



Operating instructions......pages 1 to 6 Translation of the original operating instructions

9 Declaration of conformity

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-monitoring module. 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

i

i

Ĭ

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 machinery or plant.

The safety-monitoring module 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".

> To avoid EMC disturbances, the physical ambient and operational conditions at the place where the product is installed, must meet the provisions laid down in the paragraph "Electromagnetic Compatibility (EMC)" of DIN EN 60204-1.

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.

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

Content

1 About this document 1.1 Function	
1.2 Target group: authorised qualified personnel.	
1.3 Explanation of the symbols used 1.4 Appropriate use	
1.5 General safety instructions	
1.6 Warning about misuse	
1.7 Exclusion of liability	2
2 Product description	
2.1 Ordering code	
2.2 Special versions	
2.4 Technical data	
2.5 Safety classification	
3 Mounting	
3.1 General mounting instructions	3
3.2 Dimensions	
4 Electrical connection	
4.1 General information for electrical connection.	3
5 Operating principle and settings 5.1 LED functions	3
5.2 Description of the terminals	
5.3 Notes	3
6 Set-up and maintenance	
6.1 Functional testing.	3
6.2 Maintenance	
7 Disassembly and disposal	
7 Disassembly and disposal 7.1 Disassembly	4
7.2 Disposal	
8 Appendix 8.1 Wiring examples	4
8.2 Start configuration	
8.3 Sensor configuration	
8.4 Actuator configuration	- 5

EN

(EN)

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-monitoring module, personal hazards or damage to machinery or plant components cannot be excluded. The relevant requirements of the standards EN 1088 and EN ISO 13850 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.

The safety-monitoring module must only be used when the enclosure is closed, i.e. with the front cover fitted.

2. Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

SRB 301LC/8

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-monitoring modules for integration in safety circuits are designed for fitting in control cabinets. They are used for the safe evaluation of the signals of positive break position switches for safety functions on sliding, hinged and removable safety guards as well as emergency stop control devices. They have a defined switch-off behaviour in case of a momentary supply failure.

The safety function is defined as the opening of the enabling circuits 13-14, 23-24 and 33-34 when the inputs C1-S1 and/or D1-S2 are opened. The safety-relevant current paths with the output contacts 13-14, 23-24 and 33-34 meet the following requirements under observation of a B_{10d} value assessment (also refer to "Requirements to DIN EN ISO 13849-1"):

- Control category 4 - PL e to DIN EN ISO 13849-1

- corresponds to SIL 3 to DIN EN 61508-2
- corresponds to SILCL 3 to DIN EN 62061

(corresponds to control category 4 to DIN EN 954-1)

To determine the Performance Level (PL) of the entire safety function (e.g. sensor, logic, actuator) to DIN EN ISO 13849-1, an analysis of all relevant components is required.

