

# PSR-MS40-1NO-1DO-24DC-SC - Safety relays



2904954

<https://www.phoenixcontact.com/in/products/2904954>

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

## Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061
- Low housing width of just 6.8 mm
- 2 channel control
- 1 enabling current path, 1 digital signal output
- Automatic activation

## Commercial data

Item number	2904954
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DNA
Product key	DNA171
Catalog page	Page 217 (C-6-2019)
GTIN	4046356905039
Weight per piece (including packing)	88.7 g
Weight per piece (excluding packing)	69 g
Customs tariff number	85371098
Country of origin	DE

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## Technical data

### Notes

#### Note on application

Note on application	Only for industrial use
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### Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop Safety door Transponder
Control	1 and 2 channel
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

### Insulation characteristics

Overvoltage category	III
Degree of pollution	2

### Times

Typical response time	< 175 ms
Typical release time	< 20 ms (when controlled via A1 or S12 and S22.)
Restart time	1 s (Boot time, after switching on the supply voltage)
Recovery time	< 500 ms

### Electrical properties

Maximum power dissipation for nominal condition	3 W ( $U_S = 26.4 \text{ V}$ , $I_L^2 = 36 \text{ A}^2$ , $P_{\text{Total max}} = 1.2 \text{ W} + 1.8 \text{ W}$ )
Nominal operating mode	100% operating factor
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

### Supply

Designation	A1/A2
Rated control circuit supply voltage $U_S$	20.4 V DC ... 26.4 V DC
Rated control circuit supply voltage $U_S$	24 V DC -15 % / +10 %
Rated control supply current $I_S$	typ. 42 mA
Power consumption at $U_S$	typ. 1 W
Inrush current	4.5 A ( $\Delta t < 120 \mu\text{s}$ at $U_S$ )
Filter time	1 ms (at A1 in the event of voltage dips at $U_S$ )
Protective circuit	Surge protection; Suppressor diode Serial protection against polarity reversal

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## Input data

Digital: Sensor circuit (S12, S22)

Description of the input	safety-related sensor inputs
Input voltage range "0" signal	0 V DC ... 5 V DC (for safe Off; at S12)
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Input current range "0" signal	0 mA ... 2 mA (for safe Off; at S12)
Inrush current	< 20 mA (typ. with $U_S$ at S12)
	< 5 mA (typ. with $U_S$ at S22)
	> -15 mA (typ. with $U_S$ at S22/0 V)
Filter time	max. 1.5 ms (Test pulse width of low test pulses)
	Test pulse rate = 5 x Test pulse width
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 5 mA (with $U_S/I_x$ to S12)
	< 5 mA (with $U_S/I_x$ to S22/ $U_S$ )
	> -5 mA (with $U_S/I_x$ to S22/0V)

Digital: Start circuit (S35)

Description of the input	non-safety-related
Number of inputs	1
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	< 10 mA
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 10 mA

## Output data

Relay: Enabling current path (13/14)

Output description	safety-related N/O contacts
Number of outputs	1 (undelayed)
Contact switching type	1 enabling current path
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC
Switching capacity	min. 60 mW
Inrush current	min. 3 mA
	max. 6 A
Limiting continuous current	6 A
Sq. Total current	36 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.1 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

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Signal: M1

Output description	non-safety-related
Number of outputs	1 (digital, PNP)
Voltage	22 V DC ( $U_s - 2 V$ )
Current	max. 100 mA
Maximum inrush current	500 mA ( $\Delta t = 1 \text{ ms}$ at $U_s$ )
Protective circuit	Suppressor diode

## Connection data

Connection technology

pluggable	no
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Conductor connection

Connection method	Screw connection
Conductor cross section rigid	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	26 ... 12
Stripping length	12 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

## Signaling

Status display	2 x LED (green)
Operating voltage display	1 x LED (green)

## Dimensions

Width	6.8 mm
Height	93.1 mm
Depth	102.5 mm

## Material specifications

Color (Housing)	yellow (RAL 1018)
Housing material	PBT

## 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

Safety Integrity Level (SIL)	3
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3
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Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3
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## 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
Vibration (operation)	10 Hz ... 150 Hz, amplitude 0.15 mm, 2g

