SCHMERSAL

EN Operating Instructions . . . . . .pages 1 to 6
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 indicates 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 Schmersal range of products is not intended for private consumers.

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.

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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:

EX-T3Z 068-①YR-②

No.	Option	Description
①	11	1 NO / 1 NC
	22	2 NO / 2 NC
	33	3 NO / 3 NC
②		Silver contacts
	1637	Gold 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 ordering code below 2.1, these specifications apply accordingly, provided that they correspond to the standard version.

2.3 Purpose

Pull-wire emergency stop switches are used wherever it must be possible to initiate the emergency stop command from any point on a machine, equipment or plant. The emergency stop command is triggered by pulling on the tensioned pull-wire.

The two-sided pull-wire emergency stop switch has pull-wire and wire-breakage monitoring. On pulling or breakage of the wire, the NC contacts are positively opened and the NO contacts are closed. Thereafter the pull-wire emergency switch can only be manually set back into an operational state. The device is suitable for harsh environmental conditions.

2.4 Determination and use for explosion protection

The components can be used in explosion-endangered areas of Zone 21 and 22 equipment category 2D and 3D.

The switch may only be operated in the temperature range specified in the datasheet. External influences, e.g. solar radiation, external sources of cold, must be borne in mind and precautionary measures taken, if applicable.

The installation and maintenance requirements to the standard series 60079 must be met.

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.

2.5 Technical Data

Marking in accordance with the ATEX Directive:	⟨Ex⟩ II 2D
Marking in accordance with standards:	Ex tb IIIC T90°C Db
Applied standards:	DIN EN 60947-5-1, DIN EN 60947-5-5, DIN EN ISO 13850, EN 620
- ATEX:	EN IEC 60079-0, EN 60079-31
- IECEx:	IEC 60079-0, IEC 60079-31
- INMETRO:	ABNT NBR IEC 60079-0, ABNT NBR IEC 60079-31
Certificate numbers:	
- ATEX:	BVS 08 ATEX E 156
- IECEx:	IECEx BVS 09.0005
- INMETRO:	DNV 13.0077
Enclosure/cover:	Grey cast iron, painted
Degree of protection:	IP65, IP66 to EN 60529 (ABNT NBR IEC 60529)
Contact material:	silver, gold-flashed
Contact type:	change-over contact with double break, type Zb; max. 3 NO and 3 NC contacts
Switching system:	⊖ DIN EN 60947-5-1 snap action, NC contacts with positive break
Max. impact energy:	7 J
Max. Actuating speed:	1 m/s
Max. surface temperature:	+90 °C
Connection:	screw terminals
Cable type:	rigid single wire or fine wire
Max. cable section:	0.75 ... 1.5 mm² (incl. conductor ferrules)
Cable entry:	2 × M20
Rated impulse withstand voltage U_{imp}:	4 V
Overvoltage category:	III
Degree of pollution:	2
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:	2,5 A / 230 VAC 6 A / 24 VDC
Max. fuse rating:	6 A gG D-fuse
Required short-circuit current:	1,000 A
Positive break torque:	1.8 Nm
Angle for positive break travel:	32°
Positive break force:	50 N
Actuating force:	max. 50 N (30 N in wire direction)
Ambient temperature:	–20 °C … +60 °C
Mechanical life:	50,000 operations
Max. wire length:	2 × 50 m
Features:	wire pull and breakage detection
Tightening torque:	
- Cable gland:	8 Nm
- Blocking screws:	8 Nm
- Cover screws:	1 Nm
- Earth screws:	PE 1 Nm PA 1.2 Nm

2.6 Safety classification

Standards:	EN ISO 13849-1
B_{10D} NC contact:	100,000
Mission time:	20 years

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

(Determined values can vary depending on the application-specific parameters hop, dop and tcycle 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 installation may only be carried out with the system de-energised and by authorised personnel.

