

PSR-MC38-2NO-1DO-24DC-SC - Safety relays



1009831

<https://www.phoenixcontact.com/us/products/1009831>

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Safety relay for emergency stop, safety doors and light grids up to SIL 3, Cat. 4, PL e, 1- or 2-channel operation, automatic or manual, monitored start, 2 enabling current paths, 1 signal output, TBUS interface, $U_S = 24 \text{ V DC}$, pluggable screw terminal block

Your advantages

- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- 1- and 2-channel control
- 2 enabling current paths, 1 digital signal output
- For emergency stop and safety door monitoring, plus evaluation of light grids
- TBUS interface for connecting CONTACTRON hybrid motor starters and MINI POWER power supplies



Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1009831 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN01 |
| Product key | DNA181 |
| GTIN | 4055626482705 |
| Weight per piece (including packing) | 212.33 g |
| Weight per piece (excluding packing) | 169.38 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

Technical data

Notes

Note on application

| | |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

Product properties

| | |
|----------------|--|
| Product type | Safety relays |
| Product family | PSRmini |
| Application | Emergency stop |
| | Safety door |
| | Light grid |
| | Magnetic switch |
| | Transponder |
| Control | 1 and 2 channel |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

Insulation characteristics

| | |
|----------------------|---|
| Overvoltage category | II, III (See the section "Insulation coordination") |
| Degree of pollution | 2 |

Times

| | |
|-------------------------------|--|
| Typical response time | 200 ms (automatic start) |
| | 30 ms (manual, monitored start) |
| Typ. starting time with U_S | 200 ms (when controlled via A1) |
| Typical release time | 25 ms (when actuation is via the sensor circuit) |
| | 60 ms (when controlled via A1) |
| Restart time | < 1 s (Boot time) |
| Recovery time | < 500 ms |

Electrical properties

| | |
|---|--|
| Maximum power dissipation for nominal condition | 16.6 W (at $U_S = 26.4$ V, $I_L^2 = 72$ A ²) |
| Nominal operating mode | 100% operating factor |
| Rated insulation voltage | 250 V |
| Rated surge voltage/insulation | See data sheet, section "Insulation coordination". |

Supply

| | |
|--|--|
| Designation | A1/A2 |
| Rated control circuit supply voltage U_S | 24 V DC -15 % / +10 % (provide external protection) |
| Rated control supply current I_S | typ. 75 mA |
| Power consumption at U_S | typ. 1.8 W |
| Inrush current | < 4 A ($\Delta t = 3$ ms at U_S) |
| Filter time | 20 ms (at A1 in the event of voltage dips at U_S) |
| Protective circuit | Serial protection against polarity reversal |

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| | |
|--|------------------|
| | Suppressor diode |
|--|------------------|

Input data

Digital: Sensor circuit (S10, S12, S13, S22)

| | |
|---|--|
| Description of the input | safety-related sensor inputs |
| Number of inputs | 4 |
| Input voltage range "1" signal | 20.4 V DC ... 26.4 V DC |
| Inrush current | < 40 mA (typ. with U_S at S10) < 300 mA (typ. with U_S at S12, $\Delta t = 150$ ms) < 3 mA (typ. with U_S at S13) > -300 mA (typ. with U_S at S22, $\Delta t = 150$ ms) |
| Filter time | 2 ms (At S10, S12, S13; test pulse width of low test pulses) 1 s (At S10, S12, S13; test pulse rate of low test pulses) No brightness test pulses / high test pulses permitted. |
| Concurrence | ∞ |
| Max. permissible overall conductor resistance | 50 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | 40 mA (typ. with U_S at S10) 45 mA (typ. with U_S at S12) 3 mA (typ. with U_S at S13) -35 mA (typ. with U_S at S22, $\Delta t = 150$ ms) |

Digital: Start circuit (Y1, S34, S35)

| | |
|---|---|
| Description of the input | non-safety-related |
| Number of inputs | 3 |
| Input voltage range "1" signal | 20.4 V DC ... 26.4 V DC |
| Inrush current | < 60 mA (typ. with U_S at Y1, $\Delta t = 150$ ms) < 270 mA (typ. with U_S at S34, $\Delta t = 15$ ms) < 80 mA (typ. with U_S at S35, $\Delta t = 25$ ms) |
| Filter time | No darkness test pulses / low test pulses permitted. No brightness test pulses / high test pulses permitted. |
| Max. permissible overall conductor resistance | 50 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | typ. 10 mA (typ. with U_S at Y1) typ. 34 μ A (typ. with U_S at S35) |

Output data

Relay: Enabling current path (13/14, 23/24)

| | |
|------------------------|--|
| Output description | safety-related N/O contacts 2 NO contacts each in series, without delay, floating |
| Number of outputs | 2 (undelayed) |
| Contact switching type | 2 enabling current paths |
| Contact material | AgSnO ₂ |
| Switching voltage | min. 10 V AC/DC |

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| | |
|-----------------------------|---|
| | max. 250 V AC/DC (Observe the load curve) |
| Switching power | min. 100 mW |
| Inrush current | min. 10 mA max. 6 A |
| Switching capacity | 5 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 | 10 A gL/gG 4 A gL/gG (for low-demand applications) |

