SCHMERSAL

EN Operating instructions. . . . . .pages 1 to 4
Original

Content

1 About this document
1.1 Function 1
1.2 Target group: authorised qualified personnel 1
1.3 Explanation of the symbols used 1
1.4 Appropriate use 1
1.5 General safety instructions 1
1.6 Warning about misuse 1
1.7 Exclusion of liability 2

2 Product description
2.1 Ordering code 2
2.2 Special versions 2
2.3 Purpose 2
2.4 Technical data 2
2.5 Safety classification 2

3 Mounting
3.1 General mounting instructions 2
3.2 Dimensions 3

4 Electrical connection
4.1 General information for electrical connection 3
4.2 Contact variants 3

5 Set-up and maintenance
5.1 Functional testing 3
5.2 Maintenance 3

6 Disassembly and disposal
6.1 Disassembly 3
6.2 Disposal 3

7 EU Declaration of conformity

1. About this document

1.1 Function

This operating instructions manual provides all the information you need 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 products described in these operating instructions are developed to execute safety-related functions as part of an entire plant or machine. It is the responsibility of the manufacturer of a machine or plant to ensure the correct functionality of the entire machine or plant.

The safety switchgear 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 improper use or manipulation of the safety switchgear, personal hazards or damages to machinery or plant components cannot be excluded. The relevant requirements of the standard EN ISO 14119 must be observed.

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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:

AZ 17-①Z②K-③-④-⑤

No.	Option	Description
①	11	1 NO / 1 NC
	02	2 NC contacts
②		Latching force max. 5 N
	R	Latching force 30 N
③		M16 cable gland
	2243	Frontside cable output
	2243-1	Rearside cable output
	ST	M12 x 1 connector
④	1637	Gold-plated contacts
⑤	5M	Cable length 5 m
	6 m	Cable length 6 m

Only if the information described in this operating instructions manual are realised correctly, the safety function and therefore the compliance with the Machinery Directive is maintained.

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

Safety switches with separate actuators AZ 17 are suitable for moveable safety guards, which need to be closed to ensure the necessary operational security.

The safety switches are used for applications, in which the hazardous situation is terminated without delay when the safety guard is opened.

When the safety guard is opened, the NC contacts are positively opened and the NO contacts are closed.

The safety switchgears are classified according to EN ISO 14119 as type 2 interlocking devices.

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

The entire concept of the control system, in which the safety component is integrated, must be validated to the relevant standards.

2.4 Technical data

Standards:	EN 60947-5-1, BG-GS-ET-15
Enclosure:	glass-fibre reinforced thermoplastic, self-extinguishing
Actuator:	stainless steel 1.4301
Coding level according to EN ISO 14119:	low
Protection class:	IP67 to EN 60529
Contact material:	Silver
Contact type:	change-over with double break Zb, or 2 NC contacts, galvanically separated contact bridges
Switching system:	⊖ acc. EN 60947-5-1 slow action, NC contact with positive break
Connection:	cut clamp terminals, cable or connector M12, 4-pole
Cable:	flexible
Cable section:	0.75 … 1.0 mm²
Rated impulse withstand voltage U_{imp}:	4 kV
Rated insulation voltage U_i:	250 V
Thermal test current I_{the}:	10 A
Utilisation category:	AC-15, DC-13
Rated operating current/voltage I_e/U_e:	4 A / 230 VAC, 4 A / 24 VDC
Max. fuse rating:	6 A gG D-fuse
Required short-circuit current:	1,000 A
Positive break travel:	11 mm
Positive break force:	each NC contact 17 N
Ambient temperature:	−30 °C … +80 °C
Mechanical life:	> 1 million operations
Actuating speed:	max. 2 m/s
Actuating frequency:	max. 2,000 operations/h
Latching force:	30 N for ordering suffix R

2.5 Safety classification

Standards:	EN ISO 13849-1
Envisaged structure:	
- Basically:	applicable up to Cat. 1 / PL c
- With 2-channel usage and fault exclusion mechanism*:	applicable up to Cat. 3 / PL d with suitable logic unit
B_{10D} NC contact:	2,000,000
B_{10D} NO contact at 10% ohmic contact load:	1,000,000
Mission time:	20 years

* If a fault exclusion to the 1-channel mechanics is authorised.

$$MTTF_D = \frac{B_{10D}}{0{,}1 \times n_{op}} \qquad n_{op} = \frac{d_{op} \times h_{op} \times 3600\ s/h}{t_{cycle}}$$

(Determined values can vary depending on the application-specific parameters h_{op}, d_{op} and t_{cycle} as well as the load.)

If multiple safety components are wired in series, the Performance Level to EN ISO 13849-1 will be reduced due to the restricted error detection under certain circumstances.

3. Mounting

3.1 General mounting instructions

The mounting position however must be chosen so that the ingress of dirt and soiling in the used opening is avoided. Use the supplied base plate for the fixing. The tightening torque of the fixing screws must not exceed 150 Ncm. The enclosure must not be used as an end stop. Any mounting position. The mounting position however must be chosen so that the ingress of dirt and soiling in the used opening is avoided. The unused opening must be sealed by means of slot sealing plugs.