EN ISO 13849-1; IEC 6150 Climate resistance: EN 60068-2-7 Material of the housings: Plastic, glass-fibre reinforce Material of the contacts: AgSnO, self-cleaning, positive driv Weight: 250 Start conditions: Automatic or start butto Feedback circuit (Y/N): ye Pull-in delay for automatic start: typ. 210 Durop-out delay in case of emergency stop: typ. 30 m Drop-out delay on "supply failure": typ. 30 m Bridging in case of voltage drops: typ. 30 m Onnection type: Screw connectio Cable section: min. 0.25 mm² / max. 25 mm Connecting cable: rigid or flexibi Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: 10 million operation Resistance to vibrations to EN 60068-2-6: 1055 Hz Material of the operating voltage dres: 12 strates Protection class: Enclosure: Protection class: Enclosure: Protection class: Enclosure: Protection class: Terminalis: Protec	General data Standards:	
Climate resistance: EN 60066-2-7 Mounting: Snaps onto standard DIN rail to EN 6071 Material of the housings: Plastic, glass-fibre reinforce thermoplastic, ventilate Material of the contacts: AgSnO, self-cleaning, positive driv Weight: 250 Start conditions: Automatic or start butto Feedback circuit (Y/N): ve Pull-in delay for automatic start: typ. 110 m Pull-in delay of rautomatic start: typ. 20 m Mechanical data Connection type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mm Pigne cable: 10 million operation Electrical data Connecting cable: minals (Y/N): Nei Mechanical life: Derating curve available on request Resistance to shock: 10 g / 11 m Resistance to shock: 10 g / 11 m Power consumption: max. 20 m Reset after 1 se Number of NC contacts: 10 m Reset after 1 se Number of NC contacts: 10 m Reset after 1 se Number of Safety contacts: 10 m Reside detection (Y/N): 10 m Reset after 1 se Number of safety co	Standards:	IEC/EN 60204-1, EN 60947-5-1
Mounting: Snaps onto standard DIN rail to EN 6071 Terminal designations: EN 60947. Material of the housings: Plastic, glass-fibre reinforce thermoplastic, ventilate Material of the contacts: AgSnO, self-cleaning, positive driv Weight: Start conditions: Automatic or start butto Self-cleaning, positive driv Weight: Yeight: 250 Start conditions: Automatic or start butto Feedback circuit (Y/N): ye Pull-in delay for automatic start: typ. 110 m Drop-out delay in case of emergency stop: typ. 30 m Drop-out delay on "supply failure": typ. 30 m Connection type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mm Connection type: Screw connection Cable section: million operation Connection type: Of an applicate or the terminals: Connection type: Screw connection Cable section: min. 0.25 mm² / max. 2.5 mm Connection type: Screw connection Edetrical Iffe: Derating curve available on reque Resistance to shock: 10 g / 11 m	Climato resistanco:	
Terminal designations: EN 60947- Material of the housings: Plastic, glass-fibre reinforce thermoplastic, ventilate Material of the contacts: AgSnO, self-cleaning, positive driv Weight: 250 Start conditions: Automatic or start butto Feedback circuit (Y/N): ye Pull-in delay for automatic start: typ. 20 m Drop-out delay in case of emergency stop: typ. 30 m Drop-out delay on "supply failure": typ. 30 m Bridging in case of voltage drops: typ. 20 m Connection type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mr Connecting cable: rigid or flexibl Tightening torque for the terminals: 0.6 Nr With removable terminals: 0.6 Nr Mith removable terminals: 0.6 Nr Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 Hz ambient temperature: -25 °C +45 ° Resistance to vibrations to EN 60068-2-6: 10 55 Hz Arr clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulatior FMoterical data Contac		
Material of the housings: Plastic, glass-fibre reinforce thermoplastic, ventilate Material of the contacts: AgSnO, self-cleaning, positive driv Weight: 250 Start conditions: Automatic or start butto Feedback crouit (Y/N): ye Pull-in delay for automatic start: typ. 110 m Pull-in delay in case of emergency stop: typ. 20 m Drop-out delay on "supply failure": typ. 20 m Mechanical data Connection type: Connection type: Screw connection Connecting cable: nigid or flexibi Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Ne Mechanical life: Derating curve available on reques Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 million operation Ambient conditions Ambient temperature: -25 °C +45 ° Storage and transport temperature: -25 °C +45 ° Protection class: Enchcal tersistance in new state: max. 20 Rated operating voltage Ue;: 24 VDC -15%/+20% Fuse rating for the operating voltage: -1,500 m = 1.5 mm <t< td=""><td></td><td>•</td></t<>		•
thermoplastic, ventilate Material of the contacts: AgSnO, self-cleaning, positive driv Start conditions: Automatic or start butto Feedback circuit (Y/N): ye Pull-in delay for automatic start: typ. 10 m Pull-in delay with reset button: typ. 20 m Drop-out delay in case of emergency stop: typ. 30 m Bridging in case of voltage drops: typ. 20 m Mechanical data Connection type: Connection type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mm Connecting cable: rigid or flexibil Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: Derating curve available on request Resistance to shock: 10 g / 11 m Resistance to shock: 10 g / 11 m Resistance to shock: 10 g / 11 m Protection class: Enclosure: Protection class: Enclosure: Protection class: Enclosure: Protection class: Enclosure: Clearances and creepage <t< td=""><td></td><td></td></t<>		
Material of the contacts: AgSnO, self-cleaning, positive driv Weight: 250 Start conditions: Automatic or start butto Feedback circuit (Y/N): ye Pull-in delay for automatic start: 1yp. 110 m Drop-out delay in case of emergency stop: 1yp. 30 m Drop-out delay in case of energency stop: 1yp. 30 m Bridging in case of voltage drops: 1yp. 30 m Mechanical data Connection type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mm Connecting cable: rigid or flexibl Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: 10 million operation Electrical life: Derating curve available on request Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 Hz Ambient temperature: -25 °C +45 ° Storage and transport temperature: -40 °C +65 ° Protection class: Enclosure: IP4 Ar clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 mt Power consumption: max. 2 V Rated operating voltage U ₈ : 24 VDC -15%/+20% residual ripple max. 100 Mimber of NO contacts: Number of Safety contacts: Number of asignalling outputs: Switching capacity of the asafety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	Material of the housings.	
Weight: 250 Start conditions: Automatic or start butto Start conditions: Yet and the set of the se	Matarial of the contacto:	
Start conditions: Automatic or start butto Feedback circuit (Y/N): ye Pull-in delay for automatic start: typ. 10 m Pull-in delay with reset button: typ. 20 m Drop-out delay in case of emergency stop: typ. 30 m Bridging in case of voltage drops: typ. 20 m Mechanical data Connection type: Connection type: Screw connectio Connecting cable: rigid or flexibl Tightening torque for the terminals: 0.6 lW With removable terminals (Y/N): Nei Mechanical life: Derating curve available on requee Resistance to shock: 10 g /11 m Resistance to vibrations to EN 60068-2-6: 10 55 H amplitude 0.35 mr Ambient temperature: -25 °C +45 °l Storage and transport temperature: -40 °C +85 °l Protection class: Enclosure: IP4 Clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: Contact resistance in new state: max. 100 md Power consumption: max. 2 V Reset after 1 set <td></td> <td></td>		
