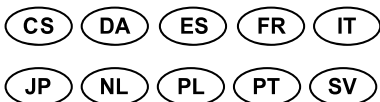




EN Operating instructions pages 1 to 4
Original



Detailed user information at
products.schmersal.com.

1. About this document

This document provides all the information you need for the mounting, set-up and commissioning to ensure the safe operation and disassembly of the switchgear. The operating instructions enclosed with the device must always be kept in a legible condition and accessible.

All operations described in the 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 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.

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

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

2. Product description

2.1 Purpose

The solenoid interlock has been designed to prevent in conjunction with the control part of a machine, movable safety guards from being opened before hazardous conditions have been eliminated.

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

2.3 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with the 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.

2.4 Technical data

General data

Standards	EN ISO 14119, EN IEC 60947-5-1
Coding level according to EN ISO 14119	Low
Switching principle	Slow action, positive break NC contact

Degree of protection	IP67
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Safety classification

Standards	EN ISO 13849-1
B _{10D} Normally closed contact (NC)	2,000,000 operations
B _{10D} Normally open contact (NO)	1,000,000 operations
Note (B _{10D} Normally open contact (NO))	at 10% I _e and ohmic load
Mission time	20 years

Mechanical data

Mechanical life, minimum	1,000,000 operations
Holding force F _{max} ' maximum	2,600 N
Holding force F _{Zh} in accordance with EN ISO 14119	2,000 N
Latching force	5 N, 30 N, for ordering suffix R
Actuating speed, maximum	2 m/s
Switching frequency	1,000 /h

Mechanical data - Termination

Termination	Screw terminals or cage clamps or connector plug
Cable section, minimum	0.25 mm ²
Cable section, maximum	1.5 mm ²
Note (cable section)	All indications are including the conductor ferrules.

Electrical data

Utilisation category	AC-15, DC-13
Rated operating current/voltage I _e /U _e	4 A / 230 VAC 4 A / 24 VDC
- Connector ST 4-pole	4 A / 230 VAC 4 A / 24 VDC
- Connector ST 8-pole	2 A / 24 VDC
Rated impulse withstand voltage U _{imp}	4 kV
- Connector ST 4-pole	2.5 kV
- Connector ST 8-pole	0.8 kV
Rated insulation voltage U _i	250 V
- Connector ST 4-pole	250 V
- Connector ST 8-pole	60 V
Thermal test current I _{the}	6 A
- Connector 4-pole	4 A
- Connector 8-pole	2 A
Max. fuse rating:	6 A gG D-fuse
- Connector ST 4-pole	4 A gG D-fuse
- Connector ST 8-pole	2 A gG D-fuse
Required rated short-circuit current	1,000 A
Rated control voltage U _s	24 VDC 24 VAC / 50/60 Hz 110 VAC / 50/60 Hz 230 VAC / 50/60 Hz

Electrical data - Magnet control

Magnet switch-on time	100 %
Electrical power consumption, maximum	10 W
Test pulse duration, maximum	5 ms
Test pulse interval, minimum	50 ms

3. Mounting

3.1 General mounting instructions



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

Three mounting holes are provided for fixing the enclosure. The solenoid interlock is double insulated. The use of an earth wire is not authorised. The solenoid interlock must not be used as an end stop. Any mounting position. The mounting position must be chosen so as to avoid the penetration of dirt in the used holes. Unused actuator openings must be sealed with slot sealing plugs.



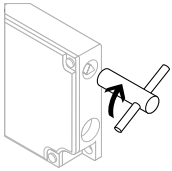
The actuator must be permanently fitted to the safety guards and protected against displacement by suitable measures (tamperproof screws, gluing, drilling of the screw heads).

3.2 Manual release

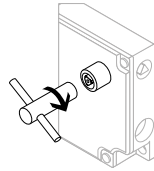
(for set-up, maintenance, etc.)

Manual release is realised by turning the triangular key by 180° (M5 triangular key available as accessory), so that the locking bolt is pulled into the unlocking position. Please ensure that jamming by external influence on the actuator is avoided. The normal locking function is only restored after the triangular key has been returned to its original position. After being put into operation, the manual release must be secured by installing the plastic cover, which is included in delivery.

