

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 |
| Catalog page | Page 250 (C-6-2019) |
| 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

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 |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

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 |

Air clearances and creepage distances between the power circuits

| | |
|--------------------------------|---|
| 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) |
| Filter time | max. 3 ms (at A1-A2 in the event of voltage dips at U_s) |
| | max. 3 ms (at A1-A2; low test pulse width) |
| | $\geq 50 \text{ ms}$ (at A1-A2; low test pulse rate) |
| | max. 17 ms (at A1-A2; high test pulse width) |
| | $\geq 600 \text{ ms}$ (at A1-A2; high test pulse rate) |
| Protective circuit | Serial protection against polarity reversal; Suppressor diode 33 V |

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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

| | |
|---|--|
| Output description | 2 N/O contacts in series, without delay, floating |
| Number of outputs | 1 (safety-related N/O contacts: 13/14) |
| Contact switching type | 1 enabling current path |
| Contact material | AgSnO ₂ |
| Switching voltage | min. 12 V AC/DC max. 250 V AC/DC (Observe the load curve) |
| 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)) 5 A (250 V (AC15)) |
| Limiting continuous current | 6 A (High demand) 4 A (Low demand) |
| Sq. Total current | 36 A ² (observe derating) |
| Switching frequency | max. 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 path

| | |
|-----------------------------|--|
| Output description | 2 N/C contacts in series, without delay, not floating (reference ground: 0V) |
| Number of outputs | 1 (safety-related N/C contacts: 21/22) |
| 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 |
| Switching frequency | max. 1 Hz |
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 150 mA Fast-blow |

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Connection data

Connection technology

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

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 | 12 mm |
| Screw thread | M3 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

Signaling

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

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 |
|------------------------------|---|

Safety data

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

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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 nA nC IIC T4 / Ex nA 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 |

Standards and regulations

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Air clearances and creepage distances between the power circuits

| | |
|-----------------------|-------------------------------------|
| Standards/regulations | EN 60664-1, EN 60079-7, EN 60079-15 |
|-----------------------|-------------------------------------|

Mounting

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

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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 |
|-------------|----------|

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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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