# PSR-SCP-24DC/ESD/5X1/1X2/300 - Safety relays

2981428

https://www.phoenixcontact.com/in/products/2981428

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Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e (EN ISO 13849), one- or two-channel operation, automatic or manual activation, 3 N/O contacts, 1 N/C contact, 2 N/O contacts with dropout delay of 0.2 s ... 300 s, plug-in screw 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 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
- Adjustable delay time of 0.2 s ... 300 s (24 increments)
- Protective labels to prevent manipulation of the set time (PSR-ESD-300) or electronic protection against manipulation (PSR-ESD-30)

## Commercial Data

| | |
|---|---|
| Item number | 2981428 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales Key | DNA |
| Product Key | DNA131 |
| Catalog Page | Page 230 (C-6-2019) |
| GTIN | 4017918975227 |
| Weight per Piece (including packing) | 430 g |
| Weight per Piece (excluding packing) | 430 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 | 10x $10^6$ cycles |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

## Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 3.72 W |
| Nominal operating mode | 100% operating factor |

Air clearances and creepage distances between the power circuits

| | |
|---|---|
| Rated insulation voltage | 250 V AC |
| Rated surge voltage/insulation | Basic insulation 4 kV:<br>between all current paths and housing<br>Safe isolation, reinforced insulation 6 kV:<br>between 13/14, 23/24, 33/34, and the remaining current paths<br>between 13/14, 23/24, 33/34 among one another |

## Input data

General

| | |
|---|---|
| Rated control circuit supply voltage $U_S$ | 24 V DC -15 % / +10 % |
| Power consumption at $U_S$ | typ. 3.72 W |
| Rated control supply current $I_S$ | typ. 155 mA |
| Inrush current | 200 mA (at $U_S$) |
| | < 40 mA (with $U_s/I_x$ to S10) |
| | < 150 mA (with $U_s/I_x$ to S12) |
| | > -60 mA (with $U_s/I_x$ to S22) |
| | < 40 mA (with $U_s/I_x$ to S34) |
| | < 40 mA (with $U_s/I_x$ to S35) |
| Current consumption | < 40 mA (with $U_s/I_x$ to S10) |
| | < 50 mA (with $U_s/I_x$ to S12) |
| | > -40 mA (with $U_s/I_x$ to S22) |
| | 0 mA (with $U_s/I_x$ to S34) |
| | < 5 mA (with $U_s/I_x$ to S35) |
| Voltage at input/start and feedback circuit | 24 V DC -15 % / +10 % |
| Filter time | 1 ms (at A1 in the event of voltage dips at $U_s$) |
| | max. 1.5 ms (at S10, S12; test pulse width) |
| | 7.5 ms (at S10, S12; test pulse rate) |
| | Test pulse rate = 5 x Test pulse width |

| | |
|---|---|
| Typical response time | < 600 ms (automatic start) |
| | < 70 ms (manual start) |
| Typ. starting time with $U_s$ | < 600 ms (when controlled via A1) |
| Typical release time | < 20 ms (when controlled via S11/S12 and S21/S22) |
| | < 20 ms (when controlled via A1) |
| Concurrence | ∞ |
| Recovery time | < 1 s |
| Maximum switching frequency | 0.5 Hz |
| Protective circuit | Surge protection; Suppressor diode |
| Max. permissible overall conductor resistance | approx. 22 Ω (Input and start circuits at $U_S$) |
| Operating voltage display | 1 x green LED |
| Status display | 4 x green LEDs |