Feedback circuit (Y/N): ye Pull-in delay for automatic start: typ. 110 m Pull-in delay for automatic start: typ. 20 m Pull-in delay in case of ovoltage drops: typ. 30 m Drop-out delay on "supply failure": typ. 30 m Bridging in case of voltage drops: typ. 20 m Mechanical data Connection type: Connecting cable: min. 0.25 mm² / max. 2.5 mm Tightening torque for the terminals: 0.6 ki With removable terminals (Y/N): Nei Mechanical life: 10 million operation Iget: 10 million operation Iget: 10 million operation Iget: 10 million operation Iget: 10 million operation Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 H.# Ambient conditions -25 °C +45 ° Armbient temperature: -40 °C +45 ° Protection class: Enclosure: IP4 Clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation		
Pull-in delay for automatic start: typ. 110 m Pull-in delay with reset button: typ. 20 m Drop-out delay in case of emergency stop: typ. 30 m Drop-out delay on "supply failure": typ. 30 m Bridging in case of voltage drops: typ. 20 m Mechanical data Connection type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mm Connecting cable: rigid or flexibl Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: Derating curve available on request Resistance to vibrations to EN 60068-2-6: 1055 Hz amplitude 0.35 mr Ambient conditions Ambient conditions Ambient conditions Ambient temperature: -25 °C +45 °C Protection class: Enclosure: IP4 Terminals: IP2 Clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation EMC rating: to EMC Directiv Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 <i>A</i> Reset after 1 see Monitored inputs Cross-wire detection (Y/N): Ye Earth leakage detection (Y/N): Ye Earth leakage detection (Y/N): Ye Mire breakage detection (Y/N): Ye Mire breakage detection (Y/N): Ye Mire breakage detection (Y/N): Ye Sumber of NC contacts: Number of NC contacts: Number of Safety contacts: Number of safety contacts: Number of safety contacts: Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Number of signalling outputs: Switching capacity of the auxiliary contacts: Number of signalling outputs: Switching capacity of the auxiliary contacts: A slow bio Recommended fuse for the auxiliary contacts: A slow bio Seconduction category to IEC/EN 60947-5-1: A c-15 / DC-13		
Pull-in delay with reset button: brop-out delay in case of emergency stop: brop-out delay in case of onlage drops: brop-out delay on "supply failure": by 30 m Bridging in case of voltage drops: by 20 m Mechanical data Connection type: Connection type: Connecting cable: rigid or flexibi Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Mechanical life: 10 million operation Electrical life: Derating curve available on request Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 1055 H Ambient conditions Ambient conditions Ambient temperature: -25 °C +45 °C Storage and transport temperature: -40 °C +85 °C Protection class: Enclosure: IP4 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulatior Electrical data Contact resistance in new state: max. 100 m/ Power consumption: Rated operating voltage U _e : 24 VDC -15%/+20% Fuse rating for the operating voltage: Electronic fuse Tripping currrent > 0.4 A Reset after 1 see Monitored inputs Cross-wire detection (Y/N): Ye Number of NC contacts: Number of NC contacts: Number of NC contacts: Number of Safety contacts:		
Drop-out delay in case of emergency stop: typ. 30 m Drop-out delay on "supply failure": typ. 20 m Mechanical data Connection type: Cable section: Connecting cable: Tightening torque for the terminals: Connecting cable: Tightening torque for the terminals: O.6 Nr With removable terminals (Y/N): Mechanical life: Derating curve available on requee Resistance to shock: Resistance to shock: Ambient conditions Ambient conditions Ambient temperature: Protection class: Terminals: Protection class: Terminals: Protection class: Terminals: Clearances and creepage distances to IEC/EN 60664-1: At kV/2 (basic insulation Electrical life: Contact resistance in new state: Contact resistance in new state: Cress-wire detection (Y/N): Fuse rating for the operating voltage: Cress-wire detection (Y/N): Fuse rating for the operating voltage: Contact: Conduction resistance: Conse.wire detection (Y/N): Wire breakage detection (Y/N): Wire breakage detection (Y/N): Wire breakage detection (Y/N): Wire breakage detection (Y/N): Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: Mumber of NC contacts: Number of safety contacts:		
Drop-out delay on "supply failure": typ. 30 m Bridging in case of voltage drops: typ. 20 m Mechanical data Connecting type: Screw connectio Cable section: min. 0.25 mm² / max. 2.5 mm Connecting cable: rigid or flexibl Tightening torque for the terminals: 0.6 Nn With removable terminals (Y/N): Nei Rechanical life: Derating curve available on reques Resistance to shock: 10 g / 11 m Resistance to shock: 10 g / 11 m Resistance to shock: 1055 H. Ambient conditions Ambient conditions Ambient temperature: -25 °C +45 ° Protection class: Enclosure: IP4 Terminals: IP2 Clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulatior EMC rating: to EMC Directive Electrical data Contact resistance in new state: max. 100 m Power consumption: max. 2 V Rated operating voltage U _e : 24 VDC -15%/+20% residual ripple max. 107 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 <i>J</i> Reset after 1 set Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Earth leakage detection (Y/N): Ye Mumber of NC contacts: Number of Safety contacts: Number of signalling outputs Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohm (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42; 24 VDC / 2 Fuse rating of the auxiliary contacts: 41-42; 24 ADC / 2 Fuse rating of the safety contacts: A show blob Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
Bridging in case of voltage drops:typ. 20 mMechanical dataConnection type:Screw connectioCable section:min. 0.25 mm² / max. 2.5 mmConnecting cable:rigid or flexiblTightening torque for the terminals:0.6 NrWith removable terminals (Y/N):NeiMechanical life:10 million operationElectrical life:Derating curve available on requestResistance to shock:10 g / 11 mResistance to vibrations to EN 60068-2-6:1055 HzAmbient conditionsamplitude 0.35 mrAmbient temperature: -40 °C +45 °tStorage and transport temperature: -40 °C +45 °tClearances and creepagedistances to IEC/EN 60664-1:distances to IEC/EN 60664-1:4 kV/2 (basic insulationPower consumption:max. 2 VRated operating voltage Ue:24 VDC $-15\%/+20\%$ Fuse rating for the operating voltage:electronic fuseTripping current > 0.4 AReset after 1 setMonitored inputsYeCross-wire detection (Y/N):YeNumber of NC contacts:Number of NC contacts:Number of NC contacts:Number of auxiliary contacts:Number of signalling outputs:Switching capacity of the auxiliary contacts:4.4/2: 24 VDC / 2Fuse rating of the safety contacts:13-14; 23-24; 33-34Mumber of signallin		
