

PSR-MM30-2NO-2DO-24DC-SC - Safety relay module



2702357

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2-channel over-speed and zero-speed safety relay up to SIL 3, Cat. 4, PL e, 2 safe relay outputs, suitable for connecting HTL, TTL, or sine/cosine encoders as well as proximity switches, plug-in screw terminal block, width: 22.5 mm

Your advantages

- Monitoring of up to three different speeds as well as downtime
- Compatible with a range of motion sensors
- Easy parameterization and online monitoring with the PSRmotion software, which can be downloaded free of charge
- Force-guided relay contacts, parameterizable signal outputs
- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 2702357 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DNA |
| Product key | DNA242 |
| Catalog page | Page 243 (C-6-2019) |
| GTIN | 4055626133225 |
| Weight per piece (including packing) | 191.8 g |
| Weight per piece (excluding packing) | 191.8 g |
| Customs tariff number | 90328900 |
| Country of origin | DE |

Technical data

Product properties

| | |
|--------------|--|
| Product type | Safety device |
| Application | Zero-speed safety relay |
| | Over-speed safety relay |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Times

| | |
|-----------------------|--|
| Typical response time | < 200 ms (For U_s autostart) |
| | < 150 ms (For U_s manual, monitored start) |
| Delay time range | 0 s ... 10 s ± 10 % (Adjustable switch-on delay for downtime contacts 23/24) |
| Restart time | < 1 s (Boot time) |
| Recovery time | < 1 s |

Electrical properties

| | |
|---|--|
| Maximum power dissipation for nominal condition | 6.5 W (at $U_s = 26.4$ V, $U_{\text{INPUT}} = 30$ V, $I_L^2 = 72$ A ²) |
| Nominal operating mode | 100% operating factor |
| Interfaces | Encoder |
| | Proximity switches |

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 input circuit (A1/A2, I1, I2, I3, MI1, MI2, IN1, IN2, S34, MO1, MO2, RJ45, USB) and the enabling current paths (13/14, 23/24) |

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 % (provide external protection) |
| Rated control supply current I_s | typ. 74 mA |
| Power consumption at U_s | typ. 1.78 W |
| Inrush current | < 18 A ($\Delta t = 500$ μ s at U_s) |
| Filter time | 2 ms (at A1 in the event of voltage dips at U_s) |
| Protective circuit | Serial protection against polarity reversal; 33 V suppressor diode |

Input data

Digital: Operating mode and monitoring inputs

| | |
|--------------------------|--|
| Description of the input | NPN, IEC 61131-2, type 1 |
| Number of inputs | 1 (Non-safety-related start input: S34) |
| | 3 (Safety-related operating mode inputs: I1, I2, I3) |

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| | |
|---|--|
| | 2 (Safety-related monitoring inputs: MI1, MI2) |
| Discrepancy time | 2 s (I1, I2, I3) 2.5 s (MI1, MI2) |
| Input voltage range "0" signal | 0 V DC ... 5 V DC |
| Input voltage range "1" signal | 15 V DC ... 30 V DC |
| Input current range "0" signal | 0 mA ... 1.5 mA |
| Inrush current | < 5 mA |
| Filter time | max. 2 ms (Test pulse width; low test pulses for operating mode and monitoring inputs) Test pulse rate = 5 x Test pulse width |
| Max. permissible overall conductor resistance | 150 Ω |
| Protective circuit | 33 V suppressor diode |
| Current consumption | typ. 4 mA (at U _S) |

Measurement

| | |
|---|---|
| Input name | Proximity switch inputs |
| Description of the input | NPN, IEC 61131-2, type 1 |
| Number of inputs | 2 (Safety-related proximity switch inputs: IN1 IN2) |
| Input voltage range "0" signal | 0 V DC ... 5 V DC |
| Input voltage range "1" signal | 15 V DC ... 30 V DC |
| Input current range "0" signal | 0 mA ... 1.5 mA |
| Inrush current | < 12 mA |
| Precision | ± 2 % (in reference to the parameterized limit value) |
| Limit frequency | max. 2 kHz (Minimum pulse duration: 45 μs) |
| Max. permissible overall conductor resistance | 150 Ω |
| Protective circuit | 33 V suppressor diode |
| Current consumption | typ. 10 mA (at U _S) |

Measurement

| | |
|---|---|
| Input name | Encoder input |
| Description of the input | TTL, HTL, Sin/Cos |
| Number of inputs | 1 (Safety-related encoder input, RJ45) |
| Precision | ± 2 % (in reference to the parameterized limit value) |
| Limit frequency | max. 400 kHz max. 250 kHz For active diagnostic safety encoder |
| Max. permissible overall conductor resistance | 150 Ω |
| HTL Signal form/signal level | 0 V DC ... 3 V DC (Low) 12 V DC ... 30 V DC (High) |
| TTL Signal form/signal level | 0 V DC ... 0.9 V DC (Low) 2.5 V DC ... 5 V DC (High) |
| Sine / cosine Signal form/signal level | 2 V DC ... 3 V DC (1 V _{pp} differential signal) |
| Current consumption | < 3 mA (Per track for U _S) |

Output data

Relay: Enabling current path

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| | |
|---|--|
| Output description | 2 NO contacts each in series, without delay, floating |
| Number of outputs | 2 (safety-related N/O contacts: 13/14, 23/24) |
| Contact switching type | 2 enabling current paths |
| 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 |
| Sq. Total current | 72 A ² (observe derating) |
| Switching frequency | max. 0.5 Hz |
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 6 A gL/gG |

Signal

| | |
|--------------------------|---|
| Output description | PNP |
| Number of outputs | 2 (Non-safety-related signal outputs: MO1, MO2) |
| Voltage | approx. 22 V DC (U _s - 2 V) |
| Current | max. 100 mA |
| Maximum inrush current | 500 mA (Δt = 1 ms at U _s) |
| Protective circuit | 33 V suppressor diode |
| Short-circuit protection | no |

