

# PSR-MC30-2NO-1DO-24DC-SP - Safety relays



2700499

<https://www.phoenixcontact.com/us/products/2700499>

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

The figure shows a version with a screw connection

## Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061
- Cross-circuit detection
- Low housing width of just 12.5 mm
- Manually monitored and automatic activation in a single device
- 2 enabling current paths, 1 digital signal output
- 2 channel control

## Commercial data

Item number	2700499
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA181
GTIN	4046356912877
Weight per piece (including packing)	150.2 g
Weight per piece (excluding packing)	130.5 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
	Magnetic switch
Control	2-channel
Mechanical service life	approx. $10^7$ cycles
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	< 175 ms (automatic start)
	< 175 ms (manual, monitored start)
Typ. starting time with $U_S$	< 250 ms (when controlled via A1)
Typical release time	< 20 ms (on demand via A1)
	< 20 ms (on demand via the sensor circuit)
Restart time	< 1 s (Boot time, after switching on the supply voltage)
Recovery time	< 500 ms (following demand of the safety function)
Start pulse length	500 ms (manual start)

### Electrical properties

Maximum power dissipation for nominal condition	5.5 W ( $U_S = 26.4$ V, $I_L^2 = 72$ A <sup>2</sup> , $P_{Total\ max} = 1.9$ W + 3.6 W)
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
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 %
Rated control supply current $I_S$	typ. 65 mA (at $U_S$ )

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Power consumption at $U_S$	typ. 1.56 W
Inrush current	typ. 4 A ( $\Delta t = 200 \mu s$ at $U_S$ )
Filter time	1 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 (S11, S12, S21, S22)

Description of the input	safety-related sensor inputs
Number of inputs	4
Input voltage range "0" signal	< 5 V (S12) Input S22 can interpret low-resistance outputs of a PLC as a continuous HIGH signal.
Input voltage range "1" signal	20.4 V ... 26.4 V
Input current range "0" signal	< 2 mA (S12) 0 mA ... 2 mA (S22)
Inrush current	< 20 mA (typ. with $U_S$ at S12) < 5 mA (typ. with $U_S$ at S22/24 V) > -15 mA (typ. with $U_S$ at S22/0 V)
Filter time	max. 1.5 ms (at S12, S22; test pulse width) min. 7.5 ms (at S12, S22; test pulse rate) Test pulse rate = 5 x Test pulse width
Concurrence	$\infty$
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 5 mA (typ. with $U_S$ at S12) < 5 mA (typ. with $U_S$ at S22/24 V) > -5 mA (typ. with $U_S$ at S22/0 V)

Digital: Start circuit (S34)

Description of the input	non-safety-related NPN/PNP
Number of inputs	1
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	max. 200 mA (typ. with $U_S$ )
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 10 mA (at S34/24 V) > -5 mA (at S34/0 V)

## Output data

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

Output description	safety-related N/O contacts
Number of outputs	2 (undelayed)
Contact switching type	2 enabling current paths

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Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Switching power	min. 60 mW
Inrush current	min. 3 mA
Switching capacity	max. 6 A
	5 A (AC15)
Limiting continuous current	4 A (DC13)
	6 A (observe derating)
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching frequency	0.1 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG (N/O contact)
	4 A gL/gG (for low-demand applications)

## Signal: M1

Output description	non-safety-related
Number of outputs	1 (digital, PNP)
Voltage	22 V DC (U <sub>s</sub> - 2 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 1 ms at U <sub>s</sub> )
Protective circuit	Suppressor diode
Short-circuit protection	no

## 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 sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
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	12.5 mm
Height	116.6 mm

