

# PSR-SPP-230UC/ESAM4/3X1/1X2/B - Safety relays



2901429

<https://www.phoenixcontact.com/in/products/2901429>

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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, 1- or 2-channel operation, 3 enabling current paths, nominal input voltage: 230 V AC/DC, pluggable Push-in terminal block

## Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- Manually monitored and automatic activation in a single device
- Basic insulation
- 1- and 2-channel control
- 3 enabling current paths, 1 signaling current path

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2901429             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | DNA                 |
| Product key                          | DNA114              |
| Catalog page                         | Page 229 (C-6-2019) |
| GTIN                                 | 4046356592208       |
| Weight per piece (including packing) | 236.41 g            |
| Weight per piece (excluding packing) | 175.68 g            |
| Customs tariff number                | 85371098            |
| Country of origin                    | DE                  |

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## 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                                                                       |
|                         | Safety door                                                                          |
| Control                 | 1 and 2 channel                                                                      |
| 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/DC -15 % / +10 %                               |
| Power consumption at $U_S$                    | 2 W                                                     |
| Rated control supply current $I_S$            | 22 mA                                                   |
| Voltage at input/start and feedback circuit   | ~ 24 V DC                                               |
| Typical response time                         | 40 ms (man. start)                                      |
| Typ. starting time with $U_S$                 | 330 ms (when controlled via A1)                         |
| Typical release time                          | 150 ms (when controlled via A1)                         |
|                                               | 20 ms (when controlled via S11/S12 and S21/S22)         |
| Concurrence                                   | $\infty$                                                |
| Recovery time                                 | 1 s                                                     |
| Maximum switching frequency                   | 0.5 Hz                                                  |
| Protective circuit                            | Surge protection; Varistor 275 V <sub>RMS</sub> (A1-A2) |
|                                               | Surge protection; Varistor                              |
| Max. permissible overall conductor resistance | 50 $\Omega$                                             |

### Output data

|                        |                          |
|------------------------|--------------------------|
| Contact switching type | 3 enabling current paths |
|------------------------|--------------------------|

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|                                              |                                                                                                                                                                                                                        |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | 1 signaling current path                                                                                                                                                                                               |
| Contact material                             | AgSnO <sub>2</sub> , + 0.2 µm Au                                                                                                                                                                                       |
| Maximum switching voltage                    | 250 V AC/DC                                                                                                                                                                                                            |
| Minimum switching voltage                    | 10 V AC/DC                                                                                                                                                                                                             |
| Limiting continuous current                  | 6 A (Enabling current paths)<br>5 A (Signaling current path)                                                                                                                                                           |
| Maximum inrush current                       | 6 A                                                                                                                                                                                                                    |
| Inrush current, minimum                      | 10 mA                                                                                                                                                                                                                  |
| Sq. Total current                            | $72 \text{ A}^2 (I_{TH}^2 = I_1^2 + I_2^2 + I_3^2)$                                                                                                                                                                    |
| Interrupting rating (ohmic load) max.        | 144 W (24 V DC, $\tau = 0 \text{ ms}$ )<br>230 W (48 V DC, $\tau = 0 \text{ ms}$ )<br>68 W (110 V DC, $\tau = 0 \text{ ms}$ )<br>88 W (220 V DC, $\tau = 0 \text{ ms}$ )<br>2000 VA (250 V AC, $\tau = 0 \text{ ms}$ ) |
| Maximum interrupting rating (inductive load) | 48 W (24 V DC, $\tau = 40 \text{ ms}$ )<br>40 W (48 V DC, $\tau = 40 \text{ ms}$ )<br>35 W (110 V DC, $\tau = 40 \text{ ms}$ )<br>33 W (220 V DC, $\tau = 40 \text{ ms}$ )                                             |
| Switching capacity min.                      | 100 mW                                                                                                                                                                                                                 |
| Switching capacity (360/h cycles)            | 6 A (24 V DC)<br>5 A (230 V AC)                                                                                                                                                                                        |
| Switching capacity (3600/h cycles)           | 3 A (24 V (DC13))<br>3 A (230 V (AC 15))                                                                                                                                                                               |
| Output fuse                                  | 10 A gL/gG NEOZED (Enabling current paths)<br>6 A gL/gG NEOZED (Signaling current path)                                                                                                                                |

## 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                                                                         |

## Signaling

|                           |                 |
|---------------------------|-----------------|
| Status display            | 3 x LED (green) |
| Operating voltage display | 1 x LED (green) |

## Dimensions

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|        |          |
|--------|----------|
| Width  | 22.5 mm  |
| Height | 112 mm   |
| Depth  | 114.5 mm |

## Material specifications

|                  |    |
|------------------|----|
| Housing material | PA |
|------------------|----|

## Characteristics

### Safety data

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

### Safety data: EN ISO 13849

|                        |   |
|------------------------|---|
| Category               | 4 |
| 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)                | -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                                |

