

# PSR-MC37-3NO-1NC-24DC-SP - Safety relays



2702412

<https://www.phoenixcontact.com/us/products/2702412>

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The figure shows a version with a screw connection

Safety relay for emergency switching off and safety doors as well as for elevator applications up to SIL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual start, cross-circuit detection, 3 enabling current paths,  $U_S = 24 \text{ V DC}$ , pluggable Push-in terminal block

## Your advantages

- Low housing width of only 22.5mm
- 3 enabling current paths, 1 signaling current path, 1 digital signal output
- Cross-circuit detection
- Automatic and manual activation
- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061
- Suitable for elevator applications in accordance with EN 81-20

## Commercial data

Item number	2702412
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA181
GTIN	4055626276953
Weight per piece (including packing)	202.5 g
Weight per piece (excluding packing)	202.5 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
	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	II
Degree of pollution	2

#### Times

Typical response time	< 100 ms (automatic start)
Typ. starting time with $U_S$	< 100 ms (when controlled via A1)
Typical release time	< 20 ms (when controlled via A1 or S12 and S22.)
Restart time	< 1 s (Boot time)
Recovery time	< 500 ms

### Electrical properties

Maximum power dissipation for nominal condition	17.03 W ( $U_B = 30 \text{ V}$ , $U_S = 24 \text{ V}$ , $I_S = 70 \text{ mA}$ , $I_L^2 = 72 \text{ A}^2$ , $R_{\text{Contact}} = 0.2 \text{ } \Omega_{\text{IEC 100}}$ )
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
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 ... 30 V DC
Rated control circuit supply voltage $U_S$	24 V DC -20 % / +25 %
Rated control supply current $I_S$	typ. 70 mA
Power consumption at $U_S$	typ. 1.68 W
Inrush current	2 A ( $\Delta t = 300 \text{ } \mu\text{s}$ at $U_S$ )
Protective circuit	Serial protection against polarity reversal; Suppressor diode

### Input data

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## Digital: Sensor circuit (S12, S22)

Description of the input	safety-related sensor inputs
Number of inputs	2
Input voltage range "0" signal	< 5 V (S12) 0 V DC ... 5 V DC (S22)
Input current range "0" signal	< 2 mA (S12) 0 mA ... 2 mA (S22)
Inrush current	< 5 mA (typ. with $U_S$ at S12, $\Delta t = 500 \mu s$ ) < 5 mA (typ. with $U_S$ at S22/24 V, $\Delta t = 500 \mu s$ ) > -5 mA (typ. with $U_S$ at S22/0 V, $\Delta t = 500 \mu s$ )
Filter time	max. 3 ms (at S12, S22; test pulse width; blanking pulses/dark test) > 1 s (at S12, S22; test pulse rate; blanking pulses/dark test) Where test pulse width $\leq 1$ ms: test pulse rate = 5 x test pulse width max. 1 ms (at S12, S22; test pulse width; switch-on pulses/light test) > 100 ms (at S12, S22; test pulse rate; switch-on pulses/light test) Unless test pulses are safety-related, they should be disabled.
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 4 mA (typ. with $U_S$ at S12) < 4 mA (typ. with $U_S$ at S22/24 V) > -15 mA (typ. with $U_S$ at S22/0 V)

## Digital: Start circuit (S35)

Description of the input	non-safety-related NPN
Number of inputs	1
Input voltage range "1" signal	19.2 V DC ... 30 V DC
Inrush current	< 10 mA (typ. with $U_S$ , $\Delta t = 500 \mu s$ )
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 0.5 mA (typ. with $U_S$ )

## Output data

### Relay: Enabling current path (13/14, 23/24, 33/34)

Output description	safety-related N/O contacts
Number of outputs	3 (undelayed)
Contact switching type	3 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 5 V AC/DC max. 250 V AC/DC
Switching power	min. 50 mW

