

PSR-SCP- 24UC/ESL4/3X1/1X2/B - Safety relays



2981059

<https://www.phoenixcontact.com/us/products/2981059>

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Safety relay for emergency stop, safety doors, and light grids up to SIL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual, monitored start, 3 enabling current paths, $U_S = 24 \text{ V DC}$, plug-in screw terminal block

Your advantages

- Manually monitored and automatic activation
- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- Three enabling and one signaling current path
- 1- and 2-channel control

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2981059 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN01 |
| Product key | DNA123 |
| GTIN | 4017918927202 |
| Weight per piece (including packing) | 182.8 g |
| Weight per piece (excluding packing) | 193.61 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

Technical data

Notes

Note on application

| | |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

Product properties

| | |
|-------------------------|--|
| Product type | Safety relays |
| Product family | PSRclassic |
| Application | Emergency stop Safety door Light grid |
| Control | 1 and 2 channel |
| Mechanical service life | approx. 10^7 cycles |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Insulation characteristics

| | |
|----------------------|-----|
| Overvoltage category | III |
| Degree of pollution | 2 |

Times

| | |
|-------------------------------|---|
| Typical response time | 125 ms (automatic start) |
| | 110 ms (manual, monitored start) |
| Typ. starting time with U_S | 125 ms (when controlled via A1) |
| Typical release time | 10 ms (on demand via the sensor circuit) |
| | 45 ms (on demand via A1) |
| Restart time | < 1 s (Boot time) |
| Recovery time | 1 s (following demand of the safety function) |
| Start pulse length | ≥ 500 ms (manual start) |

Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 16.44 W (at $U_S = 26.4$ V, $I_L^2 = 72$ A ² ; $P_{Total\ max} = 2.04$ W + 14.4 W) |
| Nominal operating mode | 100% operating factor |
| Rated insulation voltage | 250 V |
| Rated surge voltage/insulation | See data sheet, section "Insulation coordination". |

Supply

| | |
|--|---|
| Designation | A1/A2 |
| Rated control circuit supply voltage U_S | 24 V DC -15 % / +10 % |
| Rated control supply current I_S | typ. 70 mA (at U_S) |
| Power consumption at U_S | typ. 1.68 W |
| Inrush current | < 3.5 A (typ. with U_S , $\Delta t = 3$ ms) |
| Filter time | 5 ms (in the event of voltage dips at U_S , no test pulses allowed) |
| Protective circuit | Serial protection against polarity reversal; Suppressor diode |

Input data

Digital: Logic (S12, S22)

| | |
|---|--|
| Description of the input | safety-related |
| Number of inputs | 2 |
| Input voltage range "0" signal | 0 V DC ... 5 V DC |
| Input voltage range "1" signal | 20.4 V ... 26.4 V |
| Input current range "0" signal | 0 mA ... 2 mA |
| Inrush current | max. 110 mA (typ. with U_S , $\Delta t = 3$ ms) |
| Filter time | max. 2 ms (Test pulse width low test pulses, at 100 ms test pulse rate) No brightness test pulses / high test pulses permitted. |
| Concurrency | ∞ |
| Max. permissible overall conductor resistance | 50 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | 38 mA (typ. with U_S) |

Digital: Start circuit (S34, S35)

| | |
|---|--|
| Description of the input | non-safety-related |
| Number of inputs | 2 |
| Input voltage range "1" signal | 20.4 V ... 26.4 V |
| Inrush current | < 6 mA (typ. with U_S at S34/S35, $\Delta t = 70$ ms) |
| Filter time | No test pulses permitted |
| Max. permissible overall conductor resistance | 50 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | 0 mA (typ. with U_S at S34) 1 mA (typ. with U_S at S35) |

Output data

Relay: Enabling current paths (13/14, 23/24, 33/34)

| | |
|-----------------------------|---|
| Output description | 2 N/O contacts each in series, safety-related, floating |
| Number of outputs | 3 |
| Contact switching type | 3 enabling current paths |
| Contact material | AgSnO ₂ |
| Switching voltage | min. 10 V max. 250 V AC/DC |
| Switching power | min. 100 mW |
| Inrush current | min. 10 mA max. 6 A |
| Switching capacity | 5 A (AC15) 6 A (DC13) |
| Limiting continuous current | 6 A (Observe derating and load limit curve) |
| Sq. Total current | 72 A ² (observe derating) |
| Switching frequency | max. 0.5 Hz |

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| | |
|-------------------------|---|
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 10 A gL/gG |
| | 4 A gL/gG (for low-demand applications) |

