

# PSR-SPP- 24DC/FSP2/2X1/1X2 - Coupling relay



2986588

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Safe coupling relay for SIL 2 high and low demand applications, coupled digital output signals to the I/O, 2 enabling current paths, 1 signal contact, module for safe state off applications, integrated test pulse filter, width: 17.5 mm, pluggable Push-in terminal block

The figure shows a version with a screw connection

## Your advantages

- Narrow 17.5 mm housing
- Up to SIL 2 in accordance with EN 61508
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Long service life thanks to filtering of controller test pulses
- Force-guided contacts in accordance with EN 50205
- 2 enabling current paths
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation



## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2986588       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN01          |
| Product key                          | DNA161        |
| GTIN                                 | 4046356553339 |
| Weight per piece (including packing) | 137 g         |
| Weight per piece (excluding packing) | 136.5 g       |
| Customs tariff number                | 85364900      |

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|                   |    |
|-------------------|----|
| Country of origin | DE |
|-------------------|----|

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## Technical data

### Product properties

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Product type            | Coupling relay                                                                       |
| Product family          | PSRclassic                                                                           |
| Application             | Safe switch off                                                                      |
|                         | High demand                                                                          |
|                         | Low demand                                                                           |
| Control                 | 1-channel                                                                            |
| Mechanical service life | 10x 10 <sup>6</sup> cycles                                                           |
| Relay type              | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

### Insulation characteristics

|                      |     |
|----------------------|-----|
| Overvoltage category | III |
| Degree of pollution  | 2   |

### Times

|                                        |                                                    |
|----------------------------------------|----------------------------------------------------|
| Typ. starting time with U <sub>s</sub> | 50 ms (with U <sub>s</sub> when controlled via A1) |
| Typical release time                   | 50 ms (with U <sub>s</sub> when controlled via A1) |
| Recovery time                          | 1 s                                                |

### Electrical properties

|                                                 |                                                                                                          |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Maximum power dissipation for nominal condition | 2.4 W                                                                                                    |
| Nominal operating mode                          | 100% operating factor                                                                                    |
| Rated insulation voltage                        | 250 V AC                                                                                                 |
| Rated surge voltage/insulation                  | Safe isolation, reinforced insulation 6 kV between the control circuits (A1/A2), (31/32), (13/14, 23/24) |

### Supply

|                                                     |                                                             |
|-----------------------------------------------------|-------------------------------------------------------------|
| Designation                                         | A1/A2                                                       |
| Rated control circuit supply voltage U <sub>s</sub> | 24 V DC -15 % / +10 %                                       |
| Rated control supply current I <sub>s</sub>         | typ. 55 mA (typ. with U <sub>s</sub> )                      |
| Power consumption at U <sub>s</sub>                 | typ. 1.32 W                                                 |
| Inrush current                                      | max. 100 mA (typ. with U <sub>s</sub> )                     |
| Filter time                                         | max. 5 ms (in the event of voltage dips at U <sub>s</sub> ) |
|                                                     | max. 2 ms (Test pulse width; high test pulse at A1/A2)      |
|                                                     | ≥ 100 ms (Test pulse rate, high test pulse)                 |
|                                                     | Test pulse rate = 80 x Test pulse width                     |
|                                                     | max. 5 ms (Test pulse width; low test pulse at A1/A2)       |
|                                                     | ≥ 50 ms (Test pulse rate; low test pulse at A1/A2)          |
|                                                     | Test pulse rate = 15 x Test pulse width                     |
| Protective circuit                                  | Surge protection                                            |
|                                                     | Suppressor diode, 33 V (A1 - A2)                            |

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## Output data

Relay: Enabling current paths (13/14, 23/24)

|                             |                                                    |
|-----------------------------|----------------------------------------------------|
| Output description          | 2 x N/O, undelayed                                 |
| Number of outputs           | 2                                                  |
| Contact switching type      | 2 enabling current paths                           |
| Contact material            | AgCuNi, + 0.2 µm Au                                |
| Switching voltage           | min. 15 V AC/DC<br>max. 250 V AC/DC                |
| Switching power             | min. 75 mW                                         |
| Inrush current              | max. 5 A                                           |
| Switching capacity          | 5 A (24 V (DC13))<br>5 A (230 V (AC15))            |
| Limiting continuous current | 5 A                                                |
| Sq. Total current           | 50 A <sup>2</sup> (observe derating)               |
| Switching frequency         | max. 0.5 Hz                                        |
| Mechanical service life     | 10 <sup>7</sup> cycles                             |
| Output fuse                 | 10 A gL/gG (High demand)<br>4 A gL/gG (Low demand) |

