

Datasheet - SRB301ST-24V-(V.2)



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



- Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
- Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
- Fit for signal evaluation of outputs of safety magnetic switches
- 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-24V-(V.2)
Article number	103006151
EAN Code	4030661476179
eCl@ss	27-37-19-01

Approval

Approval



Classification

Standards	EN ISO 13849-1, IEC 61508, EN 60947-5-1
PL	up e (STOP 0)
Control category	up 4 (STOP 0)
DC	99% (STOP 0)
CCF	> 65 points
PFH value	≤ 2,0 x 10 ⁻⁸ /h (STOP 0)
SIL	up 3 (STOP 0)
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-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

Global Properties

Permanent light	SRB301ST
Standards	IEC/EN 60204-1, EN 60947-5-1, EN ISO 13849-1, IEC 61508, EN 81-20/-50
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	AgSn0, self-cleaning, positive action
Weight	240
Start conditions	Automatic or Start button (Optional monitored)
Start input (Y/N)	Yes
Feedback circuit (Y/N)	Yes
Start-up test (Y/N)	No
Automatic reset function (Y/N)	Yes
Reset with edge detection (Y/N)	Yes
Pull-in delay	
- ON delay with automatic start	typ. 100 ms
- ON delay with reset button	typ. 15 ms
Drop-out delay	
- Drop-out delay in case of power failure	typ. 100 ms
- Drop-out delay in case of emergency stop	typ. 25 ms / ≤ 32 ms

Mechanical data

Connection type	Screw connection, plug-in
Cable section	
- Min. Cable section	0,25
- Max. Cable section	2.5
Pre-wired cable	rigid or flexible
Tightening torque for the terminals	0,6
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
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Ambient conditions

Ambient temperature

- Min. environmental temperature	-25 °C
- Max. environmental temperature	+60 °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	
- Max. rated DC voltage for controls	20.4
- Max. rated DC voltage for controls	28.8
Rated AC voltage for controls, 50 Hz	
- Min. rated AC voltage for controls, 50 Hz	20.4
- Max. rated AC voltage for controls, 50 Hz	26.4
Rated AC voltage for controls, 60 Hz	
- Min. rated AC voltage for controls, 60 Hz	20.4
- Max. rated AC voltage for controls, 60 Hz	26.4
Contact resistance	max. 100 mΩ
Power consumption	2 W; 4.9 VA
Type of actuation	AC/DC
Switch frequency	max. 5 HZ
Rated operating voltage U_e	24 VDC -15% / +20%, residual ripple max. 10% 24 VAC -15% / +10%
Operating current I_e	0,09 A
Frequency range	50 / 60 HZ
Electronic protection (Y/N)	Yes
Fuse rating for the operating voltage	Internal electronic trip, tripping current F1: > 0,5 A; tripping current (S11, S21): > 50 mA Reset after disconnection of supply voltage
Bridging in case of voltage drops	typ. 80 ms

Inputs

Monitored inputs

- Short-circuit recognition (Y/N)	Yes
- 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 ² ; 2500 m with 2.5 mm ²
Conduction resistance	max. 40 Ω






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, 8 A ohmic (inductive in case of appropriate protective wiring) min. 10 V, 10 mA
- Switching capacity of the auxiliary contacts	24 VDC, 2 A
Fuse rating	
- Protection of the safety contacts	8 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
Note on the utilisation category	Residual current at ambient temperature up to: - 45°C = 24 A; - 55°C = 18 A; - 60°C = 12 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

LED switching conditions display (Y/N)	Yes
Number of LED's	5
LED switching conditions display	
- The integrated LEDs indicate the following operating states.	
- Position relay K1	
- Position relay K2	
- Supply voltage	
- Internal operating voltage Ui	
- QS: cross-wire short detection status (LED on when cross-wire short detection active)	

Miscellaneous data

Applications	 Emergency-Stop button
	 Guard system
	 Pull-wire emergency stop switches
	 Safety sensor
	 Safety light curtain

Dimensions

Dimensions

- Width	22.5 mm
- Height	120 mm
- Depth	121 mm

notice

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

notice - Wiring example

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 cross-short, cable break and earth leakages in the monitoring circuit.

F1 = hybrid fuse

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.

Switch setting: The cross-wire short detection function (factory default) is programmed by means of the switch located underneath the front cover of the module:

Pposition nQS (top):

no cross-wire short protection, suitable for 1-channel applications and applications with outputs with potential in the control circuits.

Position QS (bottom):

cross-wire short protection, suitable for 2-channel applications without outputs with potential in the control circuits.

