

## Datasheet - SRB301ST 230V

Guard door monitors and Safety control modules for Emergency Stop applications / General Purpose safety controllers (Series PROTECT SRB) / SRB301ST 230V



Preferred typ



- Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
- 3 safety contacts, STOP 0
- 1 Signalling output

(Minor differences between the printed image and the original product may exist!)

### Ordering details

Product type description	SRB301ST 230V
Article number	101170099
EAN code	4250116201822
Replaced article number 101177167	
eCl@ss	27-37-19-01

### Approval

Approval



BG



USA/CAN



### Classification


Standards	EN ISO 13849-1, IEC 61508, EN 60947-5-1
PL	up e
Control category	up 4
DC	99% (High)
CCF	> 65 points
PFH value	$\leq 2,0 \times 10^{-8}/h$
SIL	up 3
Mission time	20 Years
- notice	The PFH value is applicable for the combinations listed in the table for contact load (K) (current through enabling paths) and switching cycle number (n-op/y).

In case of 365 operating days per year and a 24-hour operation, this results in the specified switching cycle times (t-cycle) for the relay contacts.

Diverging applications on request.

K	n-ople	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

## Global Properties

Product name	SRB301ST 230V
Standards	IEC/EN 60204-1, EN 60947-5-1, EN ISO 13849-1, IEC 61508
Compliance with the Directives (Y/N) 	Yes
Climatic stress	EN 60068-2-78
Mounting	snaps onto standard DIN rail to EN 60715
Terminal designations	IEC/EN 60947-1
Materials	
- Material of the housings	Plastic, glass-fibre reinforced thermoplastic, ventilated
- Material of the contacts	, self-cleaning, positive action
Weight	250 g
Start conditions	Automatic or Start button
Start input (Y/N)	Yes
Feedback circuit (Y/N)	Yes
Start-up test (Y/N)	No
Reset after disconnection of supply voltage (Y/N)	
Automatic reset function (Y/N)	Yes
Reset with edge detection (Y/N)	Yes
Pull-in delay	
- ON delay with automatic start	30 ms, max. 35 ms
- ON delay with reset button	15 ms, max. 20 ms
Drop-out delay	
- Drop-out delay in case of power failure	100 ms (48 VAC); 300 ms (240 VAC)
- Drop-out delay in case of emergency stop	20 ms, max. 25 ms

## Mechanical data

Connection type	Screw connection
Cable section	
- Min. Cable section	0,25 mm <sup>2</sup>
- Max. Cable section	2,5 mm <sup>2</sup>
Pre-wired cable	rigid or flexible
Tightening torque for the terminals	0,6 Nm
Detachable terminals (Y/N)	Yes
Mechanical life	10.000.000 operations
Electrical lifetime	Derating curve available on request
restistance to shock	30 g / 11 ms
Resistance to vibration To EN 60068-2-6	10...55 Hz, Amplitude 0,35 mm

## Ambient conditions

Ambient temperature	
- Min. environmental temperature	-25 °C
- Max. environmental temperature	+45 °C
Storage and transport temperature	
- Min. Storage and transport temperature	-40 °C
- Max. Storage and transport temperature	+85 °C
Protection class	
- Protection class-Enclosure	IP40
- Protection class-Terminals	IP20

- Protection class-Clearance	IP54
Air clearances and creepage distances To IEC/EN 60664-1	
- Rated impulse withstand voltage $U_{imp}$	4 kV
Overvoltage category	II To VDE 0110
- Degree of pollution	2 To VDE 0110

## Electromagnetic compatibility (EMC)

EMC rating	conforming to EMC Directive
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## Electrical data

Rated DC voltage for controls	
- Min. rated DC voltage for controls	-
- Max. rated DC voltage for controls	-
Rated AC voltage for controls, 50 Hz	
- Min. rated AC voltage for controls, 50 Hz	48 V
- Max. rated AC voltage for controls, 50 Hz	240 V
Rated AC voltage for controls, 60 Hz	
- Min. rated AC voltage for controls, 60 Hz	48 V
- Max. rated AC voltage for controls, 60 Hz	240 V
Contact resistance	max. 100 m $\Omega$
Power consumption	max. 2.8 VA
Type of actuation	AC
Switch frequency	max. 5 Hz
Rated operating voltage $U_e$	48 ... 240 VAC
Frequency range	50 / 60 Hz
Electronic protection (Y/N)	Yes
Fuse rating for the operating voltage	primary side F1: Safety fuse, tripping current > 0,5 A secondary side: Internal electronic trip, tripping current > 0,12 A
Current and tension on control circuits	
- S11, S12, S21, S22, X2, X3	24 VDC, Test current: approx. 45 mA
Bridging in case of voltage drops	70 ms (48 VAC); 270 ms (240 VAC)

## Inputs

### Monitored inputs

- Short-circuit recognition (Y/N)	No
- Wire breakage detection (Y/N)	Yes
- Earth connection detection (Y/N)	Yes
Number of shutters	0 piece
Number of openers	2 piece
Cable length	1500 m with 1,5 mm <sup>2</sup> ; 2500 m with 2,5 mm <sup>2</sup>
Conduction resistance	max. 40 $\Omega$

