# PSR-SPP- 24UC/ESAM4/3X1/1X2/B - Safety relays

2900510

https://www.phoenixcontact.com/in/products/2900510

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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, 3 enabling current paths, nominal input voltage: 24 V DC, 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
- Manually monitored and automatic activation in a single device
- Basic insulation
- 2 channel control
- 3 enabling current paths, 1 signaling current path

## Commercial data

| | |
|---|---|
| Item number | 2900510 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DNA |
| Product key | DNA114 |
| GTIN | 4046356513784 |
| Weight per piece (including packing) | 182.2 g |
| Weight per piece (excluding packing) | 159.08 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 | 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 | typ. 150 ms (For $U_s$ autostart) |
| | typ. 100 ms (For $U_s$ manual, monitored start) |
| Typ. starting time with $U_s$ | typ. 250 ms (with Us / when controlled via A1) |
| Typical release time | typ. 20 ms (At Us on demand via sensor circuit) |
| | typ. 45 ms (At Us/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 ($U_S$ = 26.4 V, $I_L^2$ = 72 A², $P_{Total\ max}$ = 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

| | |
|---|---|
| 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 $U_S$, Δt = 3 ms) |
| Filter time | 5 ms (in the event of voltage dips at $U_s$) |
| 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 (S12) |

| | |
|---|---|
| Input voltage range "1" signal | 20.4 V ... 26.4 V (S12) |
| Input current range "0" signal | 0 mA ... 2 mA |
| Inrush current | < 100 mA (Δt = 500 ms, with $U_s/I_x$ at S12) |
| | > -100 mA (Δt = 300 ms, with $U_s/I_x$ at S22) |
| Filter time | No test pulses permitted |
| Concurrence | ∞ |
| Max. permissible overall conductor resistance | 50 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | 38 mA (typ. with $U_S$ at S12) |
| | -38 mA (typ. with $U_S$ at 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 | < 6 mA (typ. with $U_S$ at S34/35) |
| 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 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 AC/DC |
| | max. 250 V AC/DC |
| Switching capacity | min. 100 mW |
| Inrush current | min. 10 mA |
| | max. 6 A |
| Limiting continuous current | 6 A |
| Sq. Total current | 72 $A^2$ (observe derating) |
| Switching frequency | max. 0.5 Hz |
| Mechanical service life | $10^7$ cycles |
| Output fuse | 10 A gL/gG (High demand) |
| | 4 A gL/gG (Low demand) |

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 capacity | min. 100 mW |
| Inrush current | min. 10 mA |
| | max. 6 A |
| Limiting continuous current | 6 A (Signaling current path) |
| Sq. Total current | 36 $A^2$ |
| Switching frequency | max. 0.5 Hz |
| Interrupting rating (ohmic load) max. | Observe derating and load limit curve |
| Output fuse | 6 A gL/gG |

## Connection data

Connection technology

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

Conductor connection

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross-section rigid | 0.2 mm² ... 1.5 mm² |
| Conductor cross-section flexible | 0.2 mm² ... 1.5 mm² |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6) |
| Conductor cross-section flexible, with ferrule without plastic sleeve | 0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6) |
| Conductor cross-section AWG | 24 ... 16 |
| Stripping length | 8 mm |

## Signaling

| | |
|---|---|
| Status display | 3 x LED (green) |
| Operating voltage display | 1 x LED (green) |

## Dimensions

| | |
|---|---|
| Width | 22.5 mm |
| Height | 112 mm |
| 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 (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

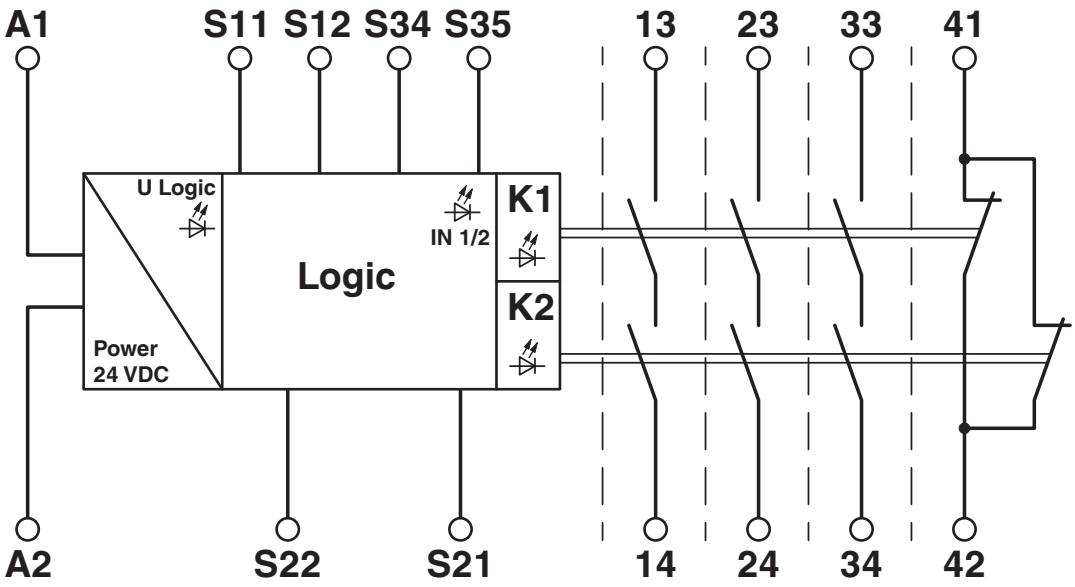
| | |
|---|---|
| Identification | CE-compliant |