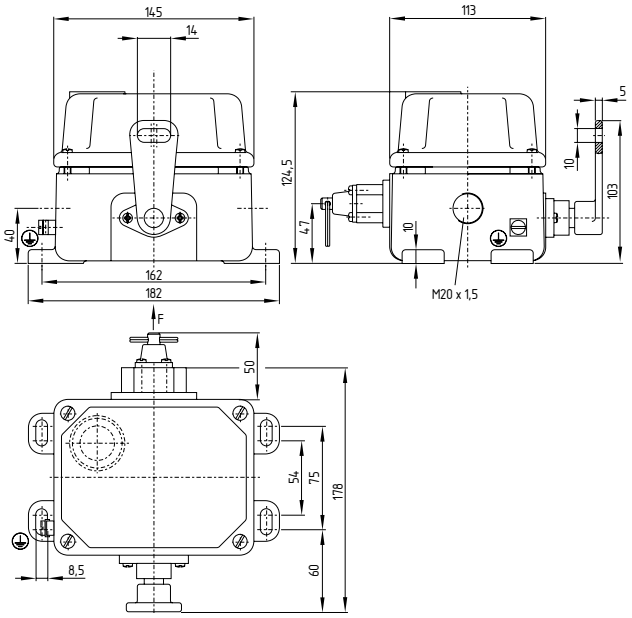
The pull-wire emergency stop switch must be fitted in the middle of the plant. Four mounting holes are available. The use of a protective ground wire is imperative. Mount the pull-wire emergency stop switch so that the device can be unlocked and reset by hand after an emergency stop command. The pull wire must be installed according to the specifications (see 3.3).

Please observe the information on tightening torques in the technical data.

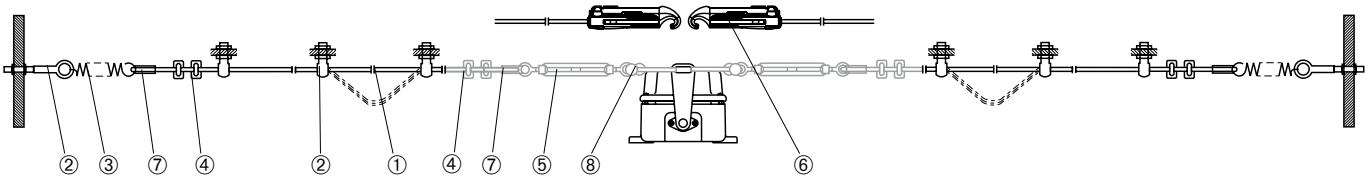
In accordance with DIN EN 60947-5-5 (EN 620), the maximum perpendicular traction force to be exercised on the wire in order to activate the emergency pull-wire switch is 200 N (125 N), the maximum deflection is 400 mm (300 mm). Sufficient space must be provided so that the required actuating deflection can be reached. It must be ensured that when tensioned, the wire rope always follows a straight course and that it remains in the correct position at all times (including at the redirection point).
External influences (temperature variations, ageing) can affect the properties of the wire rope.
The information in DIN EN ISO 13850 must be observed.

3.2 Dimensions

All measurements in mm.



3.3 Pull wire system accessories



Equip the wire rope ① at the connection points with a thimble ⑦ and two wire clamps ④. The first wire clamp must be installed immediately behind the thimble. The PVC sheet of the pull wire must be stripped in the thimble area. Adjust the pre-tension of the springs ③ by means of the tensioning jack ⑤/ rope tensioner ⑥ so that the lever is in the middle position and the counterside triggers the emergency stop command in case of breakage of the wire rope. The tension spring contains elongation protection.

Switch travel x: max. 400 mm (300 mm to EN 620), distance between support points L: max. 3 m

The greyed out components ④, ⑤, ⑦ and ⑧ are not required if using the rope tensioner S 900.

