

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
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

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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
Control	1 and 2 channel
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics: Air clearances and creepage distances between the power circuits

Overvoltage category	III
Degree of pollution	2

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	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. 50 mA
Power consumption at U_S	typ. 1.2 W
Inrush current	typ. 25 A ($\Delta t = 10\ \mu\text{s}$ at U_S)

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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

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 (typ. 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
Concurrency	∞
Max. permissible overall conductor resistance	150 Ω
Current consumption	< 4.1 mA (typ. with U_S)

Digital: Start circuit (S34)

Description of the input	non-safety-related
Number of inputs	1
Inrush current	< 8.6 mA (typ. 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 Ω
Voltage at input/start and feedback circuit	24 V DC -20 % / +25 %
Current consumption	< 3.2 mA (typ. 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 ₂
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC
Switching power	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)

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Limiting continuous current	max. 6 A
Sq. Total current	72 A ² (observe derating)
Switching frequency	max. 0.1 Hz
Mechanical service life	10x 10 ⁶ 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 _S - 1 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 1 ms at U _S)
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 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	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	PA

Characteristics

Safety data

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

Performance level (PL)	c (up to PL e depending on the application)
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Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
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Safety data: EN IEC 62061

Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
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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)	-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, amplitude 0.15 mm, 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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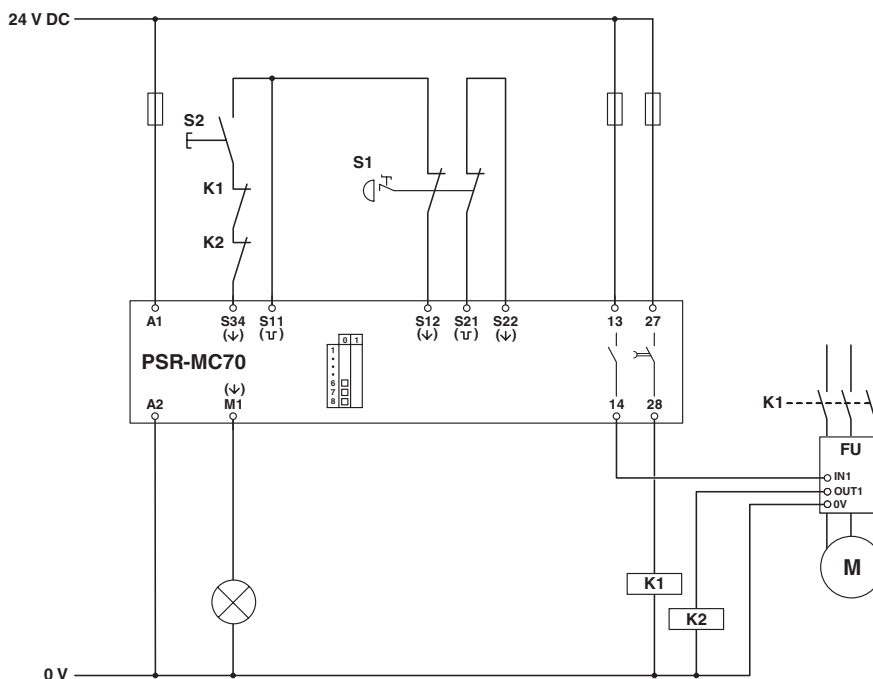


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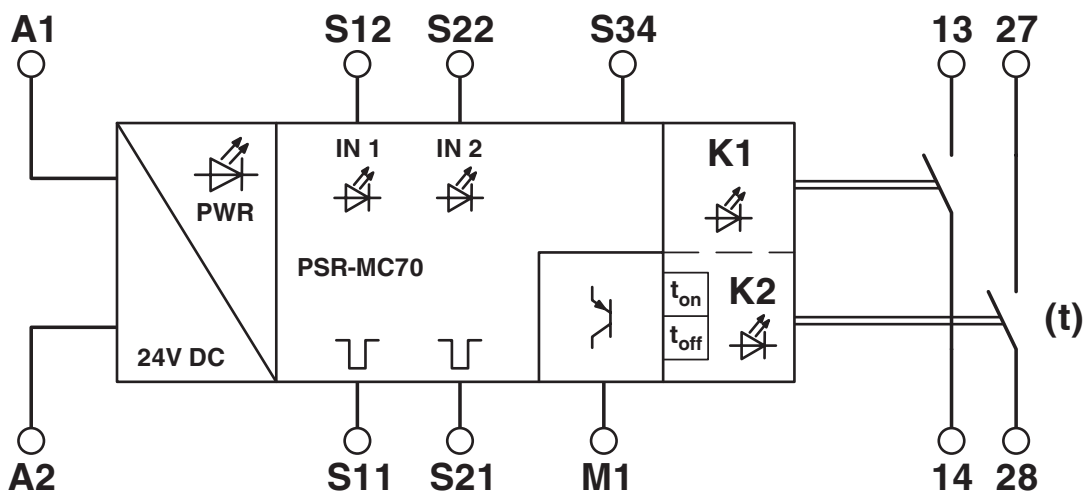
Drawings

Circuit diagram



Emergency stop monitoring/manual, monitored start

Block diagram



Block diagram

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Approvals

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cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01_205_5485_02_24

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Classifications

ECLASS

ECLASS-13.0

27371819

ETIM

ETIM 9.0

EC001449

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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