## Approvals

CE

Certificate	CE-compliant
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## Mounting

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

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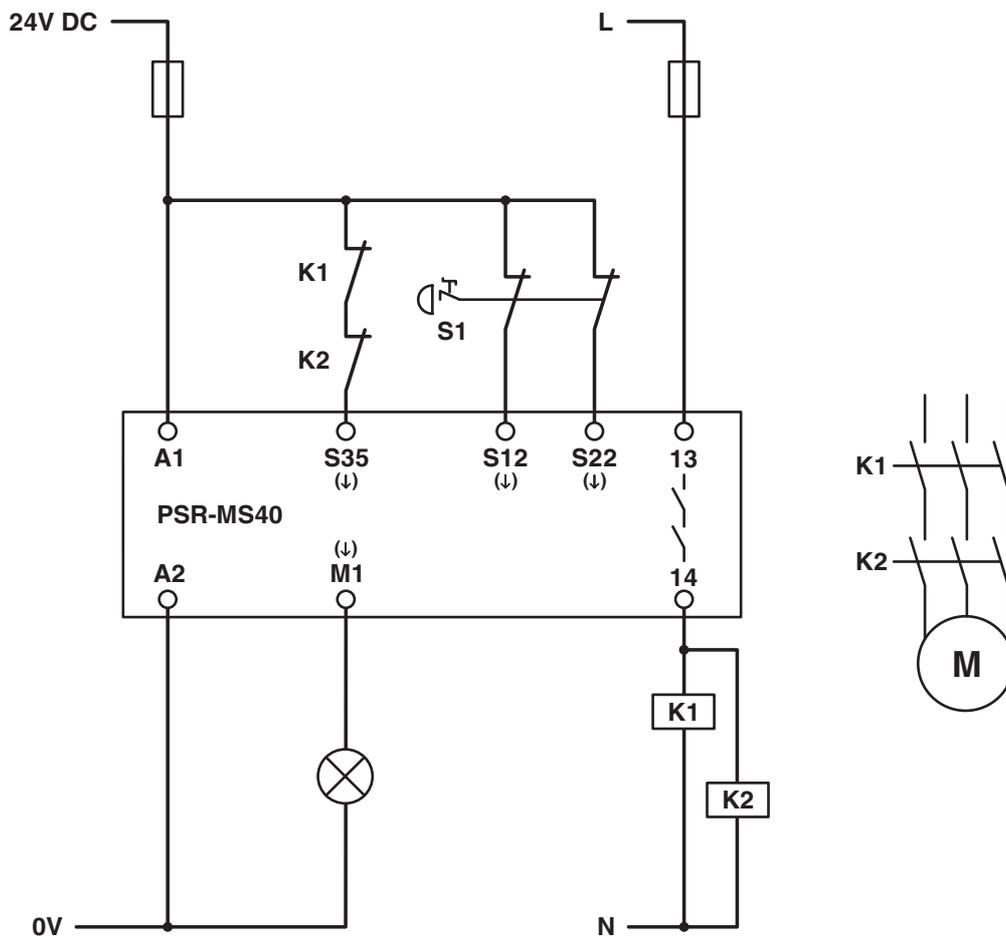


