

# Safety relays - PSR-MC70-2NO-1DO-24DC-SC - 2702094

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

## Your advantages

- ✓ Up to Cat. 1/PL c according to ISO 13849-1, SILCL 1 according to IEC 62061
- ✓ Depending on the application, up to Cat.3/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061
- ✓ Low housing width of just 12.5 mm
- ✓ Single and two-channel control
- ✓ 2 enabling current paths, 1 digital signal output
- ✓ Manually monitored and automatic activation in a single device



## Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 952262
GTIN	4046356952262

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	12.5 mm
Height	112.2 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-35 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)

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## Technical data

### Ambient conditions

Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

### Power supply

Designation	A1/A2
Rated control circuit supply voltage $U_s$	24 V DC -20 % / +25 %
	19.2 V DC ... 30 V DC
Rated control supply current $I_s$	typ. 50 mA
Power consumption at $U_s$	typ. 1.2 W
Inrush current	typ. 25 A ( $\Delta t = 10 \mu s$ 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

### Digital inputs

Input name	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 $U_s$ )
Current consumption	< 4.1 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 $\Omega$
Concurrence input 1/2	$\infty$
Limit frequency	min. 0 Hz
	max. 1 Hz
Input name	Start circuit
	S34
Description of the input	non-safety-related
Number of inputs	1
Inrush current	< 8.6 mA (typically with $U_s$ )
Current consumption	< 3.2 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 $\Omega$

Relay outputs: enabling current path

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### Relay outputs: enabling current path

Output name	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 type	2 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Limiting continuous current	6 A (observe derating)
Inrush current	min. 3 mA
	max. 6 A
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching capacity	min. 60 mW
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)

### Alarm outputs

Designation	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 (Δt = 1 ms at U <sub>S</sub> )
Short-circuit protection	Yes

### Times

Typical response time at US	< 35 ms (automatic start)
	< 30 ms (manual, monitored start)
Typical release time at US	< 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 ±5 % (can be set for 27/28)
Restart time	< 1 s (Boot time)

### General

Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3
Nominal operating mode	100% operating factor
Net weight	115.153 g
Mounting position	vertical or horizontal

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## Technical data

### General

Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Housing material	PBT
Housing color	yellow
Status display	5 x bi-color LED

### Connection data

Connection method	Screw connection
pluggable	Yes
Conductor cross section solid	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

### Safety-related characteristic data

Stop category	1
Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
Designation	EN ISO 13849
Performance level (PL)	c (up to PL e depending on the application)
Category	1 (up to Cat. 3 depending on the application)
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	1 (up to SILCL 3 depending on the application)

### Standards and Regulations

Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178
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
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

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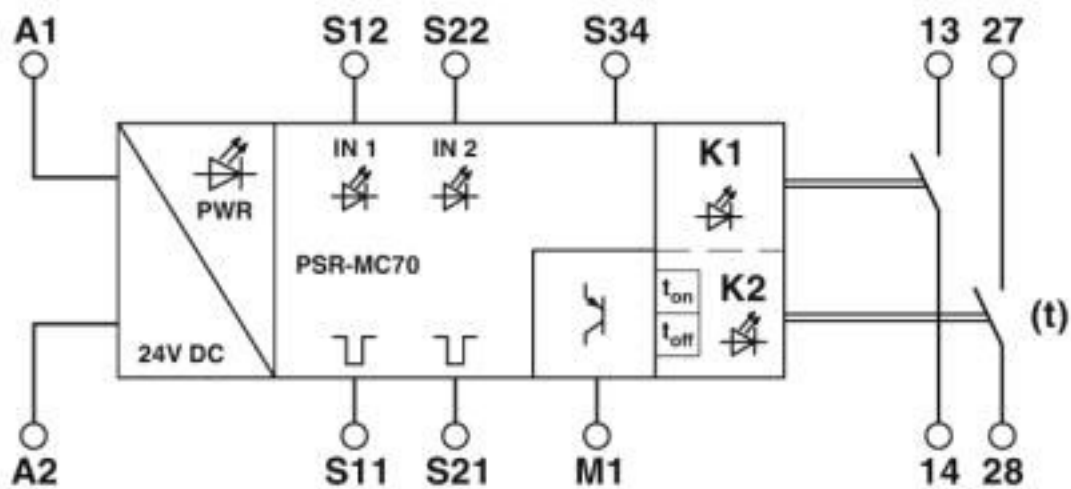
## Technical data