Mechanical data Screw connection Connection type: Screw connection Connecting cable: rigid of flexibil Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: 10 million operation Electrical life: Derating curve available on requee Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 H: Ambient conditions amplitude 0.35 m Ambient temperature: -40 °C +45 ° Protection class: Enclosure: IP4 Protection class: Enclosure: IP4 Clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Power consumption: max. 20 Rated operating voltage Ue: 24 VDC -15%/+200 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Nonitored inputs Ye Cross-wire detection (Y/N): Ye Ye Number of NC contacts: Number of NC contacts: Number of NC contacts: Number of signalling outputs: Number of signalling outputs: Max. 250 V, 6 A o		
Connection type: Screw connection Cable section: min. 0.25 mm² / max. 2.5 mm Connecting cable: rigid or flexibi Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: 10 million operation Electrical life: Derating curve available on request Resistance to vibrations to EN 60068-2-6: 1055 H.3 Ambient conditions amplitude 0.35 mr Ambient temperature: -40 °C+45 ° Storage and transport temperature: -40 °C+45 ° Protection class: Enclosure: IP4 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 m2 Power consumption: max. 20 residual ripple max. 10° Fuse rating for the operating voltage: electron fuse Tripping curret > 0.4.4 Reset after 1 set Monitored inputs -1,500 m = 1.5 mm Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NC contacts: <td></td> <td>is. typ. 20 m</td>		is. typ. 20 m
Cable section: min. 0.25 mm² / max. 2.5 mm Connecting cable: rigid or flexibl Tightening torque for the terminals: 0.6 Ni With removable terminals (Y/N): Nei Mechanical life: 10 million operation Electrical life: Derating curve available on request Resistance to vibrations to EN 60068-2-6: 10 g/ 11 m Resistance to vibrations to EN 60068-2-6: 10 55 H; Ambient conditions -25 °C +45 ° Ambient temperature: -40 °C +85 ° Protection class: Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 KV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 mt Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 se Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Ware of NO contacts: -1,500 m = 1.5 mm Cable length:<		Corow connectio
Connecting cable: rigid or flexibi Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: 10 million operation Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 H: amplitude 0.35 mr Ambient conditions Armbient conditions Arbient conditions Arbient conditions Arbient conditions Arbient temperature: -40 °C +45 ° Protection class: Electrical tats Contact resistance in new state: Monitored inputs Cross-wire detection (Y/N): Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye	51	
Tightening torque for the terminals: 0.6 Nr With removable terminals (Y/N): Nei Mechanical life: 10 million operation Electrical life: Derating curve available on reques Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 Hz Ambient conditions -25 °C +45 ° Ambient conditions -40 °C +85 ° Ambient conditions Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 mf Power consumption: max. 2 V Rated operating voltage U _a : 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Ye Ye Quiputs -1,500 m = 1.5 mr -2,500 m = 2.5 mr Schole length: -1,500 m = 1.5 mr -2,500 m = 2.5 mr Cable length: -1,500 m = 1.5 mr -2,500 m = 2.		
With removable terminals (Y/N): Nei Mechanical life: 10 million operation Electrical life: Derating curve available on request Resistance to vibrations to EN 60068-2-6: 10 55 H; amplitude 0.35 mr Ambient conditions Ambient conditions Ambient temperature: $-25 ^\circ C \dots +45 ^\circ$ Storage and transport temperature: $-40 ^\circ C \dots +85 ^\circ$ Protection class: Enclosure: Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation temperature) Power consumption: max. 100 m Power consumption: max. 100 m Power consumption: max. 100 m Rated operating voltage Ue: 24 VDC -15%/+20% residual ripple max. 100 mex. 100 m Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 <i>A</i> Reset after 1 set Monitored inputs max. 100 m Cross-wire detection (Y/N): Ye Number of NC contacts: Number of NC contacts: Cable length: -1,500 m = 1.5 mr -2,500 m = 2.5 mr 2.500 m = 2.5 mr Conducti		
Mechanical life: 10 million operation Electrical life: Derating curve available on request Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 0 55 H; Ambient conditions amplitude 0.35 m Ambient temperature: -25 °C +45 °. Storage and transport temperature: -40 °C +65 °. Protection class: Enclosure: IP4 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 m Power consumption: max. 2 V Rated operating voltage Uee: 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 <i>J</i> Reset after 1 set Monitored inputs Tripping current > 0.4 <i>J</i> Cross-wire detection (Y/N): Yee Wire breakage detection (Y/N): Yee Number of NC contacts: -1,500 m = 1.5 mm Cable length: -1,500 m = 2.5 mm -2,500 m = 2.5 mm -2,500 m = 2.5 mm -2,500 m = 2.5 mm -2,500 m = 2.5 mm -2,500 m = 2.5 mm -2,500 m		
Electrical life: Derating curve available on request Resistance to vibrations to EN 60068-2-6: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 Hz Ambient conditions amplitude 0.35 m Ambient conditions -25 °C +45 ° Storage and transport temperature: -40 °C +85 ° Protection class: Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 m Power consumption: max. 2 V Rated operating voltage U ₆ : 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Creas-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Ye Number of NC contacts: 0 -1,500 m = 1.5 mm Aubier of NC contacts: -1,500 m = 1.5 mm -2,500 m = 2.5 mm Number of Safety contacts: Number of safety contacts: Number of safety contacts: Number of safety contacts: Numbe		
Resistance to shock: 10 g / 11 m Resistance to vibrations to EN 60068-2-6: 10 55 H: Ambient conditions -25 °C +45 °. Ambient temperature: -40 °C +85 °. Protection class: Enclosure: IP4 Protection class: Enclosure: IP4 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Colearance: IP5 Power consumption: max. 100 m Power consumption: max. 2 V Rate doperating voltage U _c : 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 / Reset after 1 set Monitored inputs Constacts: Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: -1,500 m = 1.5 mm Number of Safety contacts: -1,500 m = 2.5 mm Number of safety contacts: Number of safety contacts:		
Resistance to vibrations to EN 60068-2-6: 10 55 H: amplitude 0.35 mr Ambient conditions -25 °C +45 °. Ambient temperature: -40 °C +85 °. Protection class: Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data max. 100 mr Contact resistance in new state: max. 100 mr Power consumption: max. 20 mr Pase rating for the operating voltage U.; 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 / Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NC contacts: - 1,500 m = 1.5 mr Cable length: - 1,500 m = 2.5 mr - 2,500 m = 2.5 mr - 2,500 m = 2.5 mr 2-channel with cross-wire short detection Conduction resistance: Number of Safety contacts: Number of signalling outputs: Number of signalling outputs: Switching capacity of the safety contacts: Number of signalling out		Derating curve available on reques
