

# PSR-SPP- 24DC/SDC4/2X1/B - Safety relays



2981499

<https://www.phoenixcontact.com/us/products/2981499>

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Safety relay for emergency stop, safety door, and magnetic switches, as well as light grids, up to SIL 3 or Cat. 4, PL e in accordance with EN ISO 13849, 2 N/O contacts, TBUS interface, automatic or manual activation, pluggable Push-in terminal block

## Your advantages

- 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
- Modular system with TBUS extension
- For emergency stop and safety door monitoring, plus evaluation of light grids
- 2 enabling current paths, 1 signaling current path
- 1- and 2-channel control

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2981499       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN01          |
| Product key                          | DNA211        |
| GTIN                                 | 4046356051699 |
| Weight per piece (including packing) | 228 g         |
| Weight per piece (excluding packing) | 197.9 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                                                                           |
|                         | Magnetic switch                                                                      |
| 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   |

### Electrical properties

|                                                 |                                                                                                                            |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Maximum power dissipation for nominal condition | 1.68 W                                                                                                                     |
| Nominal operating mode                          | 100% operating factor                                                                                                      |
| Rated insulation voltage                        | 250 V                                                                                                                      |
| Rated surge voltage/insulation                  | 4 kV / Basic isolation, (safe isolation, reinforced insulation and 6 kV between input circuit and enabling current paths.) |

### Input data

#### General

|                                               |                                                  |
|-----------------------------------------------|--------------------------------------------------|
| Nominal input voltage $U_N$                   | 24 V DC                                          |
| Input voltage range in reference to $U_N$     | 0.85 ... 1.1                                     |
| Typical input current at $U_N$                | 70 mA                                            |
| Voltage at input/start and feedback circuit   | approx. 24 V DC                                  |
| Typical response time                         | 20 ms (manual start)                             |
|                                               | 150 ms (automatic start)                         |
| Typical release time                          | 10 ms                                            |
| Recovery time                                 | 1 s                                              |
| Max. permissible overall conductor resistance | 50 $\Omega$ (Input and start circuits at $U_S$ ) |

### Output data

|                        |                                  |
|------------------------|----------------------------------|
| Contact switching type | 2 enabling current paths         |
|                        | 1 semiconductor signaling output |

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|                                              |                                                              |
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| Contact material                             | AgSnO <sub>2</sub>                                           |
| Maximum switching voltage                    | 250 V AC/DC (Enabling current paths)                         |
|                                              | 24 V (Signal output)                                         |
| Minimum switching voltage                    | 15 V AC/DC (Enabling current paths)                          |
| Limiting continuous current                  | 6 A (Enabling current paths)                                 |
|                                              | 100 mA (Signal output)                                       |
| Maximum inrush current                       | 6 A                                                          |
| Inrush current, minimum                      | 25 mA (Enabling current paths)                               |
| Sq. Total current                            | $72 \text{ A}^2 (I_{TH}^2 = I_1^2 + I_2^2)$                  |
| Interrupting rating (ohmic load) max.        | 144 W (24 V DC, $\tau = 0 \text{ ms}$ )                      |
|                                              | 288 W (48 V DC, $\tau = 0 \text{ ms}$ )                      |
|                                              | 77 W (110 V DC, $\tau = 0 \text{ ms}$ )                      |
|                                              | 88 W (220 V DC, $\tau = 0 \text{ ms}$ )                      |
|                                              | 1500 VA (250 V AC, $\tau = 0 \text{ ms}$ )                   |
| Maximum interrupting rating (inductive load) | 48 W (24 V DC, $\tau = 40 \text{ ms}$ )                      |
|                                              | 40 W (48 V DC, $\tau = 40 \text{ ms}$ )                      |
|                                              | 35 W (110 V DC, $\tau = 40 \text{ ms}$ )                     |
|                                              | 33 W (220 V DC, $\tau = 40 \text{ ms}$ )                     |
| Switching capacity                           | min. 0.4 W (Enabling current paths)                          |
| Switching capacity (360/h cycles)            | 6 A (24 V DC)                                                |
|                                              | 5 A (230 V (AC15))                                           |
| Switching capacity (3600/h cycles)           | 3 A (24 V (DC13))                                            |
|                                              | 3 A (230 V (AC15))                                           |
| Output fuse                                  | 10 A gL/gG NEOZED (Enabling current paths)                   |
|                                              | Miniature circuit breaker C6 (24 V / 20 A power supply unit) |

