

Safety device - PSR-MC31-2SDO-1DO-24DC-SP - 1015503

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Safety relay module for safety shut-off mats, switching strips, emergency stop, safety doors, and light grids up to SILCL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual start, 2 safe HL outputs, 1 signal output, $U_S = 24 \text{ V DC}$, pluggable Push-in terminal block

Your advantages

- ✓ Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with IEC 62061
- ✓ Low housing width of just 12.5 mm
- ✓ Cascade input
- ✓ Compatible with numerous signal generators
- ✓ One or two-channel activation
- ✓ 2 safe digital outputs, 1 digital signal output



Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4055626496467
Custom tariff number	85371098
Country of origin	Germany

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Width	12.5 mm
Height	116.6 mm

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Dimensions

Depth	114.5 mm
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Ambient conditions

Ambient temperature (operation)	-40 °C ... 70 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, 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 % / +25 % (provide external protection)
	19.2 V DC ... 30 V DC
Rated control supply current I_s	typ. 54 mA (No load)
Power consumption at U_s	typ. 1.3 W
Inrush current	< 5 A ($\Delta t = 200 \mu s$ at U_s)
Filter time	1 ms (For the logic. At A1 in the event of voltage dips at U_s)
Protective circuit	Parallel protection against polarity reversal Suppressor diode Provide external protection, see safety notes. Fuse type: 5 A FF

Digital inputs

Input name	Sensor circuit
	S10, S12, S22
Description of the input	safety-related sensor inputs
	IEC 61131-2 type 3 (S10, S12) PNP (S22)
Number of inputs	3
Input voltage range "0" signal	0 V DC ... 5 V DC (S10, S12)
	S22 open
Input voltage range "1" signal	11 V DC ... 30 V DC (S10, S12)
	0 V ... 0 V (S22)
Input current range "0" signal	0 mA ... 2 mA (S10, S12)
Inrush current	< 10 mA (Typically with U_s at S10/S12, $\Delta t = 500 \mu s$)
	> -5 mA (typ. with U_s at S22, $\Delta t = 500 \mu s$)
Current consumption	4 mA (S10, S12)
	-4 mA (S22)
Filter time	max. 1.5 ms (Test pulse width of low test pulses)
	Test pulse rate = 5 x Test pulse width
	Does not apply for S22
	Deactivate the switch-on pulses for safety applications.

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Digital inputs

Max. permissible overall conductor resistance	150 Ω
Concurrence	∞
Protective circuit/component	Suppressor diode

2. Digital inputs

Input name	Start circuit
	S34, S35
Description of the input	non-safety-related
Number of inputs	2
Input voltage range "1" signal	19.2 V DC ... 30 V DC
Inrush current	< 10 mA (Typically with U_s , $\Delta t < 100$ ms)
Current consumption	< 7 mA (Typically with U_s at S34)
	< 5 mA (Typically with U_s at S35)
Max. permissible overall conductor resistance	150 Ω
Protective circuit/component	Suppressor diode

3. Digital inputs

Input name	External release
	S36
Description of the input	safety-related
	IEC 61131-2 type 3
Number of inputs	1
Input voltage range "0" signal	0 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Current consumption	7 mA
Protective circuit/component	Suppressor diode

Digital outputs

Output name	14, 24
Output description	Safety-related digital outputs
	PNP, IEC 61131-2 Type 2
Number of outputs	2
Output voltage	≥ 23 V DC ($U_s - 1$ V)
Output current	max. 2.4 A
Inrush current	max. 4.8 A ($\Delta t = 10$ ms)
Output voltage when switched off	< 5 V DC (in the safe state)
Leakage current	max. 1 mA (in the safe state)
Ohmic load	min. 12 Ω
Max. capacitive load	max. 10 μ F (2.4 A load)

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Digital outputs

	max. 4.7 μ F (1 A load)
Max. inductive load	max. 1 H
Min. load current	2 mA
Switching frequency	1 Hz (Resistive, inductive, capacitive)
Type of protection	Freewheeling circuit for inductive loads
Limitation of the voltage induced on circuit interruption	max. 50 V

Alarm outputs

Designation	M1
Output description	PNP
	non-safety-related
Number of outputs	1
Voltage	approx. 22 V DC ($U_s - 2$ V)
Current	max. 100 mA
Maximum inrush current	500 mA ($\Delta t = 1$ ms at U_s)
Protective circuit/component	Suppressor diode
Short-circuit protection	Yes

