SCHMERSAL

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

Content

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: www.schmersal.net.

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

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. The entire concept of the control system, in which the safety component is integrated, must be validated to EN ISO 13849-2.

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

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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 1088 must be observed.

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 415-33ZPK-①

No.	Option	Description
①	1637	Gold-plated contacts

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 are suitable for movable 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.

Operating principle

By closing the safety guard, switch insert S1 and S3 are released and switch insert S2 actuated (differentiated operating principle). When the actuator is fully inserted, the safety guard is not subject to any ejection force.

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

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

2.4 Technical data

Standards:	IEC/EN 60947-5-1, BG-GS-ET-15
Enclosure:	light-alloy die-cast, enamel finish
Protection class:	IP 67 to IEC/EN 60529 / DIN VDE 0470-1
Contact material:	Silver
Contact type:	Change-over with double break Zb, galvanically separated contact bridges
Switching system:	⊖ IEC 60947-5-1; slow action, NC contact with positive break
Connection:	screw terminals
Cable type:	solid and stranded wire
Cable section:	0.75 … 1.5 mm² (incl. conductor ferrules)
Cable entry:	2 × M20 × 1.5
Uimp:	4 kV
U_i:	250 V
I_{the}:	6 A
Required short-circuit current:	1000 A
Utilisation category:	AC-15, DC-13
I_e/U_e:	4 A / 230 VAC 4 A / 24 VDC
Max. fuse rating:	6 A gG D-fuse
Positive break travel:	4.5 mm
Positive break force:	min. 15 N (depending on the setting of the ball latch)
Ambient temperature:	−25 °C … +80 °C
Latching force:	80 … 400 N (adjustable)
Mechanical life:	> 10^6 operations
Actuating speed:	max. 0.2 m/s
Max. switching frequency:	2000/h

2.5 Safety classification

Standards:	EN ISO 13849-1
B_{10D} (NC contact):	2,000,000
B_{10D} (NO contact) at 10% ohmic contact load:	1,000,000
Service life:	20 years

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

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

3. Mounting

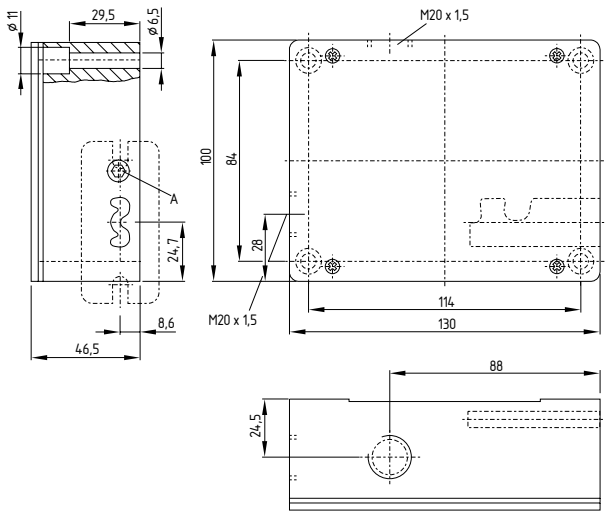
3.1 General mounting instructions

The mounting holes are accessible after removal of the cover.
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.

Mounting of the actuators: See mounting instructions actuators.

Please observe the remarks of the standards EN ISO 12100, EN 953 and EN 1088.

3.2 Dimensions
All measurements in mm.



Key
A Adjustable ball latch

3.3 Adjustment
In the unlocked condition, the safety guard is kept in a closed condition by the adjustable ball latch. By rotating a hexagonal key wrench clockwise, the desired holding force can be increased; if the hexagonal key wrench is rotated counterclockwise, the holding force is decreased. The holding force must always be set as low as possible.

4. Rear side Electrical connection

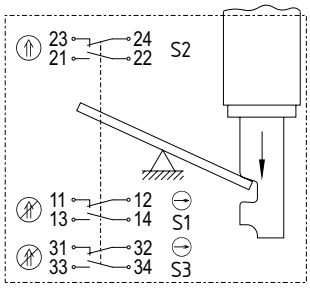
4.1 General information for electrical connection

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

Connection and sealing
The contact labelling can be found in the wiring compartment of the switch. For the cable entry, suitable cable glands with an appropriate degree of protection must be used. Non-used input openings must be sealed by means of threaded plugs. After wiring, dust and soiling must be removed from the wiring compartment. Maximum tightening torque for the screws: cover 0.6 + 0.1 Nm; bottom cover 0.7 + 0.1 Nm.

The conductors of the connecting cables must not obstruct the movement of the switching lever.

4.2 Contact variants
Contacts are shown with safety guard closed.



Key
- Actuated
- not actuated
- positive break NC contact

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. Fitting of the solenoid interlock and the actuator.
2. Check the integrity of the cable entry and connections.
3. Check the switch enclosure for damage.

5.2 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.

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

SCHMERSAL

Original

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Germany
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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 415	
Type:	See ordering code	
Description of the component:	Positive break position switch with separate actuator for safety functions	
Relevant Directives:	Machinery Directive RoHS-Directive	2006/42/EC 2011/65/EU
Applied standards:	DIN EN 60947-5-1:2010, DIN EN ISO 14119:2014	
Person authorised for the compilation of the technical documentation:	Oliver Wacker Möddinghofe 30 42279 Wuppertal	
Place and date of issue:	Wuppertal, November 6, 2017	

Authorised signature
Philip Schmersal
Managing Director

AZ415-E-EN

The currently valid declaration of conformity can be downloaded from the internet at www.schmersal.net.

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