# 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 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

ELEKTROGERÄTE RÜCKNAHME

## 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 A²) |
| 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 (Δt = 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 |

| | |
|---|---|
| | 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, Δt = 150 ms) |
| | < 3 mA (typ. with $U_S$ at S13) |
| | > -300 mA (typ. with $U_S$ at S22, Δt = 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, Δt = 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, Δt = 150 ms) |
| | < 270 mA (typ. with $U_S$ at S34, Δt = 15 ms) |
| | < 80 mA (typ. with $U_S$ at S35, Δt = 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 µA (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 |

| | |
|---|---|
| | 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 (Δt = 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 mm² ... 2.5 mm² |
| Conductor cross-section flexible | 0.2 mm² ... 2.5 mm² |
| 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 | 4 x LED (green) |
| Operating voltage display | 1 x LED (green) |

## Dimensions

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|---|---|
| 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

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|---|---|
| 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

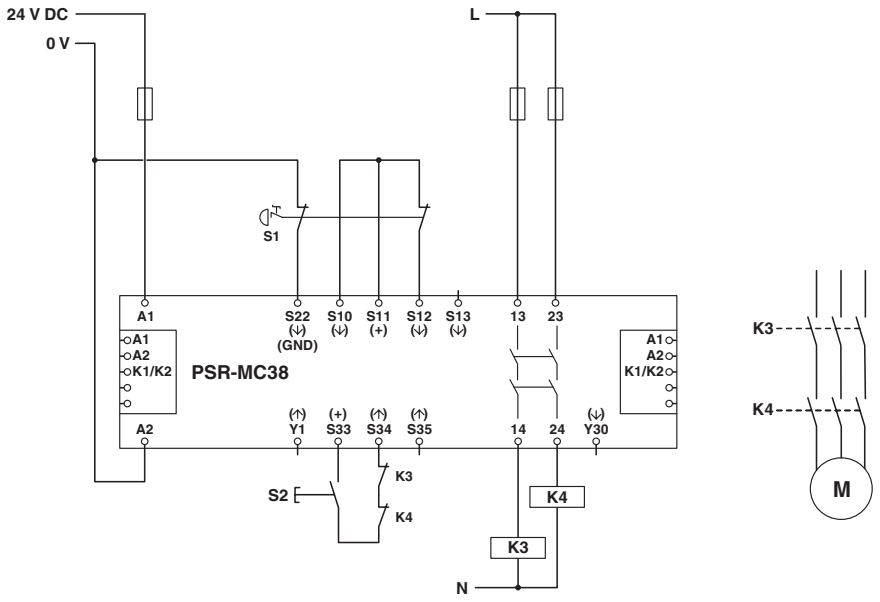
| | |
|---|---|
| Identification | CE-compliant |

## Mounting

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

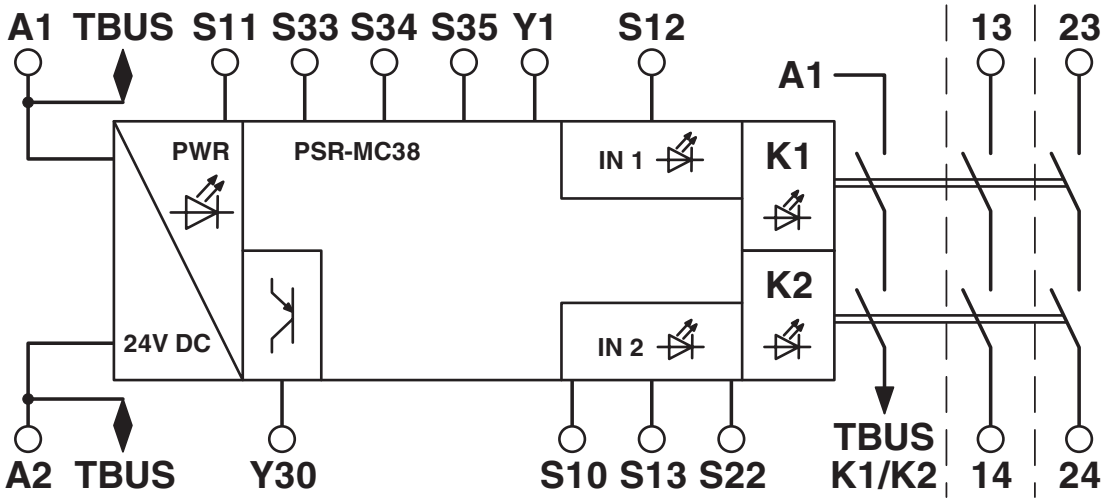
## Drawings

Circuit diagram




Example application

Block diagram




Block diagram

## 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

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## Environmental product compliance

EU RoHS

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|---|---|
| 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-aee7-b21159620cd5 |


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