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

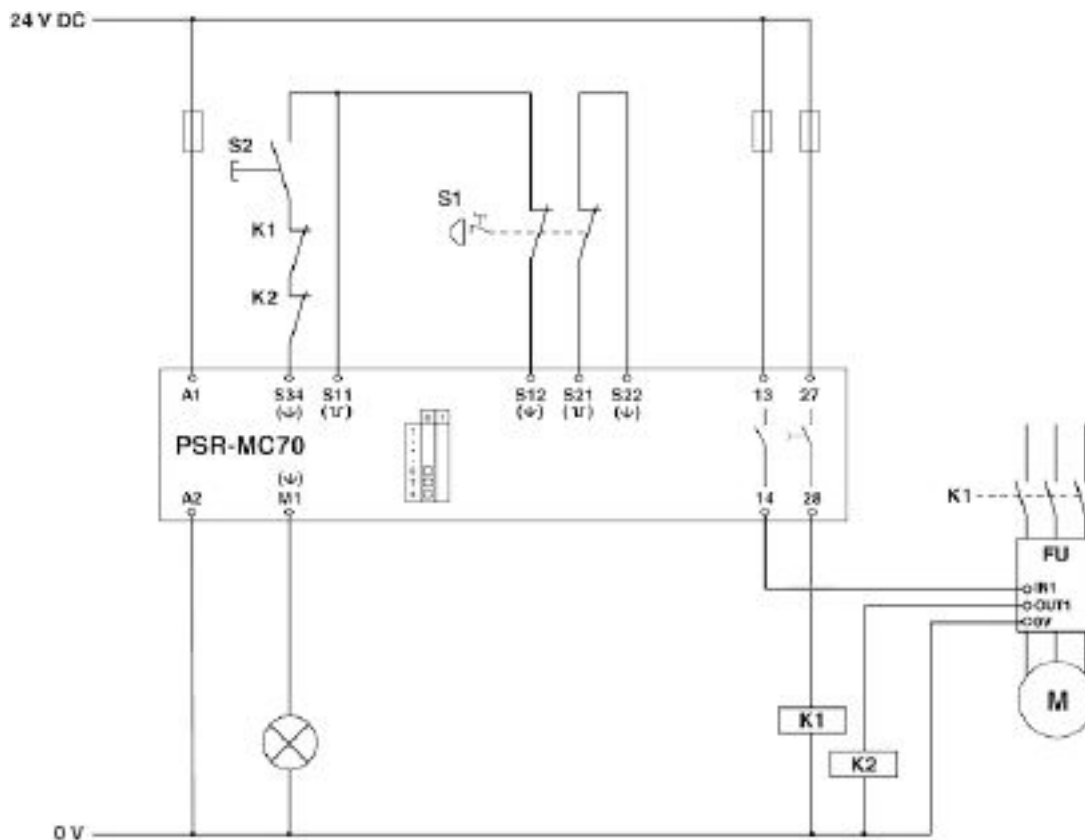
## Drawings

Block diagram



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Circuit diagram



## Classifications

eCl@ss

eCl@ss 10.0.1	27371819
eCl@ss 4.0	40020600
eCl@ss 4.1	40020600
eCl@ss 5.0	27371900
eCl@ss 5.1	27371900
eCl@ss 6.0	27371800
eCl@ss 7.0	27371819
eCl@ss 8.0	27371819
eCl@ss 9.0	27371819

ETIM

ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449

UNSPSC

UNSPSC 13.2	39121501
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## Classifications

### UNSPSC

UNSPSC 18.0	39122205
UNSPSC 19.0	39122205
UNSPSC 20.0	39122205
UNSPSC 21.0	39122205

## Approvals

### Approvals

#### Approvals

UL Listed / cUL Listed / Functional Safety / cULus Listed

#### Ex Approvals

### Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
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Functional Safety			01/205/5485.00/16
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cULus Listed			
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