# Safety relays - PSR-SPP- 24UC/ESAM4/2X1/1X2

2900526

https://www.phoenixcontact.com/de/produkte/2900526

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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 62061, SIL 3 in accordance with IEC 61508
- Manually monitored and automatic activation in a single device
- Reinforced insulation
- 2 channel control
- 2 enabling current paths, 1 signaling current path

## Commercial Data

| | |
|---|---|
| Item number | 2900526 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales Key | G1 - Relais |
| Product Key | DNA114 |
| Catalog Page | Page 229 (C-6-2019) |
| GTIN | 4046356515665 |
| Weight per Piece (including packing) | 191,63 g |
| Weight per Piece (excluding packing) | 222,2 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

# Technical Data

## Product properties

| | |
|---|---|
| Product type | Safety relays |
| 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 |

Insulation characteristics

| | |
|---|---|
| Overvoltage category | III |

## 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 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 (at Us) |
| Inrush current | < 3.5 A (Δt = 3 ms at $U_s$) |
| | < 100 mA (Δt = 500 ms, with $U_s/I_x$ at S12) |
| | > -100 mA (Δt = 300 ms, with $U_s/I_x$ at S22) |
| | < 6 mA (with $U_s/I_x$ to S34) |
| | < 6 mA (with $U_s/I_x$ to S35) |
| Current consumption | typ. 38 mA (S12) |
| | typ. -38 mA (S22) |
| | typ. 0 mA (with $U_s/I_x$ to S34) |
| | typ. 1 mA (with $U_s/I_x$ to S35) |
| Voltage at input/start and feedback circuit | approx. 24 V DC |
| Filter time | 5 ms (in the event of voltage dips at $U_s$) |
| | No test pulses permitted |
| Typical response time | 100 ms (Monitored/manual start) |
| | 150 ms (automatic start) |
| Typ. starting time with $U_s$ | 250 ms (when controlled via A1) |
| Typical release time | 20 ms (on demand via the sensor circuit) |
| | 45 ms (on demand via A1) |
| Concurrence | ∞ |

| | |
|---|---|
| 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 Ω (Input and start circuits at $U_S$) |
| Operating voltage display | Green LED |
| Status display | Green LED |

## Output data

| | |
|---|---|
| Contact type | 2 enabling current paths |
| | 1 signaling current path |
| Contact material | $AgSnO_2$, + 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 $A^2$ (Enabling current paths) |
| | 36 $A^2$ (Signaling current path 31/32) |
| Interrupting rating (ohmic load) max. | 144 W (24 V DC, τ = 0 ms) |
| | 288 W (48 V DC, τ = 0 ms) |
| | 77 W (110 V DC, τ = 0 ms) |
| | 88 W (220 V DC, τ = 0 ms) |
| | 1500 VA (250 V AC, τ = 0 ms) |
| Maximum interrupting rating (inductive load) | 48 W (24 V DC, τ = 40 ms) |
| | 40 W (48 V DC, τ = 40 ms) |
| | 35 W (110 V DC, τ = 40 ms) |
| | 35 W (220 V DC, τ = 40 ms) |
| Switching capacity min. | 100 mW |
| Switching capacity according to IEC 60947-5-1 | 6 A (DC13) |
| | 5 A (AC15) |
| | 2 A (DC13) |
| Switching capacity (3600/h cycles) | 1.5 A (AC15) |
| Output fuse | 10 A gL/gG NEOZED (Enabling current paths) |
| | 6 A gL/gG NEOZED (Signaling current path) |

## Connection data

Connection technology

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

Conductor connection

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross section solid | 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 |

## Dimensions

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

## Material specifications

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

## 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: EN 50156

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

Safety data: IEC 61508 - High demand

| | |
|---|---|
| Equipment type | Type A |
| Safety Integrity Level (SIL) | 3 |
| Probability of a hazardous failure per hour ($PFH_D$) | $5.5 \times 10^{-10}$ (5 A DC13; 5 A AC15; 8760 switching cycles/year) |
| Proof test interval | 240 Months |
| Duration of use | 240 Months |

Safety data: IEC 61508 - Low demand

| | |
|---|---|
| Designation | The data is only valid if the demand rate is no more than once a year. |
| Equipment type | Type A |
| Safety Integrity Level (SIL) | 3 |
| Probability of a hazardous failure on demand ($PFD_{AVG}$) | $1.37 \times 10^{-4}$ |
| Proof test interval | 66 Months |

## Environmental and real-life conditions

Ambient conditions

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|---|---|
| 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 |