## Connection data

### Connection technology

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

### Conductor connection

|                                                                       |                                                                              |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------|
| Connection method                                                     | Push-in connection                                                           |
| Conductor cross section rigid                                         | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>                                  |
| Conductor cross section flexible                                      | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>                                  |
| Conductor cross section, flexible, with ferrule, with plastic sleeve  | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6) |
| Conductor cross section flexible, with ferrule without plastic sleeve | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6) |
| Conductor cross-section AWG                                           | 24 ... 16                                                                    |
| Stripping length                                                      | 8 mm                                                                         |

## Dimensions

|        |          |
|--------|----------|
| Width  | 22.5 mm  |
| Height | 112 mm   |
| Depth  | 114.5 mm |

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## Material specifications

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

## Characteristics

### Safety data

|               |   |
|---------------|---|
| Stop category | 0 |
|---------------|---|

### Safety data: EN ISO 13849

|                        |                        |
|------------------------|------------------------|
| Category               | 4 (Undelayed contacts) |
| Performance level (PL) | e                      |

### 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                                    |
| 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) |

## Mounting

|                   |                   |
|-------------------|-------------------|
| Mounting type     | DIN rail mounting |
| Mounting position | any               |

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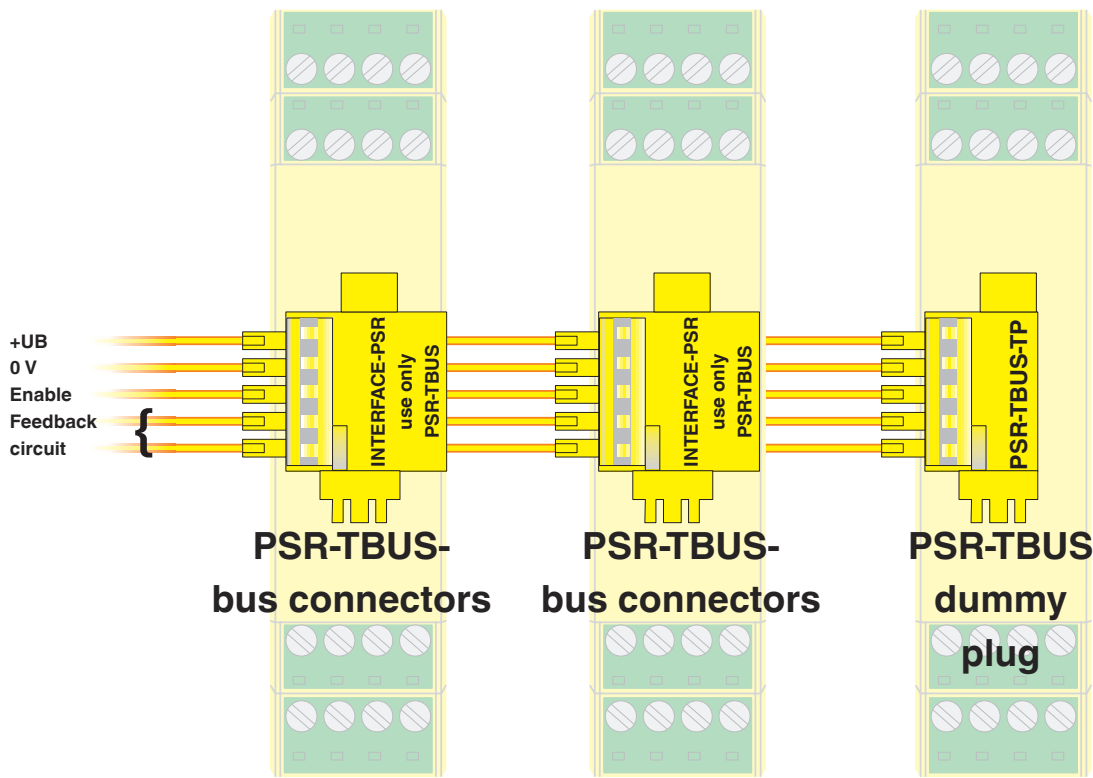


