

# PSR-SPP-230AC/ESAM2/3X1/1X2/B - Safety relays



2901431

<https://www.phoenixcontact.com/us/products/2901431>

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Safety relay for emergency stop and safety door up to SIL 1, SIL CL 1, Cat. 1, PL c, depending on the application up to SIL 3, SIL CL 3, Cat. 4, PL e, single-channel operation, 3 enabling current paths, nominal input voltage of 230 V AC/DC, pluggable Push-in terminal block

## Your advantages

- Up to Cat. 1/PL c in accordance with ISO 13849-1, SIL 1 in accordance with IEC 62061, SIL 1 in accordance with IEC 61508
- Depending on the application, 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
- Basic insulation

## Commercial Data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2901431             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Product Key                          | DNA111              |
| Catalog Page                         | Page 229 (C-6-2019) |
| GTIN                                 | 4046356592178       |
| Weight per Piece (including packing) | 235.4 g             |
| Weight per Piece (excluding packing) | 167.21 g            |
| Country of origin                    | DE                  |

## Technical Data

### Product properties

|                         |  |
|-------------------------|--|
| Product type            | Safety relays  |
| Product family          | PSRclassic   |
| Application             | Emergency stop<br>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 | 2.88 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 | 4 kV / basic insulation (safe isolation, reinforced insulation, and 6 kV between A1-A2/logic/enabling and signaling current paths) |

### Input data

#### General

|   |  |
|---|--|
| Rated control circuit supply voltage $U_S$    | 230 V AC -15 % / +10 %   |
| Rated control supply current $I_S$            | 22 mA  |
| Voltage at input/start and feedback circuit   | ~ 24 V DC  |
| Typical response time                         | 50 ms (manual start)<br>300 ms (automatic start)                       |
| Typ. starting time with $U_S$                 | 300 ms (when controlled via A1 or S11/S12)                             |
| Typical release time                          | 20 ms (when controlled via S11/S12)<br>150 ms (when controlled via A1) |
| Recovery time                                 | 1 s  |
| Maximum switching frequency                   | 0.5 Hz   |
| Protective circuit                            | Surge protection; Suppressor diode<br>Surge protection; Varistor       |
| Max. permissible overall conductor resistance | 50 $\Omega$  |
| Operating voltage display                     | Green LED  |
| Status display                                | 2 x green LEDs   |

### Output data

|                           |  |
|---------------------------|--|
| Contact switching type    | 3 enabling current paths<br>1 signaling current path |
| Contact material          | AgSnO <sub>2</sub> , gold-flashed                    |
| Maximum switching voltage | 250 V AC/DC  |
| Minimum switching voltage | 10 V AC/DC   |

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|  |  |
|--|--|
| Limiting continuous current                  | 6 A (Enabling current paths)               |
|  | 5 A (Signaling current path)               |
| Maximum inrush current                       | 6 A  |
| Inrush current, minimum                      | 10 mA                                      |
| Sq. Total current                            | 72 A <sup>2</sup>                          |
| Interrupting rating (ohmic load) max.        | 144 W (at 24 V DC)                         |
|  | 230 W (at 48 V DC)                         |
|  | 68 W (at 110 V DC)                         |
|  | 88 W (at 220 V DC)                         |
|  | 2000 VA (for 250 V AC)                     |
| Maximum interrupting rating (inductive load) | 48 W (at 24 V DC)                          |
|  | 40 W (at 48 V DC)                          |
|  | 35 W (at 110 V DC)                         |
|  | 33 W (at 220 V DC)                         |
| Switching capacity min.                      | 100 mW                                     |
| Switching capacity (360/h cycles)            | 6 A (24 V DC)                              |
|  | 5 A (230 V AC)                             |
| Switching capacity (3600/h cycles)           | 3 A (24 V (DC13))                          |
|  | 3 A (230 V (AC 15))                        |
| Output fuse                                  | 10 A gL/gG NEOZED (Enabling current paths) |
|  | 6 A gL/gG NEOZED (Signaling current paths) |

## Connection data

### Connection technology

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

### Conductor connection

|   |  |
|---|--|
| Connection method   | Push-in connection   |
| Conductor cross section rigid   | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>                                  |
| Conductor cross section flexible                                      | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>                                  |
| Conductor cross section, flexible, with ferrule, with plastic sleeve  | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6) |
| Conductor cross section flexible, with ferrule without plastic sleeve | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (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

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## Safety data

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

## Safety data: EN ISO 13849

|                              |   |
|------------------------------|---|
| Category                     | 1 (up to Cat. 4 depending on the application) |
| Performance level (PL)       | c (up to PL e depending on the application)   |
| Safety Integrity Level (SIL) | 1 (up to SIL 3 depending on the application)  |
| Safety Integrity Level (SIL) | 1 (up to SIL 3 depending on the application)  |