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Depth	114.5 mm
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## 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 (4 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 ... 55 °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
Vibration (operation)	10 Hz ... 150 Hz, amplitude 0.15 mm, 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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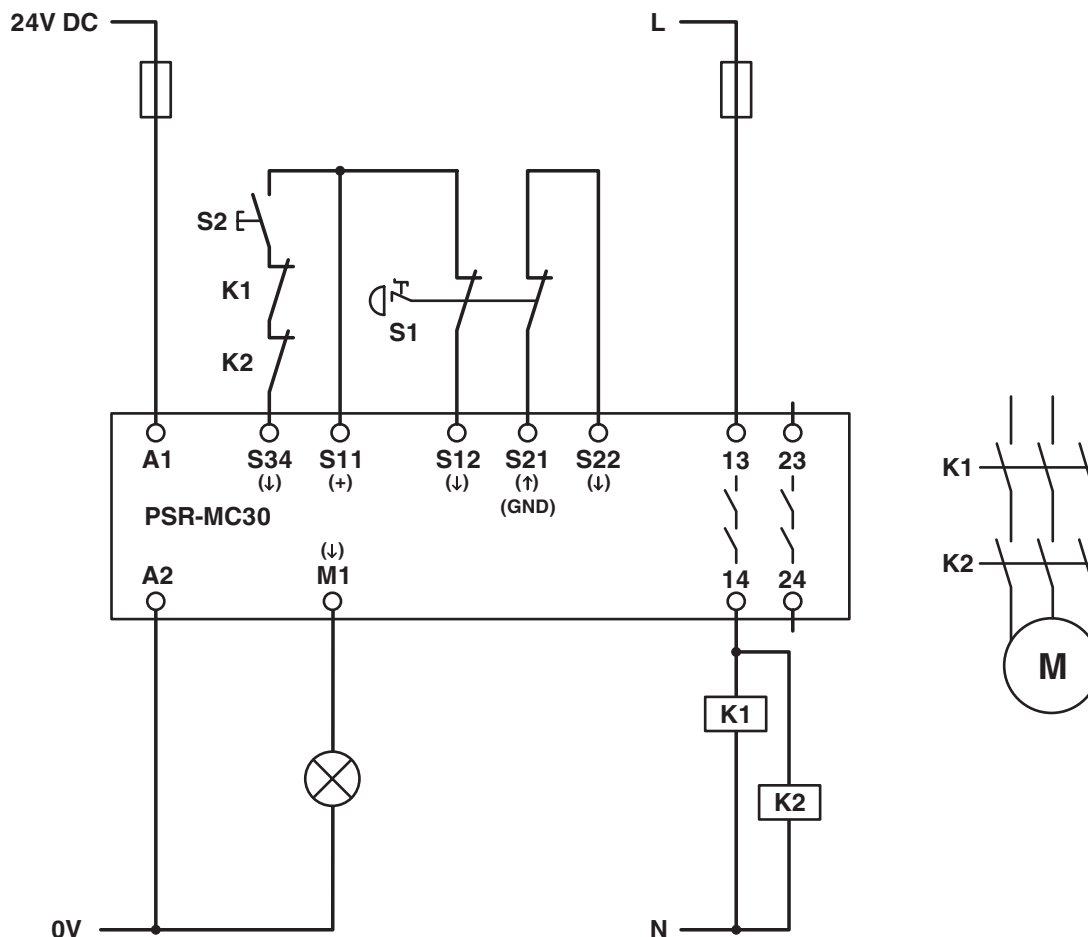


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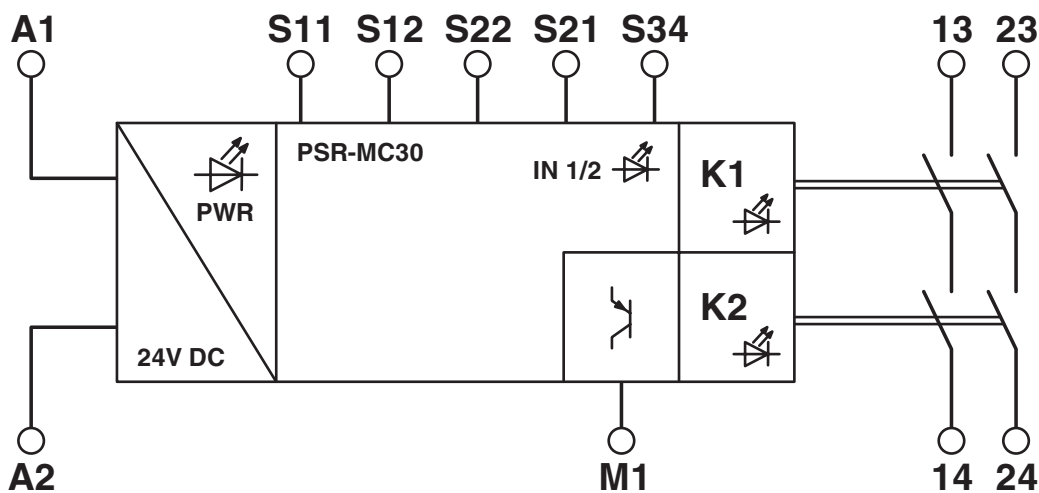
## Drawings