Relay: 31/32

|                             |                             |
|-----------------------------|-----------------------------|
| Output description          | 1 N/C signal contact        |
| Number of outputs           | 1                           |
| Contact switching type      | 1 confirmation current path |
| Contact material            | AgCuNi, + 0.2 µm Au         |
| Switching power             | min. 75 mW                  |
| Inrush current              | max. 100 mA                 |
| Limiting continuous current | 100 mA                      |
| Mechanical service life     | 10 <sup>7</sup> cycles      |
| Output fuse                 | 150 mA (fast-blow)          |

## 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                                                                         |

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## Signaling

|                           |                |
|---------------------------|----------------|
| Operating voltage display | 1 x yellow LED |
|---------------------------|----------------|

## Dimensions

|        |          |
|--------|----------|
| Width  | 17.5 mm  |
| Height | 112 mm   |
| Depth  | 114.5 mm |

## Material specifications

|                  |                   |
|------------------|-------------------|
| Color (Housing)  | yellow (RAL 1018) |
| Housing material | PA                |

## Characteristics

### Safety data

|                            |   |
|----------------------------|---|
| Stop category (EN 60204-1) | 0 |
|----------------------------|---|

### Safety data: EN ISO 13849

|                        |                                                                                |
|------------------------|--------------------------------------------------------------------------------|
| Performance level (PL) | c (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ ) |
|------------------------|--------------------------------------------------------------------------------|

### Safety data: EN 50156

|                              |   |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

### Safety data: IEC 61508 - High demand

|                              |                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------|
| Safety Integrity Level (SIL) | 2 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ ) |
|------------------------------|------------------------------------------------------------------------------------------------------------|

### Safety data: IEC 61508 - Low demand

|                              |                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------|
| Safety Integrity Level (SIL) | 2 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ ) |
|------------------------------|------------------------------------------------------------------------------------------------------------|

### Safety data: EN IEC 62061

|                              |                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------|
| Safety Integrity Level (SIL) | 1 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ ) |
|------------------------------|------------------------------------------------------------------------------------------------------------|

## 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 (observe derating)                 |
| Ambient temperature (storage/transport)        | -40 °C ... 70 °C                                    |
| Maximum altitude                               | $\leq 2000$ 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                                |

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## Approvals

CE

|                |              |
|----------------|--------------|
| Identification | CE-compliant |
|----------------|--------------|

