Datasheet - SRB504ST

Guard door monitors and Safety control modules for Emergency Stop applications / General Purpose safety controllers (Series PROTECT SRB) / SRB504ST

☒ Preferred typ

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

- 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
- 5 safety contacts, STOP 0
- 4 Signalling outputs

Ordering details

Product type description	SRB504ST
Article number	101190714
EAN Code	4250116202300
Replaced article number 101193473	
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 (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	SRB504ST
Standards	IEC/EN 60204-1, EN 60947-5-1, EN ISO 13849-1, IEC 61508
Compliance with the Directives (Y/N) CE	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, Ag-Ni, self-cleaning, positive action
Weight	340
Start conditions	Automatic or Start button (Optional monitored)
Start input (Y/N)	Yes
Feedback circuit (Y/N)	Yes
Start-up test (Y/N)	No
Reset after disconnection of supply voltage (Y/N)	Yes
Automatic reset function (Y/N)	Yes
Reset with edge detection (Y/N)	Yes
Pull-in delay	
- ON delay with automatic start	typ. 250 ms
- ON delay with reset button	typ. 20 ms
Drop-out delay	
- Drop-out delay in case of power failure	typ. 80 ms
- Drop-out delay in case of emergency stop	typ. 30 ms / max. 36 ms

Mechanical data

Connection type	Screw connection
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
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	+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	III To VDE 0110
- Degree of pollution	2 To VDE 0110

Electromagnetic compatibility (EMC)

EMC rating	conforming to EMC Directive

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	3.2 W; 7.1 VA, plus signalling output
Type of actuation	AC/DC
Rated operating voltage U_e	24 VDC −15% / +20%, residual ripple max. 10% 24 VAC −15% / +10%
Frequency range	50 / 60 HZ
Electronic protection (Y/N)	Yes
Fuse rating for the operating voltage	Internal electronic trip, tripping current F1: > 2.5 A, F2: > 50 mA (S11-S31), > 800 mA (x4)
Current and tension on control circuits	
- S11, S12, S21, S22, S31, S32	24 VDC, Test current: 10 mA
- X1, X2	24 VDC, Start pulse: 350 mA / 15 ms
- X3, X4	24 VDC, Start pulse: 130 mA / 80 ms
- X4, X5	24 VDC, Start pulse: 140 mA / 15 ms
Bridging in case of voltage drops	typ. 70 ms

Inputs

Monitored inputs	
- Short-circuit recognition (Y/N)	optional
- Wire breakage detection (Y/N)	Yes
- Earth connection detection (Y/N)	Yes
Number of shutters	0 piece
Number of openers	2 piece
Cable length	850 m with 1.5 mm²;

	1400 m with 2.5 mm²
Conduction resistance	max. 40 Ω

Outputs

Stop category	0
Number of safety contacts	5 piece
Number of auxiliary contacts	1 piece
Number of signalling outputs	3 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
- Switching capacity of the signaling/diagnostic outputs	24 VDC, 0,1 A
Fuse rating	
- Protection of the safety contacts	8 A slow blow
- Fuse rating for the auxiliary contacts	2 A slow blow
- Fuse rating for the signaling/diagnostic outputs	0,1 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 = 18 A; - 55°C = 15 A; - 60°C = 12 A
Number of undelayed semi-conductor outputs with signaling function	3 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.	5 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	6
LED switching conditions display	
- The integrated LEDs indicate the following operating states.	
- Position relay K1	
- Position relay K2	
- Position relay K3	
- Position relay K4	
- Supply voltage	
- Internal operating voltage Ui	

Miscellaneous data

Applications	 Emergency-Stop button  Guard system  Pull-wire emergency stop switches

 Safety sensor

 Safety light curtain

Dimensions

Dimensions	
- Width	45 mm
- Height	100 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

2 channel control shown for a guard-door monitor with two contacts, of which at least one contact has positive break, with external reset button (R).

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.

(H2) = Feedback circuit

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

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

Documents

Operating instructions and Declaration of conformity (de) 410 kB, 21.08.2017
Code: mrl_srb_504st_de

Operating instructions and Declaration of conformity (nl) 426 kB, 10.10.2018
Code: mrl_srb_504st_nl

Operating instructions and Declaration of conformity (pl) 443 kB, 10.10.2018
Code: mrl_srb_504st_pl

Operating instructions and Declaration of conformity (jp) 983 kB, 10.10.2018
Code: mrl_srb_504st_jp

Operating instructions and Declaration of conformity (it) 415 kB, 10.10.2018
Code: mrl_srb_504st_it

Operating instructions and Declaration of conformity (da) 442 kB, 23.01.2018
Code: mrl_srb_504st_da

Operating instructions and Declaration of conformity (fr) 448 kB, 18.10.2017
Code: mrl_srb_504st_fr

Operating instructions and Declaration of conformity (pt) 427 kB, 10.10.2018
Code: mrl_srb_504st_pt

Operating instructions and Declaration of conformity (es) 434 kB, 28.08.2017
Code: mrl_srb_504st_es

Operating instructions and Declaration of conformity (en) 422 kB, 21.08.2017

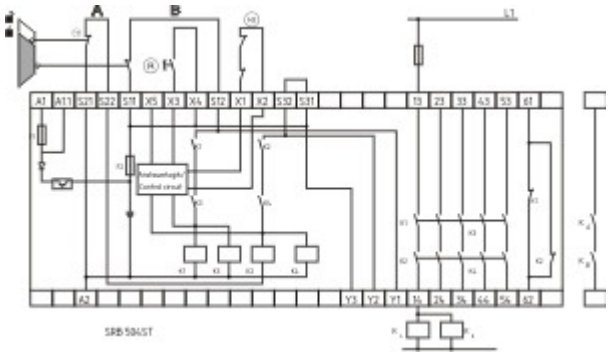
Code: mrl_srb_504st_en

Wiring example (99) 98 kB, 16.04.2013
Code: ksrb5l01

TÜV certification (de, en) 650 kB, 18.12.2017
Code: z_srbp02

EAC certification (ru) 1 MB, 15.03.2018
Code: q_aesp01

Images



Wiring example

K.A. Schmersal GmbH & Co. KG, Möddinghofe 30, D-42279 Wuppertal

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