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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 <sup>2</sup> (observe derating)
Switching frequency	0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG (N/O contact)

## Relay: Signaling current path (41/42)

Output description	non-safety-related N/C contact
Number of outputs	1 (undelayed)
Contact switching type	1 signaling current path
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 5 V AC/DC
	max. 30 V AC/DC
Switching power	min. 50 mW
Inrush current	min. 10 mA
	max. 6 A ( $\Delta t = 100$ ms)
Limiting continuous current	1 A
Sq. Total current	1 A <sup>2</sup>
Switching frequency	0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	1 A gL/gG

## Signal: Y32

Output description	non-safety-related
	PNP
Number of outputs	1 (digital)
Voltage	23 V DC ( $U_s - 1$ V)
Current	max. 100 mA
Maximum inrush current	1 A ( $\Delta t = 5$ ms at $U_s$ )
Short-circuit protection	Yes

## Connection data

### Connection technology

pluggable	yes
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### Conductor connection

Connection method	Push-in connection
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross-section, flexible, with ferrule, without plastic	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)

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sleeve	
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Signaling

Status display	3 x LED (green)
Operating voltage display	1 x LED (green)

## Dimensions

Width	22.5 mm
Height	117.4 mm
Depth	114.5 mm

## Material specifications

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

## Characteristics

### Safety data

Stop category (EN 60204-1)	0
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### Safety data: EN ISO 13849

Performance level (PL)	e (5 A DC13; 5 A AC15; 8760 switching cycles/year)
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### 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)	-40 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °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 for $\Delta t = 11$ ms (continuous shock: 10g for $\Delta t = 16$ ms)
Vibration (operation)	10 Hz ... 150 Hz, amplitude 0.15 mm, 2g

## Approvals

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## 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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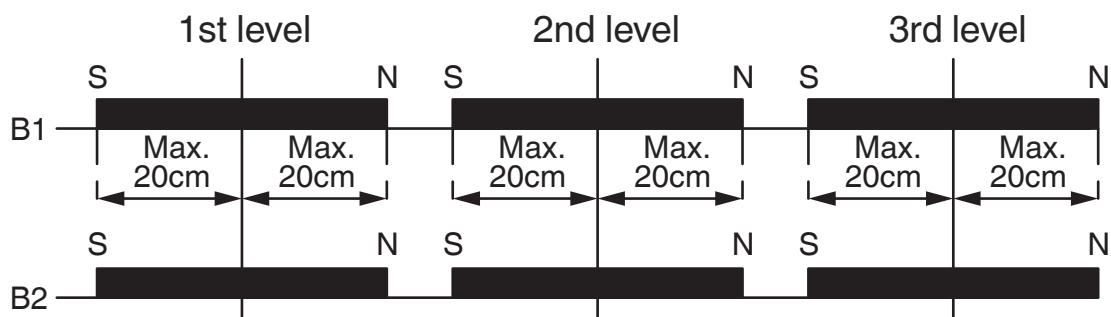
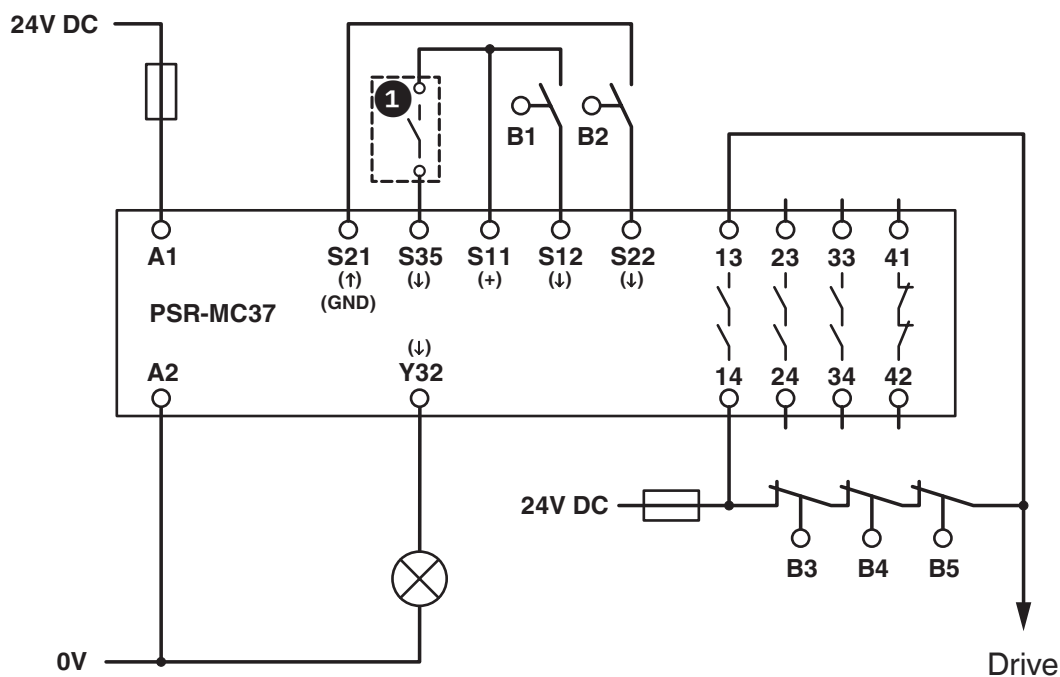