Lateral manual release



Manual release on the cover side or on the rear side (ordering suffix -ED/-EU)



Triangular key TK-M5 (101100887) available as accessory.

3.3 Emergency release (ordering suffix -N)

(Fitting and actuation only from outside the hazardous area)



The emergency release should only be used in an emergency. The solenoid interlock should be installed and/or protected so that an inadvertent opening of the interlock by an emergency release can be prevented. The emergency release must be clearly labelled that it should only be used in an emergency. The label can be used that was included in the delivery.

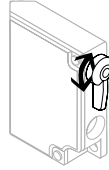
To activate the emergency release in case of an emergency, the orange lever must be turned to the stop in the direction marked by the arrow. In this position, the safety guard can be opened. The lever is latched and cannot be returned to its original position. To cancel the blocking condition, the central mounting screw must be loosened to such extent that the lever can be turned back into its original position. The screw must then be re-tightened.



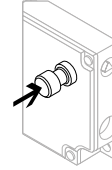
3.4 Emergency Exit

(Fitting and actuation only from within the hazardous area)

Lateral emergency exit (ordering suffix -T)



Emergency exit on the cover side or on the rear side (ordering suffix -TD/-TU)



To activate the emergency exit of the T version in case of an emergency, the orange lever must be turned to the stop in direction marked by the arrow. The emergency exit function of the TD and TU versions is activated by pressing the red pushbutton. In this position, the safety guard can be opened. The blocking condition is cancelled by turning the lever in opposite direction or by pulling back the pushbutton. In unlocked position, the safety guard is protected against unintentional closing.

4. Electrical connection

4.1 General information for electrical connection

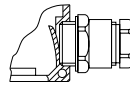


The electrical connection may only be carried out by authorised personnel in a de-energised condition.



If the risk analysis indicates the use of a monitored interlock they are to be connected in the safety circuit with the contacts indicated with the symbol

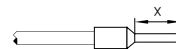
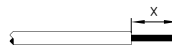
Appropriate cable glands with a suitable degree of protection are to be used. Remove the walls of the mounting holes by inserting the cable entry. All plastic residues must be removed from the switch compartment.



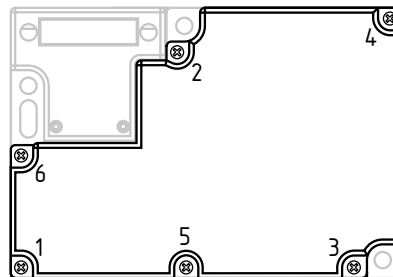
Puncturing the wall of the holes with auxiliary tools (e.g. screwdriver) can cause damage.

Settle length x of the cable:

- on cage clamps (CC) of type s or f: 5 ... 6 mm
- on screw terminals (SK): 7 mm



After connecting successfully, the inside of the switch of soiled parts must be cleaned and the housing cover must be reassembled. The tightening torque of the cover screws is 0.6 Nm. The tightening sequence of the screws is depicted in the following figure.

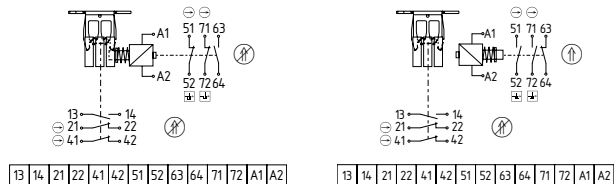


4.2 Contact Options

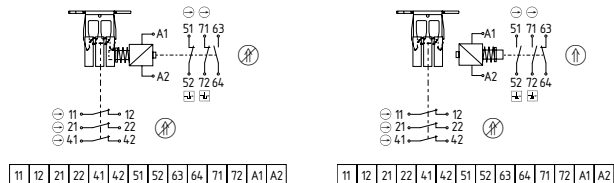
Contacts shown in a de-energised condition and with the actuator inserted

Power to unlock

AZM 161SK-12/12... and AZM 161CC-12/12...



AZM 161SK-12/03... and AZM 161CC-12/03...