## Outputs

Stop category	0
Number of safety contacts	3 piece
Number of auxiliary contacts	1 piece
Number of signalling outputs	0 piece
Switching capacity	
- Switching capacity of the safety contacts	max. 250 VAC, 6 A ohmic (inductive in case of appropriate protective wiring)
- Switching capacity of the auxiliary contacts	24 VDC, 2 A
Fuse rating	
- Fuse rating for the auxiliary contacts	external fuse ( $I_k = 1000$ A) To EN 60947-5-1 Safety fuse 2.5 A quick-blow, 2 A slow blow
- Protection of the safety contacts	external fuse ( $I_k = 1000$ A) To EN 60947-5-1 Safety fuse 8 A quick-blow, 6 A slow blow

- Fuse rating for the auxiliary contacts	2 A slow blow
Utilisation category To EN 60947-5-1	AC-15: 230 V / 6 A DC-13: 24 V / 6 A
Number of undelayed semi-conductor outputs with signaling function	0 piece
Number of undelayed outputs with signaling function (with contact)	1 piece
Number of delayed semi-conductor outputs with signaling function.	0 piece
Number of delayed outputs with signalling function (with contact).	0 piece
Number of secure undelayed semi-conductor outputs with signaling function	0 piece
Number of secure, undelayed outputs with signaling function, with contact.	3 piece
Number of secure, delayed semi-conductor outputs with signaling function	0 piece
Number of secure, delayed outputs with signaling function (with contact).	0 piece

### LED switching conditions display

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LED switching conditions display (Y/N)	Yes
Number of LED's	3 piece
LED switching conditions display	
- The integrated LEDs indicate the following operating states.	
- Position relay K2	
- Position relay K1	
- Supply voltage U <sup>B</sup>	

### Miscellaneous data

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Applications



Emergency-Stop button



Guard system



Pull-wire emergency stop switches

### Dimensions

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Dimensions	
- Width	22.5 mm
- Height	100 mm
- Depth	121 mm

### notice

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Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit.

### notice - Wiring example

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**Input level:** The example shows a 2-channel control of a guard door monitoring with two position switches, whereof one with positive break, external reset button (R) and feedback circuit (H2).

The control recognises cable break in the monitoring circuit.

**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.

For 1-channel control, connect NC contact to S11/S12 and bridge S12/S22

**Automatic start:** The automatic start is programmed by connecting the feedback circuit to the terminals S12/X3. If the feedback circuit is not required, establish a bridge

The wiring diagram is shown with guard doors closed and in de-energised condition.

### Documents

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**Operating instructions and Declaration of conformity (pl)** 335 kB, 07.10.2014

Code: mrl\_srb\_301st\_230\_pl

**Operating instructions and Declaration of conformity (jp)** 592 kB, 29.10.2014

Code: mrl\_srb\_301st\_230\_jp

**Operating instructions and Declaration of conformity (nl)** 314 kB, 29.10.2014

Code: mrl\_srb\_301st\_230\_nl

**Operating instructions and Declaration of conformity (cn)** 453 kB, 13.07.2015

Code: mrl\_srb\_301st\_230\_cn

**Operating instructions and Declaration of conformity (en)** 323 kB, 04.09.2014

Code: mrl\_srb\_301st\_230\_en

**Operating instructions and Declaration of conformity (it)** 318 kB, 11.09.2014

Code: mrl\_srb\_301st\_230\_it

**Operating instructions and Declaration of conformity (fr)** 374 kB, 07.10.2014

Code: mrl\_srb\_301st\_230\_fr

**Operating instructions and Declaration of conformity (es)** 317 kB, 15.09.2014

Code: mrl\_srb\_301st\_230\_es

**Operating instructions and Declaration of conformity (de)** 334 kB, 04.09.2014

Code: mrl\_srb\_301st\_230\_de

**Operating instructions and Declaration of conformity (pt)** 316 kB, 28.11.2016

Code: mrl\_srb\_301st\_230\_pt

**BG-test certificate (de)** 51 kB, 28.02.2005

Code: z\_301p01

**TÜV certification (de, en)** 599 kB, 27.09.2016

Code: z\_srbp07

**CCC certification (cn)** 82 kB, 24.09.2015

Code: q\_srbp06

**CCC certification (en)** 118 kB, 24.09.2015

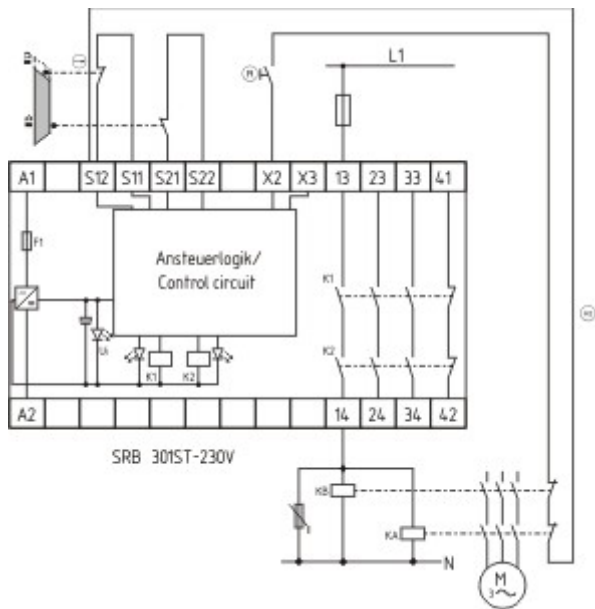
Code: q\_srbp05

**EAC certification (ru)** 833 kB, 05.10.2015

Code: q\_6042p17\_ru

## Images

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Wiring example

K.A. Schmersal GmbH & Co. KG, Möddinghofe 30, D-42279 Wuppertal  
 The data and values have been checked thoroughly. Technical modifications and errors excepted.  
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