

## Datasheet - SRB031MC-24V/1,1SEC



Guard door monitors and Safety control modules for Emergency Stop applications / General Purpose safety controllers (Series PROTECT SRB) / SRB 031MC



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

- Fit for signal evaluation of outputs of safety magnetic switches
- Drop-out delay can be set between 0,4 to 1,5 s
- 3 safety contacts, STOP 1
- 1 Signalling output
- 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

### Ordering details

Product type description	SRB031MC-24V/1,1SEC
Article number	101190685
EAN code	4250116202256

### Approval

Approval



BG



USA/CAN

### Classification

Standards	EN ISO 13849-1, IEC 61508, EN 60947-5-1
PL	bis d (STOP 1)
Control category	bis 3 (STOP 1)
DC	> 60% (STOP 1)
CCF	> 65 points
PFH value	$2 \times 10^{-7}/h$ (STOP 1)
SIL	bis 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-oply	t-cycle
20 %	525.800	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	SRB031MC
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
Reset after disconnection of supply voltage (Y/N)	No
Automatic reset function (Y/N)	Yes
Reset with edge detection (Y/N)	No
delay time	1.1 s
Pull-in delay	
- ON delay with automatic start	100 ms
Drop-out delay	
- Drop-out delay in case of power failure	delay time $\pm$ 30% for 24 VDC and Duty cycle > 3.5 s
- Drop-out delay in case of emergency stop	delay time $\pm$ 30% for 24 VDC and Duty cycle > 3.5 s

## 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)	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, $\pm$ 15 %

## 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	4 kV / 2
- 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)

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EMC rating	conforming to EMC Directive
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## 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	max. 2 W; 4.9 VA
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 > 0,5 A, Reset after approximately 1 second/s
- S11, S12, S21, S22	24 VDC, Test current: 10 mA
Bridging in case of voltage drops	approx. Time delay ± 30% for 24 VDC and Duty cycle > 3.5 s

## 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: 1500 m with 1.5 mm <sup>2</sup> ; 2500 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
Number of safety contacts	3 piece

Number of signalling outputs	1 piece
Switching capacity	
- Switching capacity of the safety contacts	max. 250 VAC, 8 A ohmic ( inductive in case of appropriate protective wiring)
- 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)	0 piece
Number of delayed semi-conductor outputs with signaling function.	0 piece
Number of delayed outputs with signalling function (with contact).	1 piece
Number of secure undelayed semi-conductor outputs with signaling function	0 piece
Number of secure, undelayed outputs with signaling function, with contact.	0 piece
Number of secure, delayed semi-conductor outputs with signaling function	0 piece
Number of secure, delayed outputs with signaling function (with contact).	3 piece





### LED switching conditions display

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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 $U_B$	
- Internal operating voltage $U_i$	

### Miscellaneous data

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

If only one external relay or contactor is used to switch the load, the system can be classified in Control Category 3 to EN 954-1, if exclusion of the fault "Failure of the external contactor" can be substantiated and is documented, e.g. by using a reliable down-rated contactor. A second contactor leads to an increase in the level of security by redundant switching to switch the load off.

**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

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**Operating instructions and Declaration of conformity** (pt) 367 kB, 23.09.2013

Code: mrl\_srb\_031mc\_pt

**Operating instructions and Declaration of conformity** (it) 596 kB, 02.01.2012

Code: mrl\_srb\_031mc\_it

**Operating instructions and Declaration of conformity** (pl) 352 kB, 11.09.2013

Code: mrl\_srb\_031mc\_pl

**Operating instructions and Declaration of conformity** (es) 721 kB, 12.10.2011

Code: mrl\_srb\_031mc\_es

**Operating instructions and Declaration of conformity** (de) 375 kB, 06.05.2013

Code: mrl\_srb\_031mc\_de

**Operating instructions and Declaration of conformity** (nl) 363 kB, 02.07.2013

Code: mrl\_srb\_031mc\_nl

**Operating instructions and Declaration of conformity** (en) 359 kB, 06.05.2013

Code: mrl\_srb\_031mc\_en

**Operating instructions and Declaration of conformity** (fr) 631 kB, 16.06.2011

Code: mrl\_srb\_031mc\_fr

**Operating instructions and Declaration of conformity** (jp) 516 kB, 23.09.2013

Code: mrl\_srb\_031mc\_jp

**Wiring example** (99) 22 kB, 23.07.2010

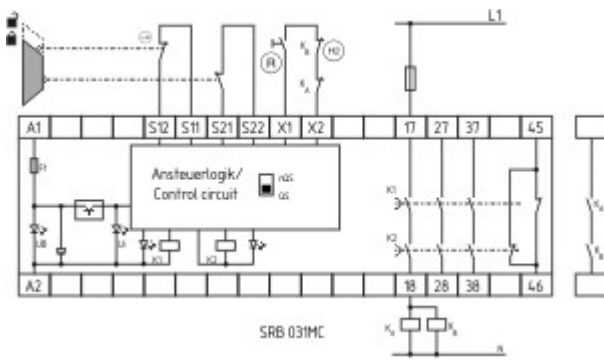
Code: ksr0101

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

Code: z\_srbp01

## 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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