

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



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
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Product properties

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

Insulation characteristics

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

Safety Integrity Level (SIL)	2
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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
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Mounting

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

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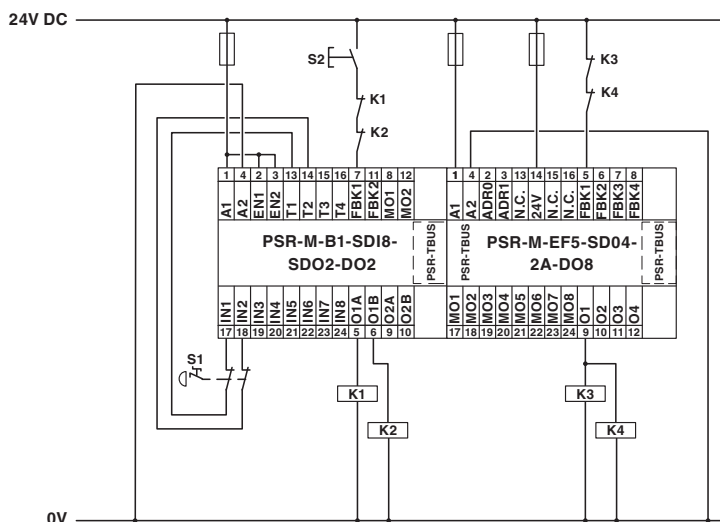


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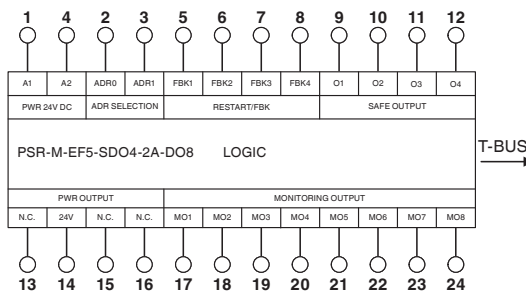
Drawings

Application drawing



Example application

Block diagram




Block diagram

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Approvals

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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
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UNSPSC

UNSPSC 21.0	39122200
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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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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EF3.1 Climate Change

CO2e kg	28.088 kg CO2e
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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com