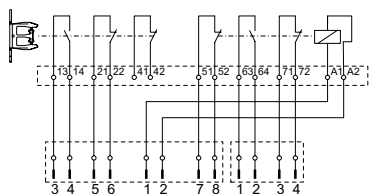


Key

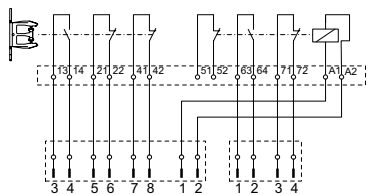
- ⊖ Positive break NC contact
- ⊕ Monitoring the interlock according to EN ISO 14119
- ① Actuated
- ⊗ Not actuated

AZM 161ST-... with connector

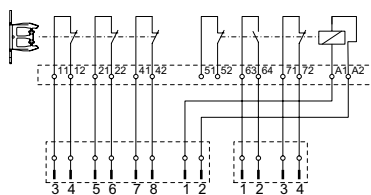
AZM 161ST-12/11...



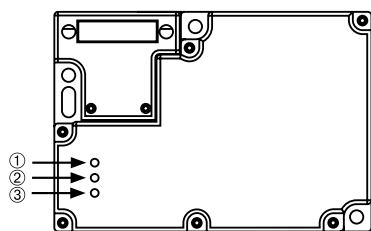
AZM 161ST-11/12...



AZM 161ST-11/03...



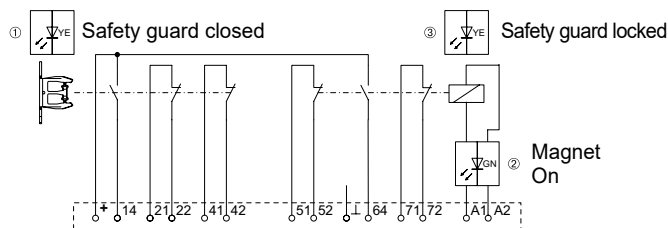
AZM 161...-G with LED



Key

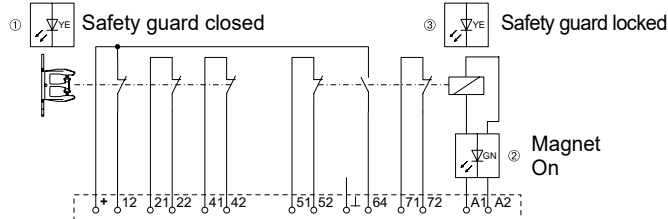
- ① Safety guard closed
- ② Magnet
- ③ Safety guard locked

Integrated contact kit 12/12 G (with LED)



The 24 V are led internally to contacts 13 and 63. The corresponding signals of the LED display can also be tapped at terminals 14 or 64.

Integrated contact kit 12/03 G (with LED)



The 24 V are led internally to contacts 11 and 63. The corresponding signals of the LED display can also be tapped at terminals 12 or 64.

Power to unlock

System condition	Magnet control		LED	
	Power to unlock	yellow ①	red ②	yellow ③
Door open	24 V (0 V)	Off	On	Off
Door closed, actuator inserted, not locked	24 V	On	On	Off
Door closed, actuator inserted and locked	0 V	On	Off	On

Power to lock

System condition	Magnet control		LED	
	Power to lock	yellow ①	red ②	yellow ③
Door open	0 V (24 V)	Off	Off	Off
Door closed, actuator inserted, not locked	0 V	On	Off	Off
Door closed, actuator inserted and locked	24 V	On	On	On

5. Set-up and maintenance

The safety function of the safety components must be tested. In the case of correct installation and adequate use, the safety switchgear features maintenance-free functionality. A regular visual inspection and functional test, including the following steps, is recommended:

1. Check fixation of the safety switch and the actuator.
2. Fitting and integrity of the cable connections.
3. Remove particles of dust and soiling.



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. Declaration of conformity

EU Declaration of Conformity		 SCHMERSAL
Original	K.A. Schmersal GmbH & Co. KG Möddinghofe 30 42279 Wuppertal Germany Internet: www.schmersal.com	
Declaration:	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:	AZM 161	
Type:	See ordering code	
Description of the component:	Interlocking device with electromagnetic interlock for safety functions	
Relevant Directives:	Machinery Directive	2006/42/EC
	EMC-Directive	2014/30/EU
	RoHS-Directive	2011/65/EU
Applied standards:	EN 60947-5-1:2017 + AC:2020 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 23, 2023	
		
	Authorised signature Philip Schmersal Managing Director	



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

8. Contact

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