PSR-M-B3-XC-SDI8-SDO4-DO4-PI - Safety module

1337855

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Configurable safety module (base module), 8 SDI, 4 SDO, 4 reset DI, or 4 MO, 4 clock outputs, can be extended via TBUS, up to SIL 3, cat. 4/PL e, plug-in Push-in terminal block, TBUS connector not included, integrated gateway functionality, extreme conditions

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

- 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
- Flexible extension with safe inputs and outputs
- Possibility of connecting fieldbus gateways for bidirectional communication between the base module and the higher-level controller
- Tool-free and time-saving installation thanks to Push-in technology
- Up to Cat. 4/PL e in accordance with EN 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
- Corrosion protection through protective coating on the PCB
- Integrated gateway functionality for PROFINET, EtherCAT®, EtherNet/IP™, Modbus/TCP
- Suitable for ATEX Zone 2 or Class I Zone 2

ELEKTROGERÄTE RÜCKNAHME

Commercial data

Item number	1337855
Packing unit	1 pc

Minimum order quantity	1 pc
Sales key	DN02
Product key	DNA361
GTIN	4063151640927
Weight per piece (including packing)	254.6 g
Weight per piece (excluding packing)	249.7 g
Customs tariff number	85371098
Country of origin	IT

Technical data

Product properties

Product type	Safety device
Application	Emergency stop
	Light grid
	Safety door
	Safe shutdown
Control	1 and 2 channel

Insulation characteristics

Protection class	III

Insulation characteristics

Overvoltage category	II
Degree of pollution	2

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	9.85 W (with max. permissible load)
Nominal operating mode	100% operating factor
Interfaces	DIN rail TBUS for connection to the master module, not supplied as standard
Rated surge voltage/insulation	See data sheet, section “Insulation coordination”.

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	120 mA (RMS typ. inactive for all outputs)
	100 mA (without communication via network)
	185 mA (Current peaks every 1.55 s with network communication)
Power consumption at U_S	typ. 2.88 W (Outputs inactive)
Inrush current	< 14.4 A (Δt = 0.5 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
	Surge voltage detection; yes, at 33 V DC
Protection	typ. 4 A (A1)

Input data

Digital: IN1, IN2, IN3, IN4, IN5, IN6, IN7, IN8

Description of the input	Safety-related digital inputs
Number of inputs	8 (4 x 2-channel, 8 x 1-channel)
Input voltage range "0" signal	0 V DC ... 5 V DC (for safe Off)
Input voltage range "1" signal	11 V DC ... 28.8 V DC
Input current range "0" signal	< 0.2 mA
Inrush current	max. 670 mA (Δt = 6 µs)
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_S)
Current consumption	typ. 3.7 mA (typ. with U_S)
	max. 4.6 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)
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	< 0.2 mA
Inrush current	max. 900 mA (Δt = 10 µs)
Filter time	250 ms ±2 ms (Test pulse rate > 1 s)
Cable length	max. 100 m (per input)
Max. permissible overall conductor resistance	1.2 kΩ (Input and reset circuit at U_S)
Current consumption	typ. 5.7 mA (typ. with U_S)
	max. 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 0.25 (observe limiting continuous current)
Number of outputs	4 (2 x 2-channel, 4 x 1-channel)
Short-circuit protection	no
Leakage current	max. 500 µA (in the Low state)
Cable length	max. 100 m (per output)
Max. capacitive load	max. 820 nF
Max. inductive load	max. 2.4 mH (See "Protective circuit")
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	18.6 V DC ... 28.2 V DC (U_S - 0.7 V)
Switching frequency	max. 1/(4 x t_{Cycle}) [Hz]
Output voltage when switched off	< 0.3 V
Test pulses	< 235 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)
Discharging circuit	Yes, internal

Signal: MO1, MO2, MO3, MO4

Output description	non-safety-related, configurable (as signal output or reset input)
Number of outputs	4 (digital, PNP)
Output voltage when switched off	max. 0.1 V
Output voltage range	18.2 V DC ... 27.8 V DC (U_S - 1 V)
Voltage	24 V DC (via A1)
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 digital signal outputs)
Leakage current	max. 4.5 mA (in the Low state)
Switching frequency	max. 1/(4 x t_{Cycle}) [Hz]
Short-circuit protection	Yes (self-limitation at 1.1 A)
Discharging circuit	No
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 (digital, PNP)
Voltage	24 V DC (via A1)
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)
Test pulses	≤ 200 µs (Test pulse duration)
	Test pulse rate = 8 x t_{Cycle} [ms]
	No brightness test pulses / high test pulses permitted.
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

Conductor connection

Connection method	Push-in connection
Conductor cross-section rigid	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 14
Stripping length	10 mm

Interfaces

Data: Network interface

Communication protocol	PROFINET
	EtherCAT®
	EtherNet/IP™
	Modbus TCP
Connection method	RJ45 jack
Number of connections	2
Transmission speed	100 Mbps (Full duplex)

Data: Service interface

Connection method	USB type C
Number of connections	1
Maximum cable length	3 m

Data: Local bus

Note	via the PSR-TBUS DIN rail connector

Signaling

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

Dimensions

Width	45.2 mm
Height	107.74 mm
Depth	113.6 mm

Material specifications

Color (Housing)	yellow (RAL 1018)
Housing material	Polyamide PA non-reinforced

Characteristics

Safety data

Stop category (EN 60204-1)	0

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

Safety data: IEC 61508 - High-demand for 1-channel wiring

Safety Integrity Level (SIL)	2

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)	-20 °C ... 70 °C (observe derating)
Ambient temperature (operation) (ATEX)	-20 °C ... 50 °C (When used in potentially explosive areas. Observe derating)
Ambient temperature (storage/transport)	-30 °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)
Shock	10g for Δt = 16 ms (continuous shock, 1000 shocks in each space direction)
Vibration (operation)	10 Hz ... 150 Hz, amplitude 0.15 mm, 2g

Approvals

ATEX

Identification	Ⓔx II 3G Ex ec IIC T4 Gc
Certificate	PxCIMA24ATEX1337855X
Note	T4: for -20°C ≤ T_{amb} ≤ ⓉⓄ⏚⬇°C

UL Ex, USA / Canada

Identification	Class I, Div. 2, Groups A, B, C, D T4
Note	T4: for -20°C ≤ T_{amb} ≤ ⓉⓄ⏚⬇°C

CE

Identification	CE-compliant

Environmental simulation test

Identification	G3
Certificate	ISA-S71.04

Mounting

Mounting type	DIN rail mounting
Assembly note	Observe derating
Mounting position	vertical or horizontal

Approvals

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cULus Listed
Approval ID: E238705

Functional Safety
Approval ID: Z10029429 0013Rev.02

cULus Listed
Approval ID: E196811

Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819
ECLASS-15.0 ASSET	27250101

ETIM

ETIM 10.0	EC001449

UNSPSC

UNSPSC 21.0	39122200

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions

China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%

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