

# PSR-SPP-24DC/MXF2/4X1/2X2/B - Safety relays



2903255

<https://www.phoenixcontact.com/us/products/2903255>

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Multifunctional safety relay for emergency stop and safety doors up to SIL 3, Cat. 4, PL e, automatically or manually monitored activation, 4 N/O contacts, 3 safety functions, 2 shutdown levels, pluggable Push-in terminal block

## Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- 3 safety functions in one device
- Low housing width of only 22.5mm
- No software configuration required
- Also available with push-in connection

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 2903255                        |
| Packing unit                         | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | DN01                           |
| Product key                          | DNA191                         |
| GTIN                                 | 4046356729796                  |
| Weight per piece (including packing) | 290.5 g                        |
| Weight per piece (excluding packing) | 260.1 g                        |
| Customs tariff number                | 85371098                       |
| Country of origin                    | DE                             |

## Technical data

### Product properties

|                         |  |
|-------------------------|--|
| Product type            | Safety relays  |
| Application             | Emergency stop   |
|                         | Safety door  |
|                         | Magnetic switch  |
| Control                 | 1 and 2 channel  |
| Mechanical service life | 10x 10 <sup>6</sup> cycles   |
| Relay type              | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Insulation characteristics: Air clearances and creepage distances between the power circuits

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

### Electrical properties

|   |                       |
|---|-----------------------|
| Maximum power dissipation for nominal condition | 3 W                   |
| Nominal operating mode                          | 100% operating factor |

Air clearances and creepage distances between the power circuits

|                                |  |
|--------------------------------|--|
| Rated insulation voltage       | 250 V AC   |
| Rated surge voltage/insulation | 4 kV/basic isolation (safe isolation, reinforced insulation and 6 kV between input circuit, enabling current paths and safety circuit 1 (13/14, 23/24) and safety circuit 2 (43/44, 53/54).) |

### 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 $U_N$              | 125 mA (with actuated relays)   |
|   | 55 mA (Two-channel 24 V/0 V + max. 200 mA control (message outputs 32/62) with non-actuated relays) |
| Current consumption                         | typ. 5 mA ( $I_{max}/I_x$ inputs)   |
|   | 20 mA (in electric torque)  |
| Voltage at input/start and feedback circuit | 24 V -15 % / +10 % (first channel: 24 V; second channel: 0 V)                                       |
| Filter time                                 | max. 1.5 ms (Test pulse duration; for all equivalent inputs)  |
|   | min. 7.5 ms (Test pulse rate; for all equivalent inputs)  |
| Typical response time                       | 175 ms (monitored/manual start)   |
|   | 250 ms (automatic start)  |
| Typ. starting time with $U_s$               | 250 ms (when controlled via A1)   |
| Typical release time                        | 25 ms (when controlled via S11/S12 and S21/S22)   |
|   | 20 ms (when controlled via A1)  |
| Concurrence                                 | $\infty$  |
| Recovery time                               | 1 s (Availability time after activation of sensor circuit: 100ms)                                   |

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|   |                                    |
|---|------------------------------------|
| Maximum switching frequency                   | 0.5 Hz                             |
| Protective circuit                            | Surge protection; Suppressor diode |
| Max. permissible overall conductor resistance | 100 Ω                              |
| Operating voltage display                     | 1 x LED (green)                    |
| Status display                                | 5 x LED (green)                    |

## Output data

|  |   |
|--|---|
| Contact switching type                       | 4 enabling current paths                                    |
|  | 2 semiconductor alarm outputs                               |
| Contact material                             | AgCuNi, +0.2 ... 0.4 μm Au                                  |
| Maximum switching voltage                    | 250 V AC/DC   |
| Minimum switching voltage                    | 10 V AC/DC  |
| Limiting continuous current                  | 6 A (N/O contact)   |
|  | max. 100 mA (Alarm output (24 V DC))                        |
| Maximum inrush current                       | 6 A   |
| Inrush current, minimum                      | 10 mA   |
| Sq. Total current                            | $72 \text{ A}^2 (I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2)$ |
| Interrupting rating (ohmic load) max.        | 1500 VA (250 V AC, τ = 0 ms)                                |
|  | 66 W (220 V DC, τ = 0 ms)                                   |
|  | 66 W (110 V DC, τ = 0 ms)                                   |
|  | 100 W (48 V DC, τ = 0 ms)                                   |
|  | 144 W (24 V DC, τ = 0 ms)                                   |
| Maximum interrupting rating (inductive load) | 48 W (24 V DC, τ = 40 ms)                                   |
|  | 43 W (48 V DC, τ = 40 ms)                                   |
| Switching power min.                         | 0.1 W   |
| Switching capacity (360/h cycles)            | 5 A (0,1 Hz; DC13; 24 V)                                    |
| Switching capacity (3600/h cycles)           | 3 A (AC15; 230 V)   |
| Output fuse                                  | 6 A gL/gG NEOZED (N/O contact)                              |
|  | 4 A gL/gG NEOZED (for low-demand applications)              |