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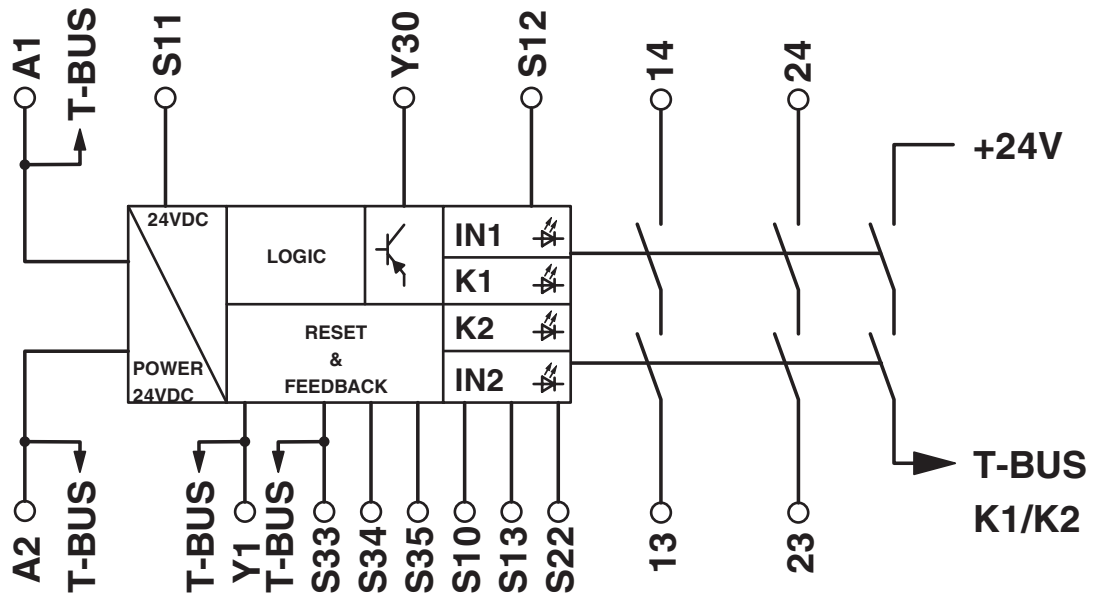
Drawings

Connection diagram



PSR-TBUS DIN rail connectors are used for cross-wiring between the modules.

Circuit diagram



Block diagram

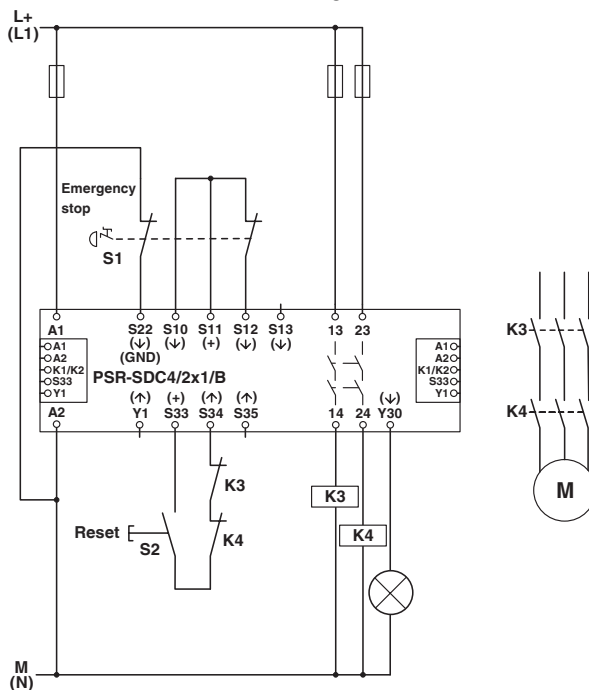
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Circuit diagram