Circuit diagram



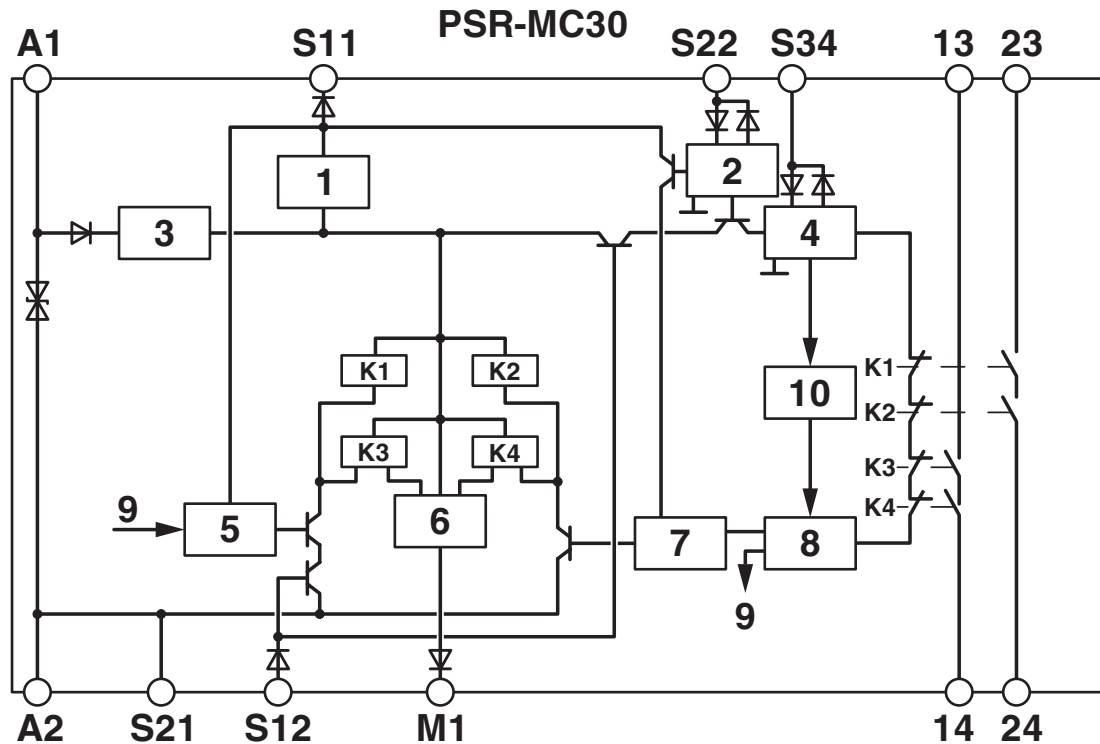
Example application

Block diagram



Block diagram

Block diagram



**Key:**

- 1 = Current limitation
- 2 = Input circuit
- 3 = Voltage limitation
- 4 = Start circuit
- 5 = Control circuit channel 1
- 6 = Control circuit signal output
- 7 = Control circuit channel 2
- 8 = Start channel 1 and 2
- 9 = Channel 1
- 10 = Diagnostics
- K1, K2 ... K4 = Force-guided elementary relays


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## Approvals

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 **Functional Safety**  
Approval ID: 44 205 13755201

 **Functional Safety**  
Approval ID: 44 780 13755201

 **cULus Listed**  
Approval ID: E140324

 **DNV GL**  
Approval ID: TAA00002VZ

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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	d0b4359c-8e92-4f02-a340-117dc23e2214

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