



EN Operating instructions..... pages 1 to 6
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、インターネット(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.

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:

| EX-AZ 3①5-②-Z③K-④-3D | | |
|----------------------|--------|---------------------------|
| No. | Option | Description |
| ① | 3 | slim design |
| | 5 | large design |
| ② | 03 | 3 NC contacts |
| | 12 | 1NO/2NC contacts |
| ③ | | Latching force 5 N |
| | R | Latching force 30 N |
| | UE | With overlapping contacts |
| ④ | 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 and the Explosion Protection 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 are suitable for sliding, hinged and removable safety guards, which need to be closed in order to ensure the necessary operational safety.

The components can be used in explosion-endangered areas of Zone 22 equipment category 3 GD. The installation and maintenance requirements to the standard series EN 61241 must be met.



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



The safety-technical data and features according to the applicable CE test certificate (or possible other approvals) are mentioned in the technical data.

Conditions for safe operation

Due to their specific impact energy, the components must be fitted with a protection against mechanical stresses. The specific ambient temperature range must be observed.

2.4 Technical data

| | |
|--|--|
| Equipment category: | ⊕ II 3D |
| Explosion protection: | Ex tD A22 IP67 T90°C X |
| Standards: | EN 60947-5-1, EN 61241-0, EN 61241-1, BG-GS-ET-15 |
| Enclosure: | light-alloy diecast, paint finish |
| Actuator: | stainless steel 1.4301 |
| Design: | DIN EN 50041 |
| Max. impact energy: | EX-AZ 335: 4 J EX-AZ 355: 1 J |
| Actuating speed: | max. 1 m/s |
| Protection class: | IP 67 to EN 60529 |
| Contact material: | Silver |
| Contact types: | Change-over contact with double break type Zb, 3 NC contacts with galvanically separated contact bridges |
| Switching system: | ⊖ EN 60947-5-1, slow action, positive break NC contact |
| Termination: | Screw connection |
| Cable section: | min. 0.75 mm ² ... max. 2.5 mm ² , (including conductor ferrules) |
| Cable entry: | EX-AZ 335: 1 x M20 x 1.5 EX-AZ 355: 3 x M20 x 1.5 |
| U _{imp} : | 4 kV |
| U _i : | 250 V |
| I _{the} : | 10 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: | 10.7 mm |
| Positive break force: | each NC contact 5 N |
| Ambient temperature: | - 20 °C ... + 60 °C |
| Mechanical life: | 10 million operations |
| Latching force: | 30 N for ordering suffix R |
| Cable cross-section of the cable glands: | min. Ø 7 mm; max. Ø 12 mm |
| | ⊕ II 2GD |
| Tightening torque: | Covers screws: min. 1.0 Nm Cable gland: min. 8 Nm Screw plug: min. 8 Nm |

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 |

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

(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



Fitting is only authorised in a de-energised condition.

4 mounting holes are provided for fixing the EX-AZ 335 switch and 2 mounting holes for fixing the EX-AZ 355-2 switch. The mounting dimensions of the component must be protected against unauthorised tampering. The use of a protective ground wire is imperative. The switch enclosure must not be used as 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 openings must be sealed by means of slot sealing plugs (AZ 335/355-1990 available as accessory) after fitting.



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

Mounting of the actuators: See mounting instructions actuators.

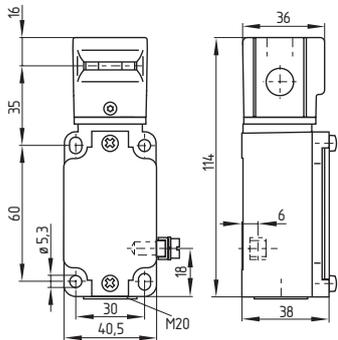


Please observe the remarks of the standards EN ISO 12100, EN 953 and EN 1088.

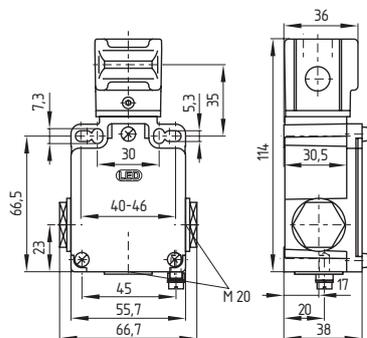
3.2 Dimensions

All measurements in mm.

