

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



1104890

<https://www.phoenixcontact.com/mx/products/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 SIL 3, Cat. 4/PL e, 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

- 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
- Narrow 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	1104890
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	02
Product key	DNA362
GTIN	4055626973401
Weight per piece (including packing)	195 g
Weight per piece (excluding packing)	159 g
Customs tariff number	85371098
Country of origin	IT

1104890

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## Technical data

### Product properties

Product type	Safety device
Application	Emergency stop
	Light grid
	Safety door
	Safe shutdown

### Insulation characteristics

Protection class	III
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### 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	7.48 W (with max. permissible load)
Nominal operating mode	100% operating factor
Interfaces	DIN rail TBUS for connection to the master module, supplied as standard

### Air clearances and creepage distances between the power circuits

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

### 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 % (external fuse, typically 4 A)
Rated control supply current $I_S$	typ. 45 mA (Outputs inactive)
	typ. 68 mA (Outputs active, without 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

### Input data

Digital: 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

1104890

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Input voltage range "1" signal	11 V DC ... 28.8 V DC
Input current range "0" signal	< 1 mA
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
Cable length	max. 100 m (per input)
Max. permissible overall conductor resistance	max. 1.2 kΩ (Input and reset circuit at U <sub>S</sub> )
Current consumption	typ. 10 mA (typically with U <sub>S</sub> )
	max. 12.5 mA (at a control voltage of 28.8 V DC)

## Digital: 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
Filter time	250 ms ±2 ms (Test pulse rate > 500 ms)
Cable length	max. 100 m (per input)
Max. permissible overall conductor resistance	1.2 kΩ (Input and reset circuit at U <sub>S</sub> )
Current consumption	typ. 12 mA (typically with U <sub>S</sub> )
	max. 14.7 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 0.5 (observe limiting continuous current)
Number of outputs	4
Short-circuit protection	Yes (max. permissible short-circuit current 12 A)
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
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)
Nominal output voltage	24 V DC (Supply via A1)
Nominal output voltage range	18.5 V DC ... 28.1 V DC (U <sub>S</sub> - 0,7 V)
Switching frequency	max. 1/4 x t <sub>Cycle</sub> [Hz]
Output voltage when switched off	< 0.1 V
Test pulses	< 120 µs (Test pulse width of low test pulses)
	≥ 650 ms (Test pulse rate for low test pulse)

1104890

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	< 150 $\mu$ s (Test pulse width, high test pulse)
	$\geq$ 1.5 s (Test pulse rate, high test pulse)
Discharging circuit	Yes, internal

Signal: 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
Output voltage when switched off	max. 0.1 V
Voltage	24 V DC (via A1)
Maximum inrush current	1.1 A ( $\Delta t = 3$ s at $U_s$ )
Limiting continuous current	100 mA (per channel) 400 mA (Total current of all digital signal outputs)
Leakage current	max. 100 $\mu$ A
Switching frequency	max. $1/4 \times t_{\text{Cycle}}$ [Hz]
Short-circuit protection	Yes (self-limitation at 1.1 A)
Cable length	max. 100 m (per output)

Clock: T1, T2, T3, T4

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

## Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Screw connection
Conductor cross section rigid	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

1104890

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Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

## Signaling

Status display	1 x LED (green), 2 x LED (orange)
	4 x LED (green, yellow, red)
	12 x LED (yellow)
Operating voltage display	1 x green LED
Error indication	2 x LED (red)

## Dimensions

Width	22.61 mm
Height	112.58 mm
Depth	113.6 mm

## Material specifications

Housing material	Polyamide PA non-reinforced
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## Characteristics

### Safety data

Stop category	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)

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1104890

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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 instructions	Observe derating
Mounting position	vertical or horizontal
Connection method	Screw connection

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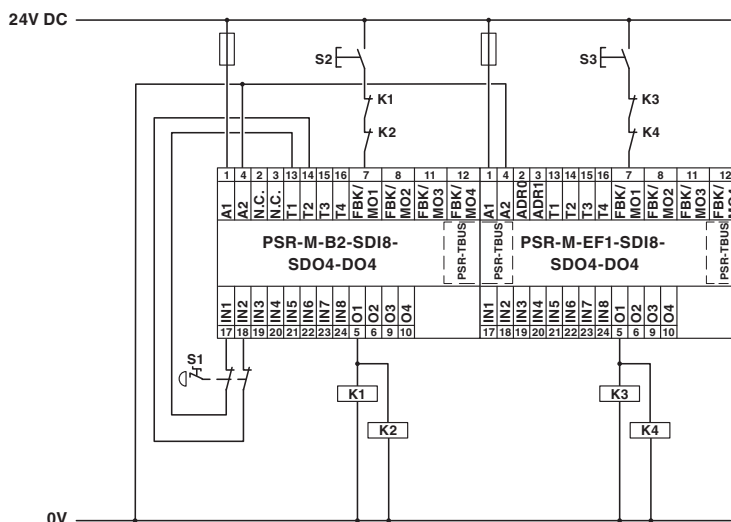


1104890

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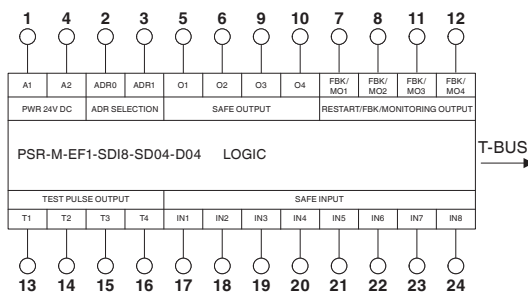
## Drawings

### Application drawing



### Example application

### Block diagram




### Block diagram


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## Approvals

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 **UL Listed**  
Approval ID: FILE E 238705

 **cUL Listed**  
Approval ID: FILE E 238705

 **EAC**  
Approval ID: RU\*-DE\*B.00606/20

**Functional Safety**  
Approval ID: Z10 029429 0013

**cULus Listed**



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## Classifications

### ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	27371819

### ETIM

ETIM 8.0	EC001449
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### UNSPSC

UNSPSC 21.0	39122200
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## Environmental product compliance

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

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## Accessories

### CP-MSTB - Coding profile

1734634

<https://www.phoenixcontact.com/mx/products/1734634>

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



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### CR-MSTB - Coding section

1734401

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



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