

Multi-functional safety relay modules

PROTECT SRB-E



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PROTECT SRB-E

The configurable



User-friendly

- Up to 11 different applications can be selected
- Monitoring of all conventional safety switchgear
- Safety level of up to PL e / SIL 3 can be achieved
- Simple adjustment using rotary switch
- Selected application can be locked using seal
- Quick response time (< 10 ms) to request
- Excellent switching performance and short cycle times
- Slot-in termination with coding

SRB-E modules

Flexible

- 1 or 2 channel signal evaluation
- Contact configuration can be selected for the sensors
- Start / Reset functions with monitoring
- Input expanders for 4 sensors up to PL e
- Cascading using safe inputs
- Combined evaluation for 2 protective devices
- Two-hand control monitoring according to type IIIC
- STOP Category 0 and 1
- Up to 5 safety outputs
- Safety category 4, PL e semi-conductor outputs up to 5.5 A

Compact

- Installation width for all device variants 22.5 mm
- Up to 24 connecting terminals
- Up to 10 safe inputs and 5 safe outputs
- Up to 4 signalling outputs
- Holder for equipment label





Safe signal processing for a range of applications

All eight variants of the new range of PROTECT SRB-E safety relay modules can be used in applications up to Cat. 4 / PL e in accordance with EN ISO 13849-1 and SIL 3 in accordance with EN 62081 / IEC 61508.

A major advantage of the new SRB-E series is its multi-functionality which allows all the variants to be used with several dozen existing SRB modules. Each module can be configured for up to eleven different applications via a simple control element. All conventional safety sensors and electromechanical safety equipment can be monitored.

The drastic reduction in the number of variants and the clear display of the relevant functions makes it considerably easier for the machine manufacturer to select the right module for their particular application.

Adjustable configuration and applications

Rotary knob position	Reset button with edge monitoring	Cross-wire monitoring active	Contact configuration for safety switchgear	Sensor monitoring for synchronicity
1	Yes	Yes	NC / NC	Yes
2	Yes	Yes	NC / NC	No
3	Yes	No	NC / NC	Yes
4	Yes	No	NC / NC	No
5	Yes	Yes	NC / NO	Yes
6	Autostart	Yes	NC / NO	No
7	Autostart	Yes	NC / NC	Yes
8	Autostart	Yes	NC / NC	No
9	Autostart	No	NC / NC	Yes
10	Autostart	No	NC / NC	No
11	Function two-hand control type IIIC (SRB-E-201ST)		NC,NO / NC,NO	< 0.5 s (triggering of actuators)
C	Configuration Mode			

Adjusting configuration and application



The function is set using a rotary knob.



A second rotary switch is used to set the required drop-out delay time for the safety outputs.

Diagnostics / Status / Visualisation

Signalling of status messages using LED displays

LED	Function	Display type
RUN	- Operating voltage OK - Ready for operation - Not a valid application	Continuously lit Continuously lit Flashes
In 1	- Time window for synchronicity exceeded - Second channel, input S22 has not opened	Flashes quickly Flashes slowly
In 2	- Input S22 closed - Time window for synchronicity exceeded - Second channel, input S12 has not opened	Continuously lit Flashes quickly Flashes slowly
Out	- Safety outputs ON - No release signal on input X7 - Safety outputs waiting for start (input X2) - Return circuit not closed (input X3)	Continuously lit Flashes quickly Flashes slowly Flashes slowly

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Errors and fault sources are indicated using flashing signals

LED	Error cause	Short flash	Long flash
ERR	Operating voltage too low	1	1
	Operating voltage too high	1	2
	Invalid rotary switch setting	1	3
	External voltage on output Q1	1	4
	External voltage on output Q2	1	5
	Termination to GND on output Q1	2	6
	Termination to GND on output Q2	2	3
	Cross-wire between inputs S12 and S22	2	4
	Undefined level on X2, X3, X7, S12, S22	Differentiated flash codes	
	Rotary switch mode changed	Quick flashing signals on all LEDs	

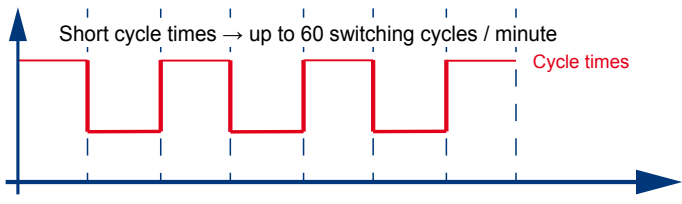
Connection option for all standard safety switchgear