## Standards and regulations

Air clearances and creepage distances between the power circuits

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

## Mounting

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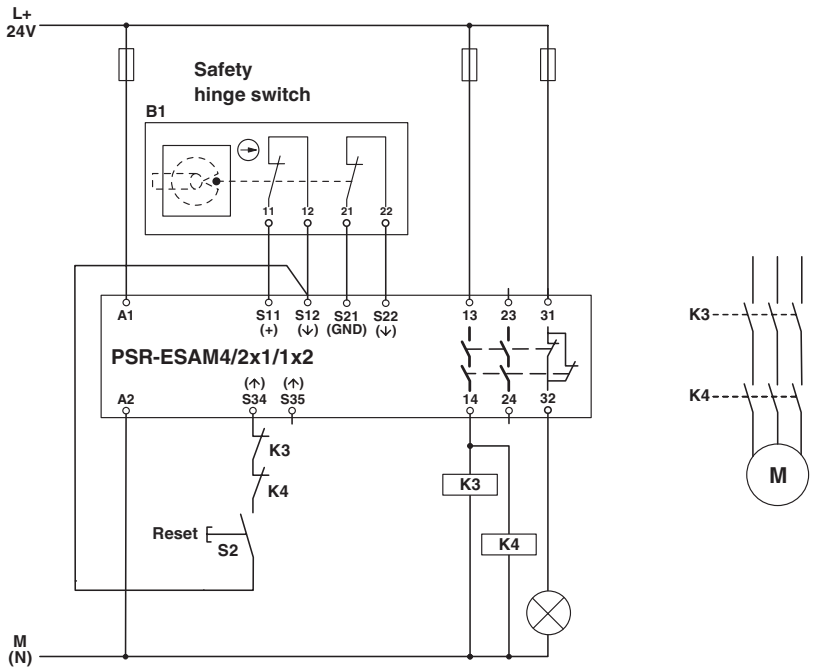
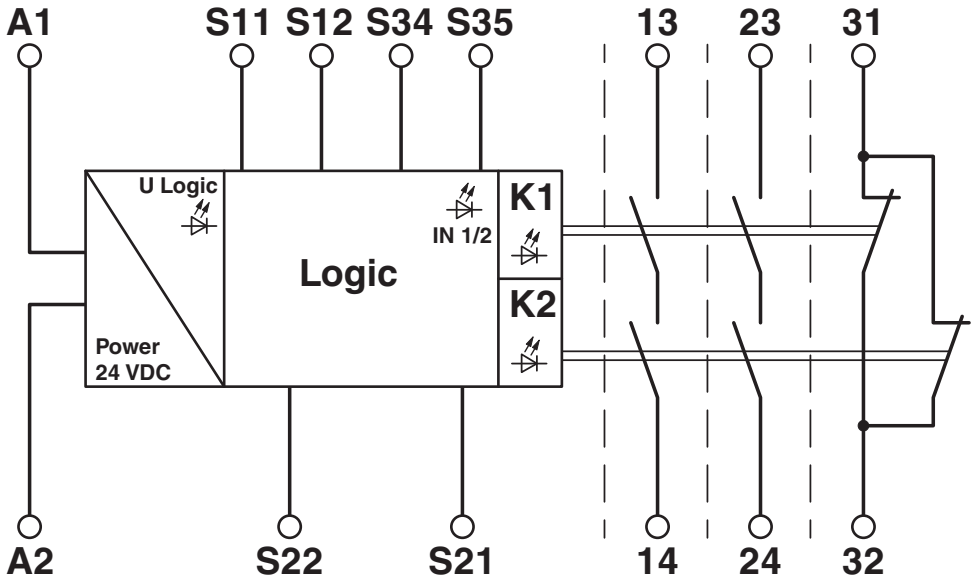
|---|---|
| Mounting type | DIN rail mounting |
| Assembly instructions | See derating curve |
| Mounting position | vertical or horizontal |

## Drawings

Circuit diagram




Circuit diagram



## Approvals

**EAC**
Approval ID: RU C-DE.A*30.B.01082

**UL Listed**
Approval ID: FILE E 140324

**cUL Listed**
Approval ID: FILE E 140324

**Functional Safety**
Approval ID: 01/205/5117.03/21

**Functional Safety**
Approval ID: 968/EZ 496.04/21

**cULus Listed**

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-9.0 | 27371819 |
| ECLASS-10.0.1 | 27371819 |
| ECLASS-11.0 | 27371819 |

### ETIM

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|---|---|
| ETIM 7.0 | EC001449 |

### UNSPSC

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

## Environmental Product Compliance

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|---|---|
| REACh SVHC | Lead 7439-92-1 |

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|---|---|
| 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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