

## Extension module - PSR-M-EF1-SDI8-SDO4-DO4-SC - 1104890

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Safe extension module with 8 safe inputs and 4 safe outputs, 4 reset inputs or 4 signal outputs, 4 clock outputs, TBUS interface, up to SILCL 3, Cat. 4/PL e, SIL 3, pluggable 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 inputs and 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	4055626973401

### 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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### Technical data

#### 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 4 A)
Rated control supply current $I_s$	typ. 45 mA (Outputs inactive)
	typ. 68 mA (Outputs active, without load)
Current consumption	max. 2.1 A (with full load)
Power consumption at $U_s$	typ. 1.08 W (Outputs inactive)
Inrush current	< 2.3 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

#### Digital inputs

Input name	IN1, IN2, IN3, IN4, IN5, IN6, IN7, IN8
Description of the input	Safety-related digital inputs
	IEC 61131-2 Type 2
Number of inputs	8
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. 12.5 mA (at a control voltage of 28.8 V DC)
Filter time	min. 3 ms ±2 ms (adjustable)
	max. 250 ms ±2 ms (adjustable)
	Test pulse rate ≥ 2x set filter time, min. Test pulse rate = 10 ms
Max. permissible overall conductor resistance	max. 1.2 kΩ (Input and reset circuit at $U_s$ )
Cable length	max. 100 m (per input)
Protective circuit/component	Suppressor diode
Input name	Reset inputs
	FBK
Description of the input	configurable (as signal output or reset input)
	IEC 61131-2 Type 2
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. 12 mA (typically with $U_s$ )
	max. 14.7 mA (at a control voltage of 28.8 V DC)

## Extension module - PSR-M-EF1-SDI8-SDO4-DO4-SC - 1104890

### Technical data

#### Digital inputs

Filter time	250 ms $\pm$ 2 ms (Test pulse rate > 500 ms)
Max. permissible overall conductor resistance	1.2 k $\Omega$ (Input and reset circuit at $U_S$ )
Cable length	max. 100 m (per input)
Protective circuit/component	Suppressor diode

#### Digital outputs

Output name	O1, O2, O3, O4
Output description	Safety-related digital outputs
	PNP, OSSD
	IEC 61131-2 type 0.5 (observe limiting continuous current)
Number of outputs	4
Nominal output voltage	24 V DC (Supply via A1)
Nominal output voltage range	18.5 V DC ... 28.1 V DC ( $U_S - 0,7$ V)
Limiting continuous current	400 mA (per channel)
	1.6 A (Total current of all safe digital outputs)
Inrush current	max. 600 mA ( $\Delta t < 10$ ms)
Output voltage when switched off	< 0.1 V
Leakage current	max. 250 $\mu$ A
Cable length	max. 100 m (per output)
Ohmic load	min. 50 $\Omega$ (Observe limiting continuous current)
Max. capacitive load	max. 820 nF
Max. inductive load	max. 2.4 mH
Switching frequency	max. $1/4 \times t_{\text{cycle}}$ [Hz]
Test pulses	< 120 $\mu$ s (Test pulse width of low test pulses)
	$\geq 650$ ms (Test pulse rate for low test pulse)
	< 150 $\mu$ s (Test pulse width, high test pulse)
	$\geq 1.5$ s (Test pulse rate, high test pulse)
Protective circuit/component	Suppressor diode
Short-circuit protection	Yes (max. permissible short-circuit current 12 A)
Error detection time at 1-channel structure	< 3.5 s (OFF state)
	< 1.5 s (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, configurable (as signal output or reset input)
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

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### Technical data

#### Alarm outputs

Maximum inrush current	1.1 A ( $\Delta t = 3 \text{ s}$ 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 $\mu\text{A}$
Protective circuit/component	Suppressor diode
Short-circuit protection	Yes (self-limitation at 1.1 A)
Cable length	max. 100 m (per output)

