

PSR-MC20-3NO-1DO-24DC-SC - Safety relays



2700466

<https://www.phoenixcontact.com/au/products/2700466>

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Safety relay for emergency stop and safety doors up to SIL 1, Cat. 1, PL c, depending on the application up to SIL 3, Cat. 4, PL e, 1-channel operation, automatic/manual start, 3 enabling current paths, $U_S = 24 \text{ V DC}$, plug-in screw terminal block

Your advantages

- Up to Cat. 1/PL c in accordance with EN ISO 13849-1, SIL 1 in accordance with EN IEC 62061
- Depending on the application, up to cat. 4/PL e in accordance with ISO 13849-1, SIL CL 3 in accordance with EN IEC 62061
- Low housing width of just 12.5 mm
- Manually monitored and automatic activation in a single device
- 3 enabling current paths, 1 digital signal output
- 1-channel control

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 2700466 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DNA181 |
| Product key | DNA181 |
| Catalog page | Page 220 (C-6-2019) |
| GTIN | 4046356912730 |
| Weight per piece (including packing) | 179.54 g |
| Weight per piece (excluding packing) | 144.37 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 |
| Control | 1-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 (when controlled via A1 or S12) |
| Restart time | < 1 s (Boot time) |
| Recovery time | < 500 ms |
| Start pulse length | ≥ 500 ms (manual start) |

Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 4.8 W ($U_S = 26.4$ V, $I_L^2 = 48$ A ² , $P_{\text{Total max}} = 2.4$ W + 2.4 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. 80 mA |
| Power consumption at U_S | typ. 1.92 W |
| Inrush current | 5 A ($\Delta t = 200$ μ s at U_S) |
| Filter time | 1 ms (at A1 in the event of voltage dips at U_S) |
| Protective circuit | Serial protection against polarity reversal; Suppressor diode |

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Input data

Digital: Sensor circuit (S12)

| | |
|---|---|
| Description of the input | safety-related sensor inputs |
| Number of inputs | 1 |
| Input voltage range "0" signal | 0 V DC ... 5 V DC (for safe Off; at S12) |
| Input voltage range "1" signal | 20.4 V DC ... 26.4 V DC |
| Input current range "0" signal | 0 mA ... 2 mA (for safe Off; at S12) |
| Inrush current | < 21 mA (typ. with U_S) |
| Filter time | max. 1.5 ms (Test pulse width of low test pulses) Test pulse rate = 5 x Test pulse width |
| Max. permissible overall conductor resistance | 150 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | < 5 mA (typ. with U_S) |

Digital: Start circuit (S34)

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

Output data

Relay: Enabling current paths (13/14, 23/24, 33/34)

| | |
|-----------------------------|--|
| Output description | 2 N/O contacts each in series, safety-related, floating |
| Number of outputs | 3 (undelayed) |
| Contact switching type | 3 enabling current paths |
| Contact material | AgSnO ₂ |
| Switching voltage | min. 12 V AC/DC max. 250 V AC/DC |
| Switching capacity | min. 60 mW |
| Inrush current | min. 3 mA max. 6 A |
| Limiting continuous current | 6 A |
| Sq. Total current | 48 A ² (observe derating) |
| Switching frequency | max. 0.1 Hz |
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 6 A gL/gG (N/O contact) 4 A gL/gG (for low-demand applications) |

Signal: M1

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| | |
|------------------------|---------------------------------------|
| 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 ($\Delta t = 1$ 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 | 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 | 0 |
|---------------|---|

Safety data: EN ISO 13849

| | |
|------------------------|---|
| Category | 1 (up to Cat. 4 depending on the application) |
| Performance level (PL) | c (up to PL e depending on the application) |

Safety data: IEC 61508 - High demand

| | |
|------------------------------|--|
| Safety Integrity Level (SIL) | 1 (up to SIL 3 depending on the application) |
|------------------------------|--|

Safety data: IEC 61508 - Low demand

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| | |
|------------------------------|--|
| Safety Integrity Level (SIL) | 1 (up to SIL 3 depending on the application) |
|------------------------------|--|

Safety data: EN IEC 62061

| | |
|------------------------------|--|
| Safety Integrity Level (SIL) | 1 (up to SIL 3 depending on the application) |
|------------------------------|--|

