# PSR-MC34-3NO-1DO-24DC-SC - Safety relays

2700540

https://www.phoenixcontact.com/us/products/2700540

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Safety relay for emergency stop and safety doors up to SIL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual, monitored start, cross-circuit detection, 3 enabling current paths, $U_S$ = 24 V DC, plug-in screw 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
- 2 channel control
- 3 enabling current paths, 1 digital signal output
- Manually monitored and automatic activation in a single device
- Cross-circuit detection

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2700540 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN01 |
| Product key | DNA181 |
| GTIN | 4046356912716 |
| Weight per piece (including packing) | 172.2 g |
| Weight per piece (excluding packing) | 143.74 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 |
| | Magnetic switch |
| | Transponder |
| Control | 2-channel |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

### Insulation characteristics

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

### Times

| | |
|---|---|
| Typical response time | < 175 ms (automatic start) |
| | < 175 ms (manual, monitored start) |
| Typ. starting time with $U_s$ | < 250 ms (when controlled via A1) |
| Typical release time | < 20 ms (on demand via A1) |
| | < 20 ms (on demand via the sensor circuit) |
| Restart time | < 1 s (Boot time, after switching on the supply voltage) |
| Recovery time | < 500 ms (following demand of the safety function) |
| Start pulse length | 500 ms (manual start) |

## Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 6.1 W ($U_S$ = 26.4 V, $I_L^2$ = 72 A², $P_{Total\ max}$ = 2.5 W + 3.6 W) |
| Nominal operating mode | 100% operating factor |
| Rated insulation voltage | 250 V AC |
| Rated surge voltage/insulation | See data sheet, section “Insulation coordination”. |

### 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 % |
| Rated control supply current $I_S$ | typ. 84 mA (at $U_S$) |
| Power consumption at $U_S$ | typ. 2 W |
| Inrush current | typ. 5 A (Δt = 200 µs at $U_s$) |
| Filter time | 1 ms (in the event of voltage dips at $U_s$) |

| | |
|---|---|
| Protective circuit | Serial protection against polarity reversal; Suppressor diode |

## Input data

Digital: Sensor circuit (S12, S22)

| | |
|---|---|
| Description of the input | safety-related sensor inputs |
| | NPN (S12), NPN/PNP (S22) |
| Number of inputs | 2 |
| Input voltage range "0" signal | < 5 V (S12) |
| | Input S22 can interpret low-resistance outputs of a PLC as a continuous HIGH signal. |
| Input voltage range "1" signal | 20.4 V ... 26.4 V |
| Input current range "0" signal | < 2 mA (S12) |
| | 0 mA ... 2 mA (S22) |
| Inrush current | < 20 mA (typ. with $U_S$ at S12) |
| | < 5 mA (typ. with $U_S$ at S22/24 V) |
| | > -15 mA (typ. with $U_S$ at S22/0 V) |
| Filter time | max. 1.5 ms (at S12, S22; test pulse width) |
| | min. 7.5 ms (at S12, S22; test pulse rate) |
| Concurrence | ∞ |
| Max. permissible overall conductor resistance | 150 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | < 5 mA (typ. with $U_S$ at S12) |
| | < 5 mA (typ. with $U_S$ at S22/24 V) |
| | > -5 mA (typ. with $U_S$ at S22/0 V) |

Digital: Start circuit (S34)

| | |
|---|---|
| Description of the input | non-safety-related |
| | NPN/PNP |
| Number of inputs | 1 |
| Input voltage range "1" signal | 20.4 V DC ... 26.4 V DC |
| Inrush current | max. 200 mA (typ. with $U_S$) |
| Max. permissible overall conductor resistance | 150 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | < 10 mA (at S34/24 V) |
| | > -5 mA (at S34/0 V) |

## Output data

Relay: Enabling current paths (13/14, 23/24/34)

| | |
|---|---|
| Output description | safety-related N/O contacts |
| Number of outputs | 3 (undelayed) |
| Contact switching type | 3 enabling current paths |
| Contact material | $AgSnO_2$ |
| Switching voltage | min. 12 V |
| | max. 250 V AC/DC (Observe the load curve) |

| | |
|---|---|
| Switching power | min. 60 mW |
| Inrush current | min. 3 mA |
| | max. 6 A |
| Switching capacity | 5 A (AC15) |
| | 4 A (DC13) |
| Limiting continuous current | 6 A (For 13/14) |
| | 6 A (For 23/24/34; since the 23/24/34 contact path only has one input path, only a total current of 6 A is permitted here) |
| Sq. Total current | 72 $A^2$ (observe derating) |
| Switching frequency | 0.1 Hz |
| Mechanical service life | 10x $10^6$ cycles |
| Output fuse | 6 A gL/gG |
| | 4 A gL/gG (for low-demand applications) |

