

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



2700540

<https://www.phoenixcontact.com/in/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,  $U_S = 24 \text{ V DC}$ , 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

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2700540             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | DNA                 |
| Product key                          | DNA181              |
| Catalog page                         | Page 222 (C-6-2019) |
| GTIN                                 | 4046356912716       |
| Weight per piece (including packing) | 182.5 g             |
| Weight per piece (excluding packing) | 143.74 g            |
| Customs tariff number                | 85371098            |
| Country of origin                    | DE                  |

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## 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, $I_L^2 = 72$ A <sup>2</sup> , $P_{Total\ max} = 2.5$ W + 3.6 W) |
| Nominal operating mode                          | 100% operating factor   |
| Rated insulation voltage                        | 250 V AC  |
| Rated surge voltage/insulation                  | See 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 ( $\Delta t = 200$ $\mu$ s at $U_S$ ) |
| Filter time                                | 1 ms (in the event of voltage dips at $U_S$ )  |

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|                    |   |
|--------------------|---|
| 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)   |
| Concurrency                                   | $\infty$   |
| Max. permissible overall conductor resistance | 150 $\Omega$   |
| 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 $\Omega$                   |
| 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 <sub>2</sub>                        |
| Switching voltage      | min. 12 V                                 |
|                        | max. 250 V AC/DC (Observe the load curve) |

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|                             |  |
|-----------------------------|--|
| Switching capacity          | min. 60 mW   |
| Inrush current              | min. 3 mA  |
|                             | max. 6 A   |
| 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 <sup>2</sup> (observe derating)   |
| Switching frequency         | 0.1 Hz   |
| Mechanical service life     | 10x 10 <sup>6</sup> 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 <sub>s</sub> - 2 V)        |
| Current                  | max. 100 mA                           |
| Maximum inrush current   | 500 mA (Δt = 1 ms at U <sub>s</sub> ) |
| 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 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| 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) |
|-----------------|-------------------|

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|                  |    |
|------------------|----|
| Housing material | PA |
|------------------|----|

## Characteristics

### Safety data

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

### Safety data: EN ISO 13849

|                        |  |
|------------------------|--|
| Category               | 4  |
| 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 |

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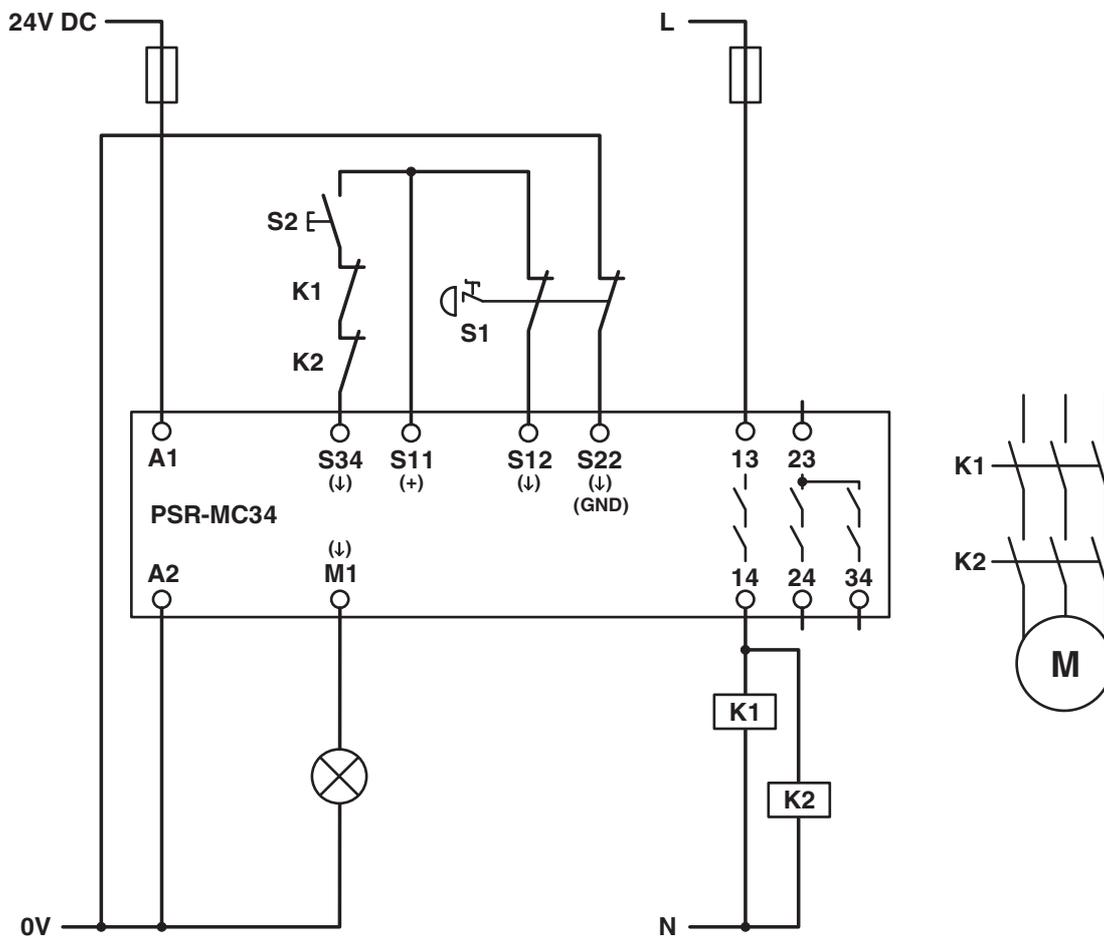


