

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



2702192

<https://www.phoenixcontact.com/de/produkte/2702192>

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Safety relay for failsafe controllers up to SILCL 3, Cat. 4, PL e, 1-channel operation, autostart, 1 enabling current path,  $U_S = 24$  V DC in accordance with IEC 61131-6, fixed screw terminal block

## Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with IEC 62061
- Low housing width of just 6.8 mm
- 1-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

## Commercial Data

Item number	2702192
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	G1 - Relais
Product Key	DNA171
Catalog Page	Page 219 (C-6-2019)
GTIN	4055626010199
Weight per Piece (including packing)	83,4 g
Weight per Piece (excluding packing)	69 g
Customs tariff number	85371098
Country of origin	DE

## Technical Data

### Product properties

Product type	Safety relays
Application	Controllers
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

### Insulation characteristics

Overvoltage category	III
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### Times

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)
Restart time	< 1 s
Recovery time	< 500 ms

### Electrical properties

Maximum power dissipation for nominal condition	3.1 W (at $U_s = 30$ V, $I_L^2 = 36$ A <sup>2</sup> )
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	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

### Supply

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 % (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 $U_s$ )
Filter time	2.5 ms (at A1 in the event of voltage dips at $U_s$ ) max. 3 ms (at A1; test pulse width; blanking pulses/dark test) 1 s (at A1; test pulse rate; blanking pulses/dark test) Where test pulse width $\leq 1$ ms: test pulse rate = 5 x test pulse width max. 1 ms (at A1; test pulse width; switch-on pulses/light test) 100 ms (at A1; test pulse rate; switch-on pulses/light test) Unless switch-on pulses/light tests are safety-related, they should be disabled.
Protective circuit	Surge protection; Suppressor diode Protection against polarity reversal for rated control circuit supply voltage

### Input data

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## Digital

Inrush current	< 10 mA (with $U_s/I_x$ to S35)
Max. permissible overall conductor resistance	150 $\Omega$
Voltage at input/start and feedback circuit	24 V DC -20 % / +25 %
Current consumption	< 2 mA (with $U_s/I_x$ to S35)

## Output data

### Relay: 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)
Switching capacity	min. 60 mW
Inrush current	min. 3 mA max. 6 A
Limiting continuous current	6 A (observe derating)
Sq. Total current	36 A <sup>2</sup> (observe derating)
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)

### Signal

Output description	non-safety-related
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

## Connection data

### Connection technology

pluggable	no
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### Conductor connection

Connection method	Screw connection
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	12 mm
Screw thread	M3

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## LED signaling

Status display	2 x green LEDs
Operating voltage display	1 x green LED

## Dimensions

Width	6.8 mm
Height	93.1 mm
Depth	102.5 mm

## Material specifications

Housing material	PBT
Color (Housing)	yellow (1018)

## Characteristics

### Safety data

Stop category	0
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### Safety data: EN ISO 13849

Category	4
Performance level (PL)	e (4 A DC13; 5 A AC15; 8760 switching cycles/year)

### Safety data: IEC 61508 - High demand

Equipment type	Type A
Safety Integrity Level (SIL)	3 (4 A DC13; 5 A AC15; 8760 switching cycles/year)
Probability of a hazardous failure per hour (PFH <sub>D</sub> )	1.00 x 10 <sup>-9</sup> (4 A DC13; 5 A AC15; 8760 switching cycles/year)
Proof test interval	240 Months
Duration of use	240 Months

### Safety data: IEC 61508 - Low demand

Equipment type	Type A
Safety Integrity Level (SIL)	3
Probability of a hazardous failure on demand (PFD <sub>AVG</sub> )	1.96 x 10 <sup>-4</sup>
Proof test interval	52 Months

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-40 °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

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Vibration (operation)	10 Hz ... 150 Hz, 2g
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## Approval data

CE

Certificate	CE-compliant
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## Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	DIN EN 50178
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## Mounting

Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Mounting position	vertical or horizontal