Ambient conditions Ambient temperature: -25 °C +45 °. Storage and transport temperature: -40 °C +85 °. Protection class: Enclosure: IP4 Protection class: Enclosure: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 mt Power consumption: max. 2 V Rated operating voltage U ₀ : 24 VDC -15%/+20% residual ripple max. 100 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Ye Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NO contacts: Number of safety contacts: Number of safety contacts: Number of safety contacts: Number of safety contacts: Number of safety contacts: Number of appropriat Switching capacity of the safety contacts: 6.3 A slow blo Number of safety contacts: 6.3 A slow blo Recommended fuse for the auxiliary contacts: 2.4 Slow blo		
Ambient conditions Ambient temperature: $-25 \ ^{\circ}C \dots +45 \ ^{\circ}$ Storage and transport temperature: $-40 \ ^{\circ}C \dots +85 \ ^{\circ}$ Protection class: Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 KV/2 (basic insulation Electrical data Contact resistance in new state: max. 100 ms Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC $-15\%/+20\%$ residual ripple max. 109 residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NO contacts: Cable length: $-1,500 \ m = 1.5 \ mm - 2,500 \ m = 2.5 \ mm - 2,500 \ m = $	Resistance to vibrations to EN 6	
Ambient temperature: $-25 \ ^\circ$ C +45 \ ^\circ Storage and transport temperature: $-40 \ ^\circ$ C +85 \ ^\circ Protection class: Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation EMC rating: to EMC Directiv Electrical data max. 100 ms Contact resistance in new state: max. 100 ms Power consumption: max. 2 v Rated operating voltage Ue: 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NO contacts: Number of NC contacts: Number of safety contacts: Number of safety contacts: Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Number of signalling outputs: Switching capacity of the auxiliary contacts: Switching capacity of the auxiliary contacts: 6.3 A slow blow <td>Ambient conditions</td> <td>amplitude 0.55 mi</td>	Ambient conditions	amplitude 0.55 mi
Storage and transport temperature: $-40 \ ^{\circ}C \dots +85 \ ^{\circ}d$ Protection class:Enclosure: IP4 Terminals: IP2 Clearance: IP5Air clearances and creepagedistances to IEC/EN 60664-1:4 kV/2 (basic insulation EMC rating:to EMC DirectivElectrical dataContact resistance in new state:Power consumption:max. 2 V Rated operating voltage Ue:Power consumption:max. 2 V Presidual ripple max. 100 msFuse rating for the operating voltage:electronic fuse Tripping current > 0.4 A Reset after 1 secMonitored inputsYeCross-wire detection (Y/N):YeWire breakage detection (Y/N):YeNumber of NC contacts:-1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectioConduction resistance:max. 40 fOutputsNumber of safety contacts:Number of signalling outputs:Switching capacity of the safety contacts:Number of signalling outputs:13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 mSwitching capacity of the auxiliary contacts:6.3 A slow bloo Recommended fuse for the auxiliary contacts:Switching capacity of the auxiliary contacts:2.4 slow bloo Contacts:Cutous or safety contacts:6.3 A slow bloo Contacts:Switching capacity of the auxiliary contacts:2.4 slow bloo Contacts:Conduction category to IEC/EN 60947-5-1:AC-15 / DC-13		-25 °C +45 °C
Protection class: Enclosure: IP4 Terminals: IP2 Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation EMC rating: to EMC Directiv Electrical data Contact resistance in new state: max. 100 m Power consumption: max. 2 V Rated operating voltage U _e : 24 VDC -15%/+20% residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 <i>A</i> Reset after 1 sec Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of auxiliary contacts: Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmin (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		-25 C +45 V
Terminals: IP2 Clearance: IP5Air clearances and creepage distances to IEC/EN 60664-1:4 kV/2 (basic insulation EMC rating:ENC rating:to EMC DirectivElectrical datamax. 100 msPower consumption:max. 2 VRated operating voltage Ue:24 VDC $-15\%/+20\%$ residual ripple max. 109Fuse rating for the operating voltage:electronic fuse Tripping current > 0.4 A Reset after 1 secMonitored inputsCross-wire detection (Y/N):YeYeWire breakage detection (Y/N):YeNumber of NC contacts:Number of NC contacts:Number of Safety contacts:-1,500 m = 1.5 mr - 2,500 m = 2.5 mr 2-channel with cross-wire short detectionConduction resistance:max. 40 sOutputsNumber of safety contacts:Number of safety contacts:13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 mSwitching capacity of the auxiliary contacts:6.3 A slow blowNumber of the safety contacts:6.3 A slow blowOutputsSafety contacts:Switching capacity of the auxiliary contacts:2 A slow blowCommended fuse for the auxiliary contacts:2 A slow blowOutputsSafety contacts:6.3 A slow blowOutputsCapacity of the auxiliary contacts:2 A slow blowConduction category to IEC/EN 60947-5-1:AC-15 / DC-13		
Clearance: IP5 Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation EMC rating: to EMC Directiv Electrical data Contact resistance in new state: max. 100 mi Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC -15%/+20% residual ripple max. 100 residual ripple max. 100 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: -1,500 m = 1.5 mr Number of NC contacts: -1,500 m = 2.5 mr Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of safety contacts: Number of safety contacts: Number of signalling outputs: switching capacity of the safety contacts: Switching capacity of the safety contacts: 6.3 A slow blow (inductive in case of appropriat protective wiring) min. 10 V / 10 m Ye Mumber of safety contacts: 6.3 A slow blow<	FIOLECLIOIT Class.	
Air clearances and creepage distances to IEC/EN 60664-1: 4 kV/2 (basic insulation EMC rating: to EMC Directiv Electrical data Contact resistance in new state: max. 100 m Power consumption: max. 2 V Rated operating voltage U _e : 24 VDC -15%/+20% residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: -1,500 m = 1.5 mm -2,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of safety contacts: Switching capacity of the auxiliary contacts: A slow blow Recommended fuse for the auxiliary contacts: A c-15 / DC-13		
distances to IEC/EN 60664-1: 4 kV/2 (basic insulation EMC rating: to EMC Directiv Electrical data Contact resistance in new state: max. 100 m Power consumption: max. 2 V Rated operating voltage U _e : 24 VDC -15%/+20% residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Rumber of NO contacts: Number of NC contacts: Cable length: -1,500 m = 1.5 mm -2,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: max. 40 s Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 2A slow blow Recommended fuse for the auxiliary contacts: 2A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	Air clearances and croopage	
EMC rating: to EMC Directiv Electrical data max. 100 ms Contact resistance in new state: max. 2 V Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC -15%/+20% residual ripple max. 109 residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 sec Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow 24 slow blow Recom		4 k V/2 (basic insulation