Relay: Signaling current path (41/42)

| | |
|-----------------------------|---|
| Output description | 2 N/C contacts parallel, non-safety-related, floating |
| Number of outputs | 1 |
| Contact switching type | 1 signaling current path |
| Contact material | AgSnO ₂ |
| Switching voltage | min. 10 V AC/DC |
| | max. 250 V AC/DC |
| Switching power | min. 100 mW |
| Inrush current | min. 10 mA |
| | max. 6 A |
| Switching capacity | 1.5 A (AC15) |
| | 2 A (DC13) |
| Limiting continuous current | 6 A |
| Sq. Total current | 36 A ² (observe derating) |
| Switching frequency | max. 0.5 Hz |
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 6 A gL/gG |

Connection data

Connection technology

| | |
|-----------|-----|
| pluggable | yes |
|-----------|-----|

Conductor connection

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section AWG | 24 ... 12 |
| Stripping length | 7 mm |
| Screw thread | M3 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

Signaling

| | |
|---------------------------|-----------------|
| Status display | 2 x LED (green) |
| Operating voltage display | 1 x LED (green) |

Dimensions

| | |
|--------|----------|
| Width | 22.5 mm |
| Height | 99 mm |
| Depth | 114.5 mm |

Material specifications

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| | |
|------------------|-------------------|
| Color (Housing) | yellow (RAL 1018) |
| Housing material | PA |

Characteristics

Safety data

| | |
|----------------------------|---|
| Stop category (EN 60204-1) | 0 |
|----------------------------|---|

Safety data: EN ISO 13849

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|------------------------|--|
| Performance level (PL) | e (5 A DC13; 5 A AC15; 8760 switching cycles/year) |
|------------------------|--|

Safety data: IEC 61508 - High demand

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

Safety data: IEC 61508 - Low demand

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

Safety data: EN IEC 62061

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

Environmental and real-life conditions

Ambient conditions

| | |
|--|---|
| Degree of protection | IP20 |
| Min. degree of protection of inst. location | IP54 |
| Ambient temperature (operation) | -20 °C ... 55 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
| Maximum altitude | ≤ 2000 m (Above sea level) |
| Max. permissible humidity (storage/transport) | 75 % (on average, 85% infrequently, non-condensing) |
| Max. permissible relative humidity (operation) | 75 % (on average, 85% infrequently, non-condensing) |
| Shock | 15g |
| Vibration (operation) | 10 Hz ... 150 Hz, amplitude 0.15 mm, 2g |

Approvals

CE

| | |
|----------------|--------------|
| Identification | CE-compliant |
|----------------|--------------|

Mounting

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|-------------------|------------------------|
| Mounting type | DIN rail mounting |
| Assembly note | See derating curve |
| Mounting position | vertical or horizontal |

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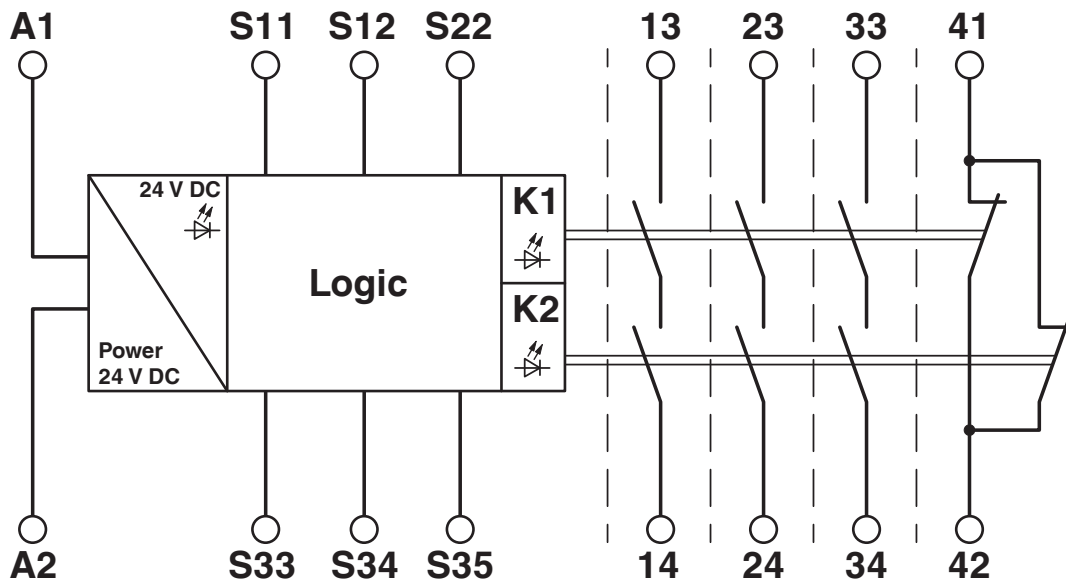