No.	Description	Designation	Ordering code	Details
①	Wire rope	PWR-xM	on request	Red PVC sheath, steel core Ø 3 mm, Total diameter 5 mm
②	Eyebolt (incl. nut)	ACC-PWR-EBLT-BM8X70-A2 ACC-PWR-EBLT-BM10X40	101192471 101084928	Stainless steel, steel, galvanised
	Anchoring hook (incl. 2 nuts and washers)	ACC-EBLT-M8-RVA-5PCS ACC-EBLT-M10-RVA-5PCS ACC-EBLT-M8-5PCS ACC-EBLT-M10-5PCS	103031496 103031499 103031495 103031498	Stainless steel, 5 pieces Stainless steel, 5 pieces Galvanised steel, 5 pieces Galvanised steel, 5 pieces
③	Tension spring	ACC-700-RZ173I	103005863	Stainless steel
④	Wire clamp	ACC-PWR-RC-3MM-NIRO ACC-PWR-RC-5MM-NIRO	101203477 101203478	Stainless steel Stainless steel
⑤	Tensioning Jack	ACC-TBLE-RVA ACC-PWR-TB-M6-2	103031494 101087930	M8 (stainless steel), 180 to 250 mm M6 (steel, galvanised), 145 to 225 mm
⑥	Rope tensioner	S 900	101186704	Smooth and time-saving adjustment
⑦	Wire thimble	ACC-PWR-WT-3MM-NIRO ACC-PWR-WT-5MM-NIRO	101203472 101203476	Stainless steel Stainless steel
⑧	Shackle	ACC-PWR-SKL-A0,16-VA	101186490	Bracket with threaded bolt, stainless steel
	Mounting set, double-sided Mounting set, double-sided with quick-clamping system S 900	ACC-RK-RS65X ACC-RK-RS65X-QR	103036965 103036963	2x ②, ③, ⑤ and 4x ⑦, ⑧ and 8x ④ in each case 2x ②, ③, ⑥, ⑦ and 4x ④ in each case

Other accessories

Description	Designation	Ordering code
Actuating handle	ACC-PWR-HDL	103042171
Pulley	ACC-PWR-PLY	103037516
Marking flag	ACC-PWR-ESLB-50PCS	103032469

As the thimbles are subject to deformation in case of wire pull, the wire should be pulled several times after fitting. After that, the wire must be re-tensioned (see image 3).

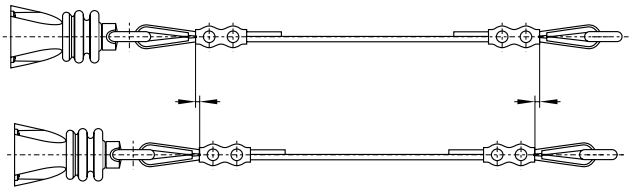


Image 3: Deformation of the wire thimbles

4. Electrical connection

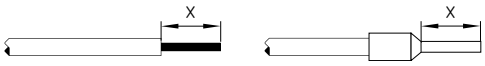
4.1 General information for electrical connection

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

Only use Ex cable glands and Ex screw plugs with integrated or associated seals which are authorised for the corresponding field of application. The Ex cable glands must be fitted in accordance with the applicable operating instructions manual. Cable glands are only authorised for permanent cables. The constructor must provide for the necessary strain relief. Ununused cable entries must be sealed by means of Ex approved locking screws. Cable glands and locking screws are not included in the delivery.

The contact labelling can be found in the wiring compartment of the switch. Do not install cable loops in the inside space of the enclosure. Bare wires must not protrude beyond the clamping disc. Lead the cable insulation up to the clamping disc. All screws and/or nuts of the terminals, also the unused, must be screwed tight.

Settle length x of the conductor: 6 mm



After wiring, the cover screws must be tightened uniformly (Tightening torque: 1 Nm).

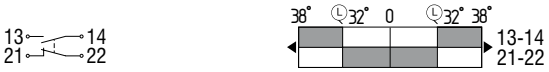
The external potential equalisation terminal is to be connected in accordance with EN 60079-14 section 6.3.

4.2 Contact Options

All NC contacts have positive break ⊖.

