

PSR-M-EF5-SDO4-2A-DO8-PI - Extension module



1104977

<https://www.phoenixcontact.com/us/products/1104977>

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Safe extension module with 4 safe outputs (2 A), 4 reset inputs, 8 signal outputs, TBUS interface, up to SIL 3, Cat. 4/PL e, pluggable Push-in terminal block, TBUS connector included

Product description

The configurable and individually scalable PSRmodular safety system is a flexible safety solution for monitoring your machine or system. The safe extension module provides the system additional safe outputs as well as signal outputs.

Your advantages

- Cost-effective safety solution with a high level of adaptability to individual requirements
- Fast startup, thanks to easy hardware and software configuration
- Machine downtimes minimized with comprehensive, easy-to-understand diagnostics
- Tool-free and time-saving installation thanks to Push-in technology
- Low housing width of just 22.6 mm
- 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
- Suitable for elevator applications in accordance with EN 81-20



Commercial data

| | |
|------------------------|---------------|
| Item number | 1104977 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN02 |
| Product key | DNA362 |
| GTIN | 4055626974767 |

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| | |
|--------------------------------------|----------|
| Weight per piece (including packing) | 178 g |
| Weight per piece (excluding packing) | 141 g |
| Customs tariff number | 85371098 |
| Country of origin | IT |

Technical data

Notes

Note on application

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

Product properties

| | |
|--------------|-----------------|
| Product type | Safety device |
| Application | Safe shutdown |
| Control | 1 and 2 channel |

Insulation characteristics

| | |
|------------------|-----|
| Protection class | III |
|------------------|-----|

Insulation characteristics

| | |
|----------------------|----|
| Overtoltage category | II |
| Degree of pollution | 2 |

Times

| | |
|---------------|-----------------------|
| Response time | see user manual |
| Restart time | min. 5 s (Boot time) |
| | max. 10 s (Boot time) |

Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 8.05 W (with max. permissible load) |
| Nominal operating mode | 100% operating factor |
| Interfaces | DIN rail TBUS for connection to the master module, supplied as standard |
| Rated surge voltage/insulation | Basic insulation 4 kV between 24 V power supply and I/Os to the housing |

Supply

| | |
|--|--|
| Designation | A1/A2 |
| Rated control circuit supply voltage U_S | 19.2 V DC ... 28.8 V DC |
| Rated control circuit supply voltage U_S | 24 V DC -20 % / +20 % (provide external protection, typically 5 A) |
| Rated control supply current I_S | typ. 25 mA (Outputs inactive) |
| | typ. 60 mA (Outputs active, without load) |
| Power consumption at U_S | typ. 0.6 W (Outputs inactive) |
| | max. 1.44 W (Outputs active, without load) |
| Inrush current | 2 A ($\Delta t < 1$ ms at U_S) |
| Filter time | typ. 5 ms (in the event of voltage dips at U_S) |
| Protective circuit | Inverse-parallel protection against polarity reversal |

Supply

| | |
|-------------|--------|
| Designation | 24V/A2 |
|-------------|--------|

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| | |
|--|--|
| Rated control circuit supply voltage U_S | 24 V DC -20 % / +20 % (provide external protection, typically 5 A) |
| Rated control supply current I_S | < 0.5 mA (Outputs inactive) |
| | max. 20 mA (Outputs active, without load) |
| Power consumption at U_S | < 12 mW (Outputs inactive) |
| | max. 0.48 W (Outputs active, without load) |
| Inrush current | 10 A ($\Delta t = 1$ ms at U_S) |
| Filter time | typ. 1 ms (in the event of voltage dips) |


Input data

Digital: Reset inputs (FBK1, FBK2, FBK3, FBK4)

| | |
|---|--|
| Description of the input | IEC 61131-2 type 3 |
| Number of inputs | 4 |
| Input voltage range "0" signal | 0 V DC ... 5 V DC |
| Input voltage range "1" signal | 11 V DC ... 28.8 V DC |
| Input current range "0" signal | < 1 mA |
| Filter time | 250 ms \pm 2 ms (Test pulse rate > 500 ms) |
| Cable length | max. 100 m (per input) |
| Max. permissible overall conductor resistance | 1.2 k Ω (Input and reset circuit at U_S) |
| Current consumption | typ. 10 mA (typ. with U_S) |
| | max. 13 mA (at a control voltage of 28.8 V DC) |

Output data

Digital: O1, O2, O3, O4

| | |
|----------------------------------|--|
| Output description | Safety-related digital outputs |
| | PNP, OSSD |
| | IEC 61131-2 type 2 (observe limiting continuous current) |
| Number of outputs | 4 (can be used as 2 x 2 channel outputs) |
| Short-circuit protection | Yes (max. permissible short-circuit current 12 A) |
| Leakage current | max. 250 μ A |
| Cable length | max. 100 m (per output) |
| Ohmic load | min. 10 Ω (Observe limiting continuous current) |
| Max. capacitive load | max. 820 nF |
| Max. inductive load | max. 2.4 mH |
| Limiting continuous current | 2 A (per channel) |
| | 8 A (Total current of all safe digital outputs) |
| Inrush current | max. 2.5 A ($\Delta t \leq$  ms) |
| Nominal output voltage | 24 V DC (Supply via A1) |
| Nominal output voltage range | 18.6 V DC ... 28.2 V DC ($U_S - 0.6$ V) |
| Switching frequency | max. $1/(4 \times t_{\text{Cycle}})$ [Hz] |
| Output voltage when switched off | < 0.1 V |
| Test pulses | < 120 μ s (Test pulse width of low test pulses) |
| | \geq 650 ms (Test pulse rate for low test pulse) |