## Approvals

### Conformity/Approvals

|             |              |
|-------------|--------------|
| Conformance | CE-compliant |
|-------------|--------------|

## Standards and regulations

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

|                       |             |
|-----------------------|-------------|
| Standards/regulations | IEC 60664-1 |
|-----------------------|-------------|

## Mounting

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

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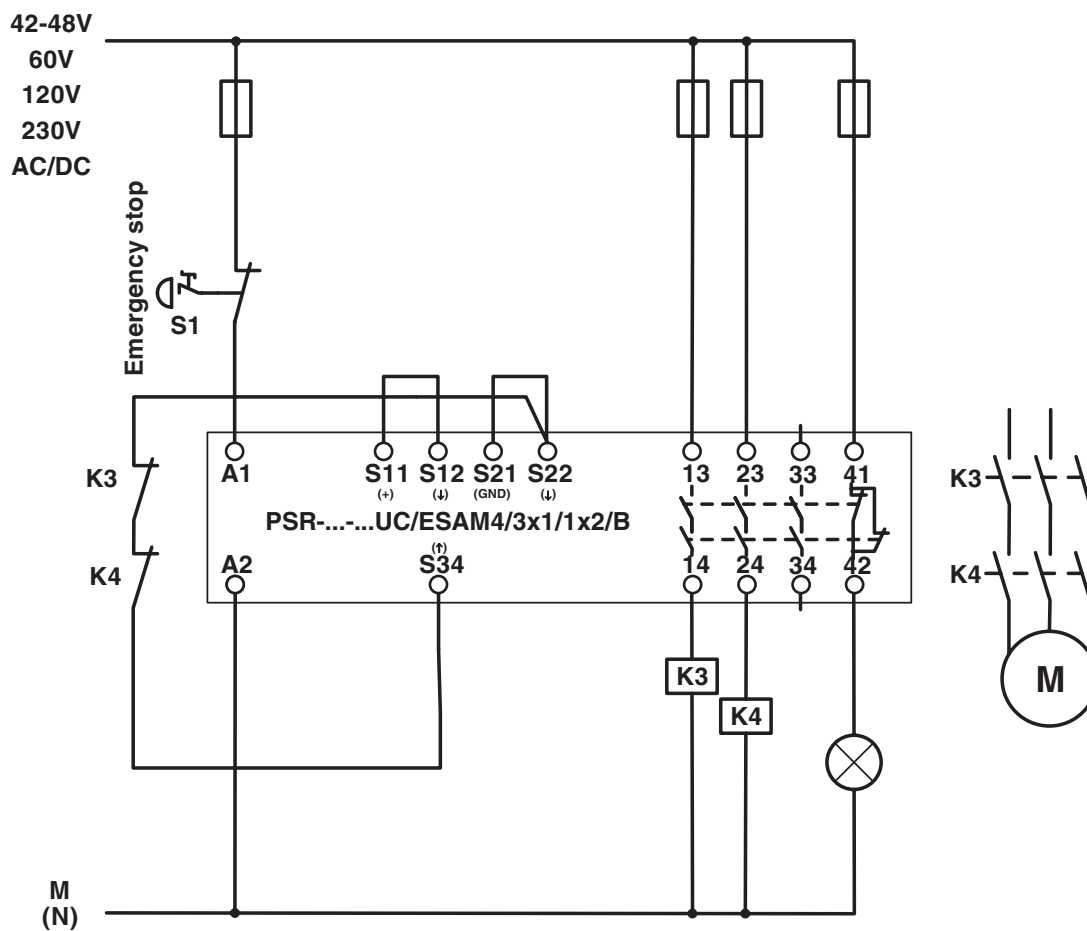


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## Drawings

Application drawing



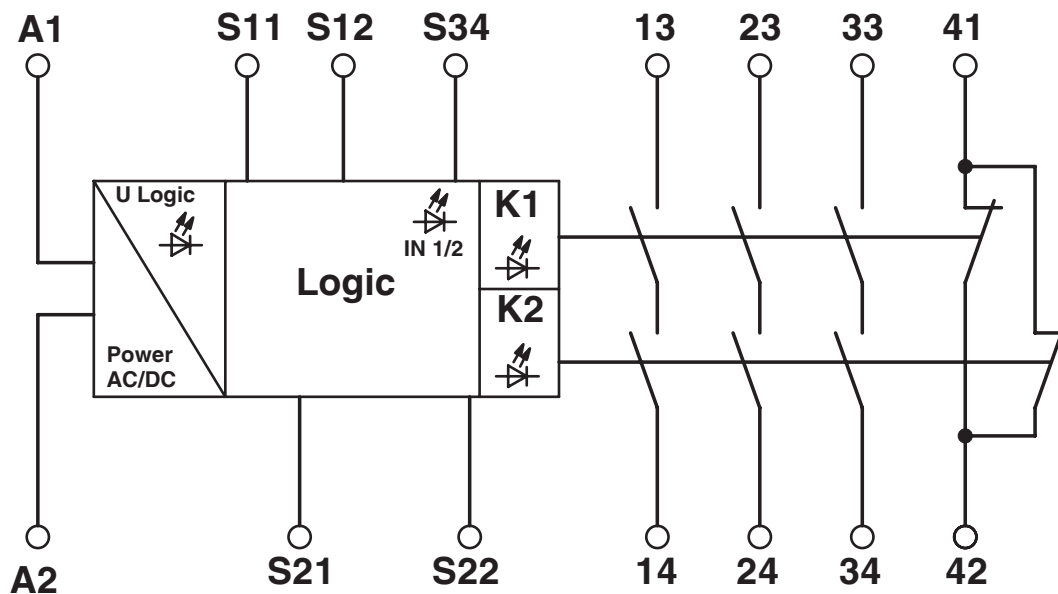
Single-channel emergency stop monitoring

