



# SSP

Safety System Products

## S2 series

Standard safety relay 1 safety function

Your advantages

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we simplify safety



## Safety System Products

### S2 series

**Monitoring of:** • [Potential-free](#) signals

- OSSD signals

**Functions:** • Manual or automatic reset

- EDM (External Device Monitoring)

**Safety contacts:** • 3 x No contact DC13, 4A

**Signal contacts:** • 1 x Opener 24 VDC / 1 A

- Setting via rotary switch

#### General data

|                       |                               |
|-----------------------|-------------------------------|
| Type designation      | S2 series                     |
| Item number           | SP-K-70-001-00                |
| Interference immunity | to EMC Directive              |
| Mounting              | standard DIN rail to EN 60715 |
| Terminal designations | EN 60947-1                    |
| PFHD relay output     | $\leq 1.25 \times 10^8$ / h   |
| PFDavg relay output   | $\leq 5.3 \times 10^5$        |
| DC                    | high                          |

#### Safety data

|                                |                                    |
|--------------------------------|------------------------------------|
| Category (EN ISO 13849-1:2015) | Cat. 4                             |
| SIL (acc. IEC 62061)           | suitable for applications in SIL 3 |
| CCF (ISO 13849-1)              | > 65 points                        |

#### Environmental conditions

|   |                                       |
|---|---------------------------------------|
| Ambient temperature                     | -25 °C ... +60 °C (non condensing) °C |
| Resistance to shock                     | 30 g/11 ms                            |
| Max. storage temperature                | -40 °C ... +85 °C (non condensing) °C |
| Resistance to vibrationsto EN 60068-2-6 | 10 ... 55 Hz, Amplitude 0.35 mm       |



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|                     |              |
|---------------------|--------------|
| Altitude            | max. 2,000 m |
| Contamination level | 2            |

#### Electrical data

|                                     |  |
|-------------------------------------|--|
| Rated operating voltage Ue          | 24 VDC / 24 VAC -20%/+20% V  |
| Frequency range                     | 50 Hz/60 Hz  |
| Power Supply                        | SELV-Netzteil network as per DIN EN 60950; safety transformer as per DIN EN 61558-2-6 (AC); mains power supply must harmonise with device safety (characteristic/melting property) so that triggering is assured |
| Power consumption                   | 2.4 W, 7 VA  |
| Protection of the operating voltage | we recommend a circuit breaker type Z (max. 16 A) or a fine fuse (max. 15 A, delayed action)   |
| UL Rating of external fuse:         | max. 16 A, only use fuses in accordance with UL 248 series   |

#### Isolation parameters acc. to IEC 60664-1

##### Rated insulation voltage Ui

|                   |       |
|-------------------|-------|
| - safety contacts | 250 V |
| Safety outputs    | 50 V  |

##### Rated impulse withstand voltage Uimp

|                                     |           |
|-------------------------------------|-----------|
| - safety contacts 13-14, 23-24      | 6 kV      |
| - safety contact 33-34              | 4 kV      |
| -Safety outputs                     | 0.8 kV    |
| Overvoltage category                | III       |
| Pick-up delay                       | < 150 ms  |
| Dropout delay emergency-stop        | < 10 ms   |
| Dropout delay power failure         | < 10 ms   |
| Bridging voltage drop               | typ. 5 ms |
| Standby after power switched on [s] | < 1,5 s   |

#### Terminal blocks

|   |                              |
|---|------------------------------|
| Single-wire (rigid) or fine-wire (flexible) | 0.2 ... 2.5 mm <sup>2</sup>  |
| Fine-wired with wire sleeve                 | 0.25 ... 2.5 mm <sup>2</sup> |

## S2 series

|   |  |
|---|--|
|   | 0.5 Nm   |
| <b>Control current circuits/inputs</b>    |  |
| Inputs S12, S22                           | 24 VDC/8 mA  |
| Inputs X2, X3, X7                         | 24 VDC/8 mA  |
| Clock outputs S11, S21                    | > 20 VDC, 10 mA per output   |
| Cable length                              | 1500 m with 1.5 mm <sup>2</sup> ; 2500 m with 2.5 mm <sup>2</sup>                              |
| Conduction resistance                     | max. 40 Ω  |
| <b>Relay outputs</b>                      |  |
| Switching capacity of the safety contacts | contacts 13-14, 23-24, 33-34: max. 250 V, 6 A<br>ohms. min. 10 VDC / 10 mA (Derating see 2.5)  |
| Fuse rating of the safety contacts        | external (Ik = 1000 A) acc. to EN 60947-5-1 Safety<br>fuse 10 A quick blow. 6 A slow blow      |
| Utilisation category to EN 60947-5-1      | AC-15: 230 V / 4 A DC-13: 24 V / 4 A   |
| Fuse rating for the auxiliary contact     | 41-42: 24 VDC / 1 A  |
| Safety contact values                     | safety fuse 2.5 A quick blow, 2 A slow blow  |
| Electrical service life (nominal load)    | see 2.5 (operating manual) Years   |
| mechanical lifespan                       | 10 million switching cycles<br>resistance max. 100 mΩ, AgNi, self-cleaning,<br>positive action |
| Max. switching cycles / minute            | 20   |
| Inductive consumers                       | provision is to be made for suitable protective<br>wiring for suppression                      |
| <b>Mechanical data</b>                    |  |
| Housing material                          | glass-fibre reinforced thermoplastic. ventilated   |
| <b>Dimensions</b>                         |  |
| Height                                    | 98 mm  |
| Width                                     | 22,5 mm  |
| Length                                    | 115 mm   |