## 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

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|        |          |
|--------|----------|
| Width  | 22.5 mm  |
| Height | 117.4 mm |
| Depth  | 114.5 mm |

## Material specifications

|       |        |
|-------|--------|
| Color | yellow |
|-------|--------|

## Characteristics

### Safety data

|                            |                        |
|----------------------------|------------------------|
| Stop category (EN 60204-1) | 0 (acc. to EN 60204-1) |
|----------------------------|------------------------|

### Safety data: EN ISO 13849

|                        |  |
|------------------------|--|
| Performance level (PL) | e (5 A DC13; 3 A AC15; 8760 cycles/year) |
|------------------------|--|

### Safety data: EN 50156

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

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|                              |   |
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|                              |   |
|------------------------------|---|
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|------------------------------|---|

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|                              |   |
|------------------------------|---|
| 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 ... 45 °C (see derating curve)               |
| Ambient temperature (storage/transport)        | -25 °C ... 85 °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) |

## Standards and regulations

### Air clearances and creepage distances between the power circuits

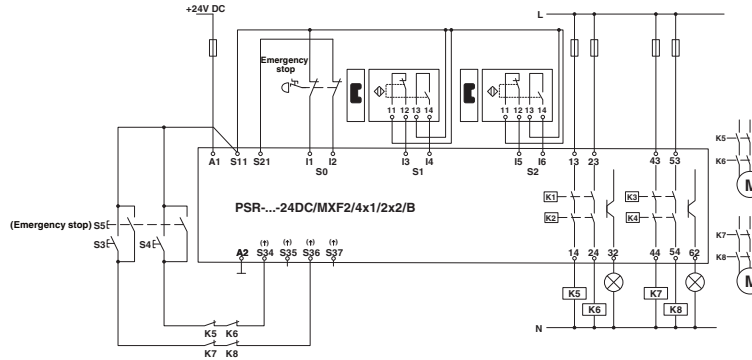
|                       |                       |
|-----------------------|-----------------------|
| Standards/regulations | DIN EN 50178/VDE 0160 |
|-----------------------|-----------------------|

## Mounting

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

Drawings

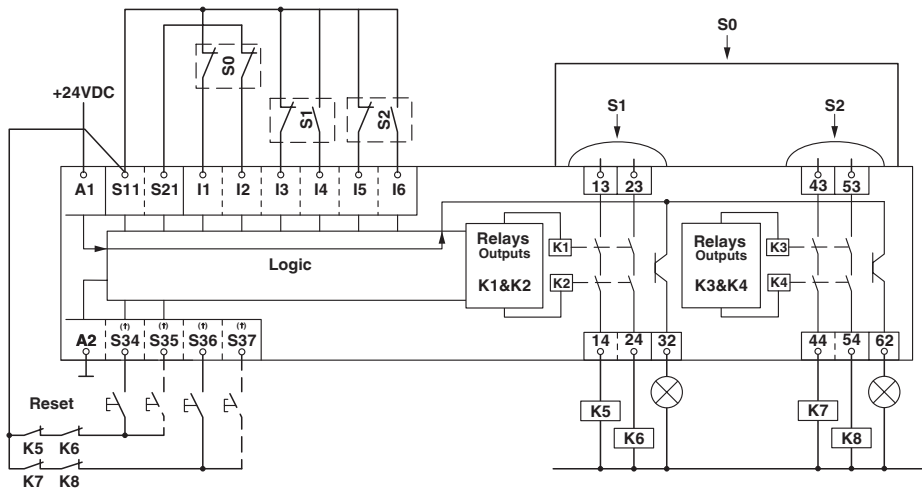
Circuit diagram



Circuit diagram



Circuit diagram



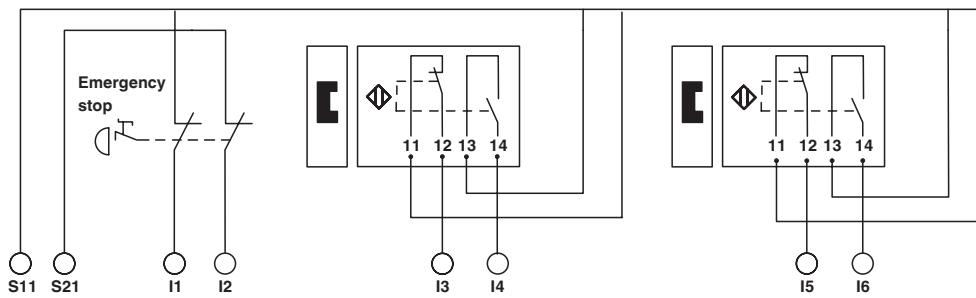
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Circuit diagram



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## Classifications

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39122205 |
|-------------|----------|

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## Environmental product compliance

### 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.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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