

# PSR-PS22-1NO-1NC-24VDC-SC - Coupling relay



2702524

<https://www.phoenixcontact.com/us/products/2702524>

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Coupling relay for SIL 3 high and low-demand applications, couples digital output signals to the I/O, 1 enabling current path, 1 confirmation current path, safe state off applications, test pulse filter, fixed screw terminal block

## Your advantages

- Up to SIL 3 in accordance with IEC 61508
- Force-guided contacts in accordance with EN 50205
- Easy proof test according to IEC 61508
- Low housing width of just 6.8 mm
- Long service life thanks to filtering of controller test pulses
- 1 enabling current path, 1 diagnostic current path
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation
- Corrosion protection through protective coating on the PCB

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2702524       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN01          |
| Product key                          | DNA172        |
| GTIN                                 | 4055626280240 |
| Weight per piece (including packing) | 166.2 g       |
| Weight per piece (excluding packing) | 71.494 g      |
| Customs tariff number                | 85364900      |
| Country of origin                    | DE            |

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## Technical data

### Notes

#### Note on application

|                     |                         |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

#### Utilization restriction

|            |                                                               |
|------------|---------------------------------------------------------------|
| CCCex note | Use in potentially explosive areas is not permitted in China. |
|------------|---------------------------------------------------------------|

### Product properties

|                |                                                                                      |
|----------------|--------------------------------------------------------------------------------------|
| Product type   | Coupling relay                                                                       |
| Product family | PSRmini                                                                              |
| Application    | Safe switch off                                                                      |
|                | High demand                                                                          |
|                | Low demand                                                                           |
|                | Ex                                                                                   |
| Control        | 1 and 2 channel                                                                      |
| 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 $U_s$ | < 150 ms (with $U_s$ when controlled via A1) |
| Typical release time          | < 30 ms (when controlled via A1)             |
| Recovery time                 | 500 ms                                       |

### Electrical properties

|                                                 |                                                                                                                                                     |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum power dissipation for nominal condition | 3.28 W ( $I_L^2 = 36 \text{ A}^2$ )                                                                                                                 |
| Nominal operating mode                          | 100% operating factor                                                                                                                               |
| Rated insulation voltage                        | 250 V AC                                                                                                                                            |
| Rated surge voltage/insulation                  | Basic insulation 4 kV between all current paths and housing                                                                                         |
|                                                 | Safe isolation, 6 kV reinforced insulation from the control circuit (A1/A2) and diagnostics circuit (0V/21/22) to the enabling current path (13/14) |

#### Supply

|                                            |                                                                                                                   |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Designation                                | A1/A2                                                                                                             |
| Rated control circuit supply voltage $U_s$ | 20.4 V DC ... 26.4 V DC                                                                                           |
| Rated control circuit supply voltage $U_s$ | 24 V DC -15 % / +10 %                                                                                             |
| Rated control supply current $I_s$         | typ. 45 mA                                                                                                        |
| Power consumption at $U_s$                 | typ. 1.08 W                                                                                                       |
| Inrush current                             | typ. 150 mA ( $\Delta t < 5 \text{ ms}$ at $U_s$ )<br>max. 3 ms (at A1-A2 in the event of voltage dips at $U_s$ ) |

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|                    |                                                                    |
|--------------------|--------------------------------------------------------------------|
| Filter time        | max. 3 ms (at A1-A2; low test pulse width)                         |
|                    | ≥ 50 ms (at A1-A2; low test pulse rate)                            |
|                    | max. 17 ms (at A1-A2; high test pulse width)                       |
|                    | ≥ 600 ms (at A1-A2; high test pulse rate)                          |
| Protective circuit | Serial protection against polarity reversal; Suppressor diode 33 V |

## Supply

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| Designation                     | 21/0V                                                                             |
| Diagnostic supply voltage $U_D$ | 24 V DC -15 % / +10 %                                                             |
| Input current at $U_D$          | 6 mA (at the contacts 21/0V for $U_D$ ; + 100 mA depending on load at contact 22) |
| Inrush current at $U_D$         | typ. 200 mA ( $\Delta t < 1$ ms; for contacts 21 - 0 V at $U_D$ )                 |
| Protective circuit              | Serial protection against polarity reversal; Suppressor diode 33 V                |