Times

Typical pickup time at U_S	< 200 ms (with U_s when controlled via A1)
Typical response time at U_S	< 200 ms (automatic start)
	< 175 ms (manual, monitored start)
Response time	< 10 ms (Take the extension of the response time into consideration if you switch several devices in sequence.)
Restart time	< 250 ms (Boot time)
Recovery time	250 ms (following demand of the safety function)

General

Nominal operating mode	100% operating factor
Net weight	104.382 g
Mounting position	vertical or horizontal
Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Housing material	Polyamide
Housing color	yellow
Operating voltage display	1 x green LED
Status display	3 x green LED

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Technical data

General

Indication	1 x red LED
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Connection data

Connection method	Push-in connection
pluggable	Yes
Conductor cross section solid	0.2 mm ² ... 1.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross-section AWG	24 ... 16
Conductor cross-section flexible with ferrule without plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Conductor cross-section flexible with ferrule and plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Stripping length	8 mm

Safety-related characteristic data

Stop category in accordance with IEC 60204	0
Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	3
Designation	EN ISO 13849
Performance level (PL)	e
Category	4
Designation	EN 62061
Safety Integrity Level (SIL)	3

Standards and Regulations

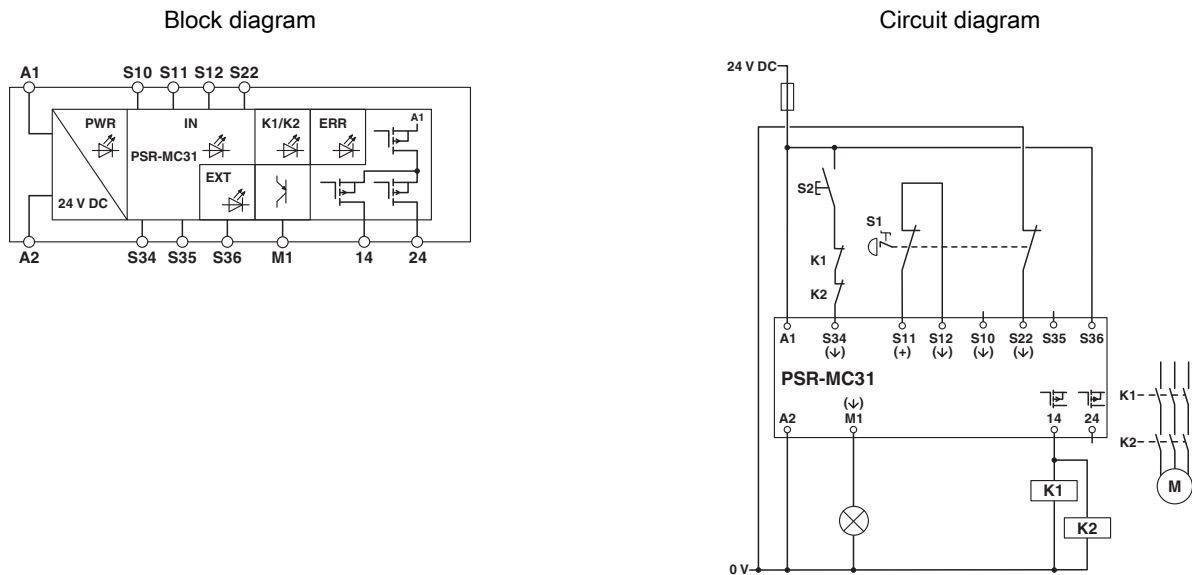
Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178, EN 60947-5-1
Rated insulation voltage	50 V
	50 V AC
Rated surge voltage/insulation	Basic insulation 4 kV between all current paths and housing
Degree of pollution	2
Overvoltage category	III
Shock	30g
Vibration (operation)	10 Hz ... 150 Hz, 5g
Conformance	CE-compliant

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

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Drawings



Classifications

eCl@ss

eCl@ss 10.0.1	27371819
eCl@ss 11.0	27371819
eCl@ss 9.0	27371819

ETIM

ETIM 6.0	EC001449
ETIM 7.0	EC001449

Approvals

Approvals

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UL Listed / cUL Listed / Functional Safety / Functional Safety / cULus Listed

Ex Approvals

Approval details

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Approvals

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
Functional Safety			44-205-15124315
Functional Safety			44-780-15124315
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

Coding section - CR-MSTB - 1734401



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

