

# Safety relays - PSR-MS21-1NO-1DO-24DC-SC - 2702192

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Safety relay for failsafe controllers up to SILCL 3, Cat. 4, PL e, 1-channel operation, automatic start, 1 enabling current path,  $U_S = 24 \text{ V DC}$  according to IEC 61131-6, 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
- Single-channel control
- 1 enabling current path, 1 digital signal output
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation
- Automatic activation



## Key commercial data

<b>package_quantity</b>	1
<b>GTIN</b>	4055626010199

## Technical data

### Note

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

<b>Width</b>	6.8 mm
<b>Height</b>	93.1 mm
<b>Depth</b>	102.5 mm

### Ambient conditions

<b>Ambient temperature (operation)</b>	-40 °C ... 60 °C (observe derating)
<b>Ambient temperature (storage/transport)</b>	-40 °C ... 85 °C
<b>Max. permissible relative humidity (operation)</b>	75 % (on average, 85% infrequently, non-condensing)
<b>Max. permissible humidity (storage/transport)</b>	75 % (on average, 85% infrequently, non-condensing)
<b>Shock</b>	15g
<b>Vibration (operation)</b>	10 Hz ... 150 Hz, 2g
<b>Maximum altitude</b>	≤ 2000 m (Above sea level)

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## Technical data

### Input data

Rated control circuit supply voltage $U_s$	24 V DC -20 % / +25 % (at A1)
Rated control supply current $I_s$	typ. 35 mA
Power consumption at $U_s$	typ. 840 mW
Inrush current	150 mA ( $\Delta t = 25$ ms at $U_s$ )
Current consumption	< 2 mA (with $U_s/I_x$ to S35)
Voltage at input/start and feedback circuit	24 V DC -20 % / +25 %
Typical response time	< 150 ms (automatic start)
Typ. starting time with $U_s$	< 250 ms (when controlled via A1)
Typical release time	< 20 ms (when controlled via A1)
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	2.5 ms (at A1 in the event of voltage dips at $U_s$ )
Filter time	max. 3 ms (at A1; test pulse width; blanking pulses/dark test)
Filter time	1 s (at A1; test pulse rate; blanking pulses/dark test)
Filter time	Where test pulse width < 1 ms: test pulse rate = 5 x test pulse width
Filter time	max. 1 ms (at A1; test pulse width; switch-on pulses/light test)
Filter time	100 ms (at A1; test pulse rate; switch-on pulses/light test)
Filter time	Unless switch-on pulses/light tests are safety-related, they should be disabled.

### 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)
Output fuse	4 A gL/gG (for low-demand applications)

### Alarm outputs

Number of outputs	1 (digital, PNP)
Voltage	typ. 21 V DC (Voltage at terminal block "24V" - 3 V)
Current	max. 100 mA
Maximum inrush current	500 mA ( $\Delta t = 1$ ms at $U_s$ )
Short-circuit protection	Yes

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## Technical data

### General

<b>Relay type</b>	Electromechanical relay with forcibly guided contacts in accordance with IEC/EN 61810-3 (EN 50205)
<b>Mechanical service life</b>	10 x 10 <sup>6</sup> cycles
<b>Nominal operating mode</b>	100% operating factor
<b>Net weight</b>	69 g
<b>Mounting type</b>	DIN rail mounting
<b>Assembly instructions</b>	See derating curve
<b>Mounting position</b>	vertical or horizontal
<b>Degree of protection</b>	IP20
<b>Min. degree of protection of inst. location</b>	IP54
<b>Control</b>	single-channel
<b>Housing material</b>	PBT
<b>Housing color</b>	yellow

### Connection data

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

### Safety-related characteristic data

<b>Stop category</b>	0
<b>Designation</b>	IEC 61508 - High demand
<b>Safety Integrity Level (SIL)</b>	3 (4 A DC13; 5 A AC15; 8760 switching cycles/year)
<b>Designation</b>	IEC 61508 - Low demand
<b>Safety Integrity Level (SIL)</b>	3
<b>Designation</b>	EN ISO 13849
<b>Performance level (PL)</b>	e (4 A DC13; 5 A AC15; 8760 switching cycles/year)
<b>Category</b>	4
<b>Designation</b>	EN 62061
<b>Safety Integrity Level Claim Limit (SIL CL)</b>	3 (4 A DC13; 5 A AC15; 8760 switching cycles/year)

### Standards and Regulations

<b>Shock</b>	15g
<b>Designation</b>	Air clearances and creepage distances between the power circuits
<b>Standards/regulations</b>	DIN EN 50178
<b>Rated insulation voltage</b>	250 V AC

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## Technical data

### Standards and Regulations

<b>Rated insulation voltage</b>	250 V AC
<b>Rated surge voltage/insulation</b>	Safe isolation, reinforced insulation 6 kV between input circuit and enabling current path (13/14)Basic insulation 4 kV between all current paths and housing
<b>Degree of pollution</b>	2
<b>Overvoltage category</b>	III
<b>Vibration (operation)</b>	10 Hz ...150 Hz, 2g
<b>Conformance</b>	CE-compliant

### Environmental Product Compliance

<b>China RoHS</b>	Environmentally Friendly Use Period = 50
<b>China RoHS</b>	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Classifications

### eCl@ss

<b>eCl@ss 5.1</b>	27371901
<b>eCl@ss 6.0</b>	27371819
<b>eCl@ss 8.0</b>	27371819
<b>eCl@ss 9.0</b>	27371819

### ETIM

<b>ETIM 5.0</b>	EC001449
<b>ETIM 6.0</b>	EC001449

### UNSPSC

<b>UNSPSC 13.2</b>	39121501
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## Approvals

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

### Approval details

**UL Listed** 

**cUL Listed** 

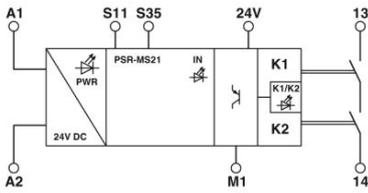
**Functional Safety**

**cULus Listed** 

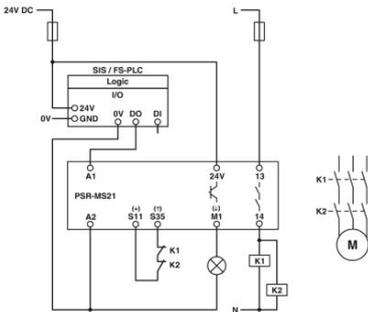
## Drawings

# Safety relays - PSR-MS21-1NO-1DO-24DC-SC - 2702192

## Block diagram



## Circuit diagram



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