## Output data

### Relay: Enabling current path (13/14)

|                             |                                                   |
|-----------------------------|---------------------------------------------------|
| Output description          | 2 N/O contacts in series, without delay, floating |
| Number of outputs           | 1 (safety-related)                                |
| Contact switching type      | 1 enabling current path                           |
| Contact material            | AgSnO <sub>2</sub>                                |
| Switching voltage           | min. 12 V AC/DC                                   |
|                             | max. 250 V AC/DC                                  |
| Switching capacity          | min. 60 mW                                        |
| Inrush current              | min. 3 mA                                         |
|                             | max. 6 A                                          |
| Limiting continuous current | 6 A (High demand)                                 |
|                             | 4 A (Low demand)                                  |
| Sq. Total current           | 36 A <sup>2</sup> (observe derating)              |
| Switching frequency         | max. 0.1 Hz                                       |
| Mechanical service life     | 10x 10 <sup>6</sup> cycles                        |
| Output fuse                 | 6 A gL/gG                                         |
|                             | 4 A gL/gG (for low-demand applications)           |

### Relay: Confirmation current path (21/22)

|                             |                                                                              |
|-----------------------------|------------------------------------------------------------------------------|
| Output description          | 2 N/C contacts in series, without delay, not floating (reference ground: 0V) |
| Number of outputs           | 1 (safety-related)                                                           |
| Contact switching type      | 1 confirmation current path                                                  |
| Contact material            | AgCuNi, + Au                                                                 |
| Switching voltage           | min. 20.4 V DC                                                               |
|                             | max. 26.4 V DC                                                               |
| Switching capacity          | min. 20 mW                                                                   |
| Inrush current              | min. 1 mA                                                                    |
|                             | max. 100 mA                                                                  |
| Limiting continuous current | 100 mA                                                                       |

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|                         |                            |
|-------------------------|----------------------------|
| Switching frequency     | max. 0.1 Hz                |
| Mechanical service life | 10x 10 <sup>6</sup> cycles |
| Output fuse             | 150 mA Fast-blow           |

## Connection data

### Connection technology

|           |    |
|-----------|----|
| pluggable | no |
|-----------|----|

### 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      | 26 ... 12                                   |
| Stripping length                 | 12 mm                                       |
| Screw thread                     | M3                                          |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                           |

## Signaling

|                           |                  |
|---------------------------|------------------|
| Status display            | 2 x LED (green)  |
| Operating voltage display | 1 x LED (yellow) |
| Error indication          | 1 x LED (red)    |

## Dimensions

|        |          |
|--------|----------|
| Width  | 6.8 mm   |
| Height | 93.1 mm  |
| Depth  | 102.5 mm |

## Material specifications

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

## Characteristics

### Safety data

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

### Safety data: EN 50156-2

|                              |                         |
|------------------------------|-------------------------|
| Safety Integrity Level (SIL) | 3 (Reference IEC 61508) |
|------------------------------|-------------------------|

### Safety data: IEC 61508 - High demand

|                              |   |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

### Safety data

|                              |   |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

### Safety data: IEC 61508 - Low demand

|                              |   |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

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## Safety data

|                              |   |
|------------------------------|---|
| Safety Integrity Level (SIL) | 3 |
|------------------------------|---|

## Safety data: IEC 61508 - Low demand

|                              |   |
|------------------------------|---|
| 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)                | -40 °C ... 70 °C (observe derating)                 |
| 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

### ATEX

|                |                             |
|----------------|-----------------------------|
| Identification | Ex II 3G Ex ec nC IIC T4 Gc |
| Certificate    | UL 22 ATEX 2912X            |

### IECEX

|                |                    |
|----------------|--------------------|
| Identification | Ex ec nC IIC T4 Gc |
| Certificate    | IECEX UL 22.0037X  |

### UL, USA/Canada

|                |         |
|----------------|---------|
| Identification | cULus   |
| Certificate    | E140324 |

### UL Ex, USA / Canada

|                |                                                          |
|----------------|----------------------------------------------------------|
| Identification | Class I, Zone 2, AEx ec nC IIC T4 / Ex ec nC IIC Gc T4 X |
|                | Class I, Div. 2, Groups A, B, C, D, T4                   |
| Certificate    | E360692                                                  |

### CE

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

### Environmental simulation test

|                |            |
|----------------|------------|
| Identification | G3         |
| Certificate    | ISA-S71.04 |

### CCC / China-Ex

|                |                    |
|----------------|--------------------|
| Identification | Ex ec nC IIC T4 Gc |
| Certificate    | 2022122304115695   |

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## Mounting

|                   |                        |
|-------------------|------------------------|
| Mounting type     | DIN rail mounting      |
| Assembly note     | See derating curve     |
| Mounting position | vertical or horizontal |

