# PSR-SPP- 24DC/ESD/4X1/30 - Safety relays

2981813

https://www.phoenixcontact.com/us/products/2981813

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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, automatic or manual activation, 2 N/O contacts with a fixed dropout delay of 0.1 s ... 30 s, pluggable Push-in terminal block

## Your advantages

- Maximum of 3 undelayed and 2 dropout delay contacts
- Manually monitored and automatic activation
- Up to Cat. 3/4 and PL d/e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- For emergency stop and safety door monitoring, plus evaluation of light grids
- 1- and 2-channel control
- Protective labels to prevent manipulation of the set time (PSR-ESD-300) or electronic protection against manipulation (PSR-ESD-30)
- Fixed delay times of 0.1 s ... 300 s

## Commercial data

| | |
|---|---|
| Item number | 2981813 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN01 |
| Product key | DNA131 |
| Catalog page | Page 230 (C-6-2019) |
| GTIN | 4046356117265 |
| Weight per piece (including packing) | 229.76 g |
| Weight per piece (excluding packing) | 209.68 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 |
| | Light grid |
| Mechanical service life | approx. $10^7$ cycles |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Times

| | |
|---|---|
| Typical response time | 150 ms (Monitored/manual and auto-start) |
| Typical release time | 20 ms (Undelayed contacts) |
| | 100 ms |
| Delay time range | 0.1 s ... 30 s ±30 % (adjustable) |
| Recovery time | 330 ms (Restart) |
| | 1 s (Electric torque) |

## Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 1.8 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 | 4 kV / basic insulation |

Supply

| | |
|---|---|
| Rated control circuit supply voltage $U_S$ | 24 V DC |
| Inrush current | typ. 250 mA |

## Input data

General

| | |
|---|---|
| Nominal input voltage $U_N$ | 24 V DC |
| Input voltage range in reference to $U_N$ | 0.85 ... 1.1 |
| Typical input current at $U_N$ | 75 mA DC |
| Voltage at input/start and feedback circuit | approx. 24 V DC |
| Typical response time | 150 ms (Monitored/manual and auto-start) |
| Typical release time | 20 ms (Undelayed contacts) |
| | 100 ms (delayed contacts) |
| Typical release time range | 0.1 s ... 30 s |
| Recovery time | 330 ms (Restart) |
| | 1 s (Electric torque) |
| Protective circuit | Suppressor diode, 33 V DC |

| | |
|---|---|
| Max. permissible overall conductor resistance | 500 Ω (Input and reset circuit at $U_N$) |
| Operating voltage display | Green LED |
| Status display | LED K1/K2 and K3(t)/K4(t), green |

## Output data

| | |
|---|---|
| Contact switching type | 4 enabling current paths |
| Contact material | $AgSnO_2$ |
| Maximum switching voltage | 250 V AC/DC |
| Minimum switching voltage | 15 V AC/DC |
| Limiting continuous current | 6 A (N/O contact) |
| Maximum inrush current | 6 A |
| Inrush current, minimum | 25 mA |
| Sq. Total current | 120 $A^2$ (see to derating) |
| Interrupting rating (ohmic load) max. | 144 W (24 V DC, τ = 0 ms) |
| | 288 W (48 V DC, τ = 0 ms) |
| | 90 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) | 42 W (24 V DC, τ = 40 ms) |
| | 33 W (48 V DC, τ = 40 ms) |
| | 25 W (110 V DC, τ = 40 ms) |
| | 23 W (220 V DC, τ = 40 ms) |
| Switching capacity min. | 0.4 W |
| Switching capacity (360/h cycles) | on request |
| Switching capacity (3600/h cycles) | 3 A (24 V (DC13)) |
| | 3 A (230 V (AC15)) |
| Output fuse | 10 A gL/gG NEOZED (N/O contact) |

## 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 |

## Dimensions

| | |
|---|---|
| Width | 22.5 mm |

| | |
|---|---|
| Height | 112 mm |
| Depth | 114.5 mm |

## Material specifications

| | |
|---|---|
| Housing material | Polyamide |

## Characteristics

Safety data

| | |
|---|---|
| Stop category | 0 |
| | 1 |

Safety data: EN ISO 13849

| | |
|---|---|
| Category | 4 |
| Performance level (PL) | e |

Safety data

| | |
|---|---|
| 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 ... 45 °C |
| 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