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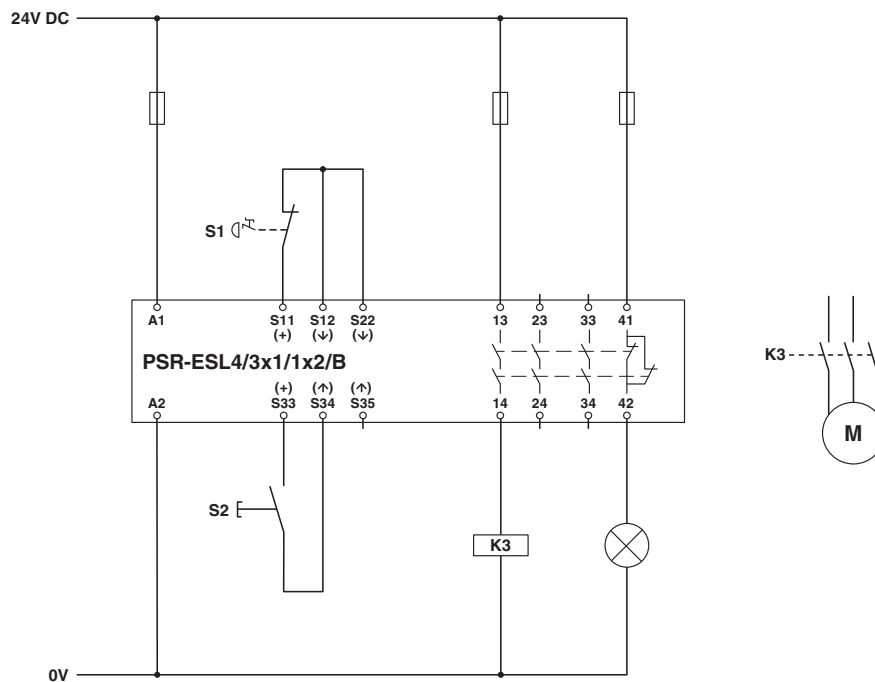
Drawings

Circuit diagram



Block diagram

Circuit diagram



Single-channel safety door monitoring

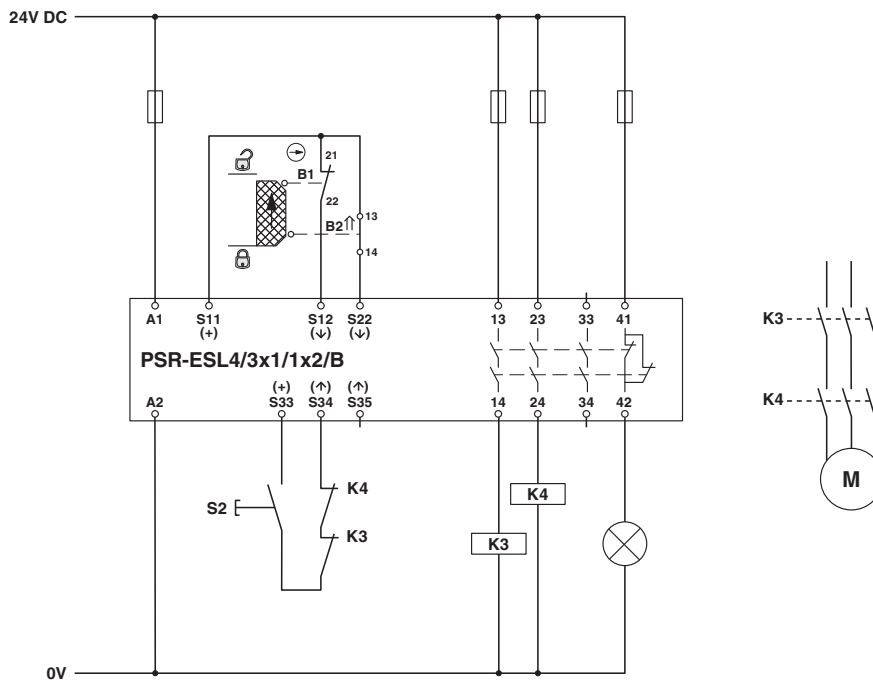
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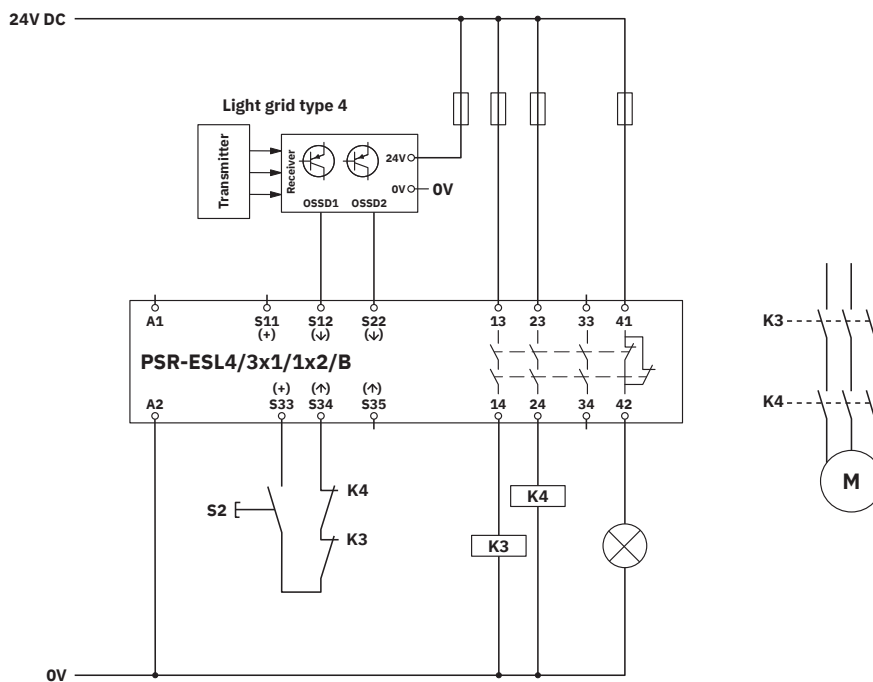
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Circuit diagram