# PSR-PS22-1NO-1NC-24VDC-SC - Coupling relay

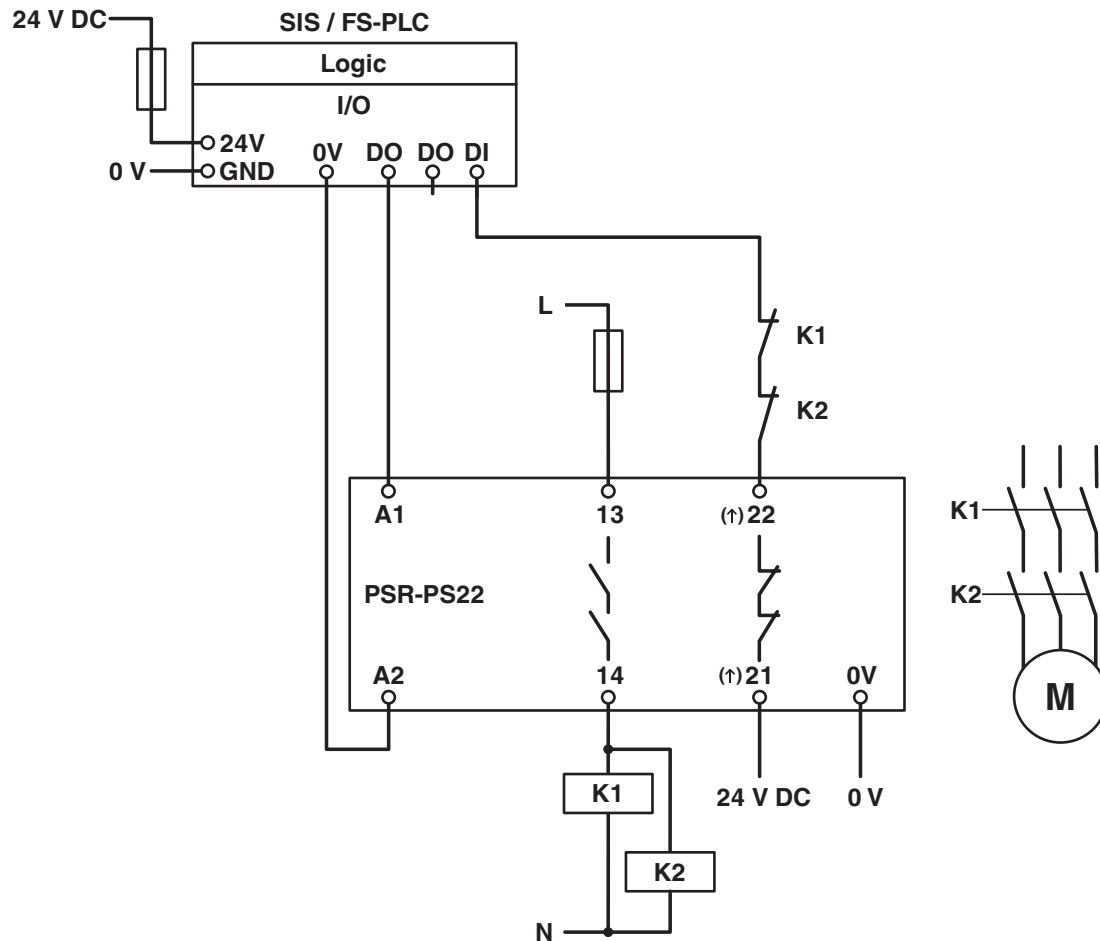
2702524

<https://www.phoenixcontact.com/us/products/2702524>



## Drawings

Circuit diagram



Example application

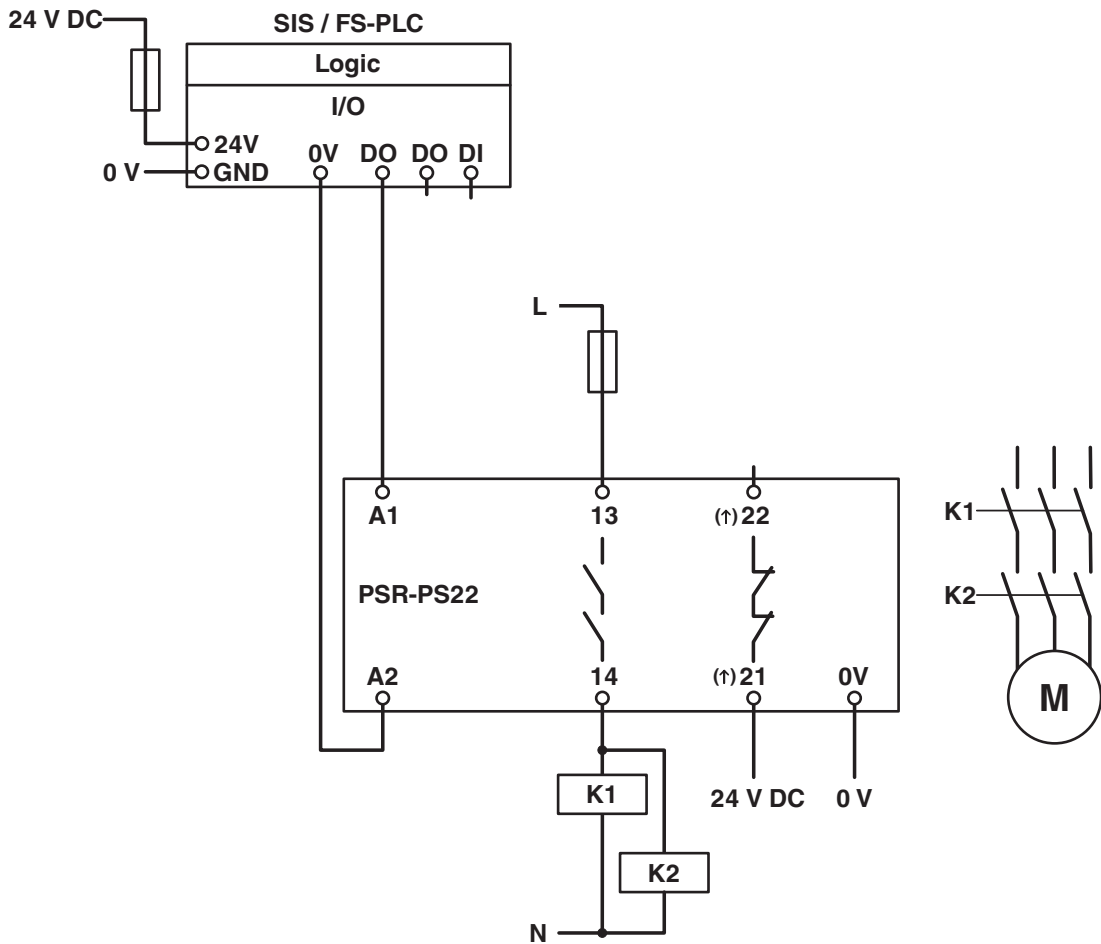
PSR-PS22-1NO-1NC-24VDC-SC - Coupling relay



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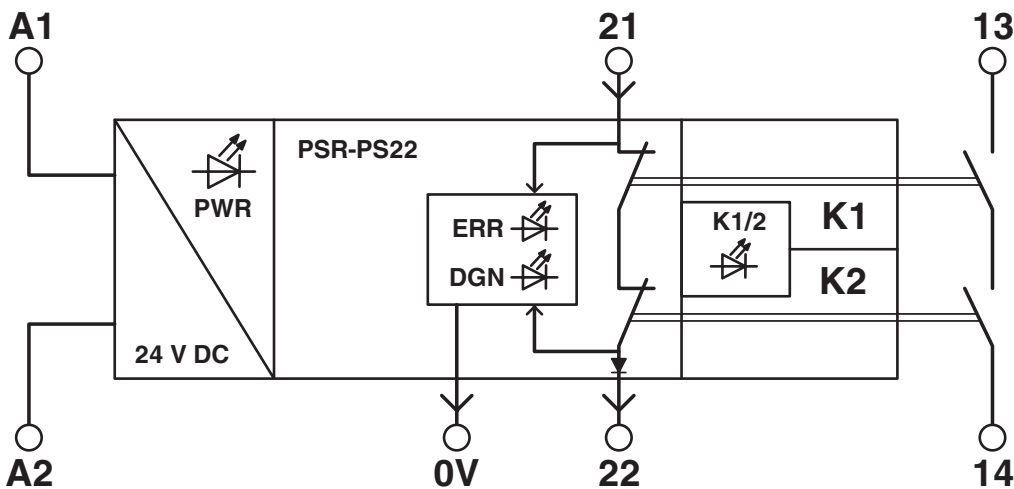
<https://www.phoenixcontact.com/us/products/2702524>

Circuit diagram



Example application

Block diagram



Block diagram

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2702524>



### Functional Safety

Approval ID: 44 780 15124306



### Functional Safety

Approval ID: 4420515124306



### cULus Listed

Approval ID: E140324



### IECEx

Approval ID: IECEx ULD 22.0037X



### ATEX

Approval ID: UL 22 ATEX 2912X



### cULus Listed

Approval ID: E360692



### CCC

Approval ID: 2022122304115695

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27371819 |
| ECLASS-15.0 | 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: n/a)                       |
| SCIP                                | b619f461-249e-46c4-89cf-a70789c77101 |