

## Datasheet - SRB 301MC-24V

Guard door monitors and Safety control modules for  
Emergency Stop applications / General Purpose safety  
controllers (Series PROTECT SRB) / SRB 301MC



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

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

### Ordering details

Product type description	SRB 301MC-24V
Article number	1190684
EAN code	4030661356082

### 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	$\leq 2,0 \cdot 10^{-8}/h$ (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.



## Global Properties

---

Product name	SRB 301MC
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	250 g
Start conditions	Automatic or Start button
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)	No
Pull-in delay	
- ON delay with automatic start	100 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	≤ 20 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)	No
Mechanical life	10.000.000 operations
Electrical lifetime	Derating curve available on request
resistance to shock	30 g / 11 ms
Resistance to vibration To EN 60068-2-6	10...55 Hz, Amplitude 0,35 mm, ± 15 %

## 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 IEC/EN 60664-1
- Degree of pollution	2 To IEC/EN 60664-1

### Electromagnetic compatibility (EMC)

---

EMC rating	conforming to EMC Directive
------------	-----------------------------

### Electrical data

---

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	2 W; 4.9 VA
Type of actuation	AC/DC
Switch frequency	
Rated operating voltage $U_e$	24 VDC -15% / +20%, residual ripple max. 10% 24 VAC -15% / +10%
Operating current $I_e$	
Frequency range	50 / 60 Hz
Electronic protection (Y/N)	Yes
Fuse rating for the operating voltage	Internal electronic trip, tripping current > 0,5 A, Reset after approximately 1 second/s
Current and tension on control circuits	
- S11, S12, S21, S22	24 VDC, Test current: 10 mA
Bridging in case of voltage drops	80 ms

### Inputs

---

<b>Monitored inputs</b>	
- 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	1500 m with 1.5 mm <sup>2</sup> ;

Conduction resistance	2500 m with 2.5 mm <sup>2</sup> max. 40 Ω
-----------------------	--

## Outputs

---

Stop category	0 / 1
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
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	4 piece
LED switching conditions display	
- The integrated LEDs indicate the following operating states.	
- Position relay K1	
- Position relay K2	
- Supply voltage	
- Internal operating voltage U <sub>i</sub>	

## Miscellaneous data

---

Applications



Emergency-Stop button



Guard system



Pull-wire emergency stop switches



Safety light curtain



Safety sensor

## Dimensions

---

### Dimensions

- Width	22.5 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

---

To secure a guard door up to PL 4 and Category #03#

Monitoring 1 guard door(s), each with a magnetic safety sensor of the BNS range

The feedback circuit monitors the position of the contactors Ka and Kb.

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:

Position 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 X1/X2. 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** (de) 1 MB, 04.10.2010

Code: mrl\_srb\_301mc\_de

**Operating instructions and Declaration of conformity** (br) 830 kB, 28.10.2010

Code: mrl\_srb\_301mc\_br

**Operating instructions and Declaration of conformity** (fr) 717 kB, 17.01.2011

Code: mrl\_srb\_301mc\_fr

**Operating instructions and Declaration of conformity** (it) 718 kB, 18.01.2011

Code: mrl\_srb\_301mc\_it

**Operating instructions and Declaration of conformity** (nl) 722 kB, 24.01.2011

Code: mrl\_srb\_301mc\_nl

**Operating instructions and Declaration of conformity** (es) 715 kB, 24.01.2011

Code: mrl\_srb\_301mc\_es

**Operating instructions and Declaration of conformity** (en) 1 MB, 04.10.2010

Code: mrl\_srb\_301mc\_en

**Wiring example** (99) 17 kB, 04.08.2008

Code: ksr3118

**TÜV certification** (de, en) 556 kB, 31.03.2011

Code: z\_srbp01

**CCC certification** (cn) 199 kB, 03.05.2011

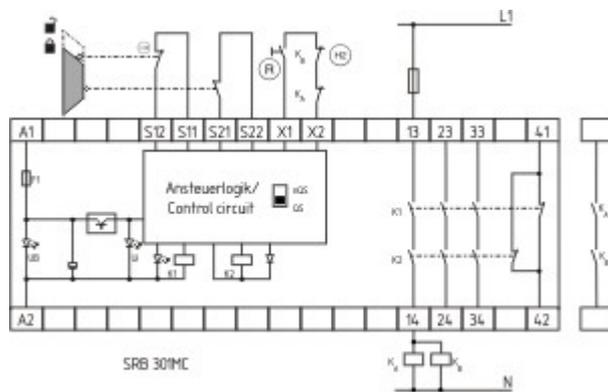
Code: q\_srbp04

**CCC certification** (en) 276 kB, 03.05.2011

Code: q\_srbp03

## Images

---



Wiring example

---

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

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

Generiert am 28.09.2011 - 12:33:00h Kasbase 1.5.5 DBI