

<meta name='Description' content='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,3 safety contacts, STOP 0; 2 safety contacts, STOP 1 (adjustable 1 ... 30 s),4 Signalling outputs,Optional: Short-circuit recognition, Manual reset with edge detection in fail-safe circuit, Automatic reset function' />

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## Datasheet - SRB 324ST-24V



Guard door monitors and Safety control modules for Emergency Stop applications / General Purpose safety controllers (Series PROTECT SRB) / SRB 324ST

Preferred typ



- 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
- 3 safety contacts, STOP 0; 2 safety contacts, STOP 1 (adjustable 1 ... 30 s)
- 4 Signalling outputs
- Optional: Short-circuit recognition, Manual reset with edge detection in fail-safe circuit, Automatic reset function

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

### Ordering details

Product type description	SRB 324ST-24V
Article number	101179876
EAN code	4030661313160

### Approval

Approval



BG



USA/CAN

### Classification


Standards	EN ISO 13849-1, IEC 61508, EN 60947-5-1
PL	up e (STOP 0) bis d (STOP 1)
Control category	up 4 (STOP 0) bis 3 (STOP 1)

DC	99% (STOP 0) > 60% (STOP 1)
CCF	> 65 points
PFH value	$\leq 2,0 \times 10^{-8}/h$ (STOP 0) $\leq 2,0 \times 10^{-7}/h$ (STOP 1)
SIL	up 3 (STOP 0) bis 2 (STOP 1)
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 %	75.067	7,0 min
80 %	30.918	17,0 min
100 %	12.223	43,0 min

## Global Properties

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Product name	SRB 324ST
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	, Ag-Ni, self-cleaning, positive action
Weight	435 g
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	250 ms
- ON delay with reset button	20 ms
Drop-out delay	
- Drop-out delay in case of power failure	80 ms
- Drop-out delay in case of emergency stop	30 ms / $\leq 36$ ms

## Mechanical data

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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
resistance to shock	30 g / 11 ms

## Ambient conditions

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### 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)

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EMC rating conforming to EMC Directive

## Electrical data

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### Rated DC voltage for controls

- Min. rated DC voltage for controls 20.4 V
- Max. rated DC voltage for controls 28.8 V

### Rated AC voltage for controls, 50 Hz

- Min. rated AC voltage for controls, 50 Hz 20.4 V
- Max. rated AC voltage for controls, 50 Hz 26.4 V

### Rated AC voltage for controls, 60 Hz

- Min. rated AC voltage for controls, 60 Hz 20.4 V
- Max. rated AC voltage for controls, 60 Hz 26.4 V

### 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%

### Operating current $I_e$

### Frequency range

50 Hz / 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 (x 4);  
Reset after disconnection of supply voltage

### 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

70 ms

## Inputs

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## 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	1-channel without cross-wire detection: 850 m with 1.5 mm <sup>2</sup> 1400 m with 2.5 mm <sup>2</sup> 2-channel with/ without cross-wire detection
Conduction resistance	max. 40 Ω

## Outputs

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Stop category	0 / 1
- Stop category 1	Residual current at ambient temperature up to: - 45°C = 12 A; - 55°C = 10 A; - 60°C = 8 A
- Stop category 0	Residual current at ambient temperature up to: - 45°C = 18 A; - 55°C = 15 A; - 60°C = 12 A
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	(13-14; 23-24; 33-34) max. 250 V, 8 A ohmic (inductive in case of appropriate protective wiring) (47-48; 57-58) max. 250 V, 6 A ohmic (inductive in case of appropriate protective wiring)
- Switching capacity of the auxiliary contacts	61-62: 24 VDC / 2 A
- Switching capacity of the signaling/diagnostic outputs	Y1-Y3: 24 VDC / 100 mA, residual current: 200 mA
Fuse rating	
- Protection of the safety contacts	8 A slow blow (13-14; 23-24) 6.3 A slow blow (37-38)
- Fuse rating for the auxiliary contacts	2 A slow blow
- Fuse rating for the signaling/diagnostic outputs	500 mA ( Internal electronic trip F3)
Utilisation category To EN 60947-5-1	13-14, 23-24, 33-34: AC-15: 230 V / 6 A, DC-13: 24 V / 6 A 37-38, 47-48: AC-15: 230 V / 3 A, DC-13: 24 V / 2 A
Note on the utilisation category	
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.	3 piece
Number of secure, delayed semi-conductor outputs with signaling function	0 piece
Number of secure, delayed outputs with signaling function (with contact).	2 piece

## LED switching conditions display

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LED switching conditions display (Y/N)	Yes
Number of LED's	6 piece
LED switching conditions display	
- The integrated LEDs indicate the following operating states.	
- Position relay K4	

- Position relay K1
- Position relay K2
- Position relay K3
- Supply voltage
- Internal operating voltage  $U_i$

## Miscellaneous data

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### Applications



Guard system



Emergency-Stop button



Pull-wire emergency stop switches



Safety light curtain



Safety sensor

## Dimensions

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### Dimensions

- Width 45 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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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

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**Operating instructions and Declaration of conformity** (pt) 602 kB, 01.10.2013

Code: mrl\_srb\_324st\_v3\_pt

**Operating instructions and Declaration of conformity** (es) 601 kB, 01.10.2013

Code: mrl\_srb\_324st\_v3\_es

**Operating instructions and Declaration of conformity** (jp) 1 MB, 26.06.2012

Code: mrl\_srb\_324st\_v3\_jp

**Operating instructions and Declaration of conformity** (de) 599 kB, 18.03.2013

Code: mrl\_srb\_324st\_v3\_de

**Operating instructions and Declaration of conformity** (fr) 1 MB, 26.06.2012

Code: mrl\_srb\_324st\_v3\_fr

**Operating instructions and Declaration of conformity** (en) 596 kB, 20.06.2013

Code: mrl\_srb\_324st\_v3\_en

**Operating instructions and Declaration of conformity** (it) 1 MB, 26.06.2012

Code: mrl\_srb\_324st\_v3\_it

**Operating instructions and Declaration of conformity** (it) 1 MB, 03.01.2012

Code: mrl\_srb\_324st\_v3\_it

**Operating instructions and Declaration of conformity** (nl) 1 MB, 17.10.2012

Code: mrl\_srb\_324st\_V3\_nl

**Wiring example** (99) 21 kB, 04.08.2008

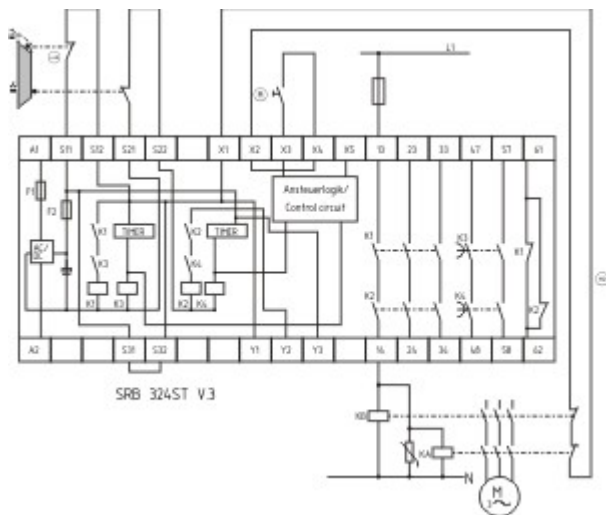
Code: ksr3110

**TÜV certification** (de, en) 226 kB, 04.09.2012

Code: z\_srbp02

## Images

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Wiring example

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

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