Connection data

Connection technology

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

Conductor connection

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Conductor cross section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section AWG | 24 ... 12 |
| Stripping length | 7 mm |
| Screw thread | M3 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

Signaling

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|---------------------------|---------------------------|
| Status display | 2x LED green (OUT1, OUT2) |
| Operating voltage display | 1 x green LED (PWR) |

Dimensions

| | |
|-------|---------|
| Width | 22.5 mm |
|-------|---------|

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|--------|----------|
| Height | 112.2 mm |
| Depth | 114.5 mm |

Material specifications

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

Characteristics

Safety data

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

Safety data: EN ISO 13849

| | |
|------------------------|--|
| Category | 4 |
| Performance level (PL) | e (6 A DC1, 17520 switching cycles/year) |

Safety data: IEC 61508 - High demand

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

Safety data: EN IEC 62061

| | |
|------------------------------|--|
| Safety Integrity Level (SIL) | 3 (For applications in SIL 3, the required demand rate for the safety function is once per day.) |
|------------------------------|--|

Environmental and real-life conditions

Ambient conditions

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|--|---|
| Degree of protection | IP20 |
| Min. degree of protection of inst. location | IP54 |
| Ambient temperature (operation) | -40 °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

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

Standards and regulations

Air clearances and creepage distances between the power circuits

| | |
|-----------------------|----------------------------|
| Standards/regulations | DIN EN 50178, EN 60947-5-1 |
|-----------------------|----------------------------|

Mounting

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|-----------------------|--------------------|
| Mounting type | DIN rail mounting |
| Assembly instructions | See derating curve |

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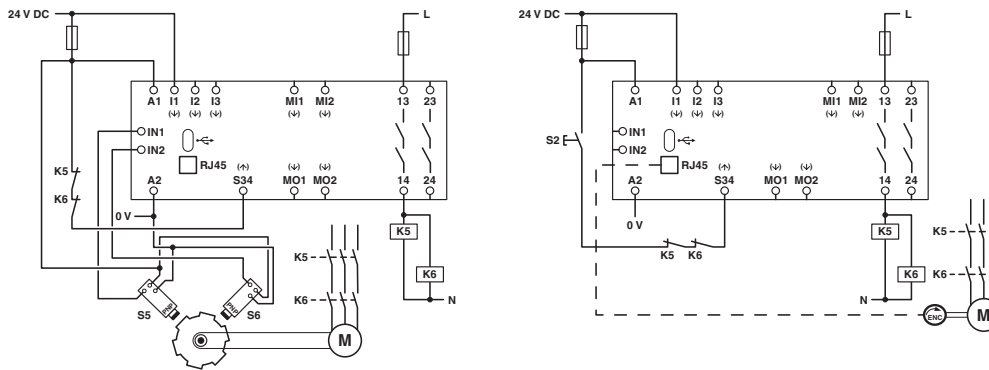
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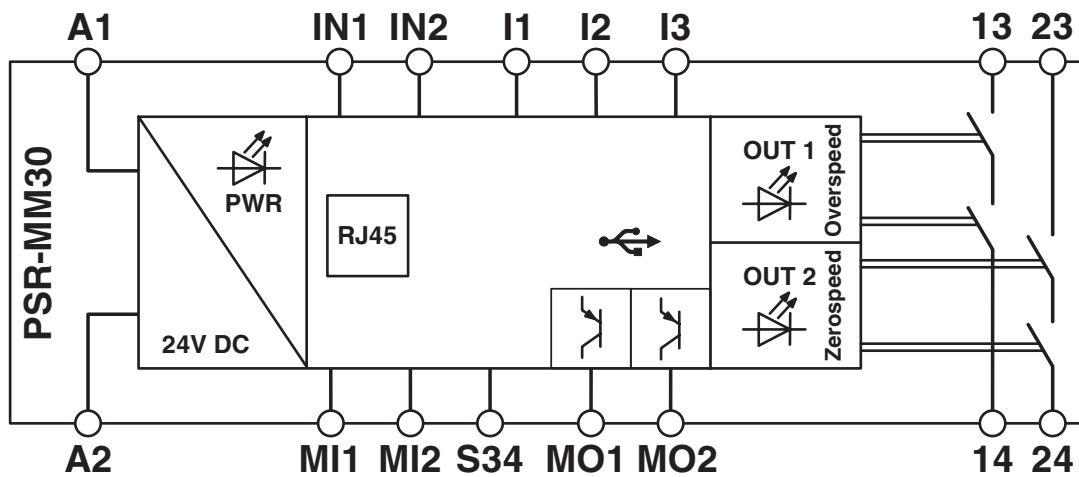
| | |
|-------------------|------------------------|
| Mounting position | vertical or horizontal |
| Connection method | Screw connection |

Drawings

Circuit diagram



Block diagram




Block diagram

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Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/ae/products/2702357>



UL Listed

Approval ID: FILE E 140324



cUL Listed

Approval ID: FILE E 140324



Functional Safety

Approval ID: 01/205/5690.00/19



Functional Safety

Approval ID: 968/FSP 1755.00/19

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27371811 |
| ECLASS-12.0 | 27371811 |
| ECLASS-13.0 | 27371811 |

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC001448 |
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UNSPSC

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|-------------|----------|
| UNSPSC 21.0 | 39122300 |
|-------------|----------|

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Environmental product compliance

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|------------|--|
| 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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Accessories

CAB-USB A/MICRO USB B/2,0M - Connecting cable

2701626

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Connecting cable, for connecting the controller to a PC for PC Worx and LOGIC+, USB A to micro USB B, 2 m in length.

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