Signal: M1

| | |
|---|---|
| Output description | non-safety-related |
| Number of outputs | 1 (digital, PNP) |
| Voltage | 22 V DC ($U_s$ - 2 V) |
| Current | max. 100 mA |
| Maximum inrush current | 500 mA (Δt = 1 ms at $U_s$) |
| Protective circuit | Suppressor diode |
| Short-circuit protection | no |

## 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

| | |
|---|---|
| Status display | 3 x LED (green) |
| Operating voltage display | 1 x LED (green) |

## Dimensions

| | |
|---|---|
| Width | 12.5 mm |
| Height | 112.2 mm |
| Depth | 114.5 mm |

## Material specifications

| | |
|---|---|
| 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 (4 A DC13; 5 A AC15; 8760 switching cycles/year) |

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) | -40 °C ... 55 °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, amplitude 0.15 mm, 2g |

## Approvals

CE

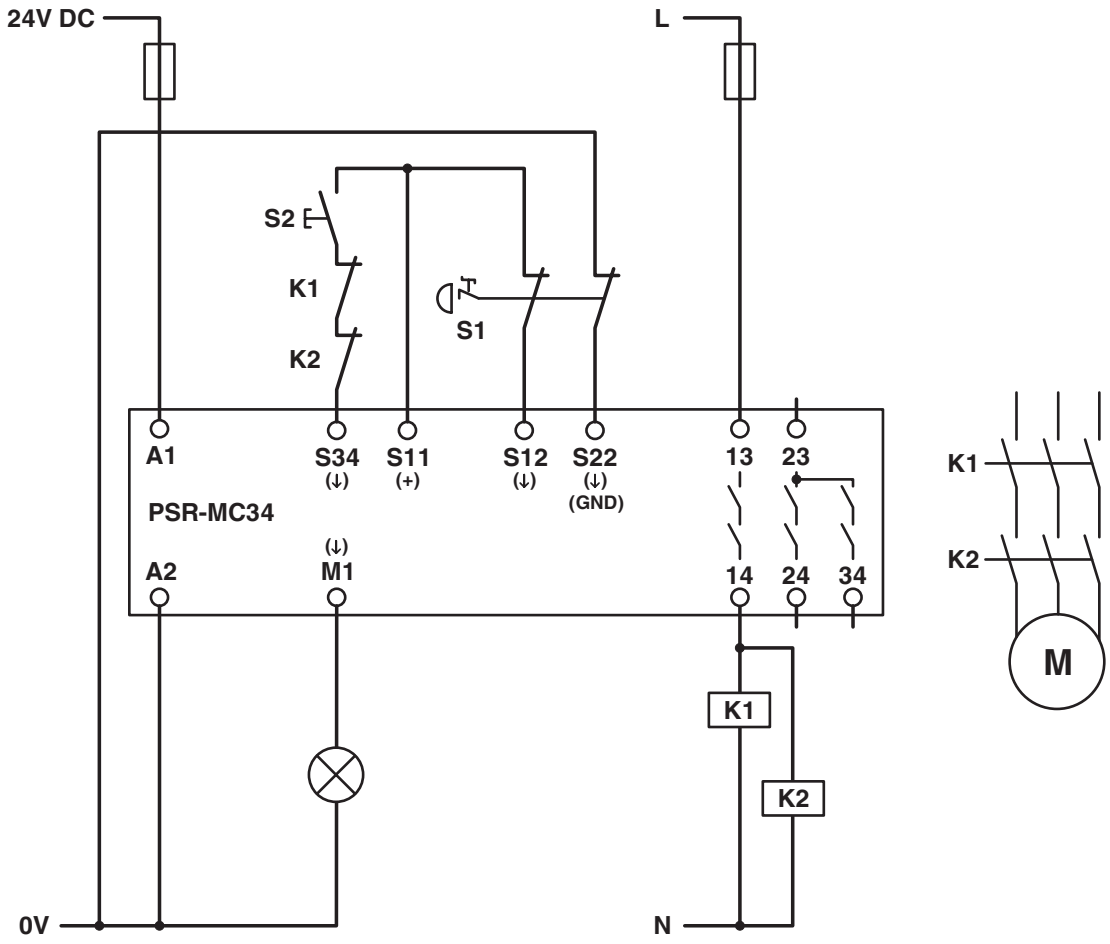
| | |
|---|---|
| Identification | CE-compliant |

