Multi-functional safety relay modules

PROTECT SRB-E

SCHMERSAL

Safe solutions for your industry

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.

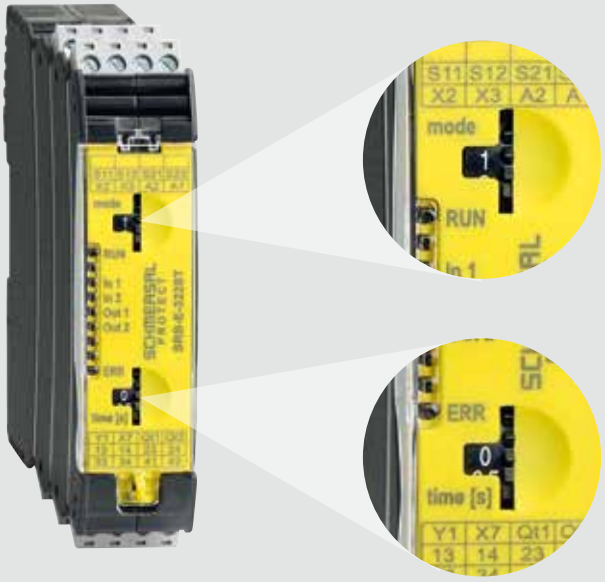
A major advantage of the new SRB-E series is its multi-functionality which allows all the variants to be used with several dozen existing SRB modules. Each module can be configured for up to eleven different applications via a simple control element. All conventional safety sensors and electromechanical 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	- Input S12 closed - Time window for synchronicity exceeded - Second channel, input S22 has not opened	Continuously lit 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

Errors and fault sources are indicated using flashing signals

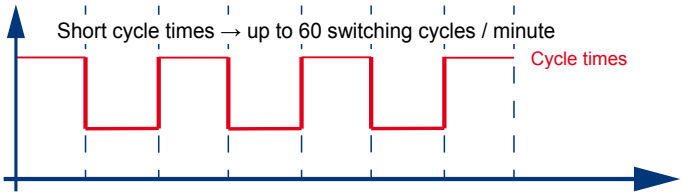
LED	Error cause	Short flash	Long flash
ERR	Operating voltage too low	1	1
	Operating voltage too high	1	2
	Invalid rotary switch setting	1	3
	External voltage on output Q1	1	4
	External voltage on output Q2	1	5
	Termination to GND on output Q1	2	6
	Termination to GND on output Q2	2	3
	Cross-wire between 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

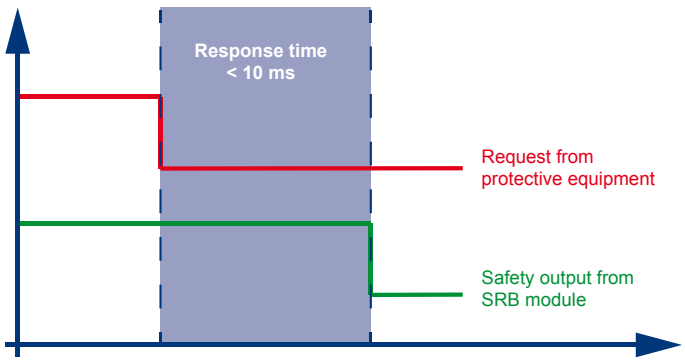
The **PROTECT SRB-E-201ST** variant is characterised by p-switching fail-safe performance semiconductor outputs with switching capacity of up to 5.5 A.

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.