For 1-channel control, connect NC contact to S11/S12 and bridge S12/S22 (QS-switch = nQS)

Connect potential p-type outputs of safety light grids/curtains to S12/S22. The devices must have the same reference potential. (QS-switch = nQS)

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

Operating instructions and Declaration of conformity (it) 399 kB, 04.10.2017

Code: mrl_srb_301st_v2v3_it

Operating instructions and Declaration of conformity (es) 407 kB, 17.10.2017

Code: mrl_srb_301st_v2v3_es

Operating instructions and Declaration of conformity (en) 387 kB, 27.09.2017

Code: mrl_srb_301st_v2v3_en

Operating instructions and Declaration of conformity (cs) 407 kB, 06.11.2015

Code: mrl_srb_301st_v2v3_cs

Operating instructions and Declaration of conformity (pl) 423 kB, 01.03.2018

Code: mrl_srb_301st_v2v3_pl

Operating instructions and Declaration of conformity (pt) 407 kB, 18.01.2018

Code: mrl_srb_301st_v2v3_pt

Operating instructions and Declaration of conformity (jp) 641 kB, 16.03.2017

Code: mrl_srb_301st_v2v3_jp

Operating instructions and Declaration of conformity (fr) 410 kB, 26.10.2017

Code: mrl_srb_301st_v2v3_fr

Operating instructions and Declaration of conformity (cn) 560 kB, 23.11.2018

Code: mrl_srb_301st_v2v3_cn

Operating instructions and Declaration of conformity (de) 374 kB, 27.09.2017

Code: mrl_srb_301st_v2v3_de

Operating instructions and Declaration of conformity (nl) 406 kB, 11.07.2018

Code: mrl_srb_301st_v2v3_nl

Operating instructions and Declaration of conformity (sv) 376 kB, 07.08.2015

Code: mrl_srb_301st_v2v3_sv

Wiring example (99) 129 kB, 15.10.2013

Code: ksr31315

Wiring example (99) 128 kB, 15.10.2013

Code: ksr31314

TÜV certification (de, en) 599 kB, 25.09.2017

Code: z_srbp03

TÜV certification (de) 1 MB, 07.03.2013

Code: z_s30p01

TÜV certification (de, en) 464 kB, 27.09.2016

Code: z_301p02

CCC certification (en) 739 kB, 24.07.2017

Code: q_srbp03

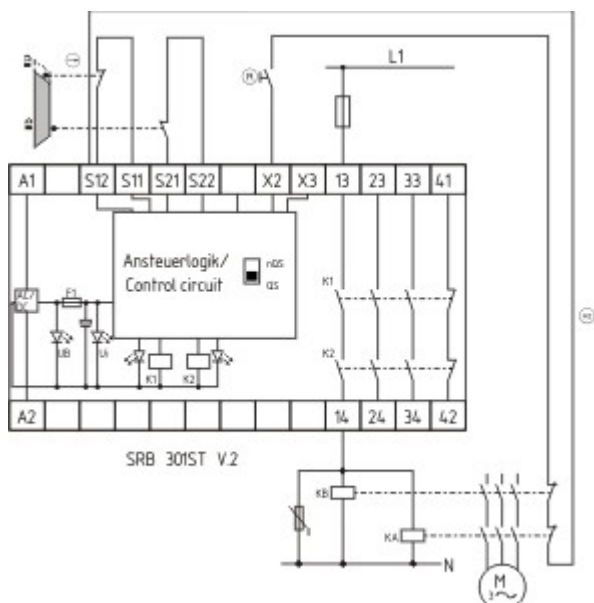
CCC certification (cn) 738 kB, 24.07.2017

Code: q_srbp04

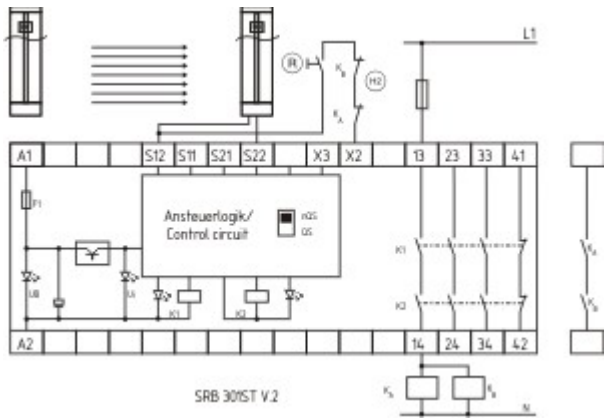
EAC certification (ru) 1 MB, 15.03.2018

Code: q_aesp01

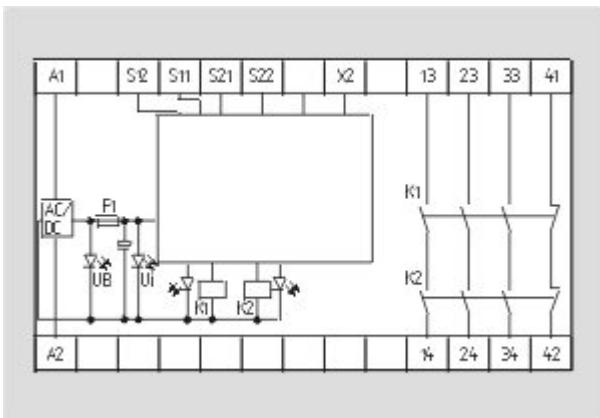
Images



Wiring example



Wiring example



Internal wiring diagram

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The data and values have been checked thoroughly. Technical modifications and errors excepted.

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