

# Schmersal

## Configurable Safety Relays



### SRB-E Electronic Safety Relays

The SRB-E modules are a series of multi-functional, configurable electronic safety relays. Each module can be adjusted to one of multiple preset configurations, which include selecting the type of reset, activating or deactivating cross-wire monitoring, and selecting the monitored contact configuration – all via the rotary dial on the front of the unit.

The SRB-E series provides a higher level of diagnostic capabilities with LEDs for both controller status as well as error fault codes, assisting with troubleshooting safety circuits.

Once the configurations have been set, the lid may be closed and sealed to prevent tampering with the settings.

### Features

- Modules with safe PNP outputs
- Modules with safe relay outputs
- Modules with monitoring of two-hand controls
- Modules with monitored input expansion up to Cat 4 PLE
- Fast cycle times (60 switching cycles/min)
- Modules with high 5.5A PNP switching capacity
- Snap-in blank equipment labels
- Removable terminal blocks for easy wiring

**Schmersal SRB-E Electronic Safety Relays Selection Chart**

|                                               |          |                     | Emergency stop monitoring | Safety guard monitoring | Pull wire emergency stop | Magnetic safety sensors | Light curtains | Input expander module for up to 4 sensors | Two hand control panels | Input signals: 1 channel | Input signals: 2 channel | Input signals: antivalent | Cross-wire detection | Start button/ autostart | Start button with edge detection | Safe Stop 0 dry contact | Safe Stop 0 semiconductor | Safe Stop 1 dry contact | Safe Stop 1 semiconductor | Not safe dry contact | Not safe semiconductor |
|-----------------------------------------------|----------|---------------------|---------------------------|-------------------------|--------------------------|-------------------------|----------------|-------------------------------------------|-------------------------|--------------------------|--------------------------|---------------------------|----------------------|-------------------------|----------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|----------------------|------------------------|
| Part Number                                   | Price    | Drawing             | ✓ ALLOWABLE               |                         |                          |                         |                |                                           |                         |                          |                          |                           |                      |                         |                                  |                         |                           |                         |                           |                      |                        |
|                                               |          |                     | Applications              |                         |                          |                         |                |                                           |                         | Input Signals            |                          |                           |                      | Start Conditions        |                                  | Output Contacts         |                           |                         |                           |                      |                        |
| <a href="#">SRB-E-201LC</a>                   | \$171.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         |                         |                           |                      | 1                      |
| <a href="#">SRB-E-201ST</a>                   | \$257.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           | ✓                       | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         |                         |                           |                      | 1                      |
| <a href="#">SRB-E-201ST-CC</a>                | \$269.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           | ✓                       | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         |                         |                           |                      | 1                      |
| <a href="#">SRB-E-301ST</a>                   | \$216.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    | ✓                       | ✓                                | 3                       |                           |                         |                           | 1                    |                        |
| <a href="#">SRB-E-301ST-CC</a>                | \$228.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    | ✓                       | ✓                                | 3                       |                           |                         |                           | 1                    |                        |
| <a href="#">SRB-E-402EM</a>                   | \$191.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    | ✓                       | ✓                                | 4                       |                           |                         |                           | 2                    |                        |
| <a href="#">SRB-E-232ST</a>                   | \$366.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         | 3                       |                           | 1                    | 1                      |
| <a href="#">SRB-E-232ST-CC</a>                | \$378.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         | 3                       |                           | 1                    | 1                      |
| <a href="#">SRB-E-322ST</a>                   | \$366.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                | 3                       |                           |                         | 2                         | 1                    | 1                      |
| <a href="#">SRB-E-322ST-CC</a>                | \$378.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                | 3                       |                           |                         | 2                         | 1                    | 1                      |
| <a href="#">SRB-E-204ST</a>                   | \$272.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        |                         | ✓              | ✓                                         |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         |                         |                           |                      | 4                      |
| <a href="#">SRB-E-204ST-CC</a>                | \$284.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              | ✓                                         |                         | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                |                         | 2                         |                         |                           |                      | 4                      |
| <a href="#">SRB-E-204PE</a>                   | \$147.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              | ✓                                         |                         | ✓                        | ✓                        | ✓                         | ✓                    | ✓                       |                                  |                         | 2                         |                         |                           |                      | 4                      |
| Combination Module for Two Protective Devices |          |                     |                           |                         |                          |                         |                |                                           |                         |                          |                          |                           |                      |                         |                                  |                         |                           |                         |                           |                      |                        |
| <a href="#">SRB-E-402ST</a>                   | \$338.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           | ✓                       | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                | 2                       | 2                         |                         |                           | 1                    | 1                      |
| <a href="#">SRB-E-402ST-CC</a>                | \$350.00 | <a href="#">PDF</a> | ✓                         | ✓                       | ✓                        | ✓                       | ✓              |                                           | ✓                       | ✓                        | ✓                        | ✓                         | ✓                    |                         | ✓                                | 2                       | 2                         |                         |                           | 1                    | 1                      |