## Mounting

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

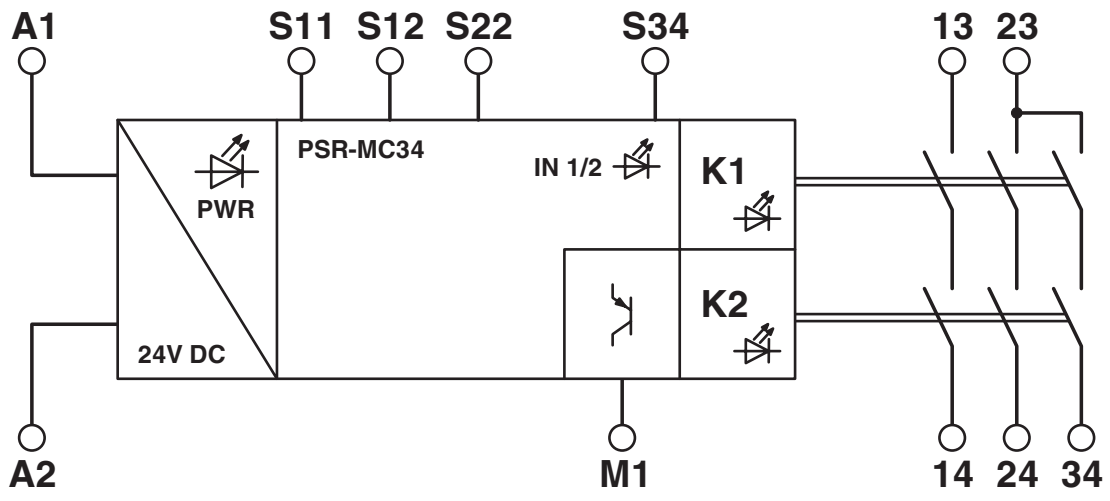
## Drawings

Circuit diagram



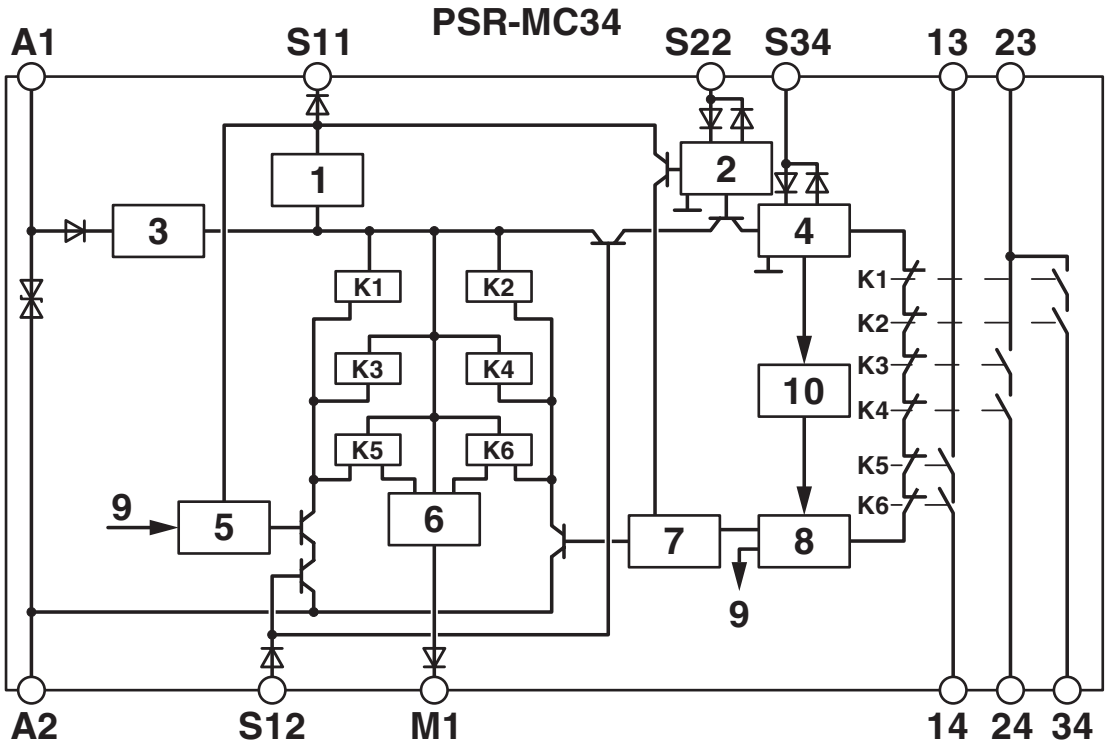

Example application

Block diagram




Block diagram

Block diagram




## Key:

1 = Current limitation
2 = Input circuit
3 = Voltage limitation
4 = Start circuit
5 = Control circuit channel 1
6 = Control circuit signal output
7 = Control circuit channel 2
8 = Start channel 1 and 2
9 = Channel 1
10 = Diagnostics
K1, K2 ... K6 = Force-guided elementary relays

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2700540

**Functional Safety**
Approval ID: 44 205 13755201

**Functional Safety**
Approval ID: 44 780 13755201

**cULus Listed**
Approval ID: E140324

## 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 |

## 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 | 07756783-9445-469b-9efa-61d141e1ca63 |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 30.752 kg CO2e |


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