

# PSR-MC70-2NO-1DO-24DC-SC - Safety relays



2702094

<https://www.phoenixcontact.com/us/products/2702094>

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Safety relay for emergency stop, safety doors, light grid up to SIL 1, Cat. 1, PL c, 1- or 2-channel operation, cross-circuit detection, can be retriggered, off delay/on delay 0.2 s ... 60 s, 2 enabling current paths,  $U_S = 24\text{ V DC}$ , plug-in screw terminal block

## Your advantages

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

## Commercial data

Item number	2702094
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA181
Catalog page	Page 226 (C-6-2019)
GTIN	4046356952262
Weight per piece (including packing)	145.69 g
Weight per piece (excluding packing)	115.153 g
Customs tariff number	85371098
Country of origin	DE

## Technical data

### Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop
	Safety door
	Light grid
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

### Times

Typical response time	< 35 ms (automatic start)
	< 30 ms (manual, monitored start)
Typical release time	< 20 ms (when controlled via S12 (only for undelayed contact 13/14))
	< 5 ms (when interrupted via A1; applicative deactivation via A1/A2 is not permitted)
Delay time range	0.2 s ... 60 s $\pm 5\%$ (can be set for 27/28)
Restart time	< 1 s (Boot time)

### Electrical properties

Maximum power dissipation for nominal condition	3.58 W (at $U_S = 30\text{ V}$ , $I_L^2 = 72\text{ A}^2$ )
Nominal operating mode	100% operating factor

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

Rated insulation voltage	250 V AC
	250 V AC
Rated surge voltage/insulation	Basic insulation 4 kV: between all current paths and housing Safe isolation, reinforced insulation 6 kV: between (A1, A2, S11, S12, S21, S22, S34, M1) and enabling current path (13/14) between (A1, A2, S11, S12, S21, S22, S34, M1) and enabling current path (27/28) between enabling current paths

### 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. 50 mA
Power consumption at $U_S$	typ. 1.2 W
Inrush current	typ. 25 A ( $\Delta t = 10\text{ }\mu\text{s}$ at $U_S$ )
Filter time	10 ms (For the logic. At A1 in the event of voltage dips at $U_S$ )
Protective circuit	Surge protection; Suppressor diode
	Protection against polarity reversal for rated control circuit supply voltage

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## Input data

Digital: Sensor circuit (S12, S22)

Description of the input	safety-related sensor inputs
Number of inputs	2
Input voltage range "0" signal	0 V DC ... 5 V DC
Input current range "0" signal	0 mA ... 2 mA
Inrush current	< 11 mA (typically with $U_S$ )
Filter time	max. 3 ms (Test pulse width of low test pulses)
	min. 21 ms (Test pulse rate for low test pulse)
	Test pulse rate = 7 x Test pulse width
Concurrence	$\infty$
Limit frequency	min. 0 Hz
	max. 1 Hz
Max. permissible overall conductor resistance	150 $\Omega$
Current consumption	< 4.1 mA (typically with $U_S$ )

Digital: Start circuit (S34)

Description of the input	non-safety-related
Number of inputs	1
Inrush current	< 8.6 mA (typically with $U_S$ )
Filter time	max. 3 ms (Test pulse width of low test pulses)
	min. 21 ms (Test pulse rate for low test pulse)
	Test pulse rate = 7 x Test pulse width
Max. permissible overall conductor resistance	150 $\Omega$
Voltage at input/start and feedback circuit	24 V DC -20 % / +25 %
Current consumption	< 3.2 mA (typically with $U_S$ )

## Output data

Relay: Enabling current paths (13/14, 27/28)

Output description	safety-related N/O contacts
Number of outputs	1 (undelayed, single-channel)
	1 (delayed, single-channel)
Contact switching type	2 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC
Switching capacity	min. 60 mW
Inrush current	min. 3 mA
	max. 6 A
Switching capacity in accordance with IEC 60947-5-1	2 A (AC15)
	4 A (DC13)
Limiting continuous current	max. 6 A

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Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching frequency	max. 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	PNP non-safety-related
Number of outputs	1
Voltage	approx. 23 V DC (U <sub>S</sub> - 1 V)
Current	max. 100 mA
Maximum inrush current	500 mA ( $\Delta t = 1 \text{ ms}$ at U <sub>S</sub> )
Short-circuit protection	Yes

## 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

## Signaling

Status display	5 x bi-color LED
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## Dimensions

Width	12.5 mm
Height	112.2 mm
Depth	114.5 mm

## Material specifications

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

## Characteristics

Safety data

Stop category	1
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Safety data: EN ISO 13849

Category	1 (up to Cat. 3 depending on the application)
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Performance level (PL)	c (up to PL e depending on the application)
Safety data: IEC 61508 - High demand	
Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
Safety data: EN IEC 62061	
Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-35 °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
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 60644-1
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## Mounting

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



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Block diagram

The block diagram illustrates the internal structure of the PSR-MC70 module. It is a rectangular block divided into several functional sections. On the left, there are two input terminals labeled A1 and A2. A1 is connected to a power input section labeled 'PWR' which contains a diode symbol. A2 is connected to a '24V DC' input section. The main body of the module is labeled 'PSR-MC70'. It contains two input channels, 'IN 1' and 'IN 2', each with a diode symbol. Below these inputs are two output terminals, S11 and S12, each with a square-wave pulse symbol. To the right of the input channels is a section labeled 'M1' with a motor symbol. Further right is a section labeled 'K1' and 'K2', each with a diode symbol. Between K1 and K2 are two timing parameters,  $t_{on}$  and  $t_{off}$ . On the far right, there are two output terminals labeled 13 and 27, and two more labeled 14 and 28. The terminal 27 is connected to a switch symbol labeled (t).

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2702094>



### UL Listed

Approval ID: FILE E 140324



### cUL Listed

Approval ID: FILE E 140324



### Functional Safety

Approval ID: 01/205/5485.01/22

### cULus Listed

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## Classifications

### ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	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	2d3e40b8-0241-4e94-a725-21ed8196fd52

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## Accessories

### CRIMPFOX 6 - Crimping pliers

1212034

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Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 mm<sup>2</sup> ... 6.0 mm<sup>2</sup>, lateral entry, trapezoidal crimp

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Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)