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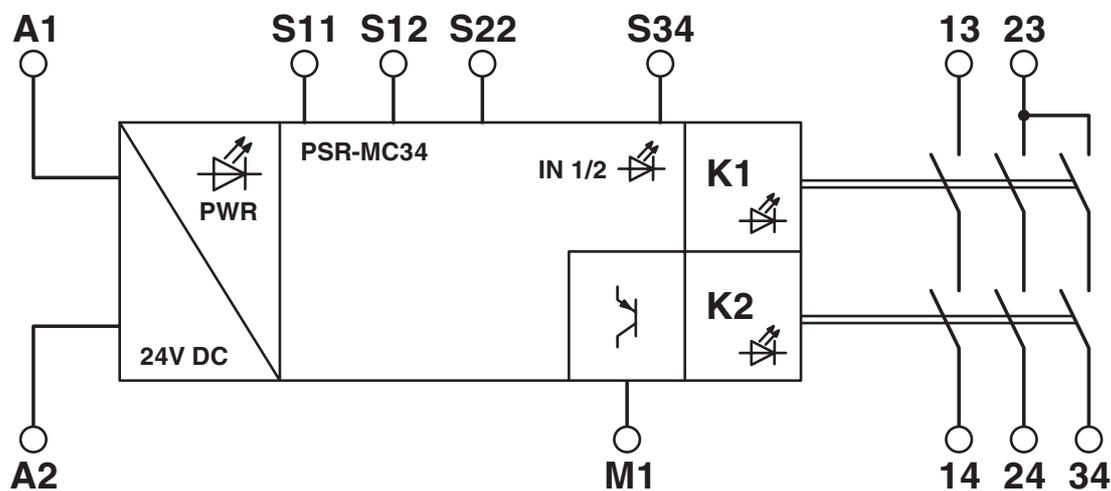
## Drawings

Circuit diagram



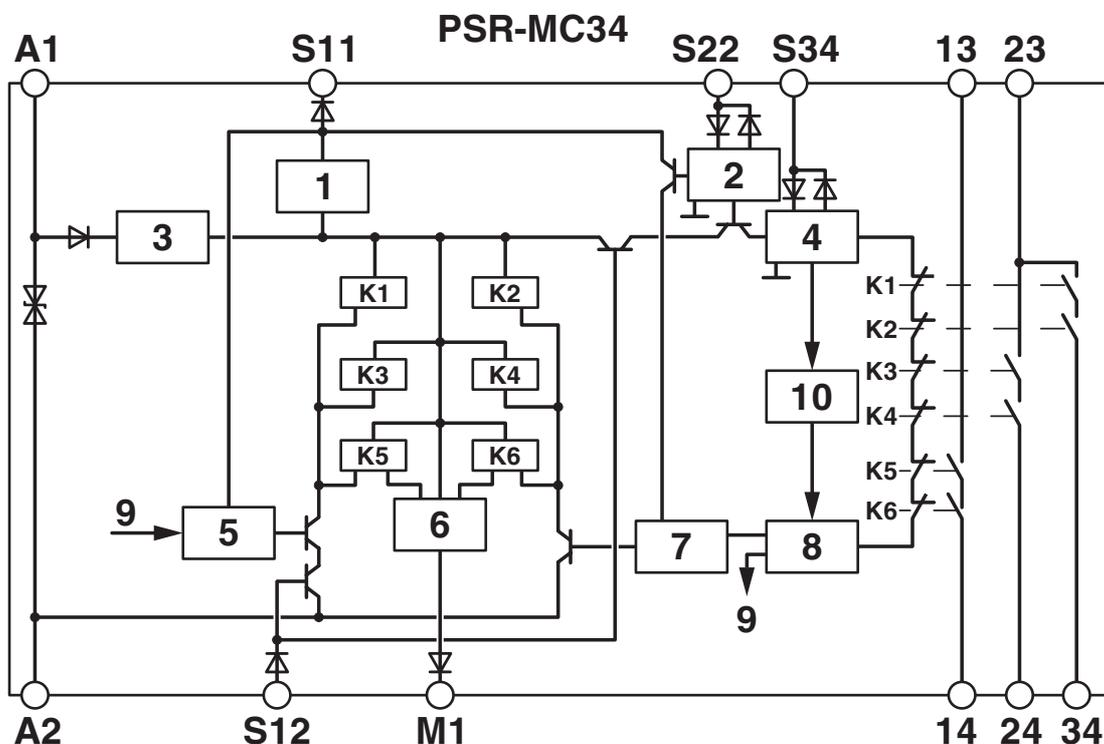
Example application

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

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## Approvals

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



### Functional Safety

Approval ID: 44-205-13755201



### Functional Safety

Approval ID: 44-4780-13755201



### cULus Listed

Approval ID: E140324

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## Classifications

### ECLASS

ECLASS-13.0

27371819

### ETIM

ETIM 9.0

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

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