

Extension module - PSR-M-EF4-SDO4-DO4-SC - 1104856

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Safe extension module with 4 safe outputs (0.4 A), 4 reset inputs, 4 signal outputs, TBUS interface, up to SILCL 3, cat. 4/PL e, SIL 3, plug-in screw 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

- ✓ Economical safety solution with a high level of adaptability to individual requirements
- ✓ Fast startup, thanks to easy hardware and software configuration
- ✓ Machine downtime minimized with comprehensive, easy-to-understand diagnostics
- ✓ Low housing width of only 22.5mm
- ✓ Up to Cat. 4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061, SIL 3 according to IEC 61508
- ✓ Suitable for lift applications according to EN 81-20

RoHS



Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4055626971056

Technical data

Dimensions

Width	22.5 mm
Height	112.2 mm
Depth	114.5 mm

Ambient conditions

Ambient temperature (operation)	-10 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-20 °C ... 85 °C
Max. permissible relative humidity (operation)	95 % (non-condensing)

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Ambient conditions

Max. permissible humidity (storage/transport)	95 % (non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

Power supply

Designation	A1/A2
Rated control circuit supply voltage U_s	24 V DC -20 % / +20 % (external fuse, typically 6 A)
Rated control supply current I_s	typ. 30 mA (Outputs inactive)
	typ. 55 mA (Outputs active, without load)
Power consumption at U_s	typ. 0.72 W (Outputs inactive)
Inrush current	< 10 A ($\Delta t = 1$ ms at U_s)
Filter time	typ. 5 ms (at A1 in the event of voltage dips at U_s)
Protective circuit	Serial protection against polarity reversal
	Suppressor diode
Designation	24V/0V
Description	Output supply, connected internally to A1/A2
Rated control circuit supply voltage U_s	24 V DC -20 % / +20 % (provide external protection, typically 5 A)
Rated control supply current I_s	See supply A1/A2
Inrush current	10 A ($\Delta t = 1$ ms at U_s)
Filter time	typ. 1 ms (in the event of voltage dips)
Protective circuit	Serial protection against polarity reversal
	Suppressor diode

Digital inputs

Input name	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
Current consumption	typ. 10 mA (typically with U_s)
	max. 13 mA (at a control voltage of 28.8 V DC)
Filter time	250 ms ± 2 ms (Test pulse rate > 500 ms)
Max. permissible overall conductor resistance	1.2 kΩ (Input and reset circuit at U_s)
Cable length	max. 100 m (per input)
Protective circuit/component	Suppressor diode

Digital outputs

Output name	O1A, O1B, O2A, O2B, O3A, O3B, O4A, O4B
Output description	Safety-related digital outputs
	PNP, OSSD
	IEC 61131-2 type 0.5 (observe limiting continuous current)

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Digital outputs

Number of outputs	8 (can be used as 4 two-channel outputs)
Nominal output voltage	24 V DC (Supply via A1)
Nominal output voltage range	18 V DC ... 27.6 V DC ($U_S - 1.2$ V)
Limiting continuous current	400 mA (per channel)
	3.2 A (Total current of all safe digital outputs)
Inrush current	max. 750 mA ($\Delta t \# 1$ s)
Output voltage when switched off	< 0.1 V
Leakage current	max. 500 μ A
Cable length	max. 100 m (per output)
Ohmic load	min. 50 Ω (Observe limiting continuous current)
Max. capacitive load	max. 680 nF
Max. inductive load	max. 1.4 mH
Switching frequency	max. $1/4 \times t_{\text{Cycle}}$ [Hz]
Test pulses	< 80 μ s (Test pulse width of low test pulses)
	Test pulse rate for low test pulses > 2 x T_{Cycle}
	< 20 μ s (Test pulse width, high test pulse)
	≥ 1.5 s (Test pulse rate, high test pulse)
Protective circuit/component	Suppressor diode
Short-circuit protection	Yes (self-limitation at 1.1 A)
Error detection time at 1-channel structure	< 3.5 s (OFF state)
	< 4 x t_{Cycle} [ms] (ON state)
Discharging circuit	Yes, internal