Electrical data Contact resistance in new state: max. 100 ms Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC -15%/+20% residual ripple max. 109 residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Ye Number of NC contacts: -1,500 m = 1.5 mm Cable length: - 1,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: Mumber of safety contacts: Max. 40 s Number of safety contacts: Number of signalling outputs: Number of signalling outputs: Switching capacity of the safety contacts: Number of signalling outputs: Switching capacity of the auxiliary contacts: Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Curotacts: 2 A slow blow		
Contact resistance in new state: max. 100 ms Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC -15%/+20% residual ripple max. 109 residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Switching capacity of the auxiliary contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13 <td></td> <td></td>		
Power consumption: max. 2 V Rated operating voltage Ue: 24 VDC -15%/+20% residual ripple max. 109 residual ripple max. 109 Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 g Outputs Mumber of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Switching capacity of the auxiliary contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2.4 slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		max 100 m
Rated operating voltage Ue: 24 VDC -15%/+20% Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Number of NO contacts: Ye Number of NC contacts: - 1,500 m = 1.5 mm Conduction resistance: max. 40 9 Outputs - 2,500 m = 2.5 mm Number of safety contacts: Number of signalling outputs: Number of signalling outputs: - 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: - 14-22; 24 VDC / 2 Fuse rating of the safety contacts: - 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow		
residual ripple max. 109 Fuse rating for the operating voltage: Fuse rating of the safety contacts: Fuse rating contact		
Fuse rating for the operating voltage: electronic fuse Tripping current > 0.4 A Reset after 1 set Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Barth leakage detection (Y/N): Ye Number of NO contacts: Ye Number of NC contacts: - 1,500 m = 1.5 mm Cable length: - 1,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: Mumber of safety contacts: max. 40 9 Outputs - Number of signalling outputs: - Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	· · · · · · · · · · · · · · · · · · ·	
Tripping current > 0.4 A Reset after 1 set Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Earth leakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 9 Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Switching capacity of the auxiliary contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	Fuse rating for the operating vo	
Reset after 1 sec Monitored inputs Ye Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Earth leakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 9 Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Switching capacity of the auxiliary contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	· · · · · · · · · · · · · · · · · · ·	-
Monitored inputs Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Barth leakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detection Conduction resistance: max. 40 f Outputs Mumber of safety contacts: Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
Cross-wire detection (Y/N): Ye Wire breakage detection (Y/N): Ye Earth leakage detection (Y/N): Ye Number of NO contacts: Ye Number of NC contacts: - 1,500 m = 1.5 mm Cable length: - 1,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: Mumber of safety contacts: max. 40 g Outputs - Number of signalling outputs: - Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	Monitored inputs	
Wire breakage detection (Y/N): Ye Earth leakage detection (Y/N): Ye Number of NO contacts: Ye Number of NC contacts: - 1,500 m = 1.5 mm Cable length: - 1,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: Mumber of safety contacts: max. 40 g Outputs - Number of safety contacts: - Number of signalling outputs: - Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m - Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		Ye
Earth leakage detection (Y/N): Ye Number of NO contacts: Number of NC contacts: Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 g Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: Switching capacity of the auxiliary contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		Ye
Number of NO contacts: Number of NC contacts: Cable length: – 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 g Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1:		
Number of NC contacts: Cable length: – 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 g Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1:		
Cable length: - 1,500 m = 1.5 mm - 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 g Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1:	Number of NC contacts:	
- 2,500 m = 2.5 mm 2-channel with cross-wire short detectio Conduction resistance: max. 40 g Outputs Number of safety contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		– 1.500 m = 1.5 mm
Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of auxiliary contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmin (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	3	
Conduction resistance: max. 40 f Outputs Number of safety contacts: Number of auxiliary contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmic (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13	:	2-channel with cross-wire short detectio
Outputs Number of safety contacts: Number of auxiliary contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1:		
Number of safety contacts: Number of auxiliary contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blog Recommended fuse for the auxiliary contacts: 2 A slow blog Utilisation category to IEC/EN 60947-5-1:	Outputs	
Number of auxiliary contacts: Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
Number of signalling outputs: Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
Switching capacity of the safety contacts: 13-14; 23-24; 33-34 max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-12		
max. 250 V, 6 A ohmi (inductive in case of appropriat protective wiring) min. 10 V / 10 m Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2 Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		contacts: 13-14: 23-24: 33-34
(inductive in case of appropriat protective wiring) min. 10 V / 10 m. Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
protective wiring) min. 10 V / 10 m. Switching capacity of the auxiliary contacts: 41-42: 24 VDC / 2. Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
Switching capacity of the auxiliary contacts:41-42: 24 VDC / 2.Fuse rating of the safety contacts:6.3 A slow blowRecommended fuse for the auxiliary contacts:2 A slow blowUtilisation category to IEC/EN 60947-5-1:AC-15 / DC-13		
Fuse rating of the safety contacts: 6.3 A slow blow Recommended fuse for the auxiliary contacts: 2 A slow blow Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		
Recommended fuse for the auxiliary contacts:2 A slow blowUtilisation category to IEC/EN 60947-5-1:AC-15 / DC-13	Switching capacity of the auxilia	
Utilisation category to IEC/EN 60947-5-1: AC-15 / DC-13		2
	Fuse rating of the safety contact	6.3 A slow blow
	Fuse rating of the safety contact Recommended fuse for the aux	6.3 A slow blow kiliary contacts: 2 A slow blow