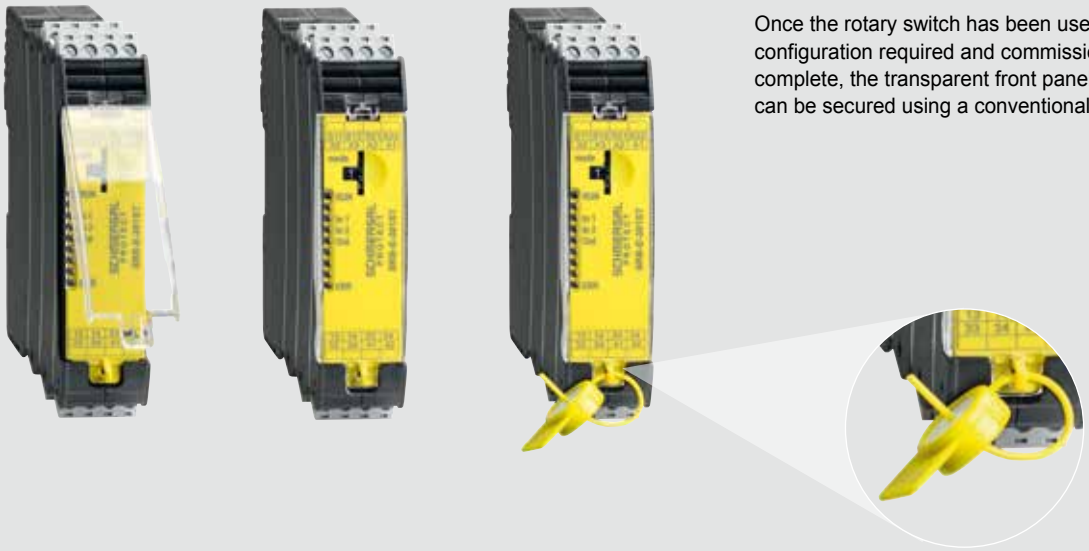


Very quick request response times

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

 Magnetic safety sensors BNS

 Emergency stop monitoring

 Pull-wire emergency stop switch / position switch

 AOPD monitoring

 Two-hand control panels

 Input expander module for up to 4 sensors

 Input signals: 1-channel

 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 mm²		
Ambient temperature	–25 °C … +60 °C		
Safety classification	PL e / SIL 3		
Approvals			

Start button with edge detection	Output contacts Safe STOP 0		Safe STOP 1		not safe		Operating voltage	Type designation	Material number
▲		2				1	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

Cross-wire detection

Safety output contacts, STOP 0

Safety output contacts, STOP 1

Non-safe output contacts: Auxiliary contacts

Non-safe output contacts: Semi-conductor

■ Yes

▲ Optional

SRB-E-212ST	SRB-E-322ST	SRB-E-204ST	SRB-E-204PE	SRB-E-402ST
24 VDC –20% / +20%	24 VDC –20% / +20%	24 VDC –20% / +20%	24 VDC –20% / +20%	24 VDC –20% / +20%
6 LED's	6 LED's	7 LED's	7 LED's	6 LED's
5	5	10	10	7
2 x 230 V / 6 A	3 x 230 V / 6 A	–	–	2 x 230 V / 6 A
1 x 24 V / 2 A	2 x 24 V / 2 A	2 x 24 V / 2 A	2 x 24 V / 2 A	2 x 24 V / 2 A
–	1 x 24 V / 1 A	–	–	1 x 24 V / 1 A
2 x 24 V / 100 mA	1 x 24 V / 100 mA	4 x 24 V / 100 mA	4 x 24 V / 100 mA	1 x 24 V / 100 mA
20	20	60	60	20
< 10 ms				
98 x 22.5 x 115 mm				
0.25 … 2.5 mm²				
–25 °C … +60 °C				
PL e / SIL 3				

The Schmersal Group

The privately-owned Schmersal Group has been developing and manufacturing products to enhance the safety at work for decades. The company was founded in 1945 and is represented by seven manufacturing sites on three continents and with its own companies and sales partners in more than 60 nations. In the demanding field of machine safety, the Schmersal Group is one of the international market and competence leaders. Based on a comprehensive product range, the company's approximately 2000 employees develop and design complete solutions for the safety of man and machine.

Customers of the Schmersal Group include „global players" from mechanical engineering and plant manufacturing and machine users. They benefit from the comprehensive know-how of the company when it comes to the standard-compliant integration of safety technology in the production processes. Furthermore, Schmersal has special sector expertise in the application fields that demand high quality and special characteristics from safety switching systems. These include food production, the packaging industry, machine tool construction, lift engineering, heavy industry and the automotive industry.

Against the backdrop of increasing numbers of standards and directives, tec.nicum offers a comprehensive range of safety services as part of the Schmersal Group services division: Certified functional safety engineers advise customers on selecting suitable safety equipment, CE compliance assessments and risk assessment, on a word-wide basis.

Product ranges

Safe switching and monitoring
- Guard door monitoring (Safety switches)
- Command devices with safety function
- Tactile safety devices
- Optoelectronic safety devices

Safe signal processing
- Safety relay components
- Safety controllers
- Safety bus systems

Automation
- Position detection
- Command and signalling devices

Industries

- Elevators and Escalators
- Packaging
- Food
- Automotive
- Machine tools
- Heavy industry

Services

- Application support
- CE conformity assessment
- Risk assessment
- Upgrading / Retrofit
- Technical planning and implementation
- Training courses

Competences

- Machine safety
- Automation
- Explosion protection
- Hygienic design

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