

# PSR-SCP- 24UC/ESAM4/8X1/1X2 - Safety relays



2963912

<https://www.phoenixcontact.com/us/products/2963912>

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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, 1- or 2-channel operation, 8 enabling current paths,  $U_S = 24 \text{ V DC}$ , plug-in screw 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
- Manually monitored and automatic activation in a single device
- 1- and 2-channel control
- 8 enabling current paths, 1 signaling current path

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2963912       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN01          |
| Product key                          | DNA114        |
| GTIN                                 | 4017918899707 |
| Weight per piece (including packing) | 369.67 g      |
| Weight per piece (excluding packing) | 339.64 g      |
| Customs tariff number                | 85371098      |
| Country of origin                    | DE            |

## Technical data

### Product properties

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Product type            | Safety relays                                                                        |
| Product family          | PSRclassic                                                                           |
| Application             | Emergency stop                                                                       |
|                         | Safety door                                                                          |
| 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         | < 140 ms (For $U_S$ manual, monitored start)                                       |
|                               | < 120 ms (For $U_S$ autostart)                                                     |
| Typ. starting time with $U_S$ | < 200 ms (with $U_S$ / when controlled via A1)                                     |
| Typical release time          | < 20 ms (At $U_S$ on demand via sensor circuit)                                    |
|                               | < 50 ms (At $U_S$ /on demand via A1)                                               |
| Restart time                  | < 1 s (Boot time)                                                                  |
| Recovery time                 | 500 ms (following demand of the safety function)                                   |
|                               | 250 ms (Availability time after activating the sensor circuit during manual start) |
| Start pulse length            | min. 500 ms (manual start)                                                         |

### Electrical properties

|                                                 |                                                                                            |
|-------------------------------------------------|--------------------------------------------------------------------------------------------|
| Maximum power dissipation for nominal condition | 31.7 W ( $U_S = 26.4$ V, $I_L^2 = 144$ A <sup>2</sup> , $P_{Total\ max} = 2.9$ W + 28.8 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. 100 mA (at $U_S$ )                                       |
| Power consumption at $U_S$                 | typ. 2.4 W                                                    |
| Inrush current                             | typ. 3.5 A (with $U_S$ , $\Delta t = 2$ ms)                   |
| Filter time                                | 2 ms (in the event of voltage dips at $U_S$ )                 |
| Protective circuit                         | Serial protection against polarity reversal; Suppressor diode |

### Input data

Digital: Sensor circuit (S10, S12, S22)

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|                                               |                                                                                                                                                                                              |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of the input                      | safety-related                                                                                                                                                                               |
| Number of inputs                              | 3                                                                                                                                                                                            |
| Input voltage range "0" signal                | 0 V DC ... 5 V DC (S10, S12)<br>S22 open                                                                                                                                                     |
| Input voltage range "1" signal                | 20.4 V ... 26.4 V (S10, S12)<br>0 V ... 0 V (S22)                                                                                                                                            |
| Input current range "0" signal                | 0 mA ... 2 mA (S10, S12)                                                                                                                                                                     |
| Inrush current                                | max. 150 mA ( $\Delta t = 1$ ms, with $U_s/I_x$ at S10)<br>max. 200 mA ( $\Delta t = 1$ ms, with $U_s/I_x$ at S12)<br>max. -180 mA ( $\Delta t = 1$ ms, with $U_s/I_x$ at S22)               |
| Filter time                                   | No brightness test pulses / high test pulses permitted.<br>max. 1.5 ms (Test pulse width, low test pulses (S10, S12) )<br>Test pulse rate = 5 x test pulse width, low test pulses (S10, S12) |
| Concurrence                                   | $\infty$                                                                                                                                                                                     |
| Max. permissible overall conductor resistance | 11 $\Omega$                                                                                                                                                                                  |
| Protective circuit                            | Suppressor diode                                                                                                                                                                             |
| Current consumption                           | 50 mA (S10, S12)<br>-50 mA (S22)                                                                                                                                                             |

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                                | < 10 mA                  |
| Filter time                                   | No test pulses permitted |
| Max. permissible overall conductor resistance | 50 $\Omega$              |
| Protective circuit                            | Suppressor diode         |
| Current consumption                           | 0 mA (S34)<br>1 mA (S35) |

## Output data

Relay: Enabling current paths (13/14, 23/24, 33/34, 43/44, 53/54, 63/64, 73/74, 83/84)

|                             |                                                         |
|-----------------------------|---------------------------------------------------------|
| Output description          | 2 N/O contacts each in series, safety-related, floating |
| Number of outputs           | 8                                                       |
| Contact switching type      | 8 enabling current paths                                |
| Contact material            | AgSnO <sub>2</sub>                                      |
| Switching voltage           | min. 5 V AC/DC<br>max. 250 V AC/DC                      |
| Switching power             | min. 50 mW                                              |
| Inrush current              | min. 10 mA AC/DC<br>max. 6 A                            |
| Switching capacity          | 3 A (AC15)<br>5 A (DC13)                                |
| Limiting continuous current | 6 A (observe derating)                                  |