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## Drawings

Circuit diagram



Example application

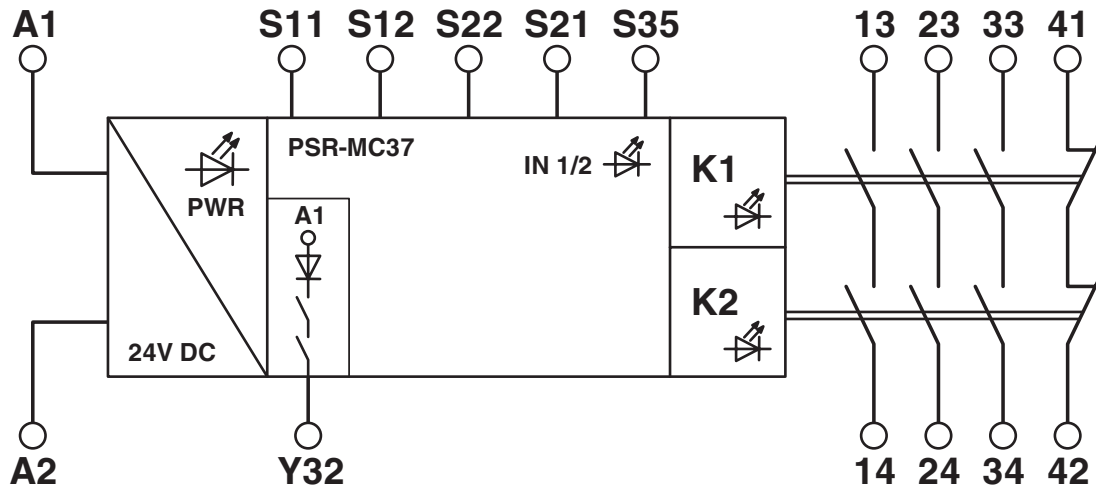
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Block diagram



Block diagram

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2702412>



**cULus Listed**

Approval ID: E140324



**Functional Safety**

Approval ID: 4420515124305



**Functional Safety**

Approval ID: 4478015124305



**Functional Safety**

Approval ID: 01\_208\_4A\_6151\_00\_25

**Functional Safety**

Approval ID: 01/208/9/7134.00/25

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## Classifications

### ECLASS

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

### ETIM

ETIM 10.0	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	18791b4e-21d2-4def-a9b3-4158057cd408

### EF3.1 Climate Change

CO2e kg	7.414 kg CO2e
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