

PSR-MC38-2NO-1DO-24DC-SC - Safety relays



1009831

<https://www.phoenixcontact.com/us/products/1009831>

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Safety relay for emergency stop, safety doors and light grids up to SIL 3, Cat. 4, PL e, 1- or 2-channel operation, automatic or manual, monitored start, 2 enabling current paths, 1 signal output, TBUS interface, $U_S = 24 \text{ V DC}$, pluggable screw terminal block

Your advantages

- 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
- 1- and 2-channel control
- 2 enabling current paths, 1 digital signal output
- For emergency stop and safety door monitoring, plus evaluation of light grids
- TBUS interface for connecting CONTACTRON hybrid motor starters and MINI POWER power supplies

Commercial data

Item number	1009831
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA181
GTIN	4055626482705
Weight per piece (including packing)	212.33 g
Weight per piece (excluding packing)	169.38 g
Customs tariff number	85371098
Country of origin	DE

Technical data

Notes

Note on application

Note on application	Only for industrial use
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Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop
	Safety door
	Light grid
	Magnetic switch
	Transponder
Control	1 and 2 channel
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics

Overvoltage category	III
Degree of pollution	2

Times

Typical response time	200 ms (automatic start)
	30 ms (manual, monitored start)
Typ. starting time with U_S	200 ms (when controlled via A1)
Typical release time	25 ms (when actuation is via the sensor circuit)
	60 ms (when controlled via A1)
Restart time	< 1 s (Boot time)
Recovery time	< 500 ms

Electrical properties

Maximum power dissipation for nominal condition	16.6 W (at $U_S = 26.4$ V, $I_L^2 = 72$ A ²)
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V
Rated surge voltage/insulation	See data sheet, section "Insulation coordination".

Supply

Designation	A1/A2
Rated control circuit supply voltage U_S	20.4 V DC ... 26.4 V DC
Rated control circuit supply voltage U_S	24 V DC -15 % / +10 % (provide external protection)
Rated control supply current I_S	typ. 75 mA
Power consumption at U_S	typ. 1.8 W
Inrush current	< 4 A ($\Delta t = 3$ ms at U_S)
Filter time	20 ms (at A1 in the event of voltage dips at U_S)

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Protective circuit	Serial protection against polarity reversal; Suppressor diode
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Input data

Digital: Sensor circuit (S10, S12, S13, S22)

Description of the input	safety-related sensor inputs
Number of inputs	4
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	$< 40 \text{ mA}$ (typ. with U_S at S10) $< 300 \text{ mA}$ (typ. with U_S at S12, $\Delta t = 150 \text{ ms}$) $< 3 \text{ mA}$ (typ. with U_S at S13) $> -300 \text{ mA}$ (typ. with U_S at S22, $\Delta t = 150 \text{ ms}$)
Filter time	2 ms (At S10, S12, S13; test pulse width of low test pulses) 1 s (At S10, S12, S13; test pulse rate of low test pulses) No brightness test pulses / high test pulses permitted.
Concurrence	∞
Max. permissible overall conductor resistance	50 Ω
Protective circuit	Suppressor diode
Current consumption	40 mA (typ. with U_S at S10) 45 mA (typ. with U_S at S12) 3 mA (typ. with U_S at S13) -35 mA (typ. with U_S at S22, $\Delta t = 150 \text{ ms}$)

Digital: Start circuit (Y1, S34, S35)

Description of the input	non-safety-related
Number of inputs	3
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	$< 60 \text{ mA}$ (typ. with U_S at Y1, $\Delta t = 150 \text{ ms}$) $< 270 \text{ mA}$ (typ. with U_S at S34, $\Delta t = 15 \text{ ms}$) $< 80 \text{ mA}$ (typ. with U_S at S35, $\Delta t = 25 \text{ ms}$)
Filter time	No darkness test pulses / low test pulses permitted. No brightness test pulses / high test pulses permitted.
Max. permissible overall conductor resistance	50 Ω
Protective circuit	Suppressor diode
Current consumption	typ. 10 mA (typ. with U_S at Y1) typ. 34 μA (typ. with U_S at S35)

Output data

Relay: Enabling current path (13/14, 23/24)

Output description	safety-related N/O contacts 2 NO contacts each in series, without delay, floating
Number of outputs	2 (undelayed)
Contact switching type	2 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 10 V AC/DC

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	max. 250 V AC/DC (Observe the load curve)
Switching power	min. 100 mW
Inrush current	min. 10 mA
	max. 6 A
Switching capacity	5 A (24 V (DC13))
	5 A (250 V (AC15))
Limiting continuous current	6 A
Sq. Total current	72 A ² (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	10 A gL/gG
	4 A gL/gG (for low-demand applications)