Two-channel safety door monitoring

Circuit diagram



Light grid monitoring

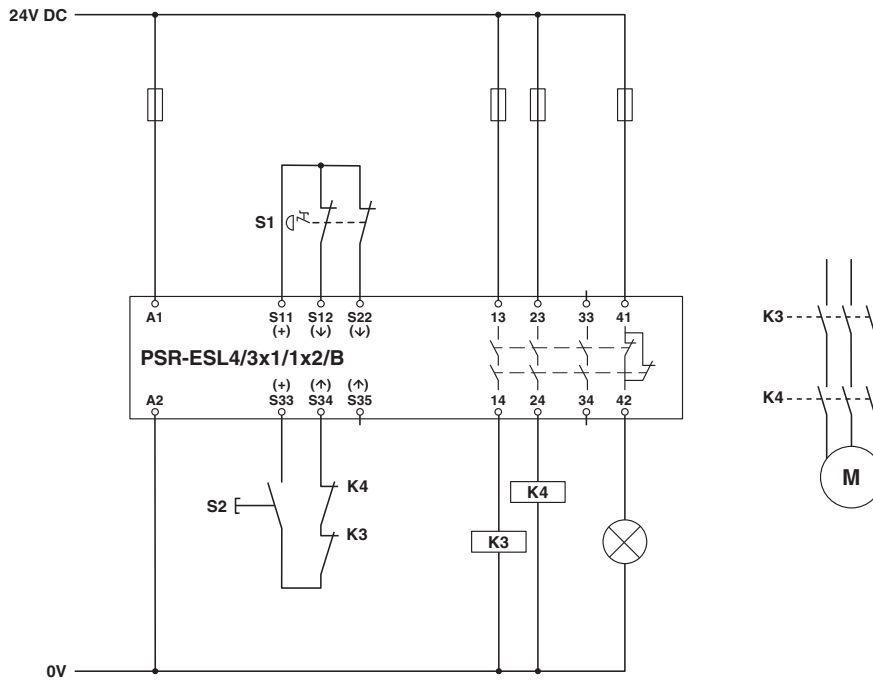
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Circuit diagram



2-channel emergency stop monitoring

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Approvals

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cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/5265.04/23

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Classifications

ECLASS

| | |
|-------------------|----------|
| ECLASS-13.0 | 27371819 |
| ECLASS-15.0 | 27371819 |
| ECLASS-15.0 ASSET | 27250101 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC001449 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39122200 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|--------------------------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| SCIP | 8c3db85c-8969-449e-86af-0a14d7f5919c |

EF3.1 Climate Change

| | |
|---------|---------------|
| CO2e kg | 7.133 kg CO2e |
|---------|---------------|

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