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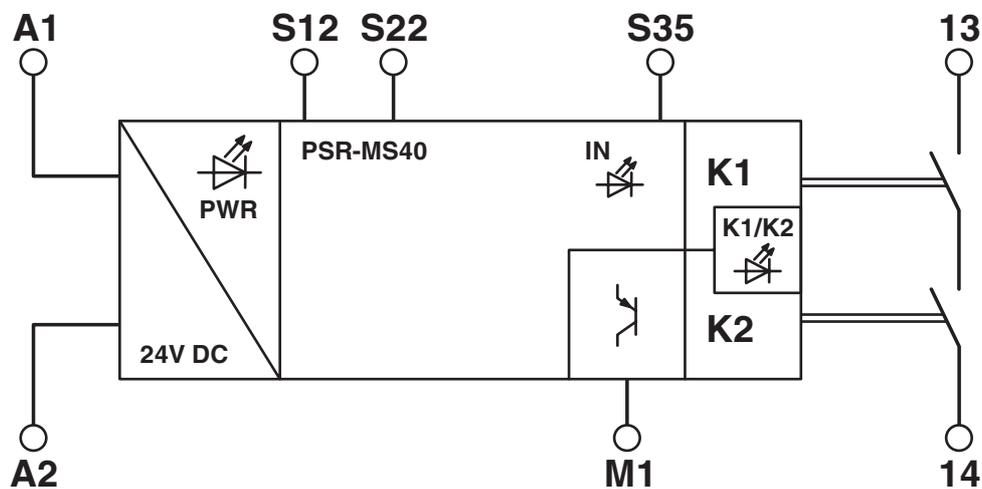
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## Drawings

Circuit diagram

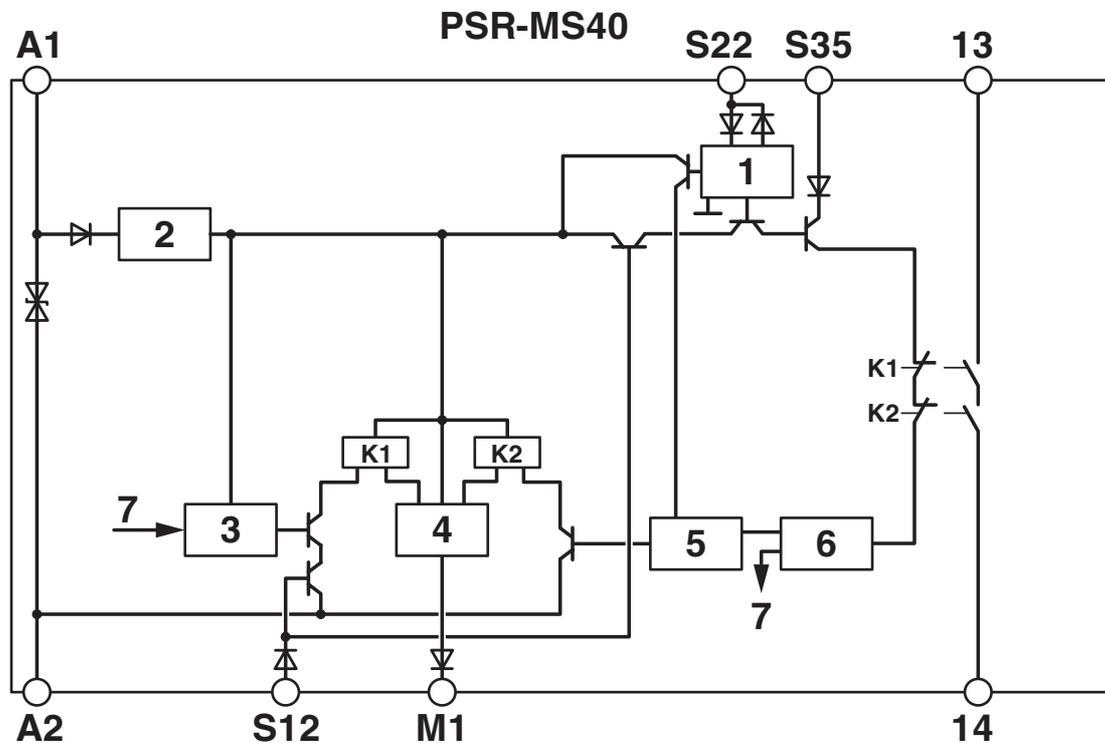


Block diagram



Block diagram

Block diagram



**Key:**

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

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/2904954>



### Functional Safety

Approval ID: 44 205 13755202



### cULus Listed

Approval ID: E140324



### Functional Safety

Approval ID: 44 780 13755207

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## Classifications

### ECLASS

ECLASS-13.0

27371819

### ETIM

ETIM 9.0

EC001449

### UNSPSC

UNSPSC 21.0

39122200

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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	8892ce87-8454-4a60-af66-c5a8ff3f4d89

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