#### Notes:

Stop Category 0 (Stop 0) means immediate loss of power. This is often referred to as an uncontrolled stop.

Stop Category 1 (Stop 1) means there is a delay before the loss of power. The control system should bring the machine to a stop prior to the loss of power. This is often referred to as a controlled stop with removal of power.

# Schmersal

## SRB-E-201 and SRB-E-301

### Configurable Safety Relays

**SRB-E-301ST**

#### Features

- Pluggable screw terminals or cage clamps
- SAFE STOP 0 function
- 1 or 2-channel control
- Start button / auto-start
- High 5.5 A PNP switching capacity (201ST only)
- Safe PNP outputs (201LC and 201ST only)
- Safe relay outputs (301ST only)
- Monitoring of two-hand controls (201ST only)

#### Safety Data

Values per EN ISO 13849-1,  
EN 62061, IEC 61508

|                                         |                                                                       |
|-----------------------------------------|-----------------------------------------------------------------------|
| <b>Performance Level</b>                | Up to e                                                               |
| <b>DC Average</b>                       | High                                                                  |
| <b>SIL CL</b>                           | Up to 3                                                               |
| <b>HFT (Hardware Failure Tolerance)</b> | 1                                                                     |
| <b>PFH(D)</b>                           | $\leq 2.66 \times 10^{-9}/h$<br>(valid for dual channel and 60% load) |

#### Schmersal SRB-E-201 and SRB-E-301 Selection Chart

| Part Number                           | Price    | Type         | Voltage    | Connection                | Configurations | Safety Input   | Safety Output | Monitoring Outputs | Drawing                    |
|---------------------------------------|----------|--------------|------------|---------------------------|----------------|----------------|---------------|--------------------|----------------------------|
| <a href="#"><u>SRB-E-201LC</u></a>    | \$171.00 | Safety relay | 24 VDC     | Pluggable screw terminals | 10             | 1 pair digital | 2 OSSD        | 1 status           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>SRB-E-201ST</u></a>    | \$257.00 |              | 24 VDC     |                           | 11             |                |               |                    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>SRB-E-201ST-CC</u></a> | \$269.00 |              | 24 VDC     | Push-in cage clamp        | 11             |                | 3 NO          | 1 NC               | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>SRB-E-301ST</u></a>    | \$216.00 |              | 24 VAC/VDC | Pluggable screw terminals | 12             |                |               |                    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>SRB-E-301ST-CC</u></a> | \$228.00 |              | 24 VAC/VDC | Push-in cage clamp        | 12             |                |               |                    | <a href="#"><u>PDF</u></a> |