## Output data

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|---|---|
| Contact type | 5 enabling current paths |
| | 1 signaling current path |
| Contact material | $AgSnO_2$ |
| Maximum switching voltage | 250 V AC/DC (Observe the load curve) |
| Minimum switching voltage | 5 V AC/DC |
| Limiting continuous current | 6 A (N/O contact, pay attention to the derating) |
| | 6 A (N/C contact) |
| Maximum inrush current | 20 A (Δt ☐ 100 ms, undelayed contacts) |
| | 8 A (delayed contacts) |
| Inrush current, minimum | 10 mA |
| Sq. Total current | 55 $A^2$ (observe derating) |
| Interrupting rating (ohmic load) max. | 144 W (24 V DC, τ = 0 ms) |
| | 288 W (48 V DC, τ = 0 ms) |
| | 110 W (110 V DC, τ = 0 ms, delayed contacts: 77 W) |
| | 88 W (220 V DC, τ = 0 ms) |
| | 1500 VA (250 V AC, τ = 0 ms, delayed contacts: 2000 VA) |
| Maximum interrupting rating (inductive load) | 42 W (24 V DC, τ = 40 ms, delayed contacts: 48 W) |
| | 42 W (48 V DC, τ = 40 ms, delayed contacts: 40 W) |
| | 42 W (110 V DC, τ = 40 ms, delayed contacts: 35 W) |
| | 42 W (220 V DC, τ = 40 ms, delayed contacts: 33 W) |
| Switching capacity min. | 50 mW |
| Switching capacity (360/h cycles) | 4 A (24 V DC) |
| | 4 A (230 V AC) |
| Switching capacity (3600/h cycles) | 2.5 A (24 V (DC13)) |
| | 3 A (230 V (AC15)) |
| Output fuse | 10 A gL/gG (N/O contact) |
| | 6 A gL/gG (N/C contact) |

## Connection data

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|---|---|
| Connection technology | |

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

Conductor connection

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section rigid | 0.2 mm² ... 2.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 12 |
| Stripping length | 7 mm |
| Screw thread | M3 |

## Dimensions

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|---|---|
| Width | 45 mm |
| Height | 99 mm |
| Depth | 114.5 mm |

## Material specifications

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|---|---|
| Housing material | PBT |

## Characteristics

Safety data

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

Safety data: EN ISO 13849

| | |
|---|---|
| Category | 4 (Undelayed contacts) |
| | 3 (delayed contacts) |
| Performance level (PL) | e (for delayed contacts PL d) |

Safety data: IEC 61508 - High demand

| | |
|---|---|
| Equipment type | Type A |
| Safety Integrity Level (SIL) | 3 (for delayed contacts SIL 2) |
| Probability of a hazardous failure per hour ($PFH_D$) | $1.89 \times 10^{-9}$ |
| Proof test interval | 240 Months |
| Duration of use | 240 Months |

Safety data: IEC 61508 - Low demand

| | |
|---|---|
| Equipment type | Type A |
| Safety Integrity Level (SIL) | 3 (for delayed contacts SIL 2) |
| Probability of a hazardous failure on demand ($PFD_{AVG}$) | $1.43 \times 10^{-4}$ |
| Proof test interval | 19 Months |
| Duration of use | 240 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 |