Signal: Y30

| | |
|------------------------|---------------------------------------|
| Output description | PNP non-safety-related |
| Number of outputs | 1 |
| Voltage | approx. 23.9 V DC ($U_s - 0.1$ V) |
| Current | max. 100 mA |
| Maximum inrush current | 500 mA ($\Delta t = 1$ ms at U_s) |
| Protective circuit | Suppressor diode |

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

| | |
|---------------------------|-----------------|
| Status display | 4 x LED (green) |
| Operating voltage display | 1 x LED (green) |

Dimensions

| | |
|--------|----------|
| Width | 22.5 mm |
| Height | 112.2 mm |
| Depth | 114.5 mm |

Material specifications

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

Characteristics

Safety data

| | |
|----------------------------|---|
| Stop category (EN 60204-1) | 0 |
|----------------------------|---|

Safety data: EN ISO 13849

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

Safety data: IEC 61508 - High demand

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

Safety data: IEC 61508 - Low 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) | -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

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

Mounting

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

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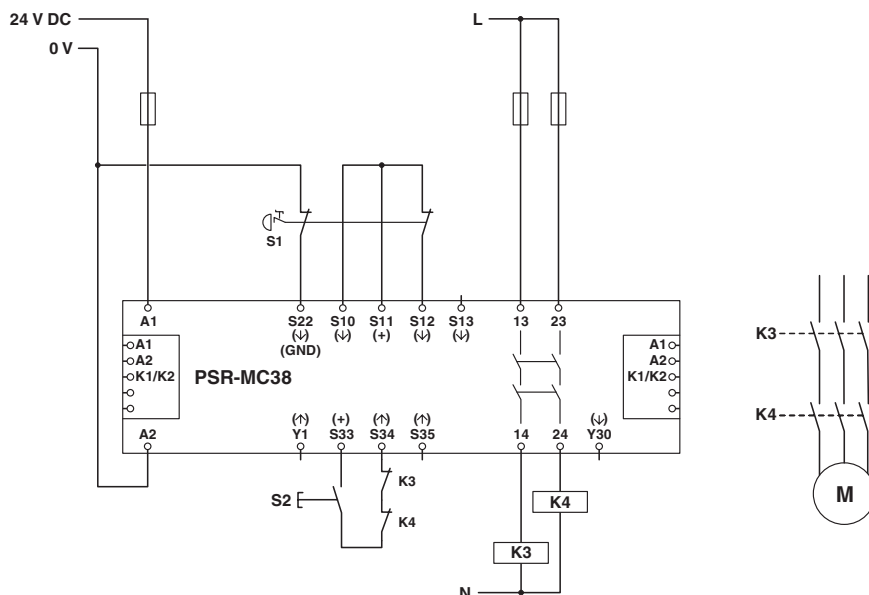


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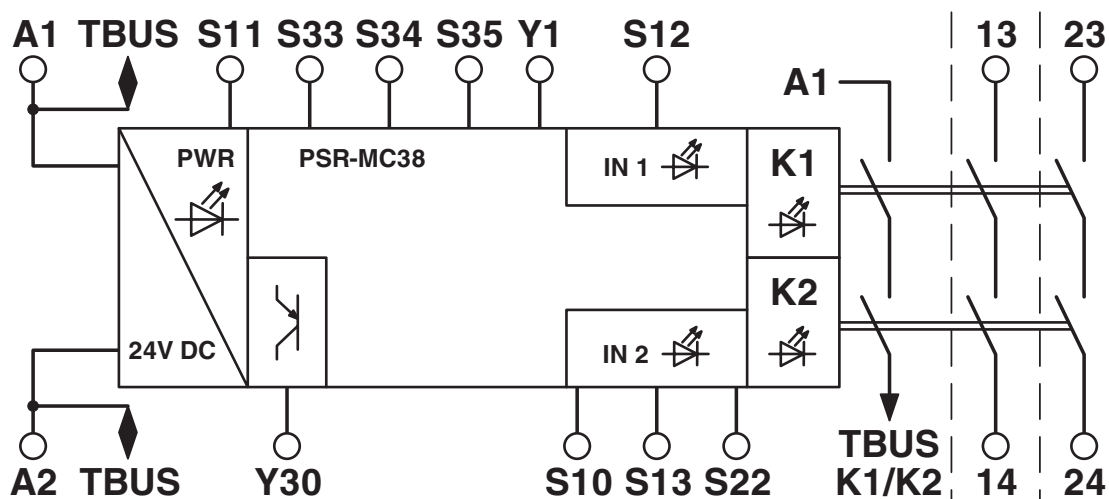
Drawings

Circuit diagram



Example application

Block diagram



Block diagram

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1009831>



cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/5651.02/24

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Classifications

ECLASS

| | |
|-------------------|----------|
| ECLASS-13.0 | 27371819 |
| ECLASS-15.0 | 27371819 |
| ECLASS-15.0 ASSET | 27250101 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC001449 |
|-----------|----------|

UNSPSC

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

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| 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 | 4d970b5f-c2f8-453e-ae7-b21159620cd5 |

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