Alarm outputs

Designation	MO1, MO2, MO3, MO4
Output description	PNP, IEC 61131-2 Typ 0,1
	non-safety-related
	Reference ground A2/0V
Number of outputs	4
Voltage	24 V DC (via A1)
Output voltage range	18.2 V DC ... 27.8 V DC ($U_S - 1$ V)
Output voltage when switched off	max. 0.1 V
Maximum inrush current	1.1 A ($\Delta t = 3$ s at U_S)
Switching frequency	max. $1/4 \times t_{\text{Cycle}}$ [Hz]
Limiting continuous current	100 mA (per channel)
	400 mA (Total current of all digital signal outputs)
Leakage current	max. 100 μ A
Protective circuit/component	Suppressor diode
Short-circuit protection	Yes (self-limitation at 1.1 A)
Cable length	max. 100 m (per output)

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Times

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

General

Nominal operating mode	100% operating factor
Net weight	159 g
Mounting position	vertical or horizontal
Mounting type	DIN rail mounting
Assembly instructions	Observe derating
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Protection class	III (EN 50178)
Housing material	Polyamide PA non-reinforced
Housing color	yellow
Operating voltage display	1 x green LED
Status display	1 x LED (green), 2 x LED (orange)
	8 x LED (yellow)
	4 x LED (green, red)
Indication	2 x LED (red)

Connection data

Connection method	Screw connection
pluggable	Yes
Conductor cross section solid	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
Torque	0.5 Nm ... 0.6 Nm

Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High-demand for 2-channel wiring
Safety Integrity Level (SIL)	3
Designation	EN ISO 13849
Performance level (PL)	e (2-channel wiring)
Category	4 (2-channel wiring)
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3 (2-channel wiring)

Standards and Regulations

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Technical data

Standards and Regulations

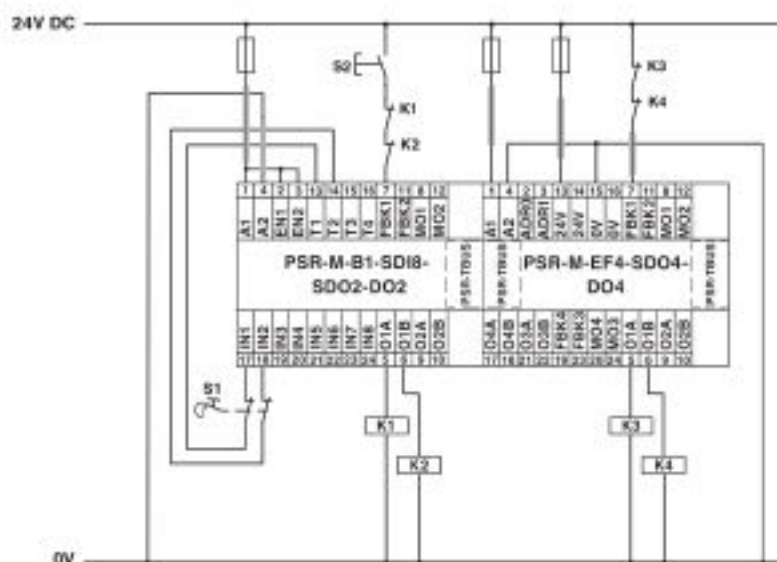
Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	EN 50178
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Basic insulation 4 kV between 24 V power supply and I/Os to the housing
Degree of pollution	2
Overvoltage category	II
Shock	10g for $\Delta t = 16$ ms (continuous shock, 1000 shocks in each space direction)
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

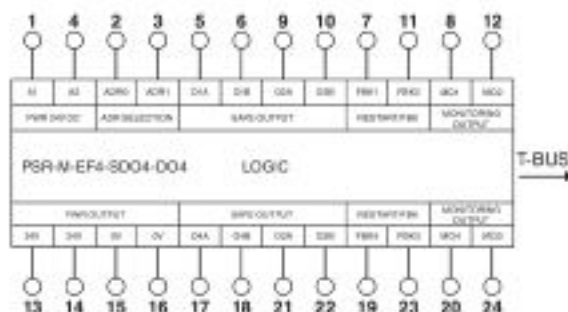
Drawings

Application drawing



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Block diagram



Classifications

eCl@ss

eCl@ss 10.0.1	27371819
eCl@ss 8.0	27371819
eCl@ss 9.0	27371819

ETIM

ETIM 5.0	EC001449
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Approvals

Approvals

Approvals

UL Listed / cUL Listed / cULus Listed

Ex Approvals

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 238705
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 238705
cULus Listed			

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Accessories

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Coding element

Coding profile - CP-MSTB - 1734634



Coding profile, is inserted into the slot on the plug or inverted header, red insulating material

Coding section - CR-MSTB - 1734401



Coding section, inserted into the recess in the header or the inverted plug, red insulating material

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