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EN Operating instructions..... pages 1 to 4
Translation of the original operating instructions

FR Vous trouverez la version actuelle du mode d'emploi dans votre langue nationale officielle sur l'Internet, www.schmersal.net.

ES Encontrará el manual de instrucciones actual en su idioma oficial de la UE en nuestra página de Internet www.schmersal.net.

NL U vindt de huidige versie van de gebruikshandleiding in uw officiële landstaal op het Internet, www.schmersal.net.

IT Il manuale d'istruzioni aggiornato nella vostra lingua (lingua ufficiale UE) è scaricabile in Internet all'indirizzo www.schmersal.net.

JP EU公用語で書かれた最新の取扱説明書は、インターネッ(www.schmersal.net)からダウンロードできます。

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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 proper functionality of the entire machinery 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 inadequate or improper use or manipulations of the safety switchgear, personal hazards or damage 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 15-ZV①K-②-③		
No.	**Insert**	
①		Ejection force
	R	Latching force 30 N
②		Cable entry M16
	ST	M12 x 1 connector
③	2254	Latching force 5 N
	1762	Front mounting
	1637	Gold-plated contacts

AZ 16-①ZV②K-③-④-⑤		
①		1 NO / 1 NC contact
	02	2 NC contacts
	03	3 NC contacts
	12	1 NO / 2 NC contact
②		Ejection force
	R	Latching force 30 N
③	G24	with LED
④		Cable entry M16
	M20	Cable entry M20
	ST	M12 x 1 connector bottom
	STL	M12 x 1 connector LHS
	STR	M12 x 1 connector RHS
⑤	2254	Latching force 5 N
	1762	Front mounting
	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 Destination and use

The safety switches with separate actuator are suitable for sliding, hinged and removable safety guards, which need to be closed in order to ensure the necessary operational safety.

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 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, EN ISO 13849-1, BG-GS-ET-15
Enclosure:	glass-fibre reinforced thermoplastic, self-extinguishing
Actuator:	stainless steel 1.4301
Protection class:	IP 67 to IEC/EN 60529; DIN VDE 0470-1
Contact material:	Silver
Contact types:	AZ 15: 1 NC contact; AZ 16: change-over contact with double break Zb or 2 NC contacts or 3 NC contacts, with galvanically separated contact bridges
Switching system:	⊖ to IEC 60947-5-1; slow action, positive break NC contact
Connection:	Screw connection or M 12 x 1 connector, 4 pole
Cable section:	0,25...2,5 mm² (including conductor ferrules)
Cable entry:	3 x M16 x 1.5
U_{imp}:	6 kV
U_i:	500 V
I_{the}:	10 A
Utilisation category:	AC-15 / DC-13
I_e/U_e:	4 A / 230 VAC 4 A / 24 VDC
Required short-circuit current:	1000 A
Max. fuse rating:	6 A gG D-fuse
Positive break travel:	8 mm
Positive break force:	each NC contact 10 N
Ambient temperature:	– 30 °C … + 80 °C
Mechanical life:	>1 million operations
Latching force:	30 N for ordering suffix R
Actuating speed:	max. 0,2 m/s
Max. switching frequency:	4000 operations / 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

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

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

3 Mounting

3.1 General mounting instructions

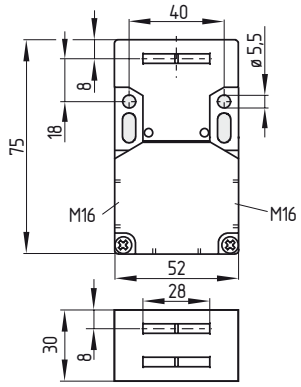
The mounting dimensions are indicated on the rear of the component. The switch enclosure must not be used as end stop. Any mounting position. The mounting position however must be chosen so that the ingression of dirt and soiling in the used opening is avoided. The unused openings must be sealed by means of slot sealing plugs (AZ 15/16 - 1476-1 available as accessory) after fitting.

Mounting of the actuators: See mounting instructions actuators.

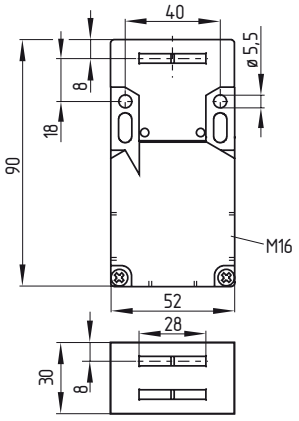
Please observe the remarks of the standards EN ISO 12100, EN 953 and EN 1088.

3.2 Dimensions
All measurements in mm.

AZ 15 / AZ 16

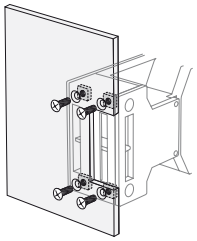


AZ 15



AZ 16

Front mounting



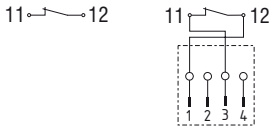
4 Electrical connection

4.1 General information for electrical connection

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

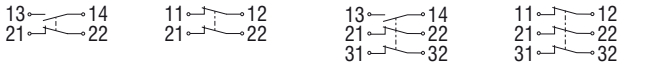
The contact labelling can be found in the wiring compartment of the switch. For the cable entry, suitable cable glands with an appropriate degree of protection must be used. After wiring, dust and soiling must be removed from the wiring compartment. The safety switch is double insulated. The use of a protective ground connector therefore is not authorised.

4.2 Contact variants
Contacts are shown with safety guard closed.



AZ 15ZVK
AZ 15ZVRK

AZ 15ZVK-ST
AZ 15ZVRK-ST

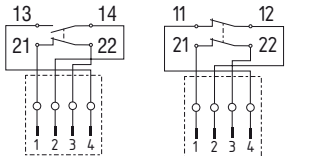


AZ 16ZVK
AZ 16ZVRK

AZ 16-02ZVK
AZ 16-02ZVRK

AZ 16-12ZVK
AZ 16-12ZVRK

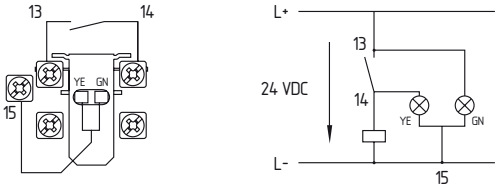
AZ 16-03ZVK
AZ 16-03ZVRK



AZ 16ZVK-ST
AZ 16ZVRK-ST

AZ 16-02ZVK-ST
AZ 16-02ZVRK-ST

LED



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 the free movement of the actuating element
2. Check the integrity of the cable entry and connections
3. Check the switch enclosure for damage

5.2 Maintenance
A regular visual inspection and functional test, including the following steps, is recommended:
1. Check the free movement of the actuating element
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 Appendix

7.1 EC Declaration of conformity

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EC Declaration of conformity

Translation of the original declaration of conformity

K.A. Schmersal GmbH
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Möddinghofe 30 ▪ 42279 Wuppertal
Germany
Internet: www.schmersal.com

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

Name of the safety component / type: AZ 15 / AZ 16

Description of the safety component: Positive break position switch with separate actuator for safety functions

Harmonised EC-Directives: 2006/42/EC EC-Machinery Directive

Person authorized for the compilation of the technical documentation:
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Möddinghofe 30
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Place and date of issue: Wuppertal, 11. May 2009

Authorised signature
Heinz Schmersal
Managing Director

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

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