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## Safety relays - PSR-MS20-1NO-1DO-24DC-SC - 2904950

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Safety relay for emergency stop and safety doors up to SILCL 1, Cat. 1, PL c, depending on the application up to SILCL 3, Cat. 4, PL e, 1-channel operation, automatic start, 1 enabling current path,  $U_s = 24 \text{ V DC}$ , fixed screw terminal block

### Why buy this product

- Up to Cat. 1/PL c according to ISO 13849-1, SILCL 1 according to IEC 62061
- Depending on the application, 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
- Single-channel control
- 1 enabling current path, 1 digital signal output
- Automatic activation



### Key Commercial Data

Packing unit	1 STK
GTIN	 4 046356 904988

### 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)
Shock	15g
Vibration (operation)	10 Hz ...150 Hz, 2g
Maximum altitude	max. 2000 m (Above sea level)

### Input data

Rated control circuit supply voltage $U_s$	24 V DC -15 % / +10 %
Power consumption at $U_s$	typ. 1 W
Rated control supply current $I_s$	typ. 42 mA
Typical inrush current	4.5 A ( $\Delta t = 120 \mu s$ at $U_s$ )
Current consumption	< 5 mA (with $U_s/I_x$ to S12)
	< 10 mA (with $U_s/I_x$ at the start circuit)
Voltage at input/start and feedback circuit	24 V DC -15 % / +10 %
Typical response time	< 175 ms
Typical pick-up time	< 250 ms (when controlled via A1)
Typical release time	< 20 ms (when controlled via A1 or S12)
Recovery time	< 500 ms
Status display	2 x green LEDs
Maximum switching frequency	0.5 Hz
Max. permissible overall conductor resistance	150 $\Omega$
Filter time	1 ms (at A1 in the event of voltage dips at $U_s$ )
	max. 1.5 ms (at S12; test pulse width)
	min. 7.5 ms (at S12; test pulse rate)
	Test pulse rate = 5 x Test pulse width

### Output data

Contact type	1 enabling current path
Contact material	AgSnO <sub>2</sub>
Minimum switching voltage	12 V AC/DC
Maximum switching voltage	250 V AC/DC (Observe the load curve)
Limiting continuous current	6 A (observe derating)
Inrush current, minimum	3 mA
Maximum inrush current	6 A
Sq. Total current	36 A <sup>2</sup> (observe derating)
Switching capacity	min. 60 mW
Output fuse	6 A gL/gG (N/O contact)
	4 A gL/gG (for low-demand applications)

### Alarm outputs

Number of outputs	1 (digital, PNP)
Voltage	22 V DC ( $U_s - 2 V$ )

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## Technical data

### Alarm outputs

Current	max. 100 mA
Maximum inrush current	500 mA ( $\Delta t = 1 \text{ ms at } U_s$ )
Short-circuit protection	no

### General

Relay type	Electromechanical relay with forcibly guided contacts in accordance with IEC/EN 61810-3 (EN 50205)
Mechanical service life	$10 \times 10^6$ cycles
Net weight	69 g
Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Mounting position	vertical or horizontal
Control	single-channel
Housing material	PBT

### 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 Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
Designation	IEC 61508 - Low 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. 4 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

Shock	15g
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## Technical data

### Standards and Regulations

Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178
Rated insulation voltage	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
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

## Classifications

### eCl@ss

eCl@ss 5.1	27371901
eCl@ss 6.0	27371819
eCl@ss 8.0	27371819

### ETIM

ETIM 5.0	EC001449
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## 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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#### Approvals submitted

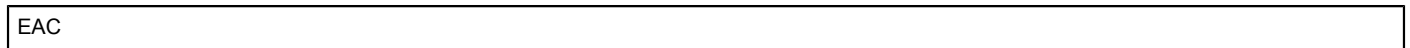
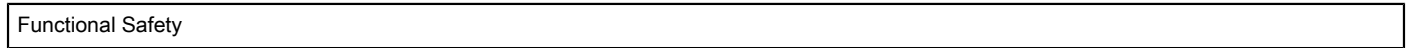
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### Approval details

UL Listed
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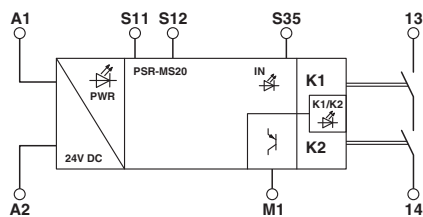
# Safety relays - PSR-MS20-1NO-1DO-24DC-SC - 2904950

## Approvals

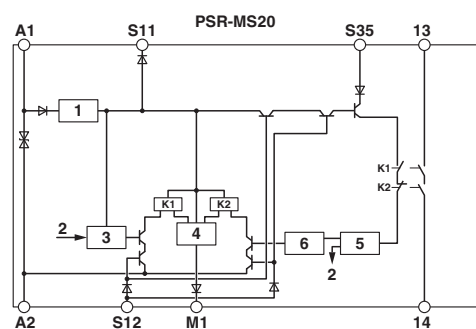


## Drawings

Block diagram



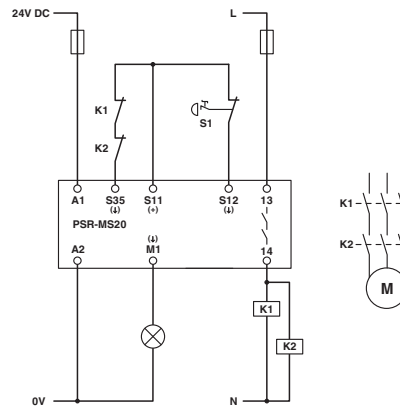
Block diagram



- Key:
- 1 = Voltage limitation
  - 2 = Channel 1
  - 3 = Control circuit channel 1
  - 4 = Control circuit signal output
  - 5 = Start channel 1 and 2
  - 6 = Control circuit channel 2
  - K1, K2 = Force-guided elementary relays

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Application drawing



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