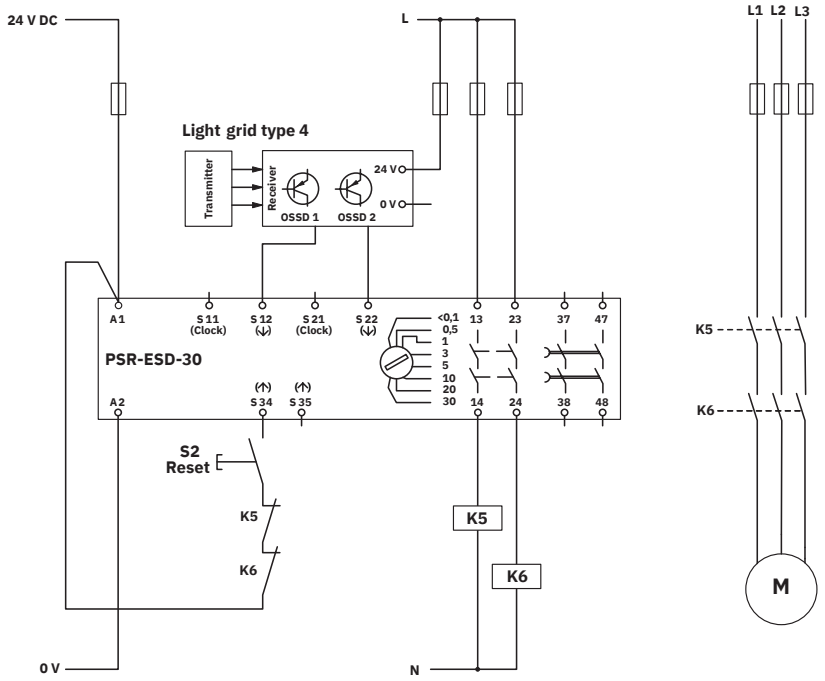
| | |
|---|---|
| Standards/regulations | DIN EN 60947-1 |

## Mounting

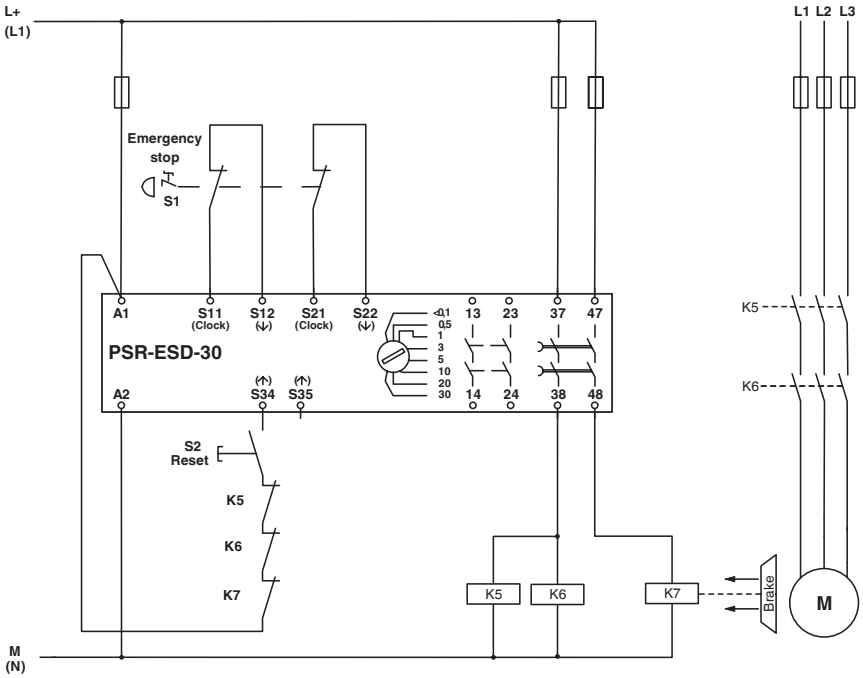
| | |
|---|---|
| Mounting type | DIN rail mounting |
| Mounting position | any |

