / PIN 5
PE	PIN 3

## 5.3 Switching capacity



## 6. 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.**

## 7. Disassembly and disposal

### 7.1 Disassembly

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

### 7.2 Disposal

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

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