#### Clock outputs

Designation	T1, T2, T3, T4
Output description	PNP, IEC 61131-2 Typ 0,1
Number of outputs	4
Voltage	24 V DC (via A1)
Nominal voltage range	18.2 V DC ... 27.8 V DC ( $U_s - 1 \text{ V}$ )
Output voltage when switched off	max. 0.1 V
Maximum inrush current	1.1 A ( $\Delta t = 3 \text{ s}$ at $U_s$ )
Limiting continuous current	100 mA (per channel)
	400 mA (Total current of all outputs)
Leakage current	max. 100 $\mu\text{A}$
Cable length	max. 100 m (per output)
Max. capacitive load	max. 470 nF
Max. inductive load	max. 2.4 mH
Test pulses	$\leq 200 \mu\text{s}$ (Test pulse duration)
	Test pulse rate = $8 \times t_{\text{cycle}}$ [ms]
Protective circuit/component	Suppressor diode
Short-circuit protection	Yes (self-limitation at 1.1 A)
Discharging circuit	Yes, internal

#### 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

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## Technical data

### General

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)
	4 x LED (green, yellow, red)
	12 x LED (yellow)
Indication	2 x LED (red)

### Connection data

Connection method	Screw connection
pluggable	Yes
Conductor cross section solid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3
Torque	0.5 Nm ... 0.6 Nm

### Safety-related characteristic data

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

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 Δt = 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
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# Extension module - PSR-M-EF1-SDI8-SDO4-DO4-SC - 1104890

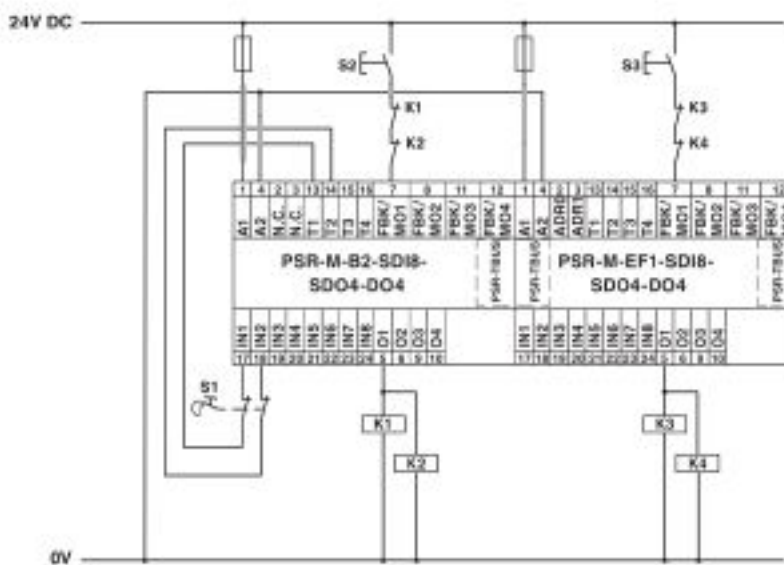
## Technical data

### Environmental Product Compliance

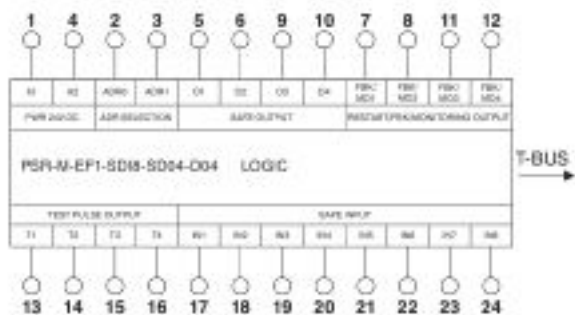
	No hazardous substances above threshold values
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## Drawings

Application drawing



Block diagram



## Classifications

eCl@ss

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

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## Classifications

ETIM

ETIM 5.0	EC001449
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## Approvals

Approvals



Approvals

UL Listed / cUL Listed / cULus Listed



Ex Approvals



## Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
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cULus Listed			
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## Accessories

Accessories

Coding element

Coding profile - CP-MSTB - 1734634

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



## Extension module - PSR-M-EF1-SDI8-SDO4-DO4-SC - 1104890

### Accessories

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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