

## Safety relays - PSR-MS30-1NO-24DC-SC - 2904952

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Safety relay for emergency stop and safety doors up to SILCL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic start, cross-circuit detection, 1 enabling current path,  $U_S = 24\text{ V DC}$ , fixed screw terminal block

### Your advantages

- Up to Cat.4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061
- Low housing width of just 6.8 mm
- Two-channel control
- 1 enabling current path
- Automatic activation
- Cross-circuit detection



### Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 905008
GTIN	4046356905008

### Technical data

#### Note

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

Width	6.8 mm
Height	93.1 mm
Depth	102.5 mm

#### Ambient conditions

Ambient temperature (operation)	-40 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C

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## Technical data

### Ambient conditions

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

### Power supply

Rated control circuit supply voltage $U_s$	24 V DC -15 % / +10 %
	20.4 V DC ... 26.4 V DC
Rated control supply current $I_s$	typ. 42 mA
Power consumption at $U_s$	typ. 1 W
Inrush current	4.5 A ( $\Delta t < 120 \mu s$ at $U_s$ )
Filter time	1 ms (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 voltage range "0" signal	0 V DC ... 5 V DC (for safe Off; at S12)
Input current range "0" signal	0 mA ... 2 mA (for safe Off; at S12)
Inrush current	< 20 mA (with $U_s/I_x$ to S12)
	< 10 mA (with $U_s/I_x$ at the start circuit)
	< 5 mA (with $U_s/I_x$ to S22)
	> -15 mA (with $U_s/I_x$ to S22/0V)
Current consumption	< 5 mA (with $U_s/I_x$ to S12)
	< 5 mA (with $U_s/I_x$ to S22)
	< 10 mA (with $U_s/I_x$ at the start circuit)
	> -5 mA (with $U_s/I_x$ to S22/0V)
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
Voltage at input/start and feedback circuit	24 V DC -15 % / +10 %
Max. permissible overall conductor resistance	150 $\Omega$

### Relay outputs: enabling current path

Output name	Enabling current path
Output description	safety-related N/O contacts
Number of outputs	1 (undelayed)
Contact type	1 enabling current path
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

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#### Relay outputs: enabling current path

Sq. Total current	36 A <sup>2</sup> (observe derating)
Switching capacity	min. 60 mW
Switching frequency	max. 0.5 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)

#### Times

Typical pickup time at US	< 250 ms (when controlled via A1)
Typical response time at US	< 175 ms
Typical release time at US	< 20 ms (when controlled via A1 or S12 and S22.)
Recovery time	< 500 ms

#### General

Relay type	Electromechanical relay with forcibly guided contacts in accordance with IEC/EN 61810-3 (EN 50205)
Nominal operating mode	100% operating factor
Net weight	69 g
Mounting position	vertical or horizontal
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
Operating voltage display	1 x green LED
Status display	2 x green LEDs

#### Connection data

Connection method	Screw connection
pluggable	no
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	26
Conductor cross section AWG max.	12
Stripping length	12 mm
Screw thread	M3

#### Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High demand

# Safety relays - PSR-MS30-1NO-24DC-SC - 2904952

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### Safety-related characteristic data

Safety Integrity Level (SIL)	3
Designation	IEC 61508 - Low demand
Safety Integrity Level (SIL)	3
Designation	EN ISO 13849
Performance level (PL)	e (4 A DC13; 5 A AC15; 8760 switching cycles/year)
Category	4
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3

### Standards and Regulations

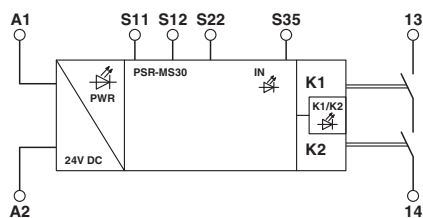
Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178
Rated insulation voltage	250 V AC
	250 V AC
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6 kV between input circuit and enabling current path Basic insulation 4 kV between all current paths and housing
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

### Environmental Product Compliance

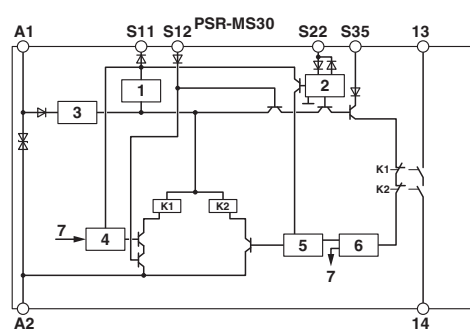
REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Drawings

Block diagram



Block diagram

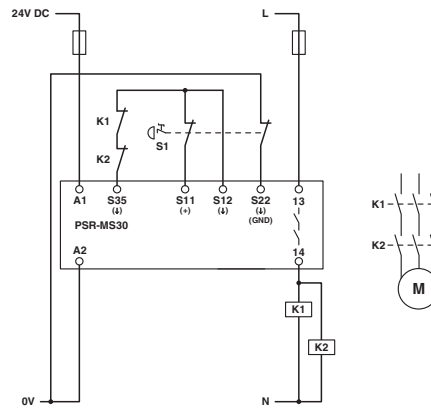


Key:  
1 = Current limitation

# Safety relays - PSR-MS30-1NO-24DC-SC - 2904952

- 2 = Input circuit
- 3 = Voltage limitation
- 4 = Control circuit channel 1
- 5 = Control circuit channel 2
- 6 = Start channel 1 and 2
- 7 = Channel 1
- K1, K2 = Force-guided elementary relays

Application drawing



## Approvals

### Approvals

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### Approvals

UL Listed / cUL Listed / Functional Safety / EAC / cULus Listed

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### Ex Approvals

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### Approval details

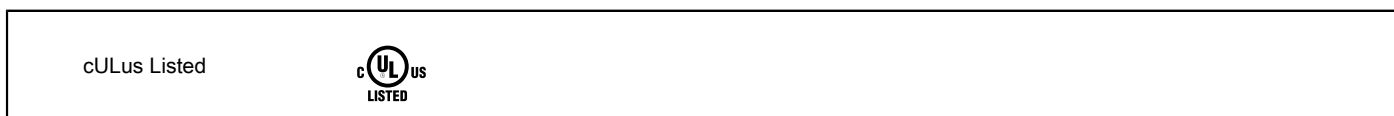
UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
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Functional Safety			44-205-13755202
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### Approvals



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