## Drawings

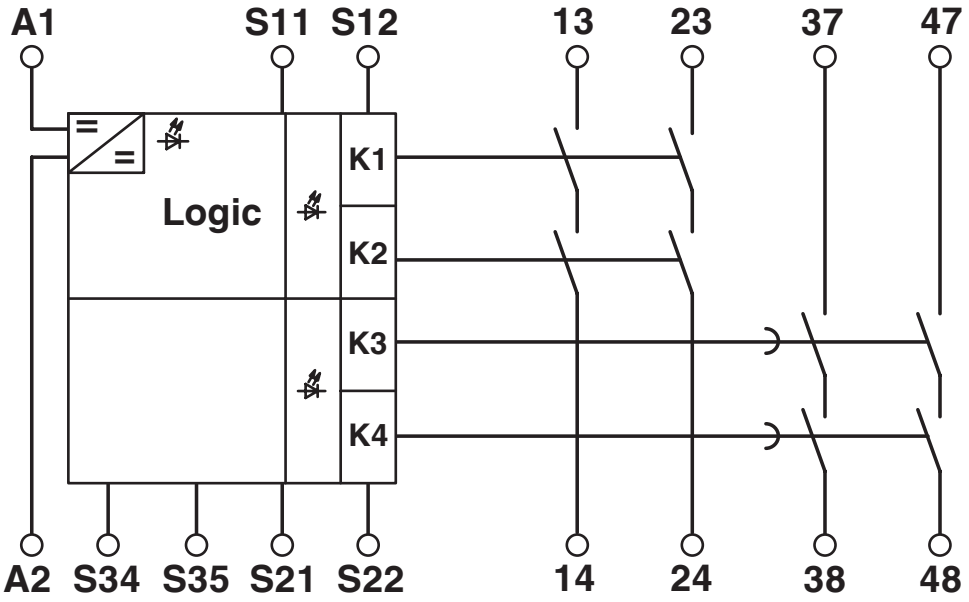
Circuit diagram



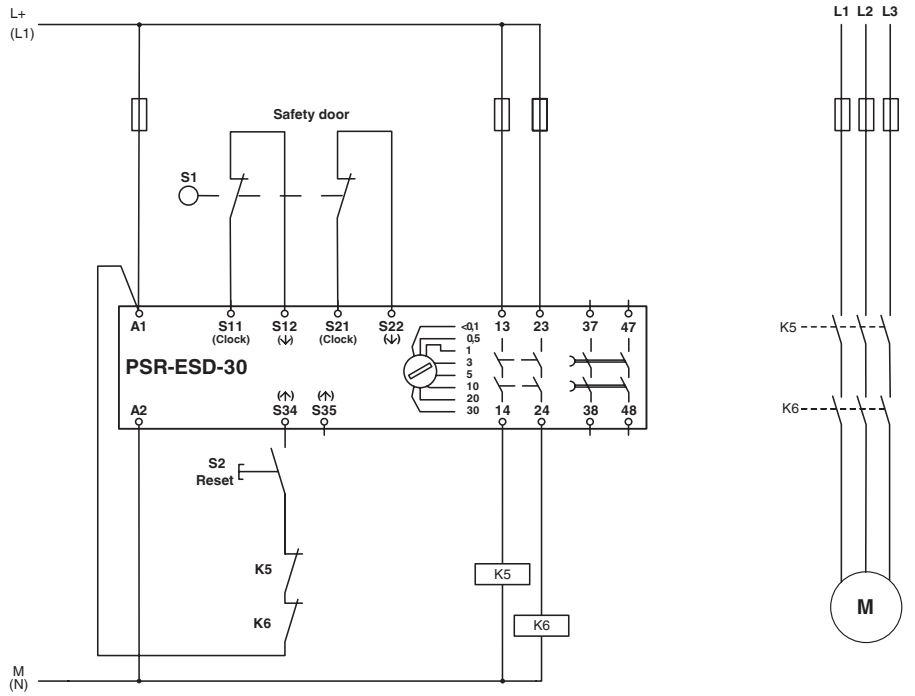

Circuit diagram



Circuit diagram




Circuit diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2981813

**EAC**
Approval ID: TR_TS_D_00573_c

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

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

**Functional Safety**
Approval ID: 01/205/0656.04/23

**cULus Listed**

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 34, 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) |
| | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7) |
| SCIP | 6f773305-d4ee-4c30-9f1d-e1978693fe90 |

## Accessories

### CRIMPFOX 6 - Crimping pliers

1212034

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


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