

PSR-M-EF7-SAI4-PI - Extension module



1104986

<https://www.phoenixcontact.com/us/products/1104986>

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Safe extension module with 4 safe analog inputs, 0 V ... 10 V; 0 mA or 4 mA ... 20 mA; TBUS interface, up to Cat. 4/PL e, SIL 3, plug-in 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 with additional safe analog inputs.

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 | 1104986 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN02 |
| Product key | DNA362 |
| GTIN | 4055626974804 |

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| | |
|--------------------------------------|----------|
| Weight per piece (including packing) | 193.1 g |
| Weight per piece (excluding packing) | 145 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 | Analog IN |
| 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 | 2.76 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 all current paths and housing |
| | Electrical isolation, 0.5 kV functional insulation between logic and analog inputs and between the analog inputs |

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 % (external fuse, typically 6 A) |
| Rated control supply current I_S | typ. 82 mA (without sensor supply) |
| | typ. 212 mA (with sensor supply) |
| Power consumption at U_S | typ. 1.96 W (without sensor supply) |
| | typ. 5.08 W (with sensor supply) |
| Inrush current | max. 14 A ($\Delta t = 1$ ms at U_S) |
| Filter time | typ. 5 ms (in the event of voltage dips at U_S) |
| Protective circuit | Serial protection against polarity reversal |

Input data

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Analog

| | |
|--|---|
| Input name | IN S1, IN S2, IN S3, IN S4 |
| Description of the input | Safety-oriented analog inputs, configurable as current or voltage inputs, galvanically isolated |
| Number of inputs | 4 |
| Connection technology | 2-conductor, 3-conductor or 4-conductor (2-conductor sensor signal + 2-conductor sensor supply) |
| Note regarding the connection technology | shielded |
| Scanning rate | 2.5/5/10/16.6/20/50/60/100/200/400/800/1000/2000/4000 Hz |
| Current input signal | 0 mA ... 25 mA (Measuring range) 0 mA ... 20 mA (Configurable measuring range with diagnostics range 20.1 mA ... 23 mA) 4 mA ... 20 mA (Configurable measuring range with diagnostics range 20.1 mA ... 23 mA (upper limit), 2.5 mA ... 3.8 mA (lower limit)) |
| Voltage input signal | 0 V ... 12 V (Measuring range) 0 V ... 10 V (Configurable measuring range with diagnostics range 10.05 V ... 11.5 V (upper limit), 0.1 V (lower limit)) |
| Max. permissible current | max. 35 mA (as current input) |
| Permissible voltage | max. 24 V (as current input) max. 14 V (as voltage input) |
| Input resistance current input | 290 Ω ±25 % (incl. internal protective circuit) |
| Input resistance of voltage input | 185 kΩ ±25 % |
| A/D converter resolution | 16 bit |
| Resolution (current) | 381 nA |
| Resolution (voltage) | 152 μV |
| Precision | typ. ± 2 % (as current input, relative to the measuring range final value) max. ± 2.5 % (as current input) typ. ± 1 % (as voltage input, relative to the measuring range final value) max. ± 1.5 % (as voltage input) |
| Temperature coefficients | typ. ± 0.07 %/K max. ± 0.07 %/K |
| Limit frequency (3 dB) | 160 Hz (RC low pass, 1st order, as current input) 4 Hz (RC low pass, as voltage input) |
| Frequency | 12 Hz (max. recommended sensor signal frequency, as current input) 2 Hz (max. recommended sensor signal frequency, as voltage input) |
| Permissible cable length | max. 100 m (per input) |
| Protective circuit | Overload protection of the current inputs Overload protection of the voltage inputs |

Output data

Sensor supply: OUT S1/0V ...OUT S4/0V

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| | |
|---------------------|--|
| Description | Sensor supply voltage per analog input |
| Supply voltage | 24 V DC \pm 3 % |
| Current | max. 30 mA (Sensor current recording per channel) |
| Short-circuit-proof | yes |
| Protective circuit | Overload protection Overload detection at ≥ 14 mA |

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 | 4 x LED (yellow, red) |
| Operating voltage display | 1 x LED (green) |

Dimensions

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

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) |
|------------------------------|----------------------|

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| | |
|--|----------------------|
| | 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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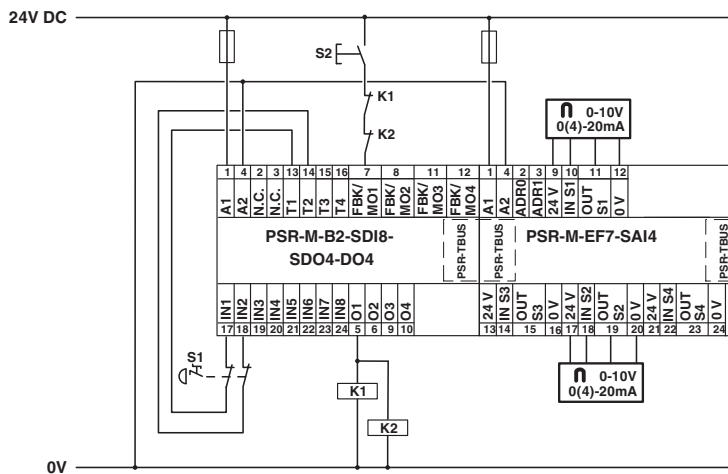


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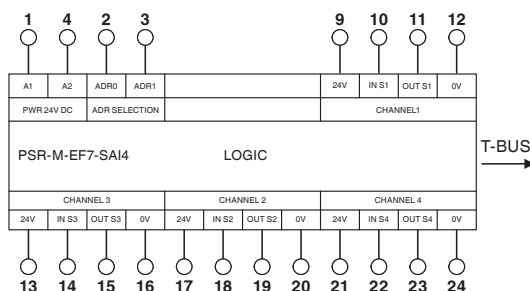
Drawings

Application drawing



Example application

Block diagram



Block diagram

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Approvals

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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% |
|-------------------------------------|----------------------------|

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