

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



2904954

<https://www.phoenixcontact.com/us/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	DN01
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

Product properties

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

Times

Typical response time	< 175 ms
Typ. starting time with U_s	< 250 ms (when controlled via A1)
Typical release time	< 20 ms (when controlled via A1 or S12 and S22.)
Recovery time	< 500 ms

Electrical properties

Maximum power dissipation for nominal condition	3 W ()
Nominal operating mode	100% operating factor

Air clearances and creepage distances between the power circuits

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

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 ($\Delta t < 120 \mu s$ 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

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 current range "0" signal	0 mA ... 2 mA (for safe Off; at S12)

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Inrush current	< 20 mA (with U_s/I_x to S12)
	< 5 mA (with U_s/I_x to S22/ U_s)
	> -15 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
Max. permissible overall conductor resistance	150 Ω
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 Ω
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 ₂
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 ² (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	6 A gL/gG (N/O contact)
	4 A gL/gG (for low-demand applications)

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 (Δt = 1 ms at U_s)

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Short-circuit protection	no
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Connection data

Connection technology

pluggable	no
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Conductor connection

Connection method	Screw connection
Conductor cross section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
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 green LEDs
Operating voltage display	1 x green LED

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

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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, 2g

Approvals

CE

Certificate	CE-compliant
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Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	EN 60947-1
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Mounting

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

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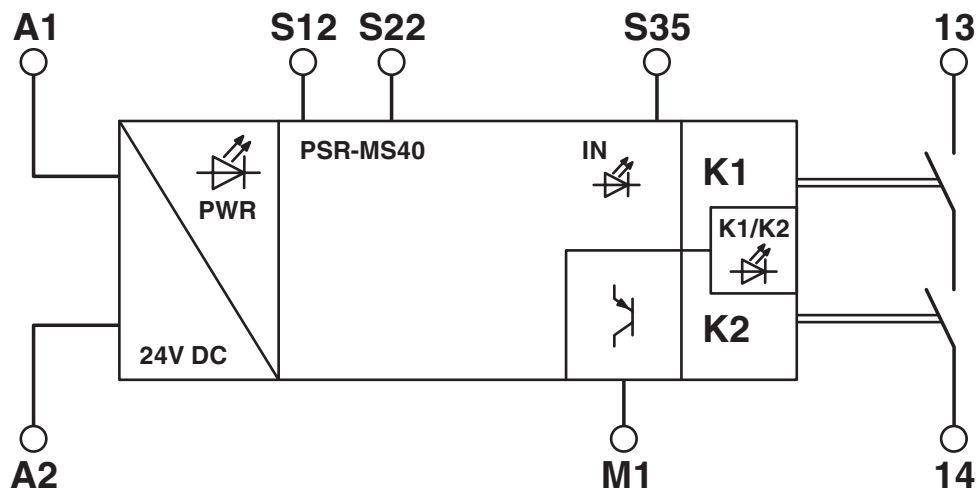


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Drawings

Block diagram



Block diagram

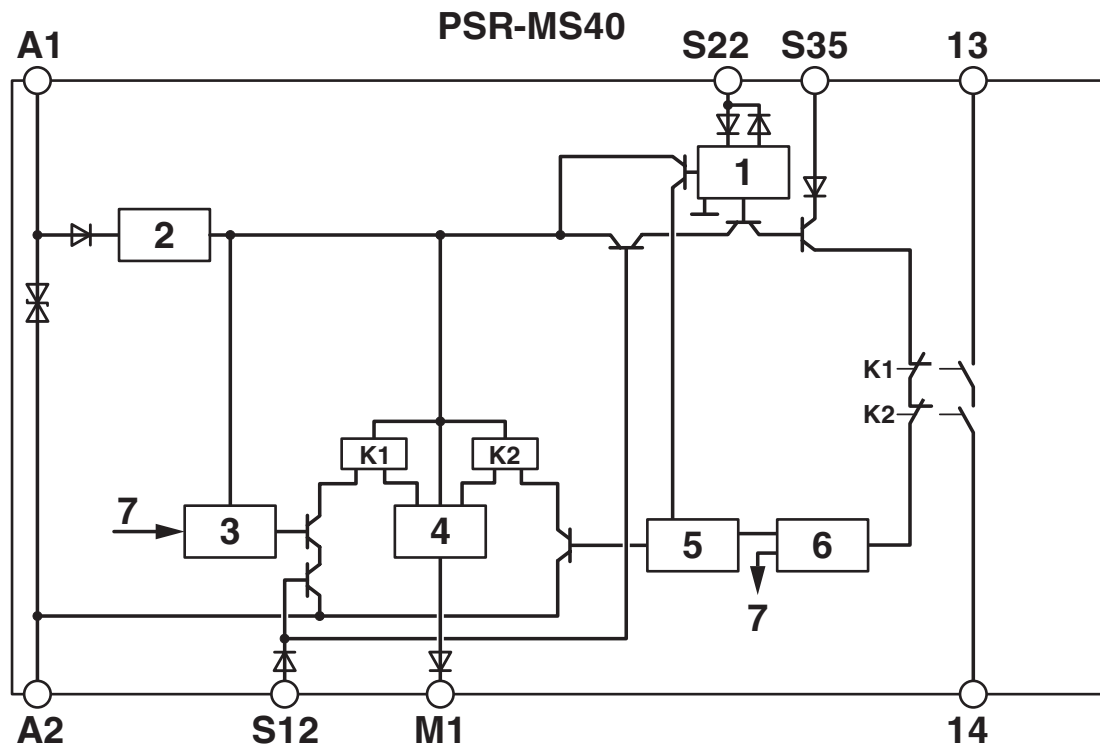
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Block diagram