Signal: Y30

Output description	PNP
	non-safety-related
Number of outputs	1
Voltage	approx. 23.9 V DC ($U_s - 0.1$ V)
Current	max. 100 mA
Maximum inrush current	500 mA ($\Delta t = 1$ ms at U_s)
Protective circuit	Suppressor diode

Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Screw connection
Conductor cross-section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross-section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

Signaling

Status display	4 x LED (green)
Operating voltage display	1 x LED (green)

Dimensions

Width	22.5 mm
Height	112.2 mm
Depth	114.5 mm

Material specifications

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Color (Housing)	yellow (RAL 1018)
Housing material	PA

Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	4 (5 A DC13; 5 A AC15; 8760 switching cycles/year)
Performance level (PL)	e

Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3
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Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3
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Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-20 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Maximum altitude	≤ 2000 m (Above sea level)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g

Approvals

CE

Identification	CE-compliant
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Mounting

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

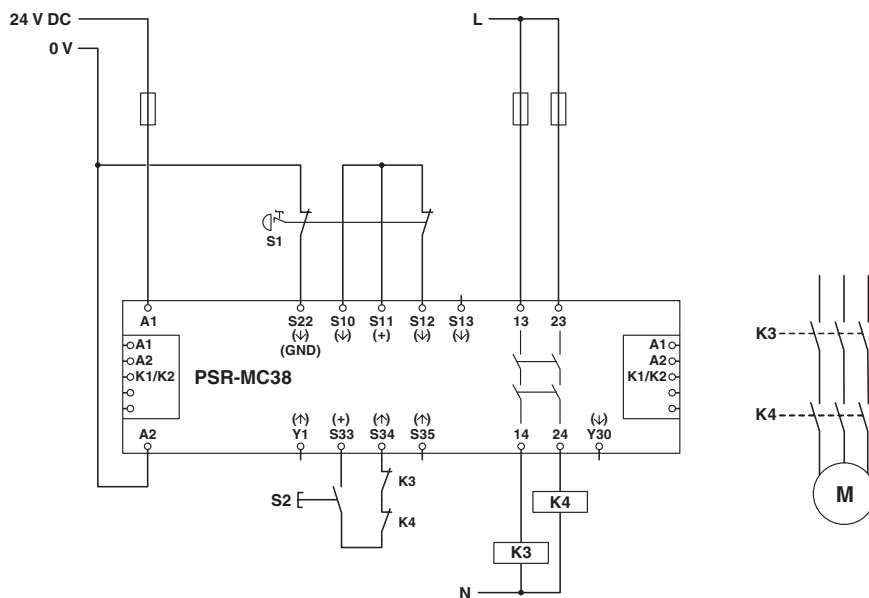
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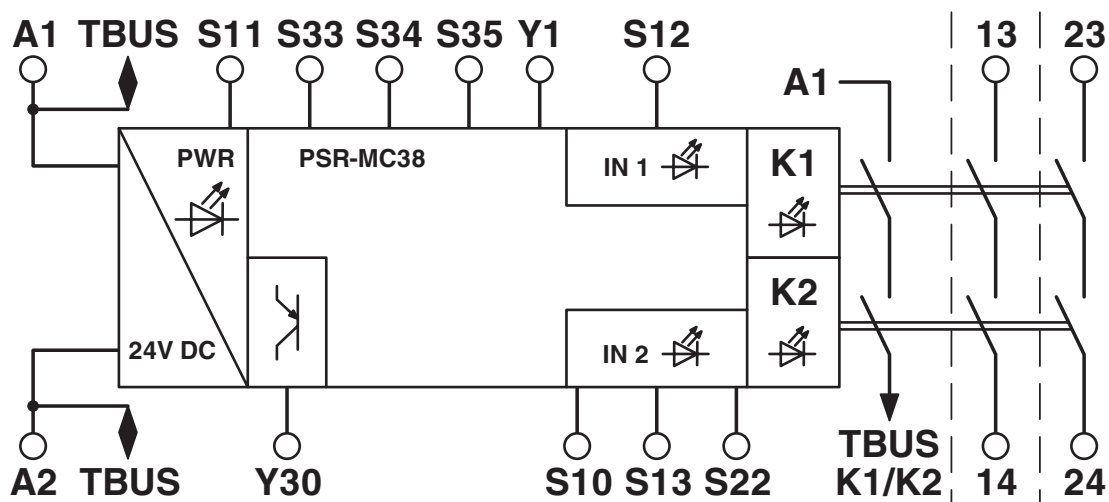
Drawings

Circuit diagram



Example application

Block diagram



Block diagram

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Approvals

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cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/5651.02/24

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Classifications

ECLASS

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

ETIM

ETIM 9.0	EC001449
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UNSPSC

UNSPSC 21.0	39122200
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	4d970b5f-c2f8-453e-ae7-b21159620cd5

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