## Environmental and real-life conditions

### Ambient conditions

|  |   |
|--|---|
| Degree of protection                           | IP20  |
| Min. degree of protection of inst. location    | IP54  |
| Ambient temperature (operation)                | -25 °C ... 55 °C                                    |
| Ambient temperature (storage/transport)        | -40 °C ... 85 °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

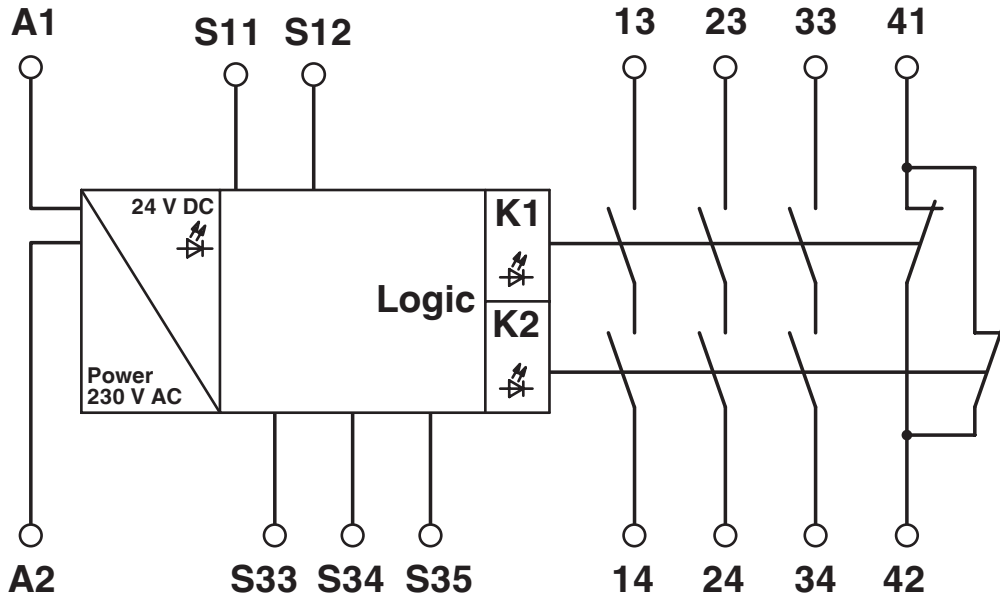
|                       |                       |
|-----------------------|-----------------------|
| Standards/regulations | DIN EN 50178/VDE 0160 |
|-----------------------|-----------------------|

## Mounting

|                   |                    |
|-------------------|--------------------|
| Mounting type     | DIN rail mounting  |
| Mounting position | any                |
| Connection method | Push-in connection |

Drawings

Circuit diagram



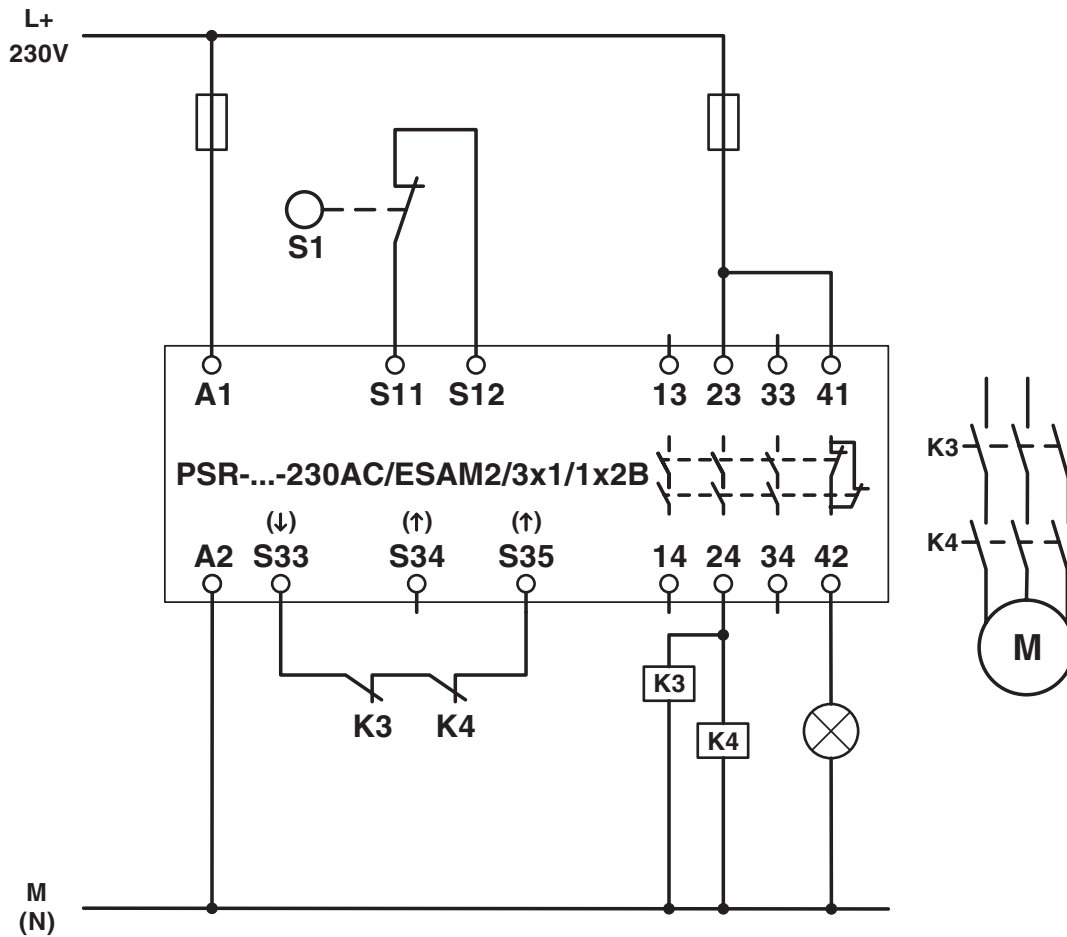
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Circuit diagram



