Safety module - PSR-M-B2-SDI8-SDO4-DO4-SC - 1104974

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Configurable safety module (basic module), 8 safe inputs, 4 safe outputs, 4 reset inputs or 4 signal outputs, 4 clock outputs, can be extended via TBUS, up to SILCL 3, Cat. 4/PL e, SIL 3, plug-in screw terminal block, TBUS connector not included

Product Description

The configurable and individually scalable PSRmodular safety system is a flexible safety solution for monitoring your machine or system.
The freely configurable base module is used to monitor various pieces of safety equipment such as emergency stop, safety doors, and light grids.
The base module has safe inputs and outputs, as well as signal outputs and clock 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
- Flexible extension with safe inputs and outputs
- Possibility of connecting fieldbus gateways for bidirectional communication between the base module and the higher-level controller
- 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

Key Commercial Data

Packing unit	1 pc
GTIN	4 055626 973258
GTIN	4055626973258

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)

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Technical data

Ambient conditions

Ambient temperature (storage/transport)	-20 °C ... 85 °C
Max. permissible relative humidity (operation)	95 % (non-condensing)
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 % (provide external protection, typically 5 A)
Rated control supply current I_S	typ. 55 mA (Outputs inactive)
	typ. 135 mA (Outputs active, without load)
Current consumption	max. 2.55 A (with full load)
Power consumption at U_S	typ. 1.32 W (Outputs inactive)
Inrush current	< 2.3 A (Δt = 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. 12.1 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

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Digital inputs

Current consumption	typ. 12 mA (typically with U_S)
	max. 14.7 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	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 (Δt < 10 ms)
Output voltage when switched off	< 0.1 V
Leakage current	max. 250 µA
Cable length	max. 100 m (per output)
Ohmic load	min. 50 Ω (Observe limiting continuous current)
Max. capacitive load	max. 820 nF
Max. inductive load	max. 2.4 mH
Switching frequency	max. 1/4 x t_{Cycle} [Hz]
Test pulses	< 120 µs (Test pulse width of low test pulses)
	≥ 650 ms (Test pulse rate for low test pulse)
	< 150 µs (Test pulse width, high test pulse)
	≥ 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)

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Technical data

Alarm outputs

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 (Δt = 3 s at U_s)
Switching frequency	max. 1/4 x t_{Cycle} [Hz]
Limiting continuous current	100 mA (per channel)
	400 mA (Total current of all digital signal outputs)
Leakage current	max. 100 µA
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 V)
Output voltage when switched off	max. 0.1 V
Maximum inrush current	1.1 A (Δt = 3 s at U_s)
Limiting continuous current	100 mA (per channel)
	400 mA (Total current of all outputs)
Leakage current	max. 100 µA
Cable length	max. 100 m (per output)
Max. capacitive load	max. 470 nF
Max. inductive load	max. 2.4 mH
Test pulses	≤ 200 µs (Test pulse duration)
	Test pulse rate = 8 x t_{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

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Technical data

General

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), 1 x LED (orange), 1 x LED (blue)
	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 mm² ... 2.5 mm²
Conductor cross section flexible	0.2 mm² ... 2.5 mm²
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	IEC 61508 - High-demand for 1-channel wiring
Safety Integrity Level (SIL)	2
Designation	EN ISO 13849
Performance level (PL)	e (2-channel wiring)
	d (1-channel wiring)
Category	4 (2-channel wiring)
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3 (2-channel wiring)
	2 (1-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 all current paths and housing
Degree of pollution	2

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Standards and Regulations

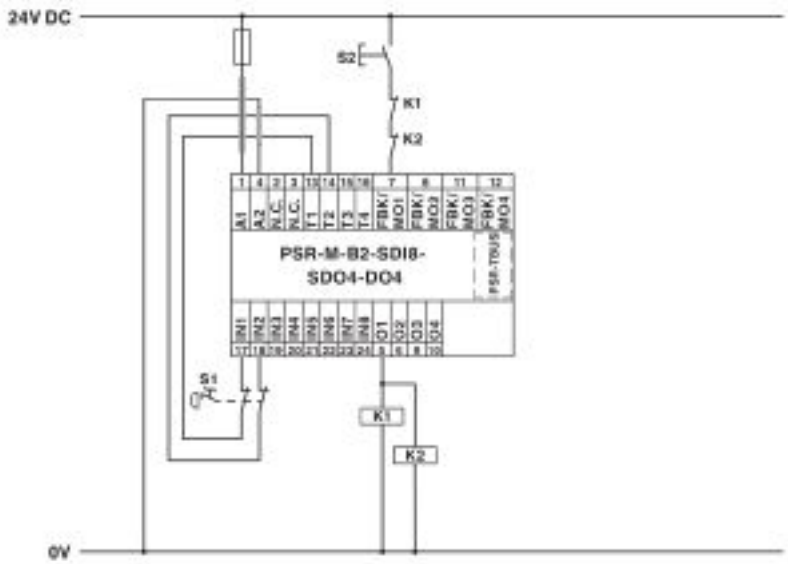
Overvoltage category	II
Shock	10g for Δt = 16 ms (continuous shock, 1000 shocks in each space direction)
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

Environmental Product Compliance

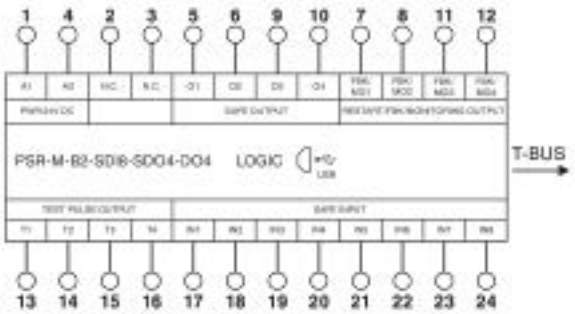
China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

Drawings

Application drawing



Block diagram



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Classifications

eCl@ss

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

ETIM

ETIM 5.0	EC001449

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			

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

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Accessories

Coding section - CR-MSTB - 1734401

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

Configuration memory

Configuration memory - PSR-M-MEMORY - 1105142

Optional memory block for the PSRmodular system for easy storage and backup of configuration data

DIN rail connector

DIN rail bus connectors - ME 22,5 TBUS 1,5/ 5-ST-3,81 YE - 2200244

DIN rail connector, nominal current: 8 A, rated voltage (III/2): 125 V, number of positions: 5, pitch: 3.81 mm, color: yellow, mounting: DIN rail, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

DIN rail bus connectors - ME 22,5 TBUS 1,5/ 5-ST-3,81 YE - 1PCS - 1225375

DIN rail connector, number of positions: 5, pitch: 3.81 mm, color: yellow

Filter terminal block

Filter terminal block - PSR-FTB/1.5/11.5 - 2904476

Terminal block for filtering test pulses from safe semiconductor outputs with adjustable filter values (1.5 µF/11.5 µF), as well as for EMC filtering of 24 V signals up to an amperage of 2 A.

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Accessories

Filter terminal block - PSR-FTB/20/86 - 2904477

Terminal block for filtering test pulses from safe semiconductor outputs with adjustable filter values (20 µF/86 µF), as well as for EMC filtering of 24 V signals up to an amperage of 2 A.

Programming cable

USB cable - CABLE-USB/MINI-USB-3,0M - 2986135

USB connecting cable: USB plug type A to USB plug type Mini-B; length: 3 m

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