100 mm x 22.5 mm x 121 mm

The data specified in this manual is applicable when the component is operated with rated operating voltage $U_e \pm 0\%$

Dimensions H x W x D:

Operating instructions Safety-monitoring module

2.5 Safety classification

Standards:	EN ISO 13849-1, IEC 61508, EN 60947-5-1
PL:	up to e
Control category:	up to 4
DC:	99% (high)
CCF:	> 65 points
PFH value:	≤ 2.00 × 10 ⁻⁸ /h
SIL:	up to 3
Service life:	20 years

The PFH value of 2.00 × 10⁻⁸/h applies to the combinations of contact load (current through enabling contacts) and number of switching cycles (n_{op/y}) mentioned in the table below. At 365 operating days per year and a 24-hours operation, this results in the below-mentioned switching cycle times (t_{cycle}) for the relay contacts.

Diverging applications upon request.

Contact load	n _{op/y}	t _{cycle}
20 %	525,600	1.0 min
40 %	210,240	2.5 min
60 %	75,087	7.0 min
80 %	30,918	17.0 min
100 %	12,223	43.0 min

3. Mounting

3.1 General mounting instructions

Mounting: snaps onto standard DIN rails to EN 60715.

Snap the bottom of the enclosure slightly tilted forwards in the DIN rail and push up until it latches in position.

3.2 Dimensions

All measurements in mm.

Device dimensions (H/W/D): 100 x 22.5 x 121 mm

4. Electrical connection

4.1 General information for electrical connection

As far as the electrical safety is concerned, the protection against unintentional contact of the connected and therefore electrically interconnected apparatus and the insulation of the feed cables must be designed for the highest voltage, which can occur in the device.

 \triangle

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

Wiring examples: see appendix

5. Operating principle and settings

5.1 LED functions

- K1: Status channel 1
- K2: Status channel 2
- U_B: Status operating voltage (LED is on, when the operating voltage on the terminals A1-A2 is ON)
- U_i: Status internal operating voltage (LED is on, when the operating voltage on the terminals C-D is ON and the fuse has not been triggered)

5.2 Description of the terminals

Voltages:	С	+24 VDC/24 VAC
	D	0 VDC/24 VAC
Inputs:	C1-S1	Input channel 1 (+)
	C1-D1	Input channel 2 (+)
	D1-S2	Input channel 2 (-) (with cross-wire short detection)
Outputs:	13-14	First safety enabling circuit
	23-24	Second safety enabling circuit
	33-34	Third safety enabling circuit
Start:	X1-X2	Feedback circuit and external reset
	41-42	Auxiliary NC contact as signalling contact



Fig. 1

5.3 Notes



Due to the operating principle of the electronic fuse, the customer must check that no hazard is caused by an unexpected restart in circuits without reset button (automatic start).



Signalling outputs must not be used in safety circuits.

6. Set-up and maintenance

6.1 Functional testing

The safety function of the safety-monitoring module must be tested. The following conditions must be previously checked and met:

- 1. Correct fixing
- 2. Check the integrity of the cable entry and connections
- 3. Check the safety-monitoring module's enclosure for damage.
- Check the electrical function of the connected sensors and their influence on the safety-monitoring module and the downstream actuators

6.2 Maintenance

A regular visual inspection and functional test, including the following steps, is recommended:

- 1. Check the correct fixing of the safety-monitoring module
- 2. Check the cable for damages
- 3. Check electrical function



The device has to be integrated into the periodic check-ups according to the Ordinance on Industrial Safety and Health, however at least 1x/year.