## Approvals

CE

| | |
|---|---|
| Certificate | CE-compliant |

## Standards and regulations

Air clearances and creepage distances between the power circuits

| | |
|---|---|
| Standards/regulations | DIN EN 50178/VDE 0160 |

## Mounting

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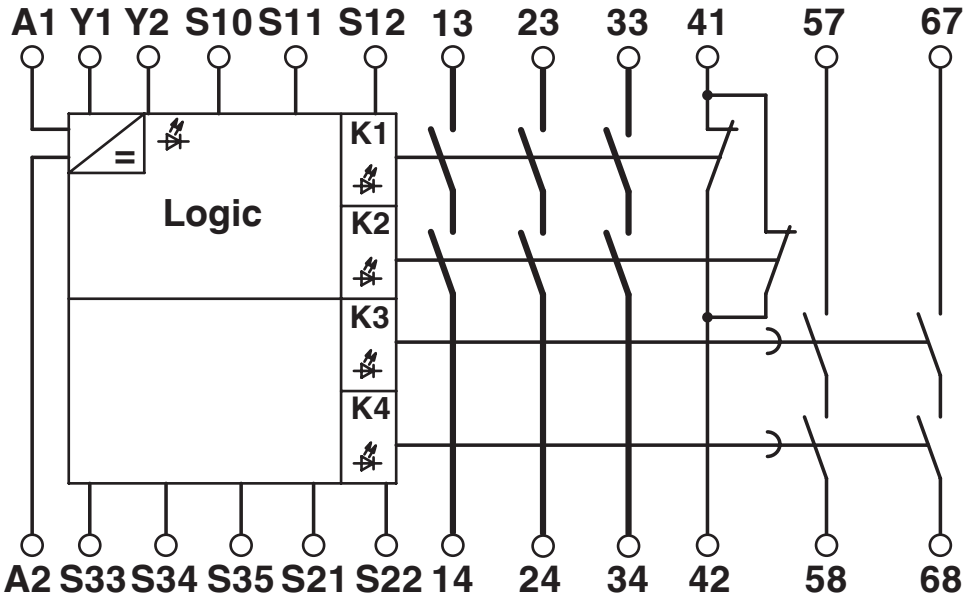
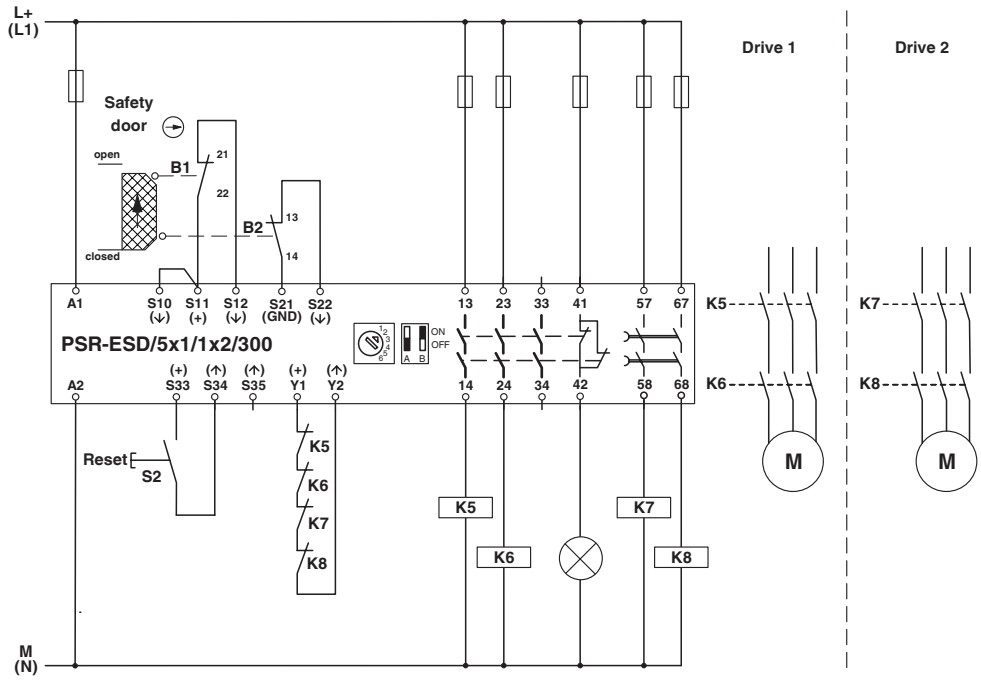
|---|---|
| Mounting type | DIN rail mounting |
| Mounting position | any |

## Drawings

Circuit diagram




Circuit diagram



## Approvals

**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: 01/205/5347.03/21

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-11.0 | 27371819 |

### ETIM

| | |
|---|---|
| ETIM 8.0 | EC001449 |

### UNSPSC

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

## Environmental Product Compliance

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

| | |
|---|---|
| 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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