

PSR-MC72-2NO-1DO-24DC-SP - Safety relays



2702097

<https://www.phoenixcontact.com/pc/products/2702097>

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Safety relay for emergency stop, safety doors, light grid up to SIL 3, Cat. 4, PL e, 1- or 2-channel operation, cross-circuit detection, can be retriggered, fall back/on delay 0.2 s ... 60 s, 2 enabling current paths, $U_S = 24$ V DC, pluggable Push-in terminal block

Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061
- Low housing width of just 12.5 mm
- 1- and 2-channel control
- 2 enabling current paths, 1 digital signal output
- Manually monitored and automatic activation in a single device

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 2702097 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Product key | DNA181 |
| Catalog page | Page 226 (C-6-2019) |
| GTIN | 4046356952491 |
| Weight per piece (including packing) | 160.34 g |
| Weight per piece (excluding packing) | 126.45 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 |
| Product family | PSRmini |
| Application | Emergency stop |
| | Safety door |
| | Light grid |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Times

| | |
|-----------------------|---|
| Typical response time | < 35 ms (automatic start) |
| | < 30 ms (manual, monitored start) |
| Typical release time | < 25 ms (when controlled via S12 (only for undelayed contact 13/14)) |
| | < 5 ms (when interrupted via A1; applicative deactivation via A1/A2 is not permitted) |
| Delay time range | 0.2 s ... 60 s $\pm 5\%$ (can be set for 27/28) |
| Restart time | < 1 s (Boot time) |

Electrical properties

| | |
|---|--|
| Maximum power dissipation for nominal condition | 5.78 W (at $U_S = 30\text{ V}$, $I_L^2 = 72\text{ A}^2$) |
| Nominal operating mode | 100% operating factor |

Air clearances and creepage distances between the power circuits

| | |
|--------------------------------|---|
| Rated insulation voltage | 250 V AC |
| | 250 V AC |
| Rated surge voltage/insulation | Basic insulation 4 kV: between all current paths and housing Safe isolation, reinforced insulation 6 kV: between (A1, A2, S11, S12, S21, S22, S34, M1) and enabling current path (13/14) between (A1, A2, S11, S12, S21, S22, S34, M1) and enabling current path (27/28) between enabling current paths |

Supply

| | |
|--|-----------------------|
| Designation | A1/A2 |
| 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. 60 mA |
| Power consumption at U_S | typ. 1.44 W |

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|--------------------|---|
| Inrush current | typ. 25 A ($\Delta t = 10 \mu s$ at U_S) |
| Filter time | 10 ms (For the logic. At A1 in the event of voltage dips at U_S) |
| Protective circuit | Surge protection; Suppressor diode |
| | Protection against polarity reversal for rated control circuit supply voltage |

Input data

Digital: Sensor circuit (S12, S22)

| | |
|---|---|
| Description of the input | safety-related sensor inputs |
| Number of inputs | 2 |
| Input voltage range "0" signal | 0 V DC ... 5 V DC |
| Input current range "0" signal | 0 mA ... 2 mA |
| Inrush current | < 11 mA (typically with U_S) |
| Filter time | max. 3 ms (Test pulse width of low test pulses) |
| | min. 21 ms (Test pulse rate for low test pulse) |
| | Test pulse rate = 7 x Test pulse width |
| Concurrency | ∞ |
| Limit frequency | min. 0 Hz |
| | max. 1 Hz |
| Max. permissible overall conductor resistance | 150 Ω |
| Current consumption | < 4.1 mA (typically with U_S) |

Digital: Start circuit (S34)

| | |
|---|---|
| Description of the input | non-safety-related |
| Number of inputs | 1 |
| Inrush current | < 8.6 mA (typically with U_S) |
| Filter time | max. 3 ms (Test pulse width of low test pulses) |
| | min. 21 ms (Test pulse rate for low test pulse) |
| | Test pulse rate = 7 x Test pulse width |
| Max. permissible overall conductor resistance | 150 Ω |
| Voltage at input/start and feedback circuit | 24 V DC -20 % / +25 % |
| Current consumption | < 3.2 mA (typically with U_S) |

Output data

Relay: Enabling current paths (13/14, 27/28)

| | |
|------------------------|--|
| Output description | safety-related N/O contacts |
| Number of outputs | 1 (undelayed) |
| | 1 (delayed) |
| Contact switching type | 2 enabling current paths |
| Contact material | AgSnO ₂ |
| Switching voltage | min. 12 V AC/DC |
| | max. 250 V AC (Observe the load curve) |
| Switching capacity | min. 60 mW |
| Inrush current | min. 3 mA |

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| | |
|-----------------------------|--|
| | max. 6 A |
| Limiting continuous current | 6 A (observe derating) |
| Sq. Total current | 72 A ² (observe derating) |
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 6 A gL/gG (N/O contact) 4 A gL/gG (for low-demand applications) |

Signal: M1

| | |
|--------------------------|--|
| Output description | PNP non-safety-related |
| Number of outputs | 1 |
| Voltage | approx. 23 V DC (U _S - 1 V) |
| Current | max. 100 mA |
| Maximum inrush current | 500 mA (Δt = 1 ms at U _S) |
| Short-circuit protection | Yes |