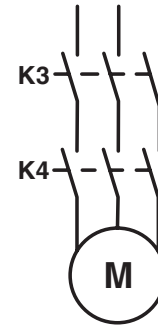
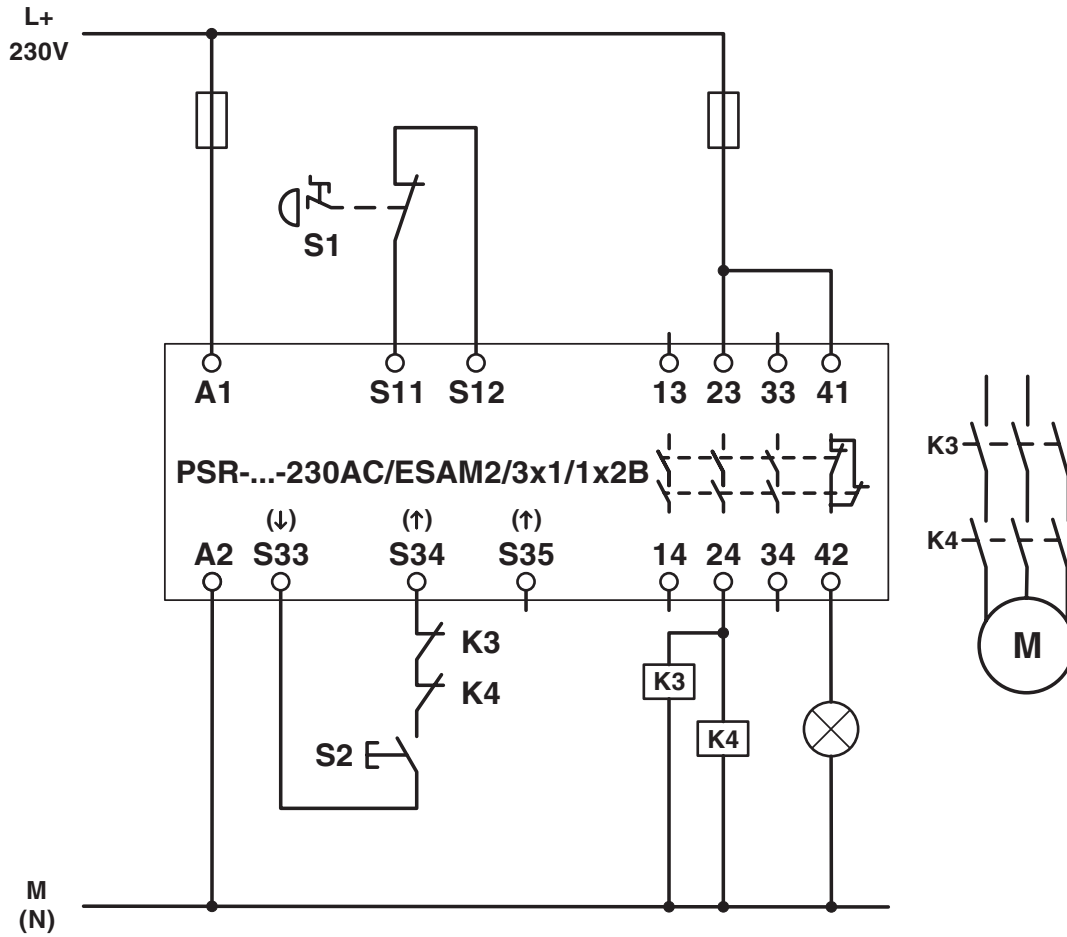
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Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2901431>



**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: 01/205/5117.03/21



**Functional Safety**

Approval ID: 968/EZ 496.04/21

**cULus Listed**



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## Classifications

### ECLASS

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