## Mounting

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

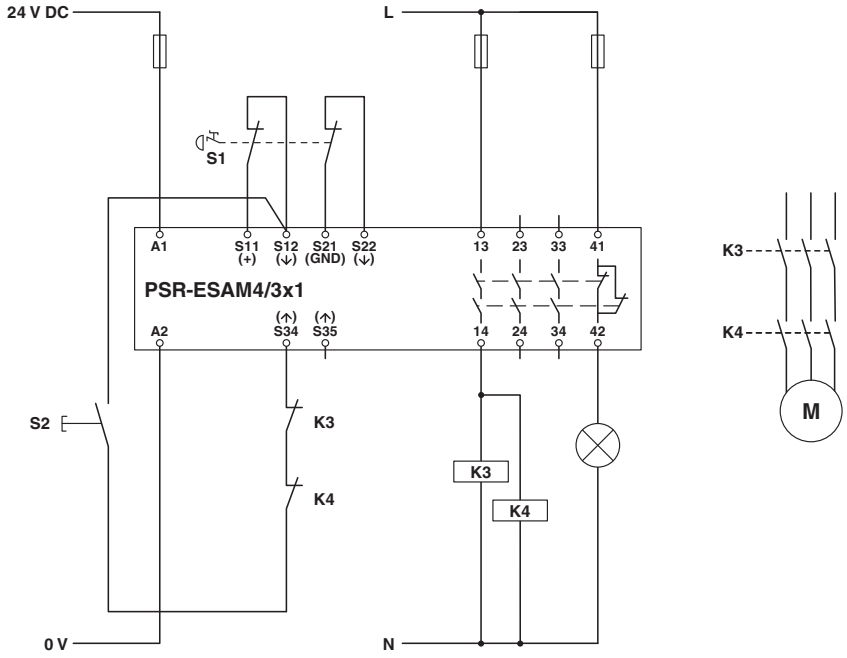
## Drawings

Circuit diagram




Block diagram

Circuit diagram




2-channel emergency stop monitoring

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/in/products/2900510

**cULus Listed**
Approval ID: E140324

**Functional Safety**
Approval ID: 01/205/5117.04/23

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## 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 | faf72f3e-a5d6-475a-adeb-073ef25de3a9 |

## Accessories

### CP-MSTB - Coding profile

1734634

https://www.phoenixcontact.com/in/products/1734634

Coding profile, is inserted into the slot on the plug or inverted header, red insulating material

### CR-MSTB - Coding section

1734401

https://www.phoenixcontact.com/in/products/1734401

Coding section, inserted into the recess in the header or the inverted plug, red insulating material

## CRIMPFOX 6 - Crimping pliers

1212034

https://www.phoenixcontact.com/in/products/1212034

Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 $mm^2$ ... 6.0 $mm^2$, lateral entry, trapezoidal crimp

## PSR-ESS-M0-H110 - Actuator

1221757

https://www.phoenixcontact.com/in/products/1221757

Actuator with anti-lock collar for modular emergency stop switches, for combination with module holder and contact module as a functional unit, panel installation, bayonet lock

## PSR-ESS-ACC-CB1-C3 - Module holder

1221747

https://www.phoenixcontact.com/in/products/1221747

Module holder for modular emergency stop switches, connects the contact block and actuator with bayonet lock, suitable for 3 elements

## PSR-ESS-ACC-CB1-NC-SC - Contact module

1221752

https://www.phoenixcontact.com/in/products/1221752

Contact module for modular emergency stop switches with force-guided N/C contact for safety-related shutdown, in conjunction with appropriate evaluation unit suitable for use up to PL e (EN ISO 13849-1), SIL 3 (EN IEC 62061)




PHOENIX CONTACT (I) Pvt. Ltd.
A-58/2, Okhla Industrial Area, Phase - II, New Delhi-110 020

+91.1275.71420
info@phoenixcontact.co.in