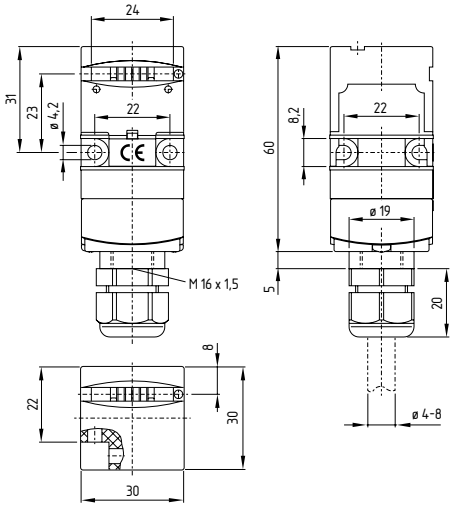
Mounting of the actuators: See mounting instructions actuators.

Please observe the remarks of the standards EN ISO 12100, EN ISO 14119 and EN ISO 14120.

The actuator must be permanently fitted to the safety guards and protected against displacement by suitable measures (e.g. tamperproof screws, gluing, drilling of the screw heads).

3.2 Dimensions
All measurements in mm.

AZ 17 safety switch

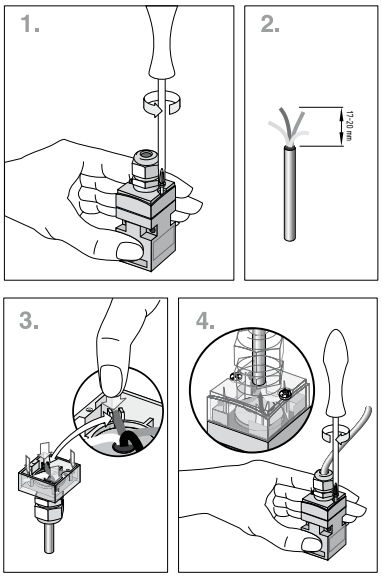


4. Electrical connection

4.1 General information for electrical connection

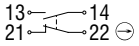
The electrical connection may only be carried out by authorised personnel in a de-energised condition.

Cut clamp terminals
The IDC method of termination (cut clamp technology) enables connecting flexible wires with cable section 0.75…1 mm² without using conductor ferrules. To this effect, strip the wire for 17...20 mm and insert it into the cable gland, close the cable gland, push the conductors in the groove of the cover (refer to wiring example) and screw the cover back. Alternatingly tighten the cover screws uniformly. Tightening force for the Torx T10 cover screws 0.7 ... 1 Nm.

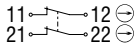


4.2 Contact variants
Contacts are shown with safety guard closed.

AZ 17-11ZK
AZ 17-11ZRK

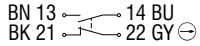


AZ 17-02ZK
AZ 17-02ZRK



with cable, frontside

AZ-17-11ZK-2243
AZ-17-11ZRK-2243

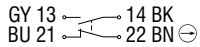


AZ-17-02ZK-2243
AZ-17-02ZRK-2243

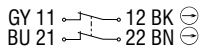


with cable, rearside

AZ 17-11ZK-2243-1
AZ 17-11ZRK-2243-1

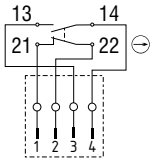


AZ 17-02ZK-2243-1
AZ 17-02ZRK-2243-1

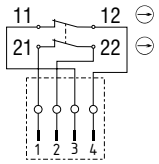


with connector, A-coding

AZ 17-11ZK-ST
AZ 17-11ZRK-ST



AZ 17-02ZK-ST
AZ 17-02ZRK-ST



5. Set-up and maintenance

5.1 Functional testing
The safety function of the safety components must be tested. The following conditions must be previously checked and met:
1. Check for correct installation of the actuator and the switch
2. Check the integrity of the cable entry and connections
3. Check the switch enclosure for damage

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:
1. Check for correct installation of the actuator and the switch
2. Remove particles of dust and soiling
3. Check cable entry and connections

Adequate measures must be taken to ensure protection against tampering either to prevent tampering of the safety guard, for instance by means of replacement actuators.

Damaged or defective components must be replaced.

6. Disassembly and disposal

6.1 Disassembly
The safety switchgear must be disassembled in a de-energised condition only.

6.2 Disposal
The safety switchgear 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

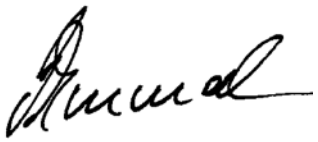
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We hereby certify that the hereafter described components both in their basic design and construction conform to the applicable European Directives.

Name of the component:	AZ 17
Type:	See ordering code
Description of the component:	Positive break position switch with separate actuator for safety functions
Relevant Directives:	2006/42/EC Machinery Directive 2011/65/EU RoHS-Directive
Applied standards:	EN 60947-5-1:2017 EN ISO 14119:2013
Person authorised for the compilation of the technical documentation:	Oliver Wacker Möddinghofe 30 42279 Wuppertal
Place and date of issue:	Wuppertal, August 3, 2020



Authorised signature
Philip Schmersal
Managing Director

AZ17-E-EN

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

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