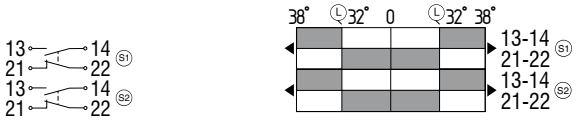
1 NO / 1 NC

EX-T3Z 068-11YR



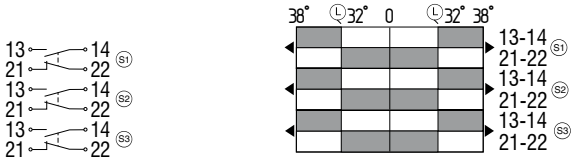
2 NO / 2 NC

EX-T3Z 068-22YR



3 NO / 3 NC

EX-T3Z 068-33YR



Key:

S1, S2, S3 Switch insert S1, S2, S3
Contact closed
Contact open
L Latching

Information for the selection of suitable safety-monitoring modules can be found in the Schmersal catalogues or in the online catalogue on our website: products.schmersal.com.

4.3 Switch travel diagrams

4.4 Accessories for cable entry

Accessories for cable entry (not included in delivery)	Ordering code	Tightening torque
Ex cable gland M20 x 1.5 Nickel plated brass	103003455	8 Nm
EX-Locking screw M20 x 1.5 Nickel plated brass	101185059	8 Nm

Always use the cable gland in accordance with the requisite conductor.

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. The mounting is executed according to the instructions.
2. The connection is executed correctly.
3. The cable is correctly executed and connected.
4. The safety component is not damaged
5. Remove particles of dust and soiling.
6. Check the free movement of the actuating element.
7. Check the functionality of the switch by actuating the wire.

5.2 Maintenance

In case of correct installation in accordance with the above-described instructions, the component requires little maintenance. For use in extreme conditions, we recommend routine maintenance including the following steps:
1. Remove particles of dust and soiling.
2. Check for damages and correct fixing.
3. Check cable entry and connections in a de-energised condition
4. Check the correct fixing of the cover screws.
5. Check the free movement of the actuating element
6. Check the functionality of the switch by actuating the wire.

Avoid electrostaic charging. Clean with damp cloth.
Do not open the device when live.

For explosion protection reasons, the component must be exchanged after max. 50.000 operations.

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

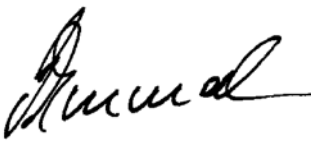
K.A. Schmersal GmbH & Co. KG
Möddinghofe 30
42279 Wuppertal
Germany
Internet: www.schmersal.com

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:	EX-T3Z 068
Type:	see ordering code
Marking:	⟨Ex⟩ II 2D Ex tb IIIC T90°C Db
Description of the component:	Pull-wire emergency stop switch for safety applications.
Relevant Directives:	Machinery Directive 2006/42/EC Explosion Protection Directive (ATEX) 2014/34/EU RoHS-Directive 2011/65/EU
Applied standards:	DIN EN 60947-5-1:2018 DIN EN 60947-5-5:2017 DIN EN ISO 13850:2016 EN IEC 60079-0:2018 EN 60079-31:2014
Notified body, which approved the full quality assurance system, referred to in Appendix IV, 2014/34/EU:	TÜV Rheinland Industrie Service GmbH Am Grauen Stein, 51105 Köln ID n°: 0035
Notified Body for the certification:	DEKRA EXAM GmbH Dinnendahlstraße 9, 44809 Bochum ID n°: 0158
EU-prototype test certificate:	BVS 08 ATEX E 156

This certificate refers only to the certification of the products to the explosion protection directive 2014/34/EU (ATEX). The conformity of the products according to the Machinery Directive 2006/42/EC is declared by the manufacturer on his own responsibility.

Person authorised for the compilation of the technical documentation:	Oliver Wacker Möddinghofe 30 42279 Wuppertal
Place and date of issue:	Wuppertal, July 28, 2023



Authorised signature
Philip Schmersal
Managing Director

EX-T3Z068-G-EN

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

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