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

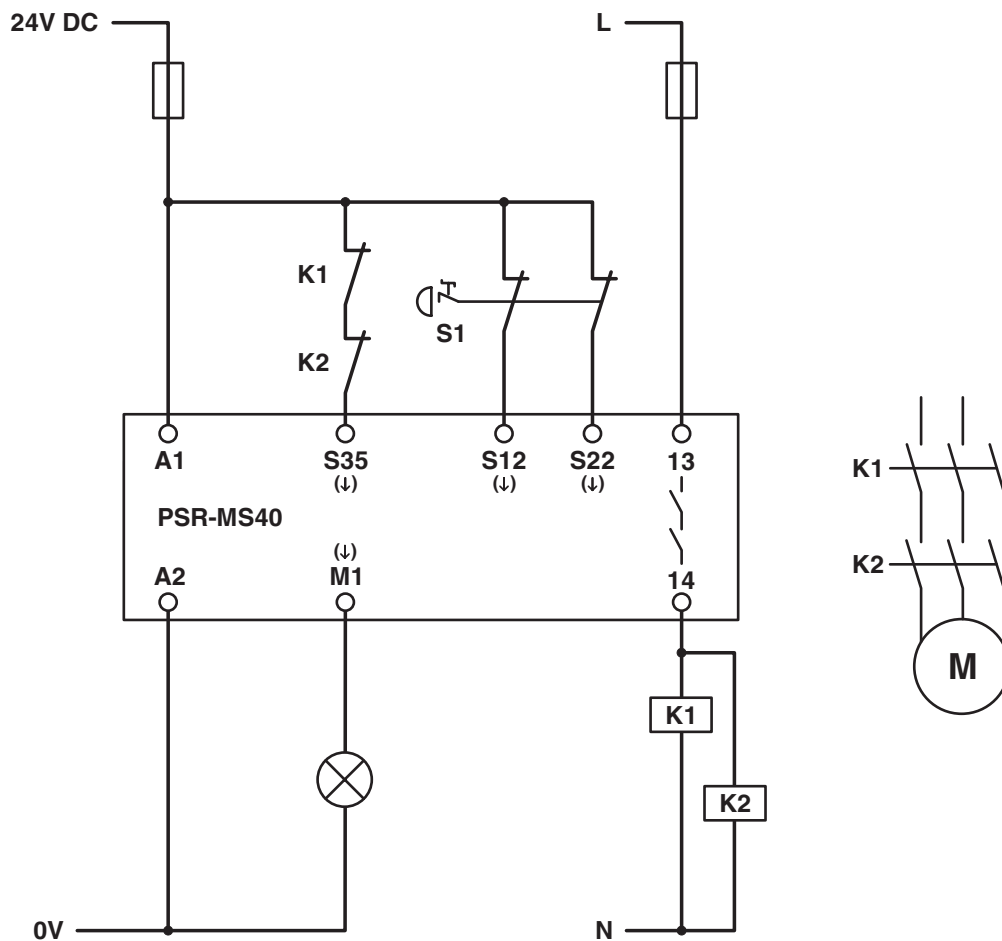
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Circuit diagram



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Approvals

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	EAC Approval ID: RU C-DE.A*30.B.01082
	UL Listed Approval ID: FILE E 140324
	cUL Listed Approval ID: FILE E 140324
	Functional Safety Approval ID: 44-205-13755202
cULus Listed	

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Classifications

ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	27371819

ETIM

ETIM 9.0	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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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com