# PSR-PC21-2NO-2NC-24DC-SC - Coupling relay

1086945

https://www.phoenixcontact.com/us/products/1086945

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Coupling relay for SIL 3 high and low-demand applications, coupled digital output signals to the I/O, 2 independently controllable enabling current paths, 2 confirmation current paths, safe state off applications, test pulse filter, pluggable screw terminal block

## Product description

The safe coupling relay couples digital output signals from failsafe controllers to I/O devices and is used for power adaptation and electrical isolation. The safe coupling relay can be used in high- and low-demand applications. The safe coupling relay safely interrupts circuits.

## Your advantages

- Up to SIL 3 in accordance with IEC 61508, IEC 61511, and IEC 50156
- Approved for Class I, Zone 2 applications
- Force-guided contacts in accordance with EN 50205
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Low housing width of just 12.5 mm
- Long service life thanks to filtering of controller test pulses
- 2 enabling current paths, 2 confirmation current paths
- Independent control of the relay channels possible

## Commercial data

| | |
|---|---|
| Item number | 1086945 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN01 |
| Product key | DNA182 |
| GTIN | 4055626881904 |
| Weight per piece (including packing) | 207.1 g |
| Weight per piece (excluding packing) | 206.52 g |
| Customs tariff number | 85364190 |
| Country of origin | DE |

# 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 |
| Mechanical service life | 10x $10^6$ cycles |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Data management status

| | |
|---|---|
| Article revision | 05 |

Times

| | |
|---|---|
| Typ. starting time with $U_s$ | < 70 ms (when controlled via A1 or A3 at $U_S$) |
| Typical release time | < 30 ms (when controlled via A1 or A3 at $U_S$) |
| Recovery time | 500 ms |

## Electrical properties

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|---|---|
| Maximum power dissipation for nominal condition | 7.05 W (S1, S2, S3, S4 = ON, 2-channel load, $U_B$ = 30 V, $U_S$ = 24 V, $I_S$ = 2*46 mA, $I_L^2$ = 36 A, $R_{contact}$ = 0.05 Ω) |
| 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 | Safe isolation, reinforced insulation 6.4 kV from (A1/A2, A3/A4, 21/22, 41/42) to (13/14, 33/34) and between (13/14) and (33/34) |
| | Basic insulation 4 kV between all current paths and housing |
| | 500 V isolation between (A1/A2, A3/A4) and (21/22, 41/42) |

Supply

| | |
|---|---|
| Designation | A1/A2, A3/A4 |
| Rated control circuit supply voltage $U_S$ | 19.2 V DC ... 30 V DC |
| Rated control circuit supply voltage $U_S$ | 24 V DC -20 % / +25 % |
| Rated control supply current $I_S$ | typ. 15 mA (per channel (configurable)) |
| | typ. 25 mA (per channel (configurable)) |

| | |
|---|---|
| | typ. 40 mA (per channel (configurable)) |
| | typ. 46 mA (per channel (configurable)) |
| Power consumption at $U_S$ | typ. 360 mW (per channel (configurable)) |
| | typ. 600 mW (per channel (configurable)) |
| | typ. 960 mW (per channel (configurable)) |
| | typ. 1.1 W (per channel (configurable)) |
| Inrush current | typ. 200 mA (Δt = 10 µs at $U_s$, per channel (configurable)) |
| | typ. 300 mA (Δt = 10 µs at $U_s$, per channel (configurable)) |
| Filter time | 2 ms (in the event of voltage dips at $U_s$) |
| Protective circuit | Serial protection against polarity reversal; 38.6 V suppressor diode |

## Output data

Relay: Enabling current paths (13/14, 33/34)

| | |
|---|---|
| Output description | 2 N/O contacts parallel, without delay, safety-related, floating |
| Number of outputs | 2 |
| Contact switching type | 2 enabling current paths |
| Contact material | $AgSnO_2$ |
| Switching voltage | min. 12 V DC |
| | max. 250 V AC/DC |
| Switching capacity | min. 60 mW |
| Inrush current | min. 3 mA |
| | max. 6 A |
| Switching capacity in accordance with IEC 60947-5-1 | 4 A (24 V (DC13)) |
| | 4 A (250 V (AC15), low demand) |
| | 2 A (250 V (AC15), high demand) |
| Limiting continuous current | 6 A (High demand) |
| | 4 A (Low demand) |
| Sq. Total current | 72 $A^2$ (High-demand, observe derating) |
| | 32 $A^2$ (Low-demand, observe derating) |
| Switching frequency | max. 0.1 Hz |
| Mechanical service life | 10x $10^6$ cycles |
| Output fuse | 6 A gL/gG |
| | 4 A gL/gG (for low-demand applications) |