#### Schmersal SRB-E-201 and SRB-E-301 Specifications

| Input/Output Specifications       |                                                                                           |
|-----------------------------------|-------------------------------------------------------------------------------------------|
| Operating Temperature             | -25°C [-13°F] to 60°C [140°F]                                                             |
| Storage Temperature               | -40°C [-40°F] to 85°C [185°F]                                                             |
| Altitude                          | 2000m [6562ft] max                                                                        |
| Vibration Resistance              | Tested to EN 60068-2-6                                                                    |
| Degree of Protection              | IP40                                                                                      |
| Housing                           | Glass-fiber reinforced thermoplastic, ventilated                                          |
| Weight                            | 130g [4.59 oz] for 201ST and 201LC<br>175g [6.17 oz] for 301ST                            |
| Agency Approvals and Standards    | CE, UL (listed number E57648)                                                             |
| Terminal Designation per EN 50005 | EN 60947-1                                                                                |
| Wire Fixing                       | Plug-in terminals                                                                         |
| Cable Section Min/Max             | 0.25 mm <sup>2</sup> [24 AWG] – 2.5 mm <sup>2</sup> [14 AWG]                              |
| Switching Frequency, Max          | 0.3 Hz                                                                                    |
| Input/Output Specifications       |                                                                                           |
| Operating Voltage Range           | 19.2 to 28.8 VDC for 201ST and 201LC<br>19.2 to 28.8 VAC/VDC for 301ST                    |
| Maximum Consumption               | 2.4 W (plus load of semiconductor outputs)                                                |
| Overvoltage Protection            | Category III                                                                              |
| Control Voltage on S11 etc.       | 24VDC                                                                                     |
| Control Current Over S12 etc.     | 8mA                                                                                       |
| Mechanical Life                   | 10 <sup>7</sup> operations                                                                |
| Contact Type                      | Ag-Ni, self-cleaning, positive drive                                                      |
| Operating Delay (Pull-In Delay)   | <150ms                                                                                    |
| Release Delay (Drop-Out Delay)    | <10ms                                                                                     |
| Switching Capacity                | 201ST: 24VDC, max 5.5 A<br>201LC: 24VDC, max 2.0 A<br>301ST: dry contacts, max 250V / 6 A |

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## SRB-E-201 and SRB-E-301

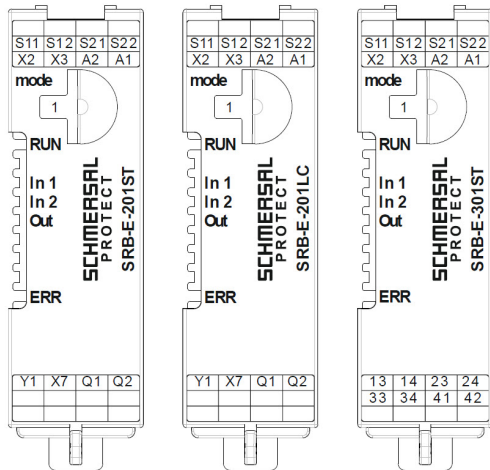
### Configurable Safety Relays



| Terminal Descriptions            |                                                       |
|----------------------------------|-------------------------------------------------------|
| Pin                              | Function                                              |
| A1                               | Operating voltage<br>+ 24 VDC<br>24 VAC (SRB-E-301ST) |
| A2                               | Operating voltage<br>0 V<br>24 VAC (SRB-E-301ST)      |
| X2                               | Input of start circuit                                |
| X3                               | Input feedback circuit                                |
| X7                               | Input release signal                                  |
| S11/S21                          | Test pulse outputs                                    |
| S12                              | Input channel 1                                       |
| S22                              | Input channel 2                                       |
| Y1                               | Signalling output (NC)                                |
| 41/42                            | Signalling contact (NC)                               |
| Q1/Q2<br>13/14<br>23/24<br>33/34 | Safety outputs                                        |

| LED Indication Descriptions                           |                                 |
|-------------------------------------------------------|---------------------------------|
| LED                                                   | Function                        |
| RUN                                                   | Operating voltage OK – RUN mode |
| ERR                                                   | Error code                      |
| In 1                                                  | High level at S12               |
| In 2                                                  | High level at S22               |
| Out                                                   | Outputs activated               |
| <b>NOTE: For flash codes, refer to product manual</b> |                                 |

| Configuration Selection                    |                                                   |                                     |                                     |                                                          |
|--------------------------------------------|---------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------------------------|
| <i>Rotary Knob Position</i>                | <i>Reset Button</i>                               | <i>Cross-Wire Monitoring Active</i> | <i>Input / Sensor Configuration</i> | <i>Monitoring of Sensor Channels For Synchronization</i> |
| C                                          | Configuration Mode                                |                                     |                                     |                                                          |
| 1                                          | Trailing Edge                                     | Yes                                 | NC / NC                             | Yes                                                      |
| 2                                          | Trailing Edge                                     | Yes                                 | NC / NC                             | No                                                       |
| 3                                          | Trailing Edge                                     | No                                  | NC / NC                             | Yes                                                      |
| 4                                          | Trailing Edge                                     | No                                  | NC / NC                             | No                                                       |
| 5                                          | Trailing Edge                                     | 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                        | Yes                                                      |
| SRB-E-301ST: Evaluation of safety mats SMS |                                                   |                                     |                                     |                                                          |
| 12                                         | Autostart                                         | No                                  | NC / NC                             | No                                                       |
| 13                                         | Trailing Edge                                     | No                                  | NC / NC                             | No                                                       |