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| | |
|---------------------|--|
| | < 150 µs (Test pulse width, high test pulse) |
| | ≥ 1.5 s (Test pulse rate, high test pulse) |
| Discharging circuit | Yes, internal |

Signal: MO1, MO2, MO3, MO4, MO5, MO6, MO7, MO8

| | |
|----------------------------------|---|
| Output description | PNP, IEC 61131-2 Typ 0,1 non-safety-related Reference ground A2 |
| Number of outputs | 8 |
| Output voltage when switched off | max. 0.1 V |
| Output voltage range | 18.2 V DC ... 27.8 V DC ($U_S - 1 V$) |
| Voltage | 24 V DC (via 24 V) |
| Maximum inrush current | 1.1 A ($\Delta t = 3 s$ at U_S) |
| Limiting continuous current | 100 mA (per channel) 0.8 A (Total current of all digital signal outputs) |
| Leakage current | max. 100 µA |
| Ohmic load | min. 180 Ω (Observe limiting continuous current) |
| Switching frequency | max. $1/(4 \times t_{Cycle})$ [Hz] |
| Short-circuit protection | Yes (self-limitation at 1.1 A) |
| Discharging circuit | No |
| Cable length | max. 100 m (per output) |

Connection data

Connection technology

| | |
|-----------|-----|
| pluggable | yes |
|-----------|-----|

Conductor connection

| | |
|----------------------------------|---|
| Connection method | Push-in 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 ... 14 |
| Stripping length | 10 mm |

Signaling

| | |
|---------------------------|--|
| Status display | 12 x LED (yellow) 4 x LED (green, yellow, red) 1 x LED (green), 2 x LED (orange) |
| Operating voltage display | 1 x LED (green) |
| Error indication | 2 x LED (red) |

Dimensions

| | |
|--------|-----------|
| Width | 22.61 mm |
| Height | 107.74 mm |
| Depth | 113.6 mm |

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Material specifications

| | |
|------------------|-----------------------------|
| Color (Housing) | yellow (RAL 1018) |
| Housing material | Polyamide PA non-reinforced |

Characteristics

Safety data

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

Safety data: EN ISO 13849

| | |
|------------------------|----------------------|
| Performance level (PL) | e (2-channel wiring) |
| | d (1-channel wiring) |

Safety data: IEC 61508 - High-demand for 2-channel wiring

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

Safety data: IEC 61508 - High-demand for 1-channel wiring

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Safety data: EN IEC 62061

| | |
|------------------------------|----------------------|
| Safety Integrity Level (SIL) | 3 (2-channel wiring) |
| | 2 (1-channel wiring) |

Environmental and real-life conditions

Ambient conditions

| | |
|--|--|
| Degree of protection | IP20 |
| Min. degree of protection of inst. location | IP54 |
| Ambient temperature (operation) | -10 °C ... 55 °C (observe derating) |
| Ambient temperature (storage/transport) | -20 °C ... 85 °C |
| Maximum altitude | ≤ 2000 m (Above sea level) |
| Max. permissible humidity (storage/transport) | 95 % (non-condensing) |
| Max. permissible relative humidity (operation) | 95 % (non-condensing) |
| Shock | 10g for $\Delta t = 16$ ms (continuous shock, 1000 shocks in each space direction) |
| Vibration (operation) | 10 Hz ... 150 Hz, 2g |

Approvals

CE

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

Mounting

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

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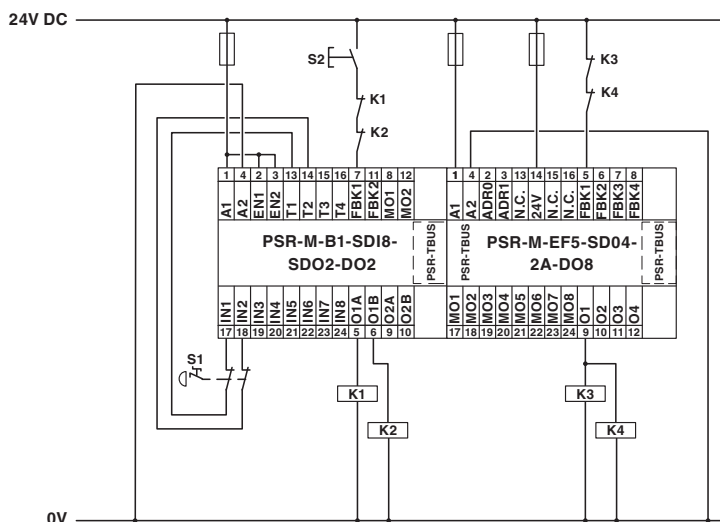


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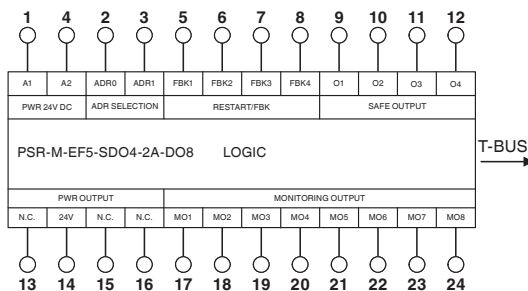
Drawings

Application drawing



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/1104977>



cULus Listed

Approval ID: E238705



Functional Safety

Approval ID: Z10029429 0013Rev.02

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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, No exemptions |
|---|--------------------|

China RoHS

| | |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E |
| | No hazardous substances above the limits |

EU REACH SVHC

| | |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

EF3.1 Climate Change

| | |
|---------|----------------|
| CO2e kg | 28.088 kg CO2e |
|---------|----------------|

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