Relay: Confirmation current paths (21/22, 41/42)

| | |
|---|---|
| Output description | 2 N/C contacts parallel, without delay, safety-related, floating |
| Number of outputs | 2 |
| Contact switching type | 2 confirmation current paths |
| Contact material | AgCuNi, + Au |
| Switching voltage | min. 5 V DC |
| | max. 30 V DC |
| Switching capacity | min. 20 mW |
| Inrush current | min. 1 mA |

| | |
|---|---|
| | max. 100 mA |
| Limiting continuous current | 100 mA |
| Mechanical service life | 10x $10^6$ cycles |
| Output fuse | 150 mA Fast-blow |

## Connection data

Conductor connection

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section rigid | 0.2 mm² ... 2.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 12 |
| Stripping length | 7 mm |
| Screw thread | M3 |
| Tightening torque | 0.6 Nm |

## Signaling

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| Status display | 2 x LED (green) |

## Dimensions

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|---|---|
| Width | 12.5 mm |
| Height | 112.2 mm |
| Depth | 114.5 mm |

## Material specifications

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

## Characteristics

Safety data

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

Safety data: EN ISO 13849

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

Safety data: EN 50156-2

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

Safety data: IEC 61508 – High-demand for 2-channel wiring (1oo2 structure)

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

Safety data: IEC 61508 – High-demand for 1-channel wiring (1oo1 structure)

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

Safety data: IEC 61508 – Low-demand for 2-channel wiring (1oo2 structure)

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

Safety data: IEC 61508 – Low-demand for 1-channel wiring (1oo1 structure)

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

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) | -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 | Ⓔx II 3G Ex ec nC IIC T4 Gc |
| Certificate | DEMKO 19 ATEX 2240X |

IECEx

| | |
|---|---|
| Identification | Ex ec nC IIC T4 Gc |
| Certificate | IECEx ULD 19.0023X |

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 | 2022122304115696 |

## Standards and regulations

Air clearances and creepage distances between the power circuits

| | |
|---|---|
| Standards/regulations | EN 61010-1, EN 60947-1, EN 60079-7, EN 60079-15 |

## Mounting

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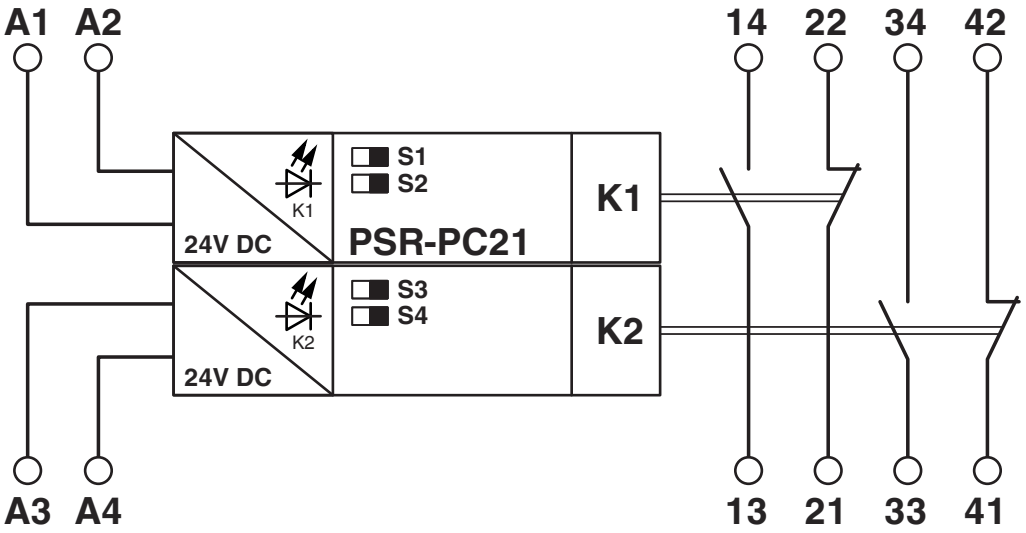
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | See derating curve |
| Mounting position | vertical or horizontal |