**SRB-E-201ST****SRB-E-201LC****SRB-E-301ST**

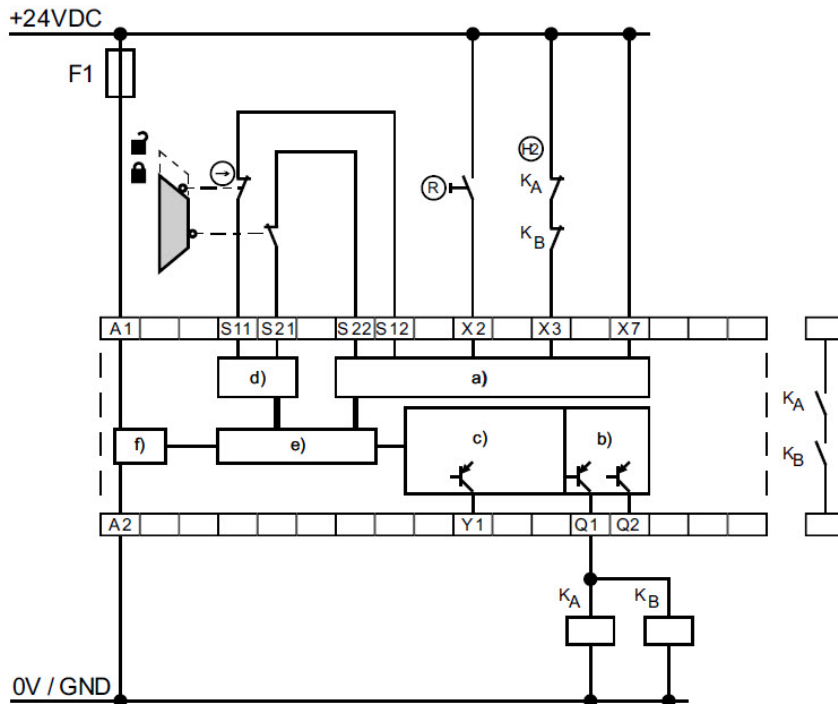
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## SRB-E-201 and SRB-E-301

### Configurable Safety Relays



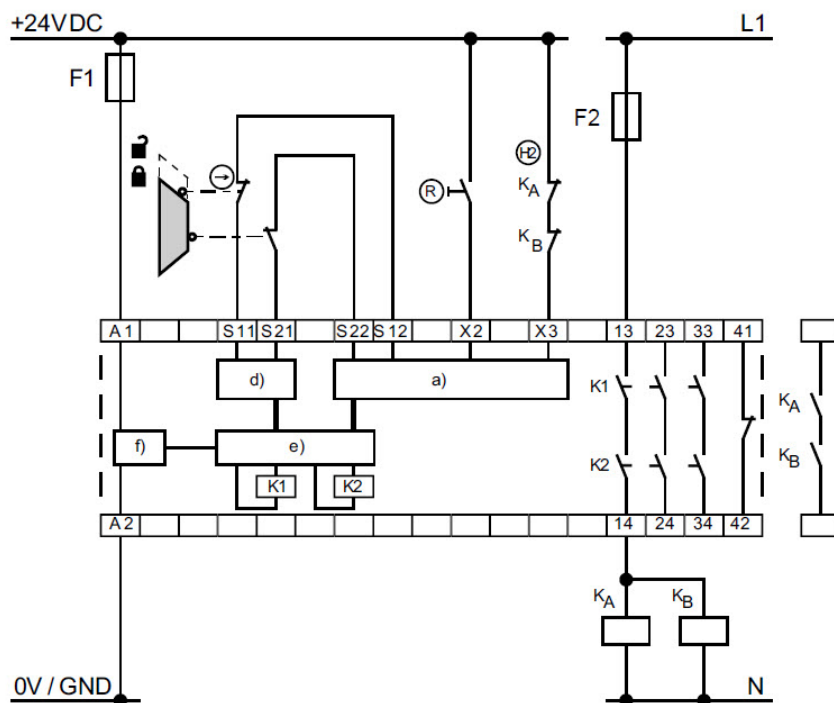
#### Application Example for SRB-E-201ST and SRB-E-201LC



#### Key

- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power

#### Application Example for SRB-E-301ST



#### Key

- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power

# Safety Products



*Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.*

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