

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



2981020

<https://www.phoenixcontact.com/in/products/2981020>

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

## Your advantages

- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with 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)

## Commercial Data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2981020             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales Key                            | DNA                 |
| Product Key                          | DNA161              |
| Catalog Page                         | Page 256 (C-6-2019) |
| GTIN                                 | 4017918911065       |
| Weight per Piece (including packing) | 204.82 g            |
| Weight per Piece (excluding packing) | 168.97 g            |
| Customs tariff number                | 85371098            |
| Country of origin                    | DE                  |

## Technical Data

### Product properties

|                         |  |
|-------------------------|--|
| Product type            | Safety relays  |
| Product family          | PSRclassic   |
| Application             | Emergency stop   |
|                         | Process technology   |
|                         | Safety door  |
| Mechanical service life | approx. $10^7$ cycles  |
| Relay type              | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

### Electrical properties

|   |                                   |
|---|-----------------------------------|
| Maximum power dissipation for nominal condition | 15.9 W ( $I^2 = 72 \text{ A}^2$ ) |
| Nominal operating mode                          | 100% operating factor             |

### Air clearances and creepage distances between the power circuits

|                                |   |
|--------------------------------|---|
| Rated insulation voltage       | 250 V   |
| Rated surge voltage/insulation | 6 kV / Safe isolation, increased insulation                 |
|                                | Basic insulation 4 kV between all current paths and housing |

### Input data

#### General

|  |   |
|--|---|
| Rated control circuit supply voltage $U_S$ | 24 V DC -15 % / +10 %                                       |
| Power consumption at $U_S$                 | 1.2 W   |
| Rated control supply current $I_S$         | typ. 50 mA DC   |
| Inrush current                             | 1 A ( $\Delta t < 10 \text{ ms}$ at $U_S$ )                 |
| Filter time                                | max. 3 ms (Test pulse duration)                             |
| Typical response time                      | 60 ms (Automatic/manual start)                              |
| Typical release time                       | 20 ms   |
| Recovery time                              | approx. 1 s   |
| Protective circuit                         | Surge protection; Suppressor diode, 33 V (A1 - A2, Y2 - A2) |
|  | Reverse polarity protection                                 |
| Operating voltage display                  | Green LED   |
| Status display                             | Green LED   |

### Output data

|                             |  |
|-----------------------------|--|
| Contact type                | 2 enabling current paths                       |
|                             | 1 signaling current path                       |
| Contact material            | AgSnO <sub>2</sub> , gold-flashed              |
| Maximum switching voltage   | 250 V AC/DC (Observe the load curve)           |
| Minimum switching voltage   | 10 V   |
| Limiting continuous current | 6 A (N/O contact/N/C contact, high demand)     |
|                             | 4 A (N/O contact, for low-demand applications) |

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|                                       |   |
|---------------------------------------|---|
| Maximum inrush current                | 6 A   |
| Inrush current, minimum               | 10 mA   |
| Sq. Total current                     | 72 A <sup>2</sup> (observe derating)                        |
| Interrupting rating (ohmic load) max. | 144 W (24 V DC, $\tau = 0$ ms)                              |
|                                       | 200 W (48 V DC, $\tau = 0$ ms)                              |
|                                       | 77 W (110 V DC, $\tau = 0$ ms)                              |
|                                       | 70 W (220 V DC, $\tau = 0$ ms)                              |
|                                       | 1500 VA (250 V AC, $\tau = 0$ ms)                           |
| Switching capacity min.               | 0.2 W   |
| Switching capacity (360/h cycles)     | 5 A (24 V (DC13))   |
|                                       | 5 A (230 V (AC 15))   |
| Switching capacity (3600/h cycles)    | 5 A (24 V (DC13))   |
|                                       | 5 A (230 V (AC 15))   |
| Output fuse                           | 6 A gL/gG NEOZED (High demand)                              |
|                                       | 4 A gL/gG NEOZED (Low demand)                               |
|                                       | Also applies to applications in accordance with EN 50156-1. |

## Connection data

### Connection technology

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

### Conductor connection

|                                  |   |
|----------------------------------|---|
| Connection method                | Screw connection                            |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross-section AWG      | 24 ... 12                                   |
| Stripping length                 | 7 mm  |
| Screw thread                     | M3  |

## Dimensions

|        |          |
|--------|----------|
| Width  | 22.5 mm  |
| Height | 99 mm    |
| Depth  | 114.5 mm |

## Material specifications

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

## Characteristics

### Safety data

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

### Safety data: EN ISO 13849

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

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## Safety data: IEC 61508 - High demand

|   |                        |
|---|------------------------|
| Safety Integrity Level (SIL)                                    | 3                      |
| Probability of a hazardous failure per hour (PFH <sub>D</sub> ) | $1.16 \times 10^{-10}$ |
| Proof test interval   | 240 Months             |
| Duration of use   | 240 Months             |

## Safety data: IEC 61508 - Low demand

|  |                       |
|--|-----------------------|
| Safety Integrity Level (SIL)                                       | 3                     |
| Probability of a hazardous failure on demand (PFD <sub>AVG</sub> ) | $1.24 \times 10^{-4}$ |
| Proof test interval  | 72 Months             |
| Duration of use  | 240 Months            |

## 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                                    |
| 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

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

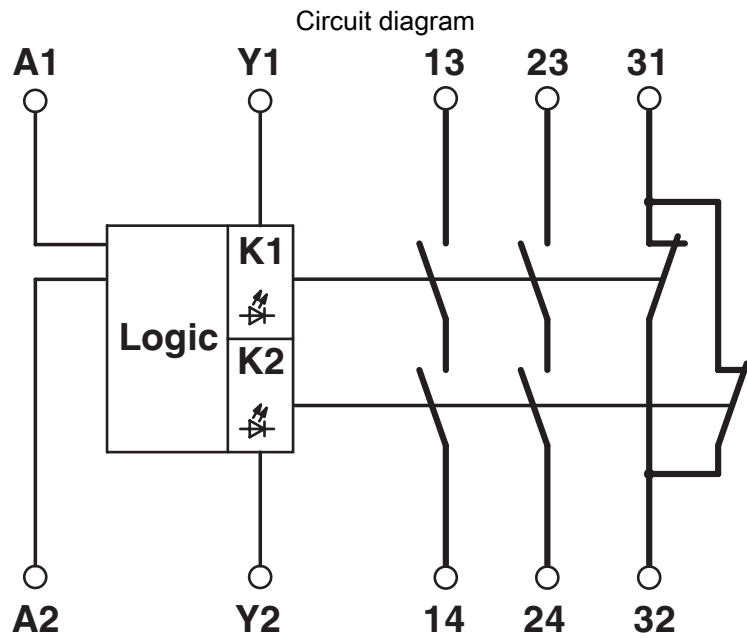
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## Drawings



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## 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: 968/EZ 406.05/22



**Functional Safety**

Approval ID: 01/205/0763.03/22

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

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## Environmental Product Compliance

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