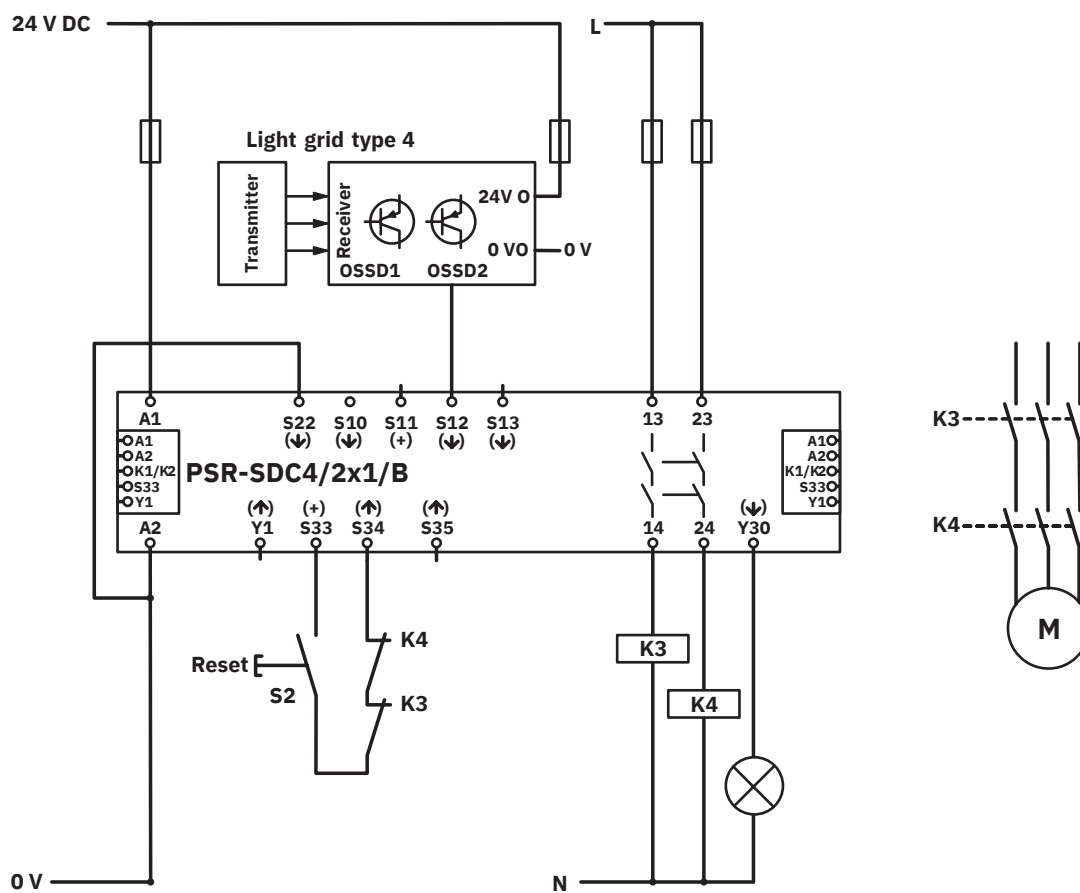
2-channel emergency stop monitoring

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Circuit diagram



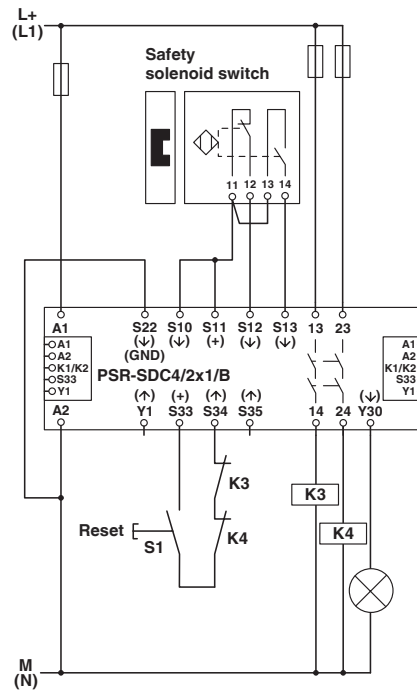
Light grid monitoring

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Circuit diagram



Two-channel magnetic switch monitoring

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## Approvals

📄 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2981499>



### Functional Safety

Approval ID: 01/205/0660.04/24



### cULus Listed

Approval ID: E140324

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27371819 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | 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                                | 3ffe7659-7c07-4479-bf6c-1b797cdb1c40 |

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