

# PSR-SPP- 24UC/ESM4/2X1/1X2 - Safety relays



2963705

<https://www.phoenixcontact.com/us/products/2963705>

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Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e in accordance with EN ISO 13849, 2-channel operation, 2 enabling current paths, nominal input voltage: 24 V DC, plug-in 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
- 2 channel control
- 2 enabling current paths, 1 signaling current path

## Commercial data

|                                      |                   |
|--------------------------------------|-------------------|
| Item number                          | 2963705           |
| Packing unit                         | 1 pc              |
| Minimum order quantity               | 1 pc              |
| Sales key                            | DN01              |
| Product key                          | DNA112            |
| Catalog page                         | Page 20 (IF-2009) |
| GTIN                                 | 4017918904753     |
| Weight per piece (including packing) | 192.18 g          |
| Weight per piece (excluding packing) | 159.47 g          |
| Customs tariff number                | 85371098          |
| Country of origin                    | DE                |

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## Technical data

### Product properties

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

### Electrical properties

|   |   |
|---|---|
| Maximum power dissipation for nominal condition | 16.44 W ( $U_S = 26.4$ V, $I_L^2 = 72$ A <sup>2</sup> , $P_{Total\ max} = 2.04$ W + 14.4 W) |
| Nominal operating mode                          | 100% operating factor   |

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

|                                |                                       |
|--------------------------------|---------------------------------------|
| Rated insulation voltage       | 250 V                                 |
| Rated surge voltage/insulation | See section "Insulation coordination" |

### Input data

#### General

|   |  |
|---|--|
| Rated control circuit supply voltage $U_S$    | 24 V DC -15 % / +10 %                                    |
| Power consumption at $U_S$                    | typ. 1.68 W (DC)   |
| Rated control supply current $I_S$            | typ. 70 mA   |
| Input voltage range in reference to $U_N$     | 0.85 ... 1.1   |
| Typical input current at $U_N$                | 70 mA DC   |
| Inrush current                                | < 3.5 A ( $\Delta t = 3$ ms at $U_S$ )                   |
|   | < 100 mA ( $\Delta t = 500$ ms, with $U_S/I_x$ at S12)   |
|   | > -100 mA ( $\Delta t = 300$ ms, with $U_S/I_x$ at S22)  |
|   | < 6 mA (with $U_S/I_x$ to S34)                           |
| Current consumption                           | typ. 38 mA (S12)   |
|   | typ. -38 mA (S22)  |
|   | typ. 1 mA (with $U_S/I_x$ to S34)                        |
| Voltage at input/start and feedback circuit   | approx. 24 V DC  |
| Filter time                                   | 5 ms (at A1 in the event of voltage dips at $U_S$ )      |
|   | No test pulses permitted                                 |
| Typical response time                         | 100 ms (Monitored/manual start)                          |
| Typical release time                          | 20 ms (on demand via the sensor circuit)                 |
|   | 45 ms (on demand via A1)                                 |
| Concurrence                                   | $\infty$   |
| Recovery time                                 | 1 s (following demand of the safety function)            |
|   | < 1 s (Boot time)  |
| Protective circuit                            | Surge protection; Suppressor diode                       |
| Max. permissible overall conductor resistance | approx. 50 $\Omega$ (Input and start circuits at $U_S$ ) |

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|                           |           |
|---------------------------|-----------|
| Operating voltage display | Green LED |
| Status display            | Green LED |

## Output data

|   |  |
|---|--|
| Contact switching type                              | 2 enabling current paths                         |
|   | 1 signaling current path                         |
| Contact material                                    | AgSnO <sub>2</sub> , + 0.2 µm Au                 |
| Maximum switching voltage                           | 250 V AC   |
| Minimum switching voltage                           | 10 V AC/DC                                       |
| Limiting continuous current                         | 6 A (N/O contact)                                |
| Maximum inrush current                              | 6 A  |
| Inrush current, minimum                             | 10 mA  |
| Sq. Total current                                   | 72 A <sup>2</sup> (Enabling current paths)       |
|   | 36 A <sup>2</sup> (Signaling current path 31/32) |
| Switching capacity min.                             | 100 mW   |
| Switching capacity in accordance with IEC 60947-5-1 | 6 A (DC13, enabling current paths)               |
|   | 5 A (AC15, enabling current paths)               |
|   | 2 A (DC13, signaling current paths)              |
|   | 1.5 A (AC15, signaling current paths)            |
| Output fuse   | 10 A gL/gG (Enabling current paths)              |
|   | 4 A gL/gG (Low-demand enabling current paths)    |
|   | 6 A gL/gG (Signaling current path)               |

## 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 |

## Material specifications

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

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## Characteristics

### Safety data

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

### Safety data: EN ISO 13849

|                        |  |
|------------------------|--|
| Category               | 4  |
| 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, 2g                                |

## Approvals

### CE

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

## Standards and regulations

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

|                       |                |
|-----------------------|----------------|
| Standards/regulations | DIN EN 60947-1 |
|-----------------------|----------------|

## Mounting

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

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27371819 |
| ECLASS-13.0 | 27371819 |
| ECLASS-12.0 | 27371819 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001449 |
|----------|----------|

### UNSPSC

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

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## Environmental product compliance

|            |  |
|------------|--|
| REACH SVHC | Lead 7439-92-1   |
| China RoHS | Environmentally Friendly Use Period = 50 years   |
|            | For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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