# PSR-SPP- 24DC/ESP4/2X1/1X2 - Safety relays

2981017

https://www.phoenixcontact.com/us/products/2981017

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The figure shows a version with a screw connection

Safety relay for SIL 3 high-demand and low-demand applications, also approved in accordance with EN 50156, DNV, and EN ISO 13849, emergency stop and safety door monitoring, 1-channel, 2 enabling current paths, 1 signal contact, width: 22.5 mm, pluggable Push-in terminal block

## Your advantages

- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- 1-channel control
- Safe isolation
- With inrush current reduction, therefore suitable for coupling to failsafe controllers (PSR-ESP4)

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2981017 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN01 |
| Product key | DNA161 |
| GTIN | 4017918911072 |
| Weight per piece (including packing) | 175 g |
| Weight per piece (excluding packing) | 175 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

# Technical data

## Notes

Note on application

| | |
|---|---|
| Note on application | Only for industrial use |

## Product properties

| | |
|---|---|
| Product type | Safety relays |
| Product family | PSRclassic |
| Application | Emergency stop |
| | Process technology |
| | Safety door |
| Control | 1-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. 60 ms (For $U_s$ manual, monitored start) |
| | 60 ms (For $U_s$ autostart) |
| Typ. starting time with $U_s$ | 60 ms (At Us/on demand via A1) |
| Typical release time | typ. 20 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 | 16.12 W (At $U_S$ = 26.4 V, $I_L^2$ = 72 A², $P_{Total\ max}$= 1.72 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”. |

## Input data

Digital: Logic (A1)

| | |
|---|---|
| Description of the input | safety-related |
| Number of inputs | 1 |
| Input voltage range "1" signal | 20.4 V ... 26.4 V |
| Inrush current | max. 1 A (typ. with $U_S$, Δt = < 10 ms) |
| | max. 3 ms (Test pulse width of low test pulses) |

| | |
|---|---|
| Filter time | min. 200 ms (Test pulse rate for low test pulse) |
| | No brightness test pulses / high test pulses permitted. |
| Max. permissible overall conductor resistance | 50 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | 65 mA (typ. with $U_S$) |

Digital: Start circuit (Y2)

| | |
|---|---|
| Description of the input | non-safety-related |
| Number of inputs | 1 |
| Input voltage range "1" signal | 20.4 V ... 26.4 V |
| Inrush current | < 14 mA (typ. with $U_S$ at Y2, Δt - 10 ms) |
| 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 Y2) |

## Output data

Relay: Enabling current paths (13/14, 23/24)

| | |
|---|---|
| Output description | 2 N/O contacts each in series, safety-related, floating |
| Number of outputs | 2 |
| Contact switching type | 2 enabling current paths |
| Contact material | $AgSnO_2$ |
| Switching voltage | min. 10 V |
| | max. 250 V AC/DC |
| Switching power | min. 100 mW |
| Inrush current | min. 10 mA |
| | max. 6 A |
| Switching capacity | 5 A (AC15) |
| | 5 A (DC13) |
| Limiting continuous current | 6 A (Observe derating and load limit curve) |
| 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 |
| | 4 A gL/gG (for low-demand applications) |

Relay: Signaling current path (31/32)

| | |
|---|---|
| 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 power | min. 100 mW |

| | |
|---|---|
| Inrush current | min. 10 mA |
| | max. 6 A |
| Switching capacity | 1.5 A (AC15) |
| | 2 A (DC13) |
| Limiting continuous current | 6 A |
| Sq. Total current | 36 $A^2$ (observe derating) |
| Switching frequency | max. 0.5 Hz |
| Mechanical service life | $10^7$ cycles |
| 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 | LED (green) |
| Operating voltage display | Green LED |

## 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 (EN 60204-1) | 0 |

Safety data: EN ISO 13849

| | |
|---|---|
| Performance level (PL) | e |

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

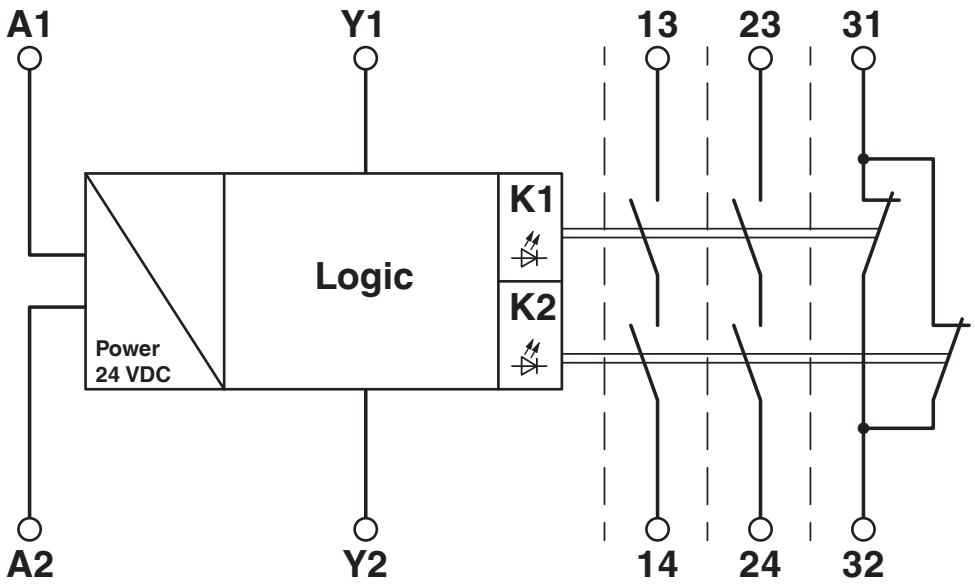
| | |
|---|---|
| Identification | CE-compliant |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Mounting position | On horizontal and vertical DIN rail |

## Drawings

Circuit diagram




Block diagram

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2981017

**DNV**
Approval ID: TAA00000K4

**cULus Listed**
Approval ID: E140324

**Functional Safety**
Approval ID: 01/205/0763.04/23

## Classifications

### ECLASS

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

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC001449 |

### UNSPSC

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

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(a)-I, 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 | 7c96e563-ee87-4e0e-b3fe-09599e14b35a |

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