

# 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
Catalog page	Page 223 (C-6-2019)
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

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## 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
	Solenoid switch
	Transponder
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

#### Data management status

Article revision	00
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#### 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 <sup>2</sup> )
Nominal operating mode	100% operating factor

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

Rated insulation voltage	250 V
	250 V
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6 kV between input circuit and enabling current path (13/14) and enabling current path (23/24) Basic insulation 4 kV between all current paths and housing

#### 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

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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 $U_S$ )
Protective circuit	Serial protection against polarity reversal; Suppressor diode

## 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 mA (typ. with $U_S$ at S10) < 300 mA (typ. with $U_S$ at S12, $\Delta t = 150$ ms) < 3 mA (typ. with $U_S$ at S13) > -300 mA (typically with $U_S$ at S22, $\Delta t = 150$ 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.
Concurrency	$\infty$
Max. permissible overall conductor resistance	50 $\Omega$
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 (typically with $U_S$ at S22, $\Delta t = 150$ 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 mA (typ. with $U_S$ at Y1, $\Delta t = 150$ ms) < 270 mA (typ. with $U_S$ at S34, $\Delta t = 15$ ms) < 80 mA (typ. with $U_S$ at S35, $\Delta t = 25$ 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 $\Omega$
Protective circuit	Suppressor diode
Current consumption	typ. 10 mA (typ. with $U_S$ at Y1) typ. 34 $\mu$ A (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)

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Contact switching type	2 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 10 V AC/DC max. 250 V AC/DC (Observe the load curve)
Switching capacity	min. 100 mW
Inrush current	min. 10 mA max. 6 A
Switching capacity in accordance with IEC 60947-5-1	5 A (24 V (DC13)) 5 A (250 V (AC15))
Limiting continuous current	6 A
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> 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 <sub>s</sub> - 0.1 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 1 ms at U <sub>s</sub> )
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 <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
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

## Signaling

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

## Dimensions

Width	22.5 mm
Height	112.2 mm

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Depth	114.5 mm
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## Material specifications

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

## 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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## Standards and regulations

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

Standards/regulations	IEC 60664-1
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## Mounting

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

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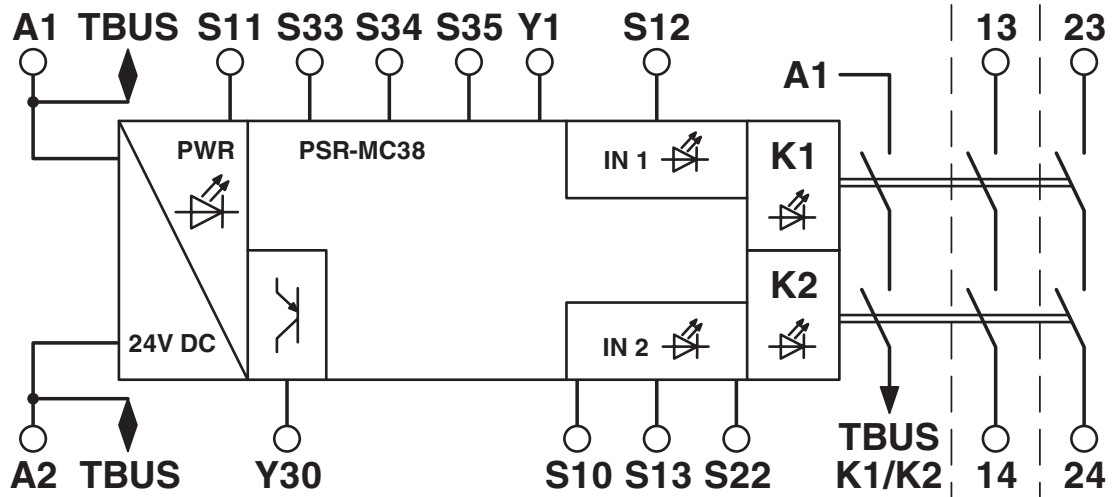


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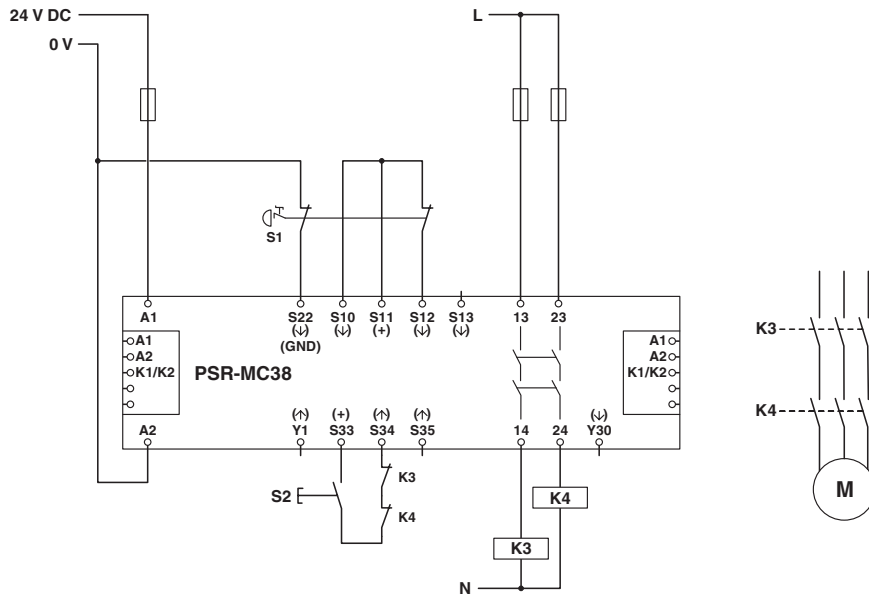
## Drawings

Block diagram



Block diagram

Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1009831>



### Functional Safety

Approval ID: 01/205/5651.01/22



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Approval ID: 01/205/5651.01/22



### Functional Safety

Approval ID: 968/FSP 1741.01/22



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### cULus Listed

Approval ID: E140324



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## Classifications

### ECLASS

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

### 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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