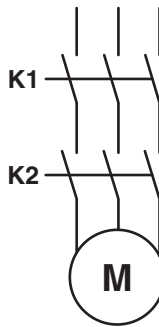
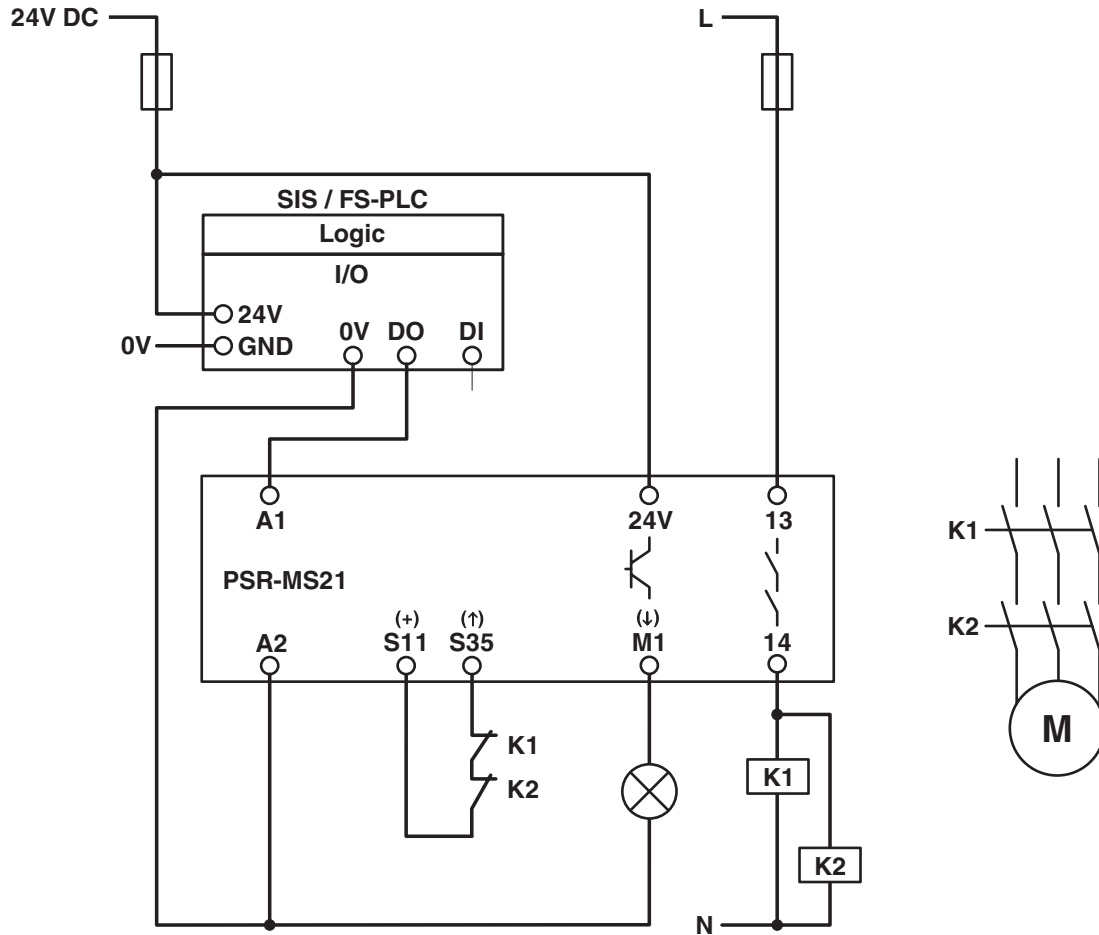
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## Drawings

Circuit diagram

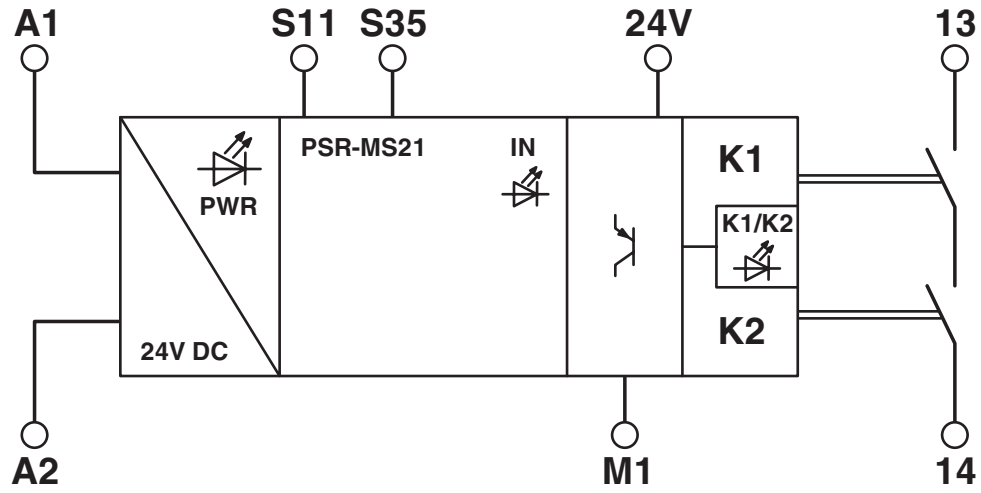


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Block diagram




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## Approvals

 **UL Listed**  
Approval ID: FILE E 140324

 **cUL Listed**  
Approval ID: FILE E 140324

 **Functional Safety**  
Approval ID: 44-205-15124301

 **Functional Safety**  
Approval ID: 44-780-15124301

**cULus Listed**

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## Classifications

### ECLASS

ECLASS-9.0	27371819
ECLASS-10.0.1	27371819
ECLASS-11.0	27371819

### ETIM

ETIM 8.0	EC001449
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### UNSPSC

UNSPSC 21.0	39122200
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## Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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## Accessories

### Zack Marker strip, flat

Zack Marker strip, flat - ZBF 6:UNBEDRUCKT - 0808710

<https://www.phoenixcontact.com/de/produkte/0808710>



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

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