Connection data

Connection technology

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

Conductor connection

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

Signaling

| | |
|----------------|------------------|
| Status display | 5 x bi-color LED |
|----------------|------------------|

Dimensions

| | |
|--------|----------|
| Width | 12.5 mm |
| Height | 116.6 mm |
| Depth | 114.5 mm |

Material specifications

| | |
|------------------|-----------|
| Housing material | Polyamide |
|------------------|-----------|

Characteristics

Safety data

| | |
|---------------|--------|
| Stop category | 0 1 |
|---------------|--------|

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Safety data: EN ISO 13849

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

Safety data: IEC 61508 - High demand

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

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) | -35 °C ... 60 °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

CE

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

Standards and regulations

Air clearances and creepage distances between the power circuits

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

Mounting

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|-----------------------|------------------------|
| Mounting type | DIN rail mounting |
| Assembly instructions | See derating curve |
| Mounting position | vertical or horizontal |
| Connection method | Push-in connection |

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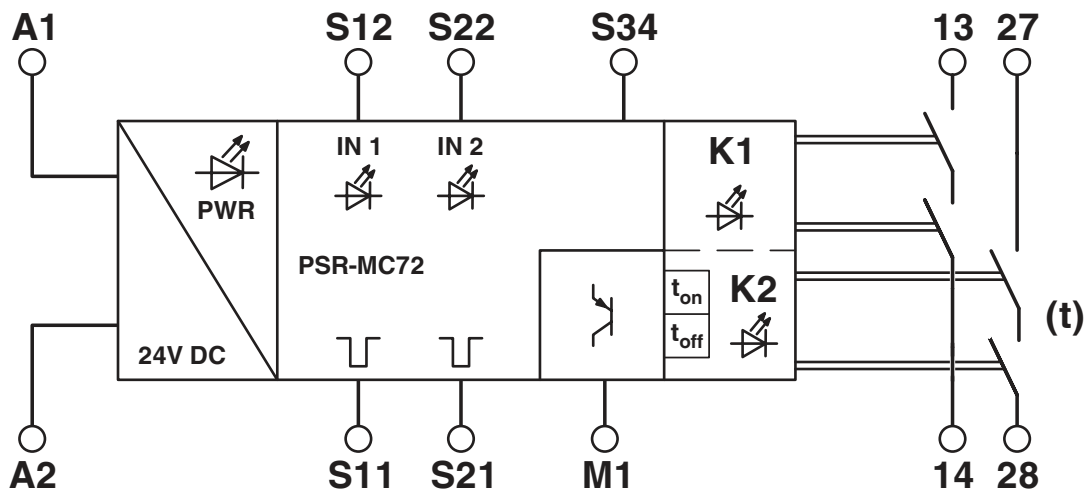


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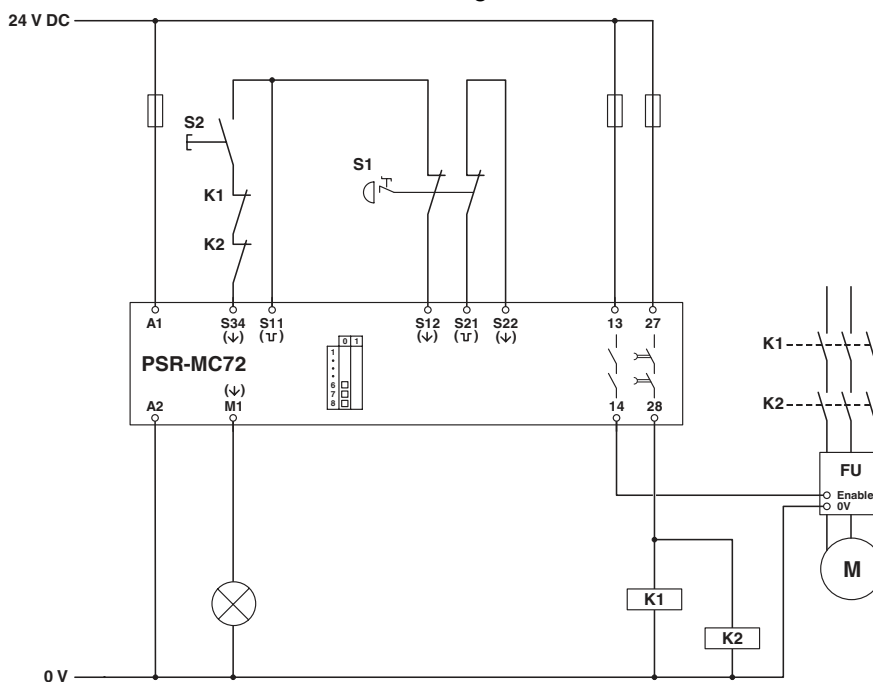
Drawings

Block diagram



Block diagram

Circuit diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/2702097>



UL Listed

Approval ID: FILE E 140324



cUL Listed

Approval ID: FILE E 140324



Functional Safety

Approval ID: 01/205/5486.01/19

cULus Listed

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Classifications

ECLASS

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

ETIM

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| ETIM 8.0 | EC001449 |
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UNSPSC

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| 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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