Damaged or defective components must be replaced.

7. Disassembly and disposal

7.1 Disassembly

The safety-monitoring module must be disassembled in a de-energised condition only.

Push up the bottom of the enclosure and hang out slightly tilted forwards.

7.2 Disposal

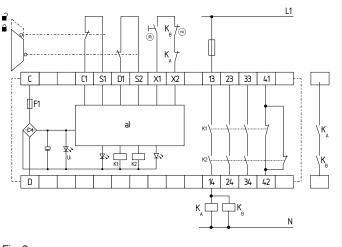
The safety-monitoring module must be disposed of in an appropriate manner in accordance with the national prescriptions and legislations.

8. Appendix

8.1 Wiring examples

Dual-channel control, shown for a guard door monitor with two position switches where one has a positive break contact; with external reset button (\mathbb{R}) (Fig. 2)

- Relay outputs: Suitable for 2-channel control, for increase in capacity or number of contacts by means of contactors or relays with positive-guided contacts.
- The control system recognises wire-breakage, earth faults and crosswire shorts in the monitoring circuit.





8.2 Start configuration

External reset button (Fig. 3)

The external reset button is integrated as shown.

The safety-monitoring module is activated upon actuation.

Automatic start (see Fig. 4)

- The automatic start is programmed by connecting the feedback circuit to the terminals. If the feedback circuit is not required, establish a bridge.
- Caution: Not admitted without additional measure due to the risk of gaining access by stepping behind!
- Caution: Within the meaning of EN IEC 60204-1 paragraph 9.2.5.4.2 and 10.8.3, the operating mode "automatic start" is only restrictedly admissible. In particular, any inadvertent restart of the machine must be prevented by other suitable measures.



X1

в (®

X2

Fig. 3

K

Due to the operating principle of the electronic fuse, the customer must check that no hazard is caused by an unexpected restart in circuits without reset button (automatic start).



Operating instructions Safety-monitoring module

8.3 Sensor configuration

Dual-channel emergency stop circuit with command devices to DIN EN ISO 13850 (EN 418) and EN 60947-5-5 (Fig. 5)

- Wire breakage and earth leakage in the control circuits are detected.
- · Cross-wire shorts between the control circuits are detected.
- Category 4 PL e to DIN EN ISO 13849-1 possible.

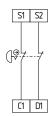
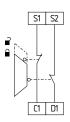


Fig. 5

Dual-channel guard door monitoring circuit with interlocking device to EN 1088 (Fig. 6)

- · With at least one positive-break position switch
- Wire breakage and earth leakage in the control circuits are detected.
- · Cross-wire shorts between the control circuits are detected.
- Category 4 PL e to DIN EN ISO 13849-1 possible.





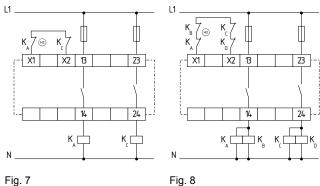
8.4 Actuator configuration

Single-channel control with feedback circuit (Fig. 7)

- Suitable for increase in capacity or number of contacts by means of contactors or relays with positive-guided contacts.
- (+2) = feedback circuit:
- If the feedback circuit is not required, establish a bridge.

Dual-channel control with feedback circuit (Fig. 8)

- · Suitable for increase in capacity or number of contacts by means of contactors or relays with positive-guided contacts. • 😔 = feedback circuit:
- If the feedback circuit is not required, establish a bridge.





Differential control with feedback circuit (see Fig. 9)

· Suitable for increase in capacity or number of contacts by means of contactors or relays with positive-guided contacts.

• (+2) = feedback circuit:

If the feedback circuit is not required, establish a bridge.

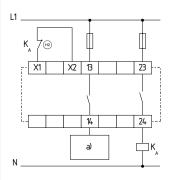
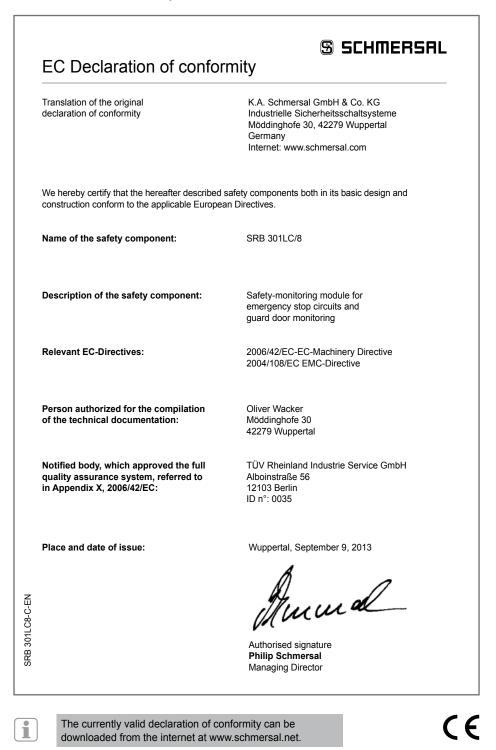


Fig. 9 a) Enabling signal controller

9. Declaration of conformity

9.1 EC Declaration of conformity



(EN)

K. A. Schmersal GmbH & Co. KG

Industrielle Sicherheitsschaltsysteme Möddinghofe 30, D - 42279 Wuppertal Postfach 24 02 63, D - 42232 Wuppertal

 Phone:
 +49 - (0)2 02 - 64 74 - 0

 Telefax
 +49 - (0)2 02 - 64 74 - 1 00

 E-Mail:
 info@schmersal.com

 Internet:
 http://www.schmersal.com