## S2 series

### LED diagnostics

Diagnose function

#### 6.1 LED indications

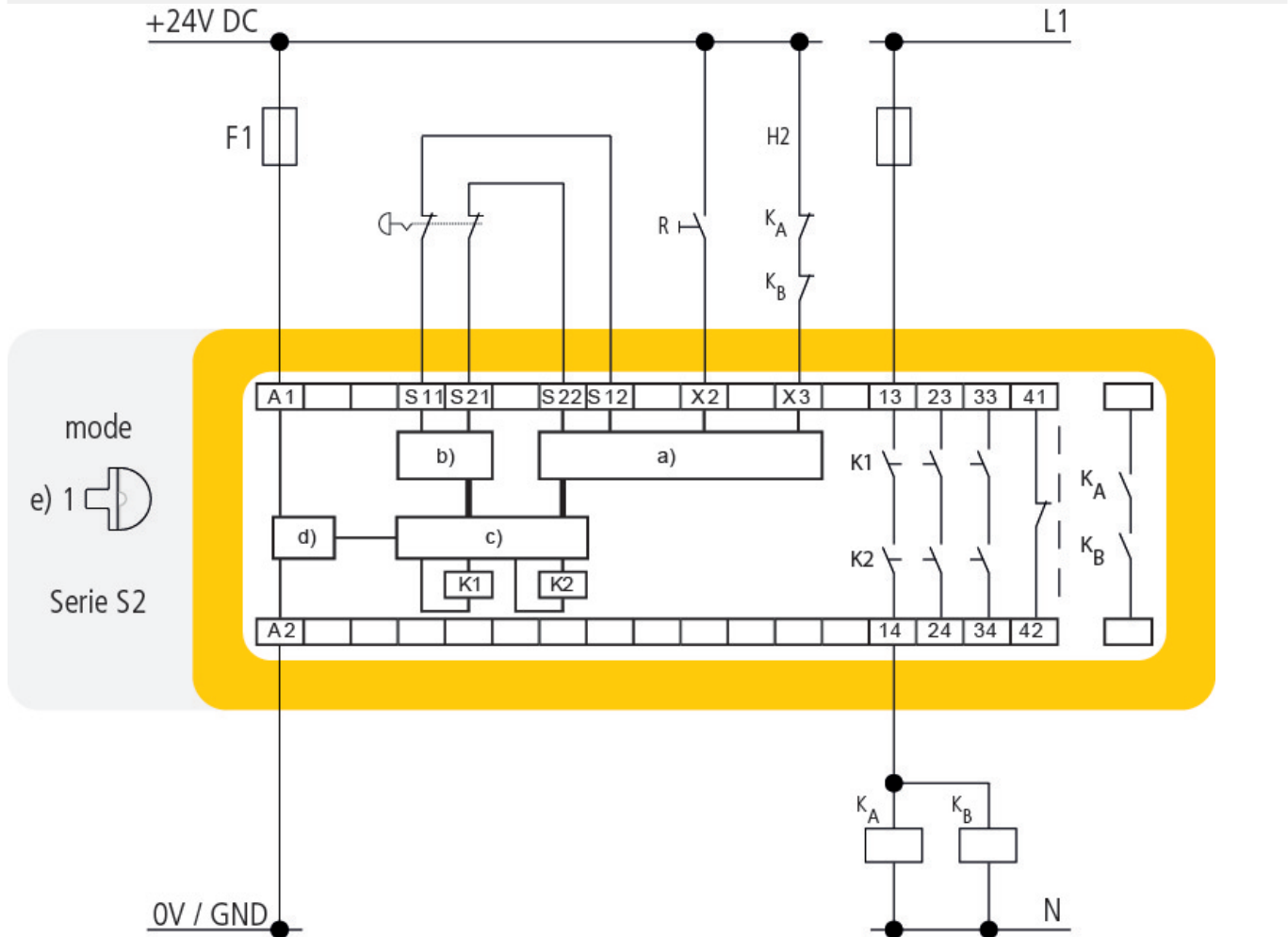
| LED  | Function                                    | Display type     |
|------|---|------------------|
| RUN  | Ready for operation                         | Continuously lit |
|      | Not a valid application                     | Flashes          |
| In 1 | Eingang S12 geschlossen                     | Continuously lit |
|      | Time window for synchronicity exceeded      | Flashes quickly  |
|      | Second channel, input S22 has not opened    | Flashes slowly   |
| In 2 | Input S22 closed                            | Continuously lit |
|      | Time window for synchronicity exceeded      | Flashes quickly  |
|      | Second channel, input S12 has not opened    | Flashes slowly   |
| Out  | Safety outputs ON                           | Continuously lit |
|      | Safety outputs waiting for start (input X2) | Flashes slowly   |
|      | Feedback circuit not closed (input X3)      | Flashes slowly   |

Single flashing of all LEDs with mains on

## S2 series

### Electrical drawings

Connection example 1



### Legend

- a) Safety inputs
- b) Clock output
- c) CPU
- d) Power supply
- e) Rotary knob for programming

## **S2 series**

### **Downloads**

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- SISTEMA - Data V 4.1
- Operating Manual
- Certificate
- CAD Data
- EPLAN-Data