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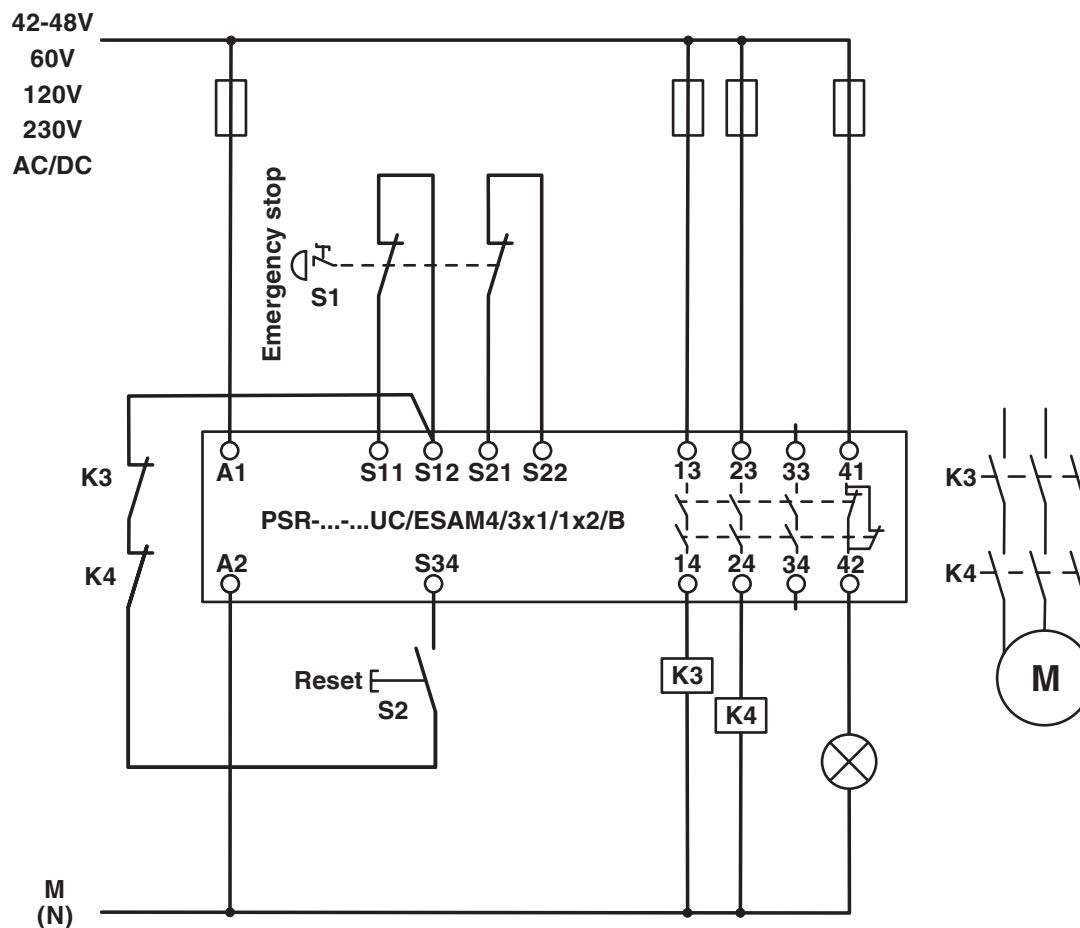
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Circuit diagram



Block diagram

Application drawing



2-channel emergency stop monitoring

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## Approvals

📄 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/2901429>



### Functional Safety

Approval ID: 01/205/5117.04/23



### Functional Safety

Approval ID: 968/EZ 496.06/23



### cULus Listed

Approval ID: E140324

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## 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                               | 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)                 |
| SCIP                                | 10fb3e6d-c1d6-477c-8df9-41a53a4f6877 |

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## Accessories

### CRIMPFOX 6 - Crimping pliers

1212034

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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<sup>2</sup> ... 6.0 mm<sup>2</sup>, lateral entry, trapezoidal crimp

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