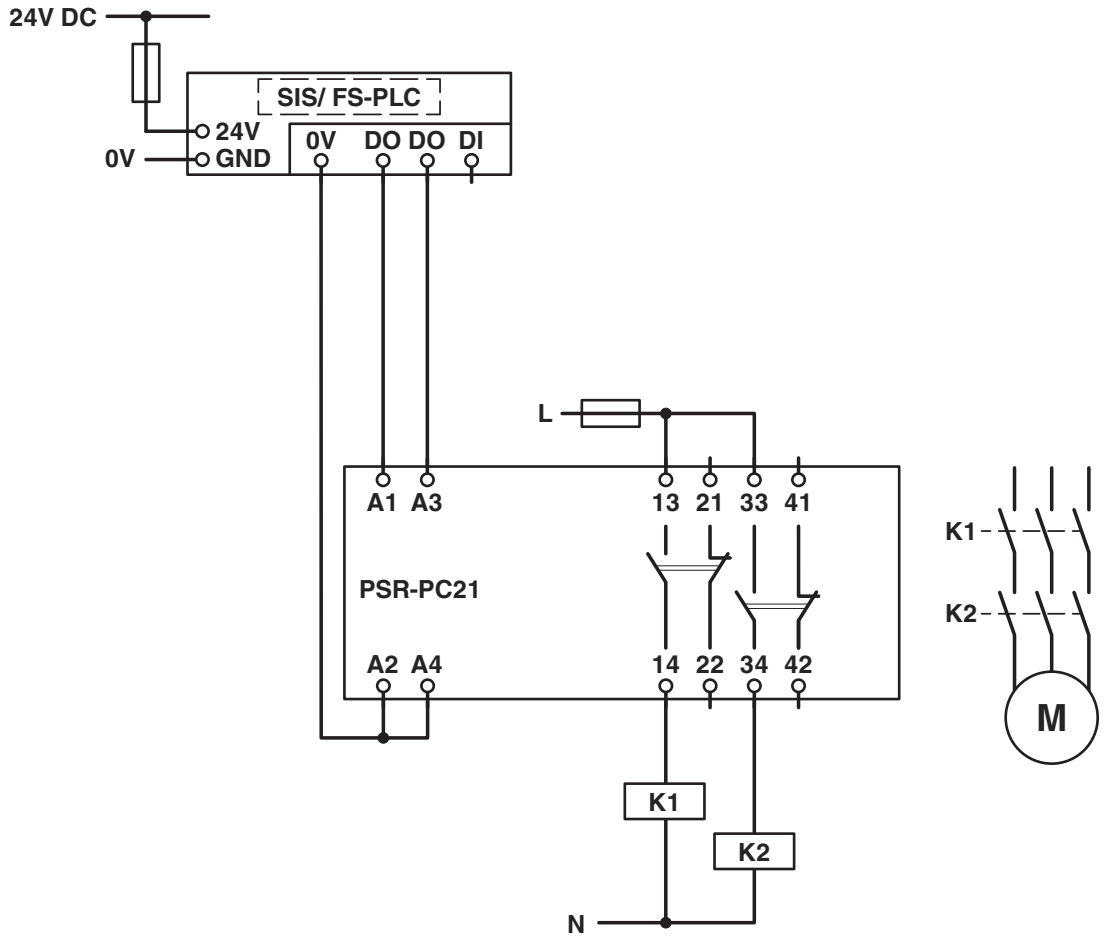
## Drawings

Block diagram

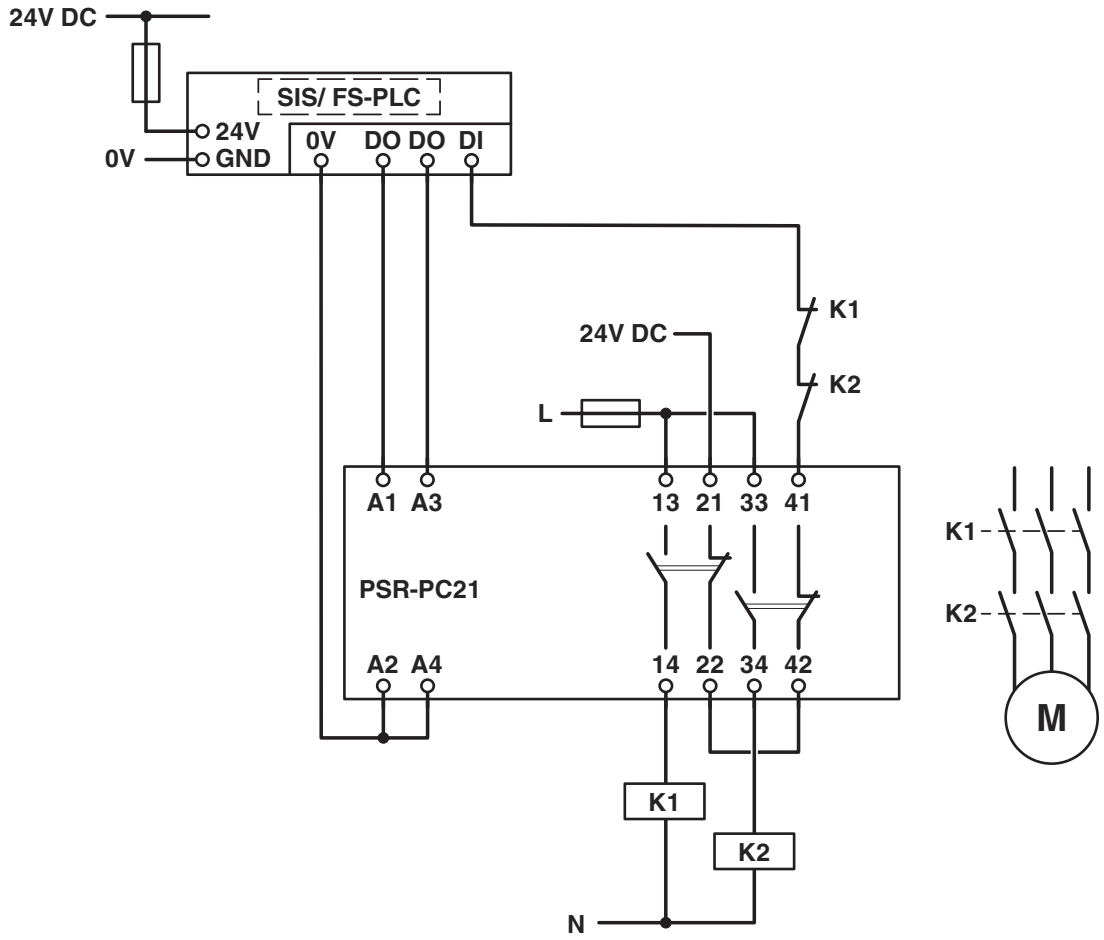



Block diagram

Circuit diagram



Circuit diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1086945

**UL Listed**
Approval ID: E140324

**cUL Listed**
Approval ID: E140324

**Functional Safety**
Approval ID: 968/FSP 1955.01/22

**Functional Safety**
Approval ID: 968/FSP 1955.01/22

**EAC**
Approval ID: TR_TS_D_00573_c

**EAC**
Approval ID: RU*C-DE.*08.B.00010

**IECEx**
Approval ID: IECEx ULD 19.0023X

**cUL Listed**
Approval ID: E360692

**UL Listed**
Approval ID: E360692

**UL Listed**
Approval ID: E360692

**cUL Listed**
Approval ID: E360692

**ATEX**
Approval ID: DEMKO 19 ATEX 2240X

**cULus Listed**

## Classifications

### ECLASS

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

### ETIM

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|---|---|
| ETIM 9.0 | EC001449 |

### UNSPSC

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

## Environmental product compliance

EU RoHS

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|---|---|
| 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 | 05af3c71-0245-4bd3-81a3-3f65c2b5f6f0 |

## Accessories

### CP-MSTB - Coding profile

1734634

https://www.phoenixcontact.com/us/products/1734634

Coding profile, is inserted into the slot on the plug or inverted header, red insulating material

### CR-MSTB - Coding section

1734401

https://www.phoenixcontact.com/us/products/1734401

Coding section, inserted into the recess in the header or the inverted plug, red insulating material

## CRIMPFOX 6 - Crimping pliers

1212034

https://www.phoenixcontact.com/us/products/1212034

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 $mm^2$ ... 6.0 $mm^2$, lateral entry, trapezoidal crimp




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