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 |

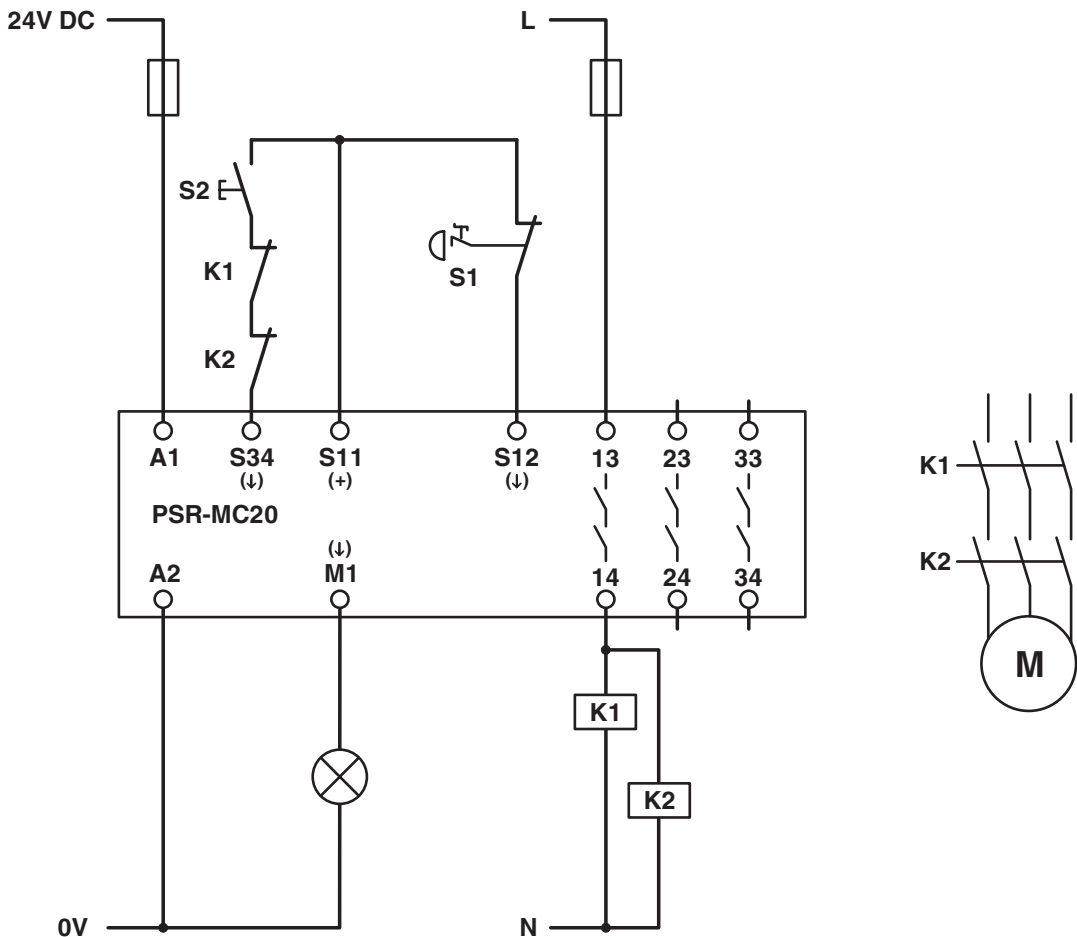
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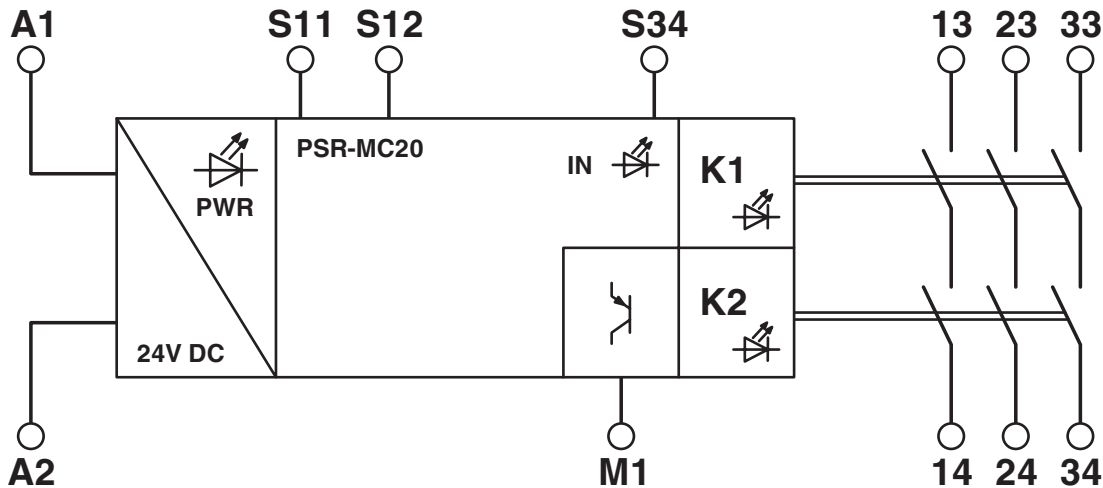
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Drawings