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|                         |                                       |
|-------------------------|---------------------------------------|
| Sq. Total current       | 144 A <sup>2</sup> (observe derating) |
| Switching frequency     | max. 0.5 Hz                           |
| Mechanical service life | 10x 10 <sup>6</sup> cycles            |
| Output fuse             | 10 A gL/gG                            |
|                         | 6 A gL/gG (Low demand)                |

## Relay: Signaling current path (91/92)

|                             |                                                       |
|-----------------------------|-------------------------------------------------------|
| 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 <sub>2</sub>                                    |
| Switching voltage           | min. 5 V AC/DC                                        |
|                             | max. 250 V AC/DC                                      |
| Switching power             | min. 50 mW                                            |
| Inrush current              | min. 10 mA                                            |
|                             | max. 6 A                                              |
| Switching capacity          | 1.5 A (AC15)                                          |
|                             | 5 A (DC13)                                            |
| Limiting continuous current | 6 A                                                   |
| Sq. Total current           | 36 A <sup>2</sup>                                     |
| Switching frequency         | max. 0.5 Hz                                           |
| Mechanical service life     | 10x 10 <sup>6</sup> cycles                            |
| Output fuse                 | 6 A gL/gG                                             |
|                             | 4 A gL/gG (Low demand)                                |

## Connection data

### Connection technology

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

### Conductor connection

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Conductor cross-section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross-section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| 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  | 45 mm |
| Height | 99 mm |

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|       |          |
|-------|----------|
| Depth | 114.5 mm |
|-------|----------|

## Material specifications

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

## Characteristics

### Safety data

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

### Safety data: EN ISO 13849

|                        |                                                    |
|------------------------|----------------------------------------------------|
| Category               | 4                                                  |
| Performance level (PL) | e (3 A DC13; 3 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 (contact interruptions < 100 µs possible)       |
| Vibration (operation)                          | 10 Hz ... 150 Hz, 2g                                |

## Approvals

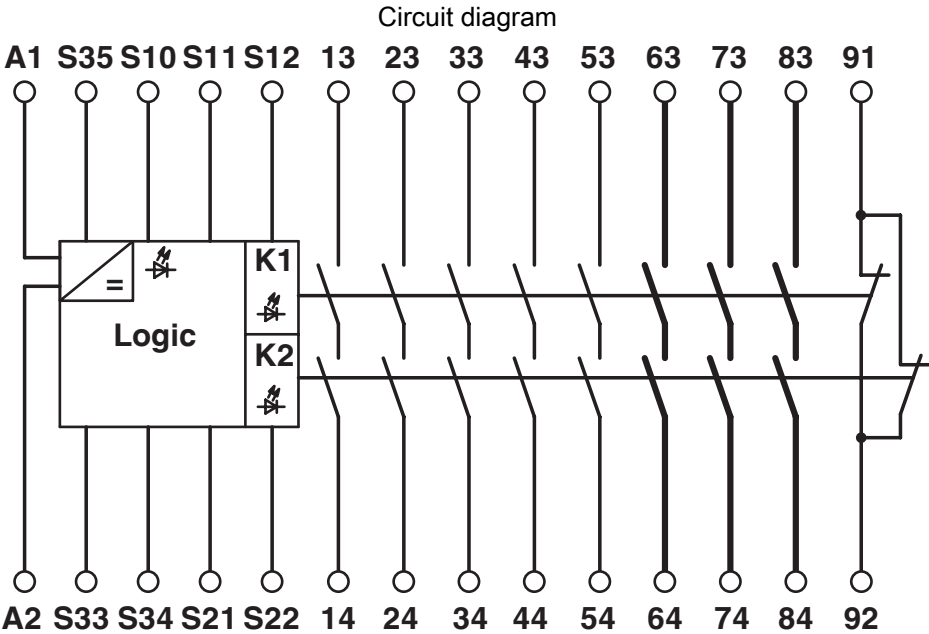
### CE

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

## Mounting

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

Drawings



Block diagram

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## Approvals

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**cULus Listed**

Approval ID: E140324



**Functional Safety**

Approval ID: 01/205/5363.04/24

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## 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                                | 27dcdbac-c215-44b3-abe0-df73c0c23cb0 |

### EF3.0 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 3.081 kg CO2e |
|---------|---------------|