

PSR-SPP- 24DC/ESD/5X1/1X2/ T10 - Safety relays



2981091

<https://www.phoenixcontact.com/us/products/2981091>

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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, automatic or manual activation, 3 N/O contacts, 1 N/C contact, 2 N/O contacts with a fixed dropout delay of 10 s, pluggable Push-in terminal block

Your advantages

- 3 undelayed and 2 dropout delay contacts
- Fixed delay times of 10 s
- 1- and 2-channel control
- For emergency stop and safety door monitoring, plus evaluation of light grids
- Manually monitored and automatic activation

Commercial data

| | |
|--------------------------------------|--------------------------------|
| Item number | 2981091 |
| Packing unit | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | DN01 |
| Product key | DNA132 |
| GTIN | 4017918943615 |
| Weight per piece (including packing) | 479.8 g |
| Weight per piece (excluding packing) | 463.8 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

Technical data

Notes

Utilization restriction

| | |
|----------|---|
| EMC note | EMC: class A product, see manufacturer's declaration in the download area |
|----------|---|

Product properties

| | |
|-------------------------|--|
| Product type | Safety relays |
| Application | Emergency stop |
| | Safety door |
| | Light grid |
| Control | 1 and 2 channel |
| Mechanical service life | 10x 10 ⁶ cycles |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Insulation characteristics: Air clearances and creepage distances between the power circuits

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

Electrical properties

| | |
|---|-----------------------|
| Maximum power dissipation for nominal condition | 3.6 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 | Basic insulation 4 kV: between all current paths and housing Safe isolation, reinforced insulation 6 kV: between 13/14, 23/24, 33/34, and the remaining current paths between 13/14, 23/24, 33/34 among one another |

Input data

General

| | |
|--|----------------------------------|
| Rated control circuit supply voltage U_S | 24 V DC -15 % / +10 % |
| Power consumption at U_S | typ. 3.6 W |
| Rated control supply current I_S | typ. 150 mA |
| Inrush current | 200 mA (at U_S) |
| | < 40 mA (with U_S/I_x to S10) |
| | < 150 mA (with U_S/I_x to S12) |
| | > -60 mA (with U_S/I_x to S22) |
| | < 40 mA (with U_S/I_x to S34) |
| | < 40 mA (with U_S/I_x to S35) |
| | < 40 mA (with U_S/I_x to S10) |

| | |
|---|--|
| Current consumption | < 40 mA (with U_s/I_x to S12) |
| | > -40 mA (with U_s/I_x to S22) |
| | 0 mA (with U_s/I_x to S34) |
| | < 5 mA (with U_s/I_x to S35) |
| Voltage at input/start and feedback circuit | 24 V DC -15 % / +10 % |
| Filter time | 1 ms (at A1 in the event of voltage dips at U_s) |
| | max. 1.5 ms (at S10, S12; test pulse width) |
| | 7.5 ms (at S10, S12; test pulse rate) |
| | Test pulse rate = 5 x Test pulse width |
| Typical response time | < 600 ms (automatic start) |
| | < 70 ms (manual start) |
| Typ. starting time with U_s | < 600 ms (when controlled via A1) |
| Typical release time | < 20 ms (when controlled via S11/S12 and S21/S22) |
| | < 20 ms (when controlled via A1) |
| Concurrency | ∞ |
| Recovery time | < 1 s |
| Delay time | K3(t), K4(t) fixed depending on model |
| Maximum switching frequency | 0.5 Hz |
| Protective circuit | Surge protection; Suppressor diode |
| Max. permissible overall conductor resistance | approx. 11 Ω (Input and start circuits at U_s) |
| Operating voltage display | 1 x LED (green) |
| Status display | 4 x LED (green) |

Output data

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|--|---|
| Contact switching type | 5 enabling current paths |
| | 1 signaling current path |
| Contact material | AgSnO ₂ |
| Maximum switching voltage | 250 V AC/DC (Observe the load curve) |
| Minimum switching voltage | 5 V AC/DC |
| Limiting continuous current | 6 A (N/O contact, pay attention to the derating) |
| | 6 A (N/C contact) |
| Maximum inrush current | 20 A ($\Delta t \leq \text{[trapezoidal pulse symbol]} \text{ ms}$, undelayed contacts) |
| | 8 A (delayed contacts) |
| Inrush current, minimum | 10 mA |
| Sq. Total current | 55 A ² (observe derating) |
| Interrupting rating (ohmic load) max. | 144 W (24 V DC, $\tau = 0$ ms) |
| | 288 W (48 V DC, $\tau = 0$ ms) |
| | 110 W (110 V DC, $\tau = 0$ ms, delayed contacts: 77 W) |
| | 88 W (220 V DC, $\tau = 0$ ms) |
| | 1500 VA (250 V AC, $\tau = 0$ ms, delayed contacts: 2000 VA) |
| Maximum interrupting rating (inductive load) | 42 W (24 V DC, $\tau = 40$ ms, delayed contacts: 48 W) |
| | 42 W (48 V DC, $\tau = 40$ ms, delayed contacts: 40 W) |
| | 42 W (110 V DC, $\tau = 40$ ms, delayed contacts: 35 W) |
| | 42 W (220 V DC, $\tau = 40$ ms, delayed contacts: 33 W) |

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| | |
|------------------------------------|--------------------------|
| Switching power min. | 50 mW |
| Switching capacity (360/h cycles) | 4 A (24 V DC) |
| | 4 A (230 V AC) |
| Switching capacity (3600/h cycles) | 2.5 A (24 V (DC13)) |
| | 3 A (230 V (AC15)) |
| Output fuse | 10 A gL/gG (N/O contact) |
| | 6 A gL/gG (N/C contact) |

Connection data

Connection technology

| | |
|-----------|-----|
| pluggable | yes |
|-----------|-----|

Conductor connection

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|---|--|
| Connection method | Push-in connection |
| Conductor cross-section, rigid | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section, flexible | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6) |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6) |
| Conductor cross-section AWG | 24 ... 16 |
| Stripping length | 8 mm |

Dimensions

| | |
|--------|----------|
| Width | 45 mm |
| Height | 112 mm |
| Depth | 114.5 mm |

Material specifications

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|------------------|--------|
| Color | yellow |
| Housing material | PBT |

Characteristics

Safety data

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| Stop category (EN 60204-1) | 0 (Undelayed contacts) |
| | 1 (delayed contacts) |

Safety data: EN ISO 13849

| | |
|------------------------|-------------------------------|
| Performance level (PL) | e (for delayed contacts PL d) |
|------------------------|-------------------------------|

Safety data: IEC 61508 - High demand

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|------------------------------|--------------------------------|
| Safety Integrity Level (SIL) | 3 (for delayed contacts SIL 2) |
|------------------------------|--------------------------------|

Safety data: IEC 61508 - Low demand

| | |
|------------------------------|--------------------------------|
| Safety Integrity Level (SIL) | 3 (for delayed contacts SIL 2) |
|------------------------------|--------------------------------|

Safety data: EN IEC 62061

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

Environmental and real-life conditions

Ambient conditions

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|--|---|
| Degree of protection | IP54 |
| | 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 | ≤ 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

CE

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|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

Standards and regulations

Air clearances and creepage distances between the power circuits

| | |
|-----------------------|-----------------------|
| Standards/regulations | DIN EN 50178/VDE 0160 |
|-----------------------|-----------------------|

Mounting

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

Drawings

Circuit diagram



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Environmental product compliance

China RoHS

| | |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E |
| | No hazardous substances above the limits |

EU REACH SVHC

| | |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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