Circuit diagram



Block diagram



Block diagram

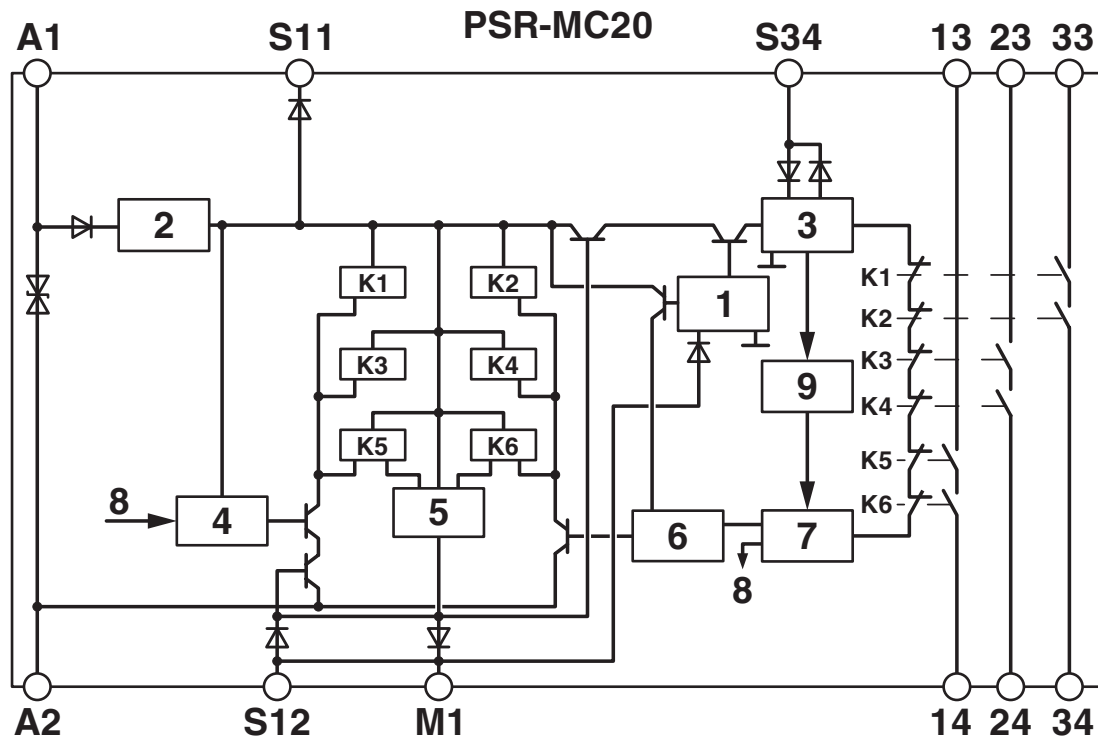
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Block diagram



Key:

- 1 = Input circuit
- 2 = Voltage limitation
- 3 = Start circuit
- 4 = Control circuit channel 1
- 5 = Control circuit signal output
- 6 = Control circuit channel 2
- 7 = Start channel 1 and 2
- 8 = Channel 1
- 9 = 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/au/products/2700466>



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 | 27c54d49-52a3-4a54-bf9b-535a5ca5232a |

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