EX-AZ 335

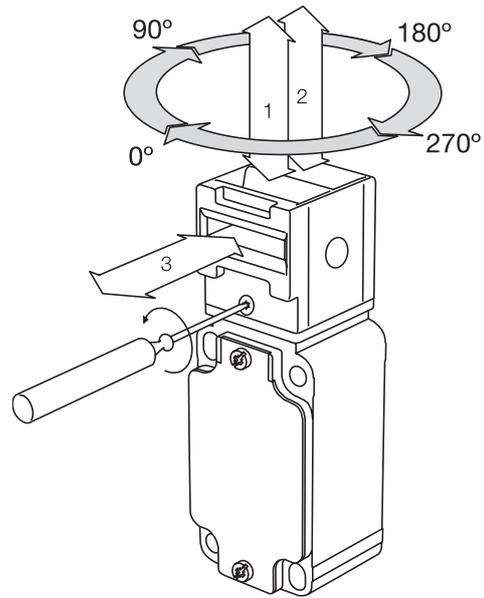


EX-AZ 355



3.3 Choosing the actuating planes

If another actuating plane is required, the two Torx screws (T10 screwdriver required) must be loosened, slightly lift up the actuating head and rotate it into the desired position; then retighten both screws.



4 Electrical connection

4.1 General information for electrical connection



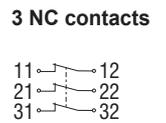
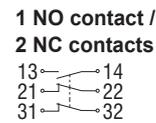
The electrical connection may only be carried out by authorised personnel in a de-energised condition.

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

Cable glands (included in delivery) are only authorised for permanent cables. The constructor must provide for the necessary strain relief. Unused openings (EX-AZ 355) must be sealed with EX-certified locking screws. After wiring, dust and soiling must be removed from the wiring compartment.

4.2 Contact variants

Contacts are shown with safety guard closed



| | | |
|---------------------------|--|--|
| Standard | EX-AZ 335-12ZK-3D EX-AZ 355-12ZK-3D | EX-AZ 335-03ZK-3D EX-AZ 355-03ZK-3D |
| with latching force | EX-AZ 335-12ZRK-3D EX-AZ 355-12ZRK-3D | EX-AZ 335-03ZRK-3D EX-AZ 355-03ZRK-3D |
| With overlapping contacts | EX-AZ 335-12ZÜK-3D EX-AZ 355-12ZÜK-3D | |

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:

- The installation is executed according to the instructions
- The connection is executed correctly
- The cable is correctly executed and connected
- Check the free movement of the actuating element
- The safety component is not damaged
- Remove particles of dust and soiling
- Check cable entry and connections in de-energised condition

5.2 Maintenance

In case of correct installation in accordance with the above-described instructions, the component requires little maintenance. Under rough operating conditions, a regular check including the following steps is recommended:

1. Check the correct fixing of the actuator and the safety switchgear
2. Remove particles of dust and soiling
3. Check cable entry and connections in a de-energised condition



Do not open the enclosure in live condition.

**Damaged or defective components must be replaced.
For explosion protection reasons, the component must be exchanged after max. 10 million operations.**

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.

7.1 EC Declaration of conformity

| | |
|---|---|
|  | |
| <h2>EC Declaration of conformity</h2> | |
| Translation of the original declaration of conformity | K.A. Schmersal GmbH Industrielle Sicherheitssysteme Mödinghofe 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: | EX-AZ 335 / EX-AZ 355 ⊕ II 3D Ex tD A22 IP67 T90°C X |
| Description of the safety component: | Positive break position switch with separate actuator |
| Harmonised EC-Directives: | 2006/42/EC EC-Machinery Directive 94/9/EC EC-Explosion Protection Directive (ATEX) |
| Person authorized for the compilation of the technical documentation: | Ulrich Loss Mödinghofe 30 42279 Wuppertal |
| Place and date of issue: | Wuppertal, January 8, 2010 |
| EX-AZ 335-B-EN |  |
| | Authorised signature Heinz Schmersal Managing Director |



Note

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



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