Safe semi-conductor outputs Cat. 4 / PL e

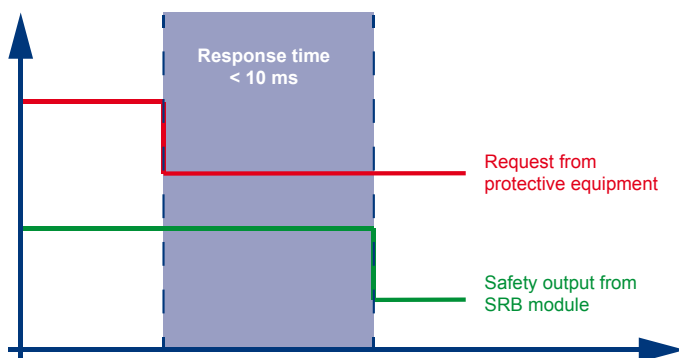
The **PROTECT SRB-E-201ST** variant is characterised by p-switching fail-safe performance semiconductor outputs with switching capacity of up to 5.5 A.

This variant is particularly suited to fail-safe applications with high switching capacity in conjunction with short cycle times, for example switching valve terminals or complete output modules.

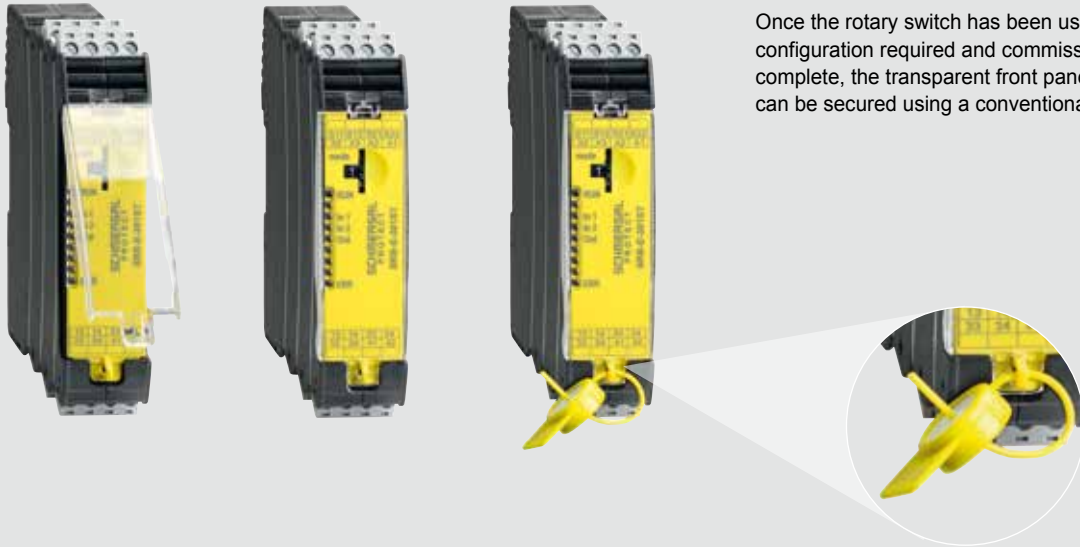


Very quick request response times

Very short response times for SRB-E modules of less than 10 ms from the request from the protective equipment to the safety output switching off.



Sealing the transparent front panel cover



Once the rotary switch has been used to set the configuration required and commissioning is complete, the transparent front panel cover can be secured using a conventional seal.

Equipment label

The equipment label allows individual project and device assignment without additional organisational tools. This allows quick assignment of the electrical equipment in the event of maintenance work or trouble-shooting.

Standard label signs can be glued or snapped into the space provided on the front of the housing.