## Mounting

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

# PSR-SPP- 24DC/FSP2/2X1/1X2 - Coupling relay

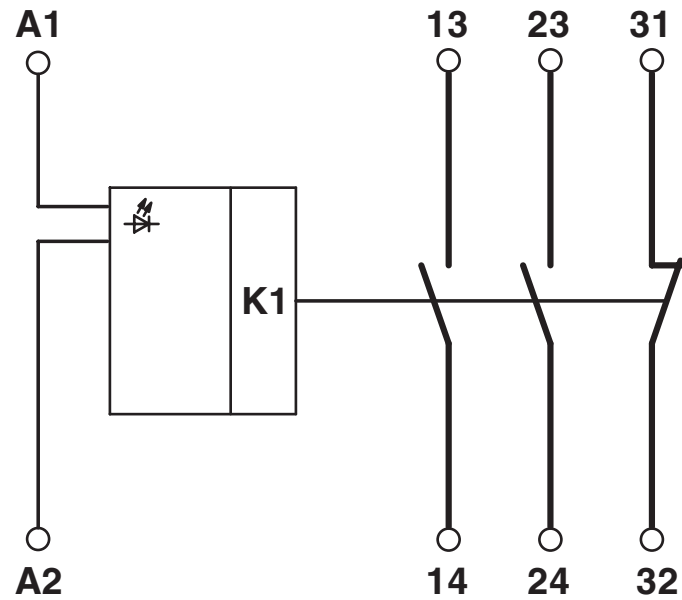


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## Drawings

Circuit diagram



Block diagram

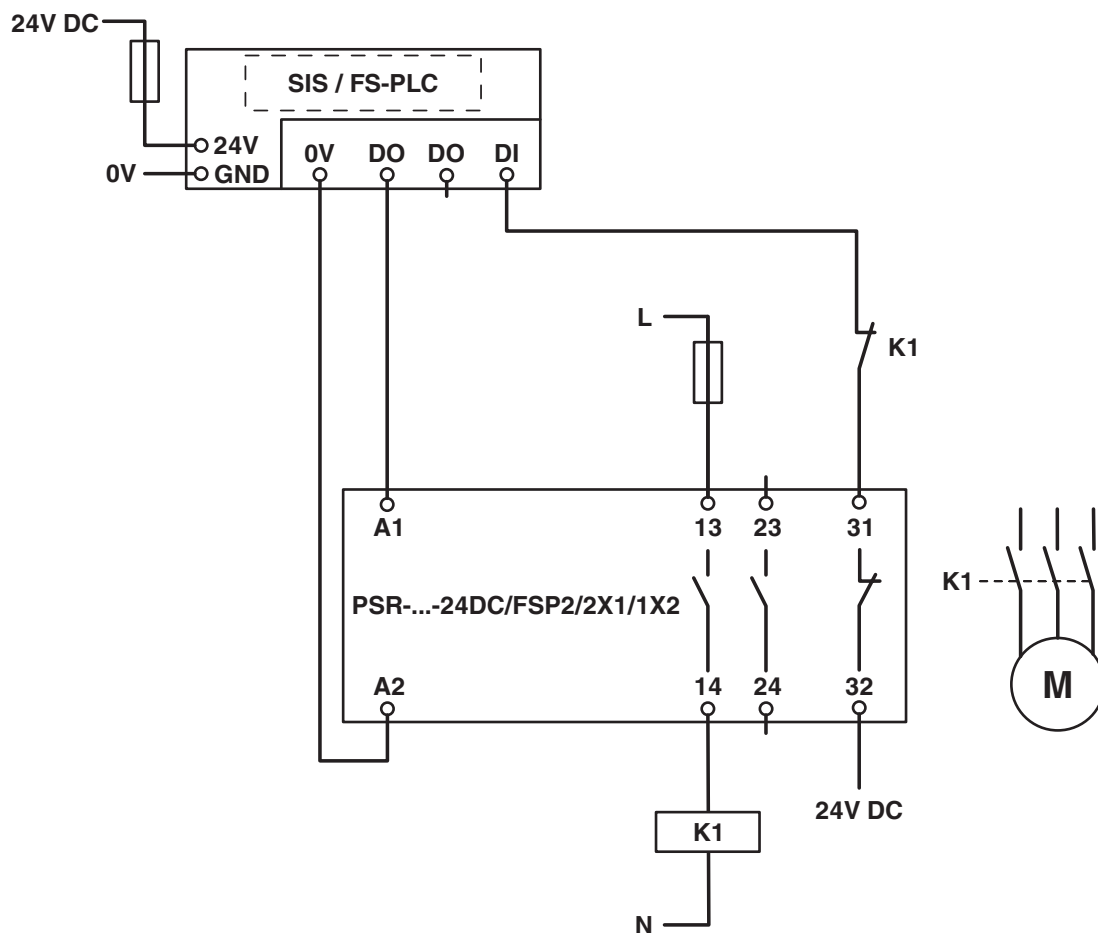
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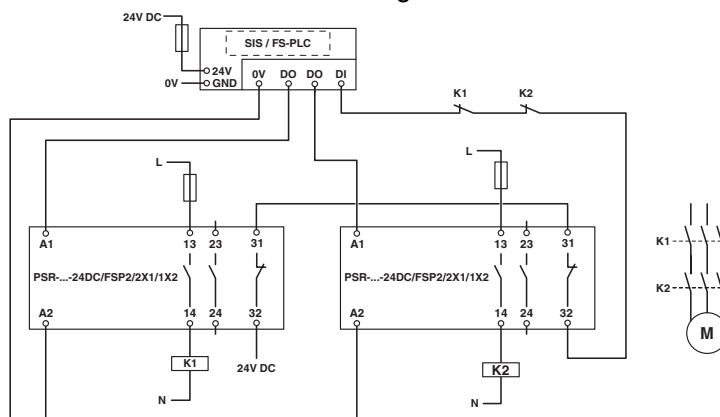


Circuit diagram



Single-channel connection with integration of the confirmation current path

Circuit diagram



Two-channel connection with integration of the confirmation current path

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## Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2986588>



**DNV GL**

Approval ID: TAA00002UC



**cULus Listed**

Approval ID: E140324



**Functional Safety**

Approval ID: 968/EZ 365.11/24

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## Classifications

### ECLASS

|                   |          |
|-------------------|----------|
| ECLASS-13.0       | 27371819 |
| ECLASS-15.0       | 27371819 |
| ECLASS-15.0 ASSET | 27250101 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC001449 |
|-----------|----------|

### UNSPSC

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

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## 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                                | 9470ca4b-46fa-4223-aa6b-57675a8728f3 |

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