Ordering example: PROTECT SRB-E-322ST-CC










Series	
E	Electronic
Number of safety outputs STOP 0	
2	2 safety outputs STOP 0
3	3 safety outputs STOP 0
4	4 safety outputs STOP 0
Number of safety outputs STOP 1	
0	0 safety output STOP 1
1	1 safety output STOP 1
2	2 safety outputs STOP 1
Number of signalling outputs	
1	1 signalling output
2	2 signalling outputs
4	4 signalling outputs

Connection	
	Plug-in screw connection
CC	Cage clamp
Design	
ST	Standard
LC	Low current
PE	Port extension




Applications and functions







PROTECT SRB-E Standard	Applications							Input signals				Start conditions
												Start button / autostart
SRB-E-201ST	■	■	■	■	■		■	▲	▲	▲	▲	▲
SRB-E-201LC	■	■	■	■	■			▲	▲	▲	▲	▲
SRB-E-301ST	■	■	■	■	■			▲	▲	▲	▲	▲
SRB-E-212ST	■	■	■	■	■			▲	▲	▲	▲	▲
SRB-E-322ST	■	■	■	■	■			▲	▲	▲	▲	▲
SRB-E-204ST	■	■	■	■	■	■		▲	▲	▲	▲	▲
SRB-E-204PE	■	■	■	■	■	■		▲	▲	▲	▲	■
Combination module for 2 safety guards												
SRB-E-402ST	■	■	■	■	■		■	▲	▲	▲	▲	▲






Key

	Safety guard monitoring		Pull-wire emergency stop switch / position switch		Input expander module for up to 4 sensors
	Magnetic safety sensors BNS		AOPD monitoring		Input signals: 1-channel
	Emergency stop monitoring		Two-hand control panels		Input signals: 2-channel

Technical data

Technical data	SRB-E-201LC	SRB-E-201ST	SRB-E-301ST
Supply voltage	24 VDC -20% / +20%	24 VDC -20% / +20%	24 VAC / VDC -20% / +20%
Diagnostic and status display	5 LED's	5 LED's	5 LED's
Number of safe inputs	5	5	4
Switching capacity of the safety contacts	-	-	3 x 230 V / 6 A
of the safe semi-conductor outputs	2 x 24 V / 2 A	2 x 24 V / 5.5 A	-
of the auxiliary contacts	-	-	1 x 24 V / 1 A
of the signalling outputs	1 x 24 V / 100 mA	1 x 24 V / 100 mA	-
Max. switching cycles / minute	60	60	20
Drop-out delay STOP 0		< 10 ms	
Dimensions (H x W x D)		98 x 22.5 x 115 mm	
Cable section (plug-in)		0.25 ... 2.5 mm ²	
Ambient temperature		-25 °C ... +60 °C	
Safety classification		PL e / SIL 3	
Approvals		  	

Start button with edge detection	Output contacts						Operating voltage	Type designation	Material number
	Safe STOP 0	Safe STOP 1		not safe					
▲							24 VDC	SRB-E-201ST	103008067
▲		2				1	24 VDC	SRB-E-201LC	103009970
▲	3				1		24 VAC/DC	SRB-E-301ST	103007672
▲	2			1		2	24 VDC	SRB-E-212ST	103007222
▲	3			2	1	1	24 VDC	SRB-E-322ST	103008184
▲		2				4	24 VDC	SRB-E-204ST	103009973
		2				4	24 VDC	SRB-E-204PE	103008070
▲	2	2			1	1	24 VDC	SRB-E-402ST	103007221

- | | | | | | |
|---|--------------------------------|--|--|---|----------|
|  | Input signals: antivalent |  | Safety output contacts, STOP 1 | ■ | Yes |
|  | Cross-wire detection |  | Non-safe output contacts: Auxiliary contacts | ▲ | Optional |
|  | Safety output contacts, STOP 0 |  | Non-safe output contacts: Semi-conductor | | |

SRB-E-212ST	SRB-E-322ST	SRB-E-204ST	SRB-E-204PE	SRB-E-402ST
24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
-20% / +20%	-20% / +20%	-20% / +20%	-20% / +20%	-20% / +20%
6 LED's	6 LED's	7 LED's	7 LED's	6 LED's
5	5	10	10	7
2 x	3 x	-	-	2 x
230 V / 6 A	230 V / 6 A	-	-	230 V / 6 A
1 x	2 x	2 x	2 x	2 x
24 V / 2 A	24 V / 2 A	24 V / 2 A	24 V / 2 A	24 V / 2 A
-	1 x	-	-	1 x
	24 V / 1 A			24 V / 1 A
2 x	1 x	4 x	4 x	1 x
24 V / 100 mA	24 V / 100 mA	24 V / 100 mA	24 V / 100 mA	24 V / 100 mA
20	20	60	60	20
< 10 ms				
98 x 22.5 x 115 mm				
0.25 ... 2.5 mm ²				
-25 °C ... +60 °C				
PL e / SIL 3				

