

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



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

## Your advantages

- Depending on the application, up to cat. 4/PL e in accordance with ISO 13849-1, SIL CL 3 in accordance with EN IEC 62061
- Low housing width of just 6.8 mm
- 1-channel control
- 1 enabling current path, 1 digital signal output
- Automatic activation

## Commercial data

Item number	2904950
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA171
Catalog page	Page 215 (C-6-2019)
GTIN	4046356904988
Weight per piece (including packing)	87.7 g
Weight per piece (excluding packing)	69 g
Customs tariff number	85371098
Country of origin	DE

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

## Technical data

### Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop
	Safety door
	Solenoid switch
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)
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 (S11, S12)

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)

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

Inrush current	< 20 mA (with $U_s/I_x$ to S12)
Filter time	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
Max. permissible overall conductor resistance	150 $\Omega$
Current consumption	< 5 mA (with $U_s/I_x$ to S12)

## 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 (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: 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 ( $\Delta t = 1$ ms at $U_s$ )
Short-circuit protection	no

## Connection data

### Connection technology

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

pluggable	no
-----------	----

## 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 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
---------------	---

### Safety data: EN ISO 13849

Category	1 (up to Cat. 4 depending on the application)
Performance level (PL)	c (up to PL e depending on the application)

### Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
------------------------------	--

### Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
------------------------------	--

### Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3 (up to SIL 3 depending on the application)
------------------------------	--

## 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)

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

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
-------------	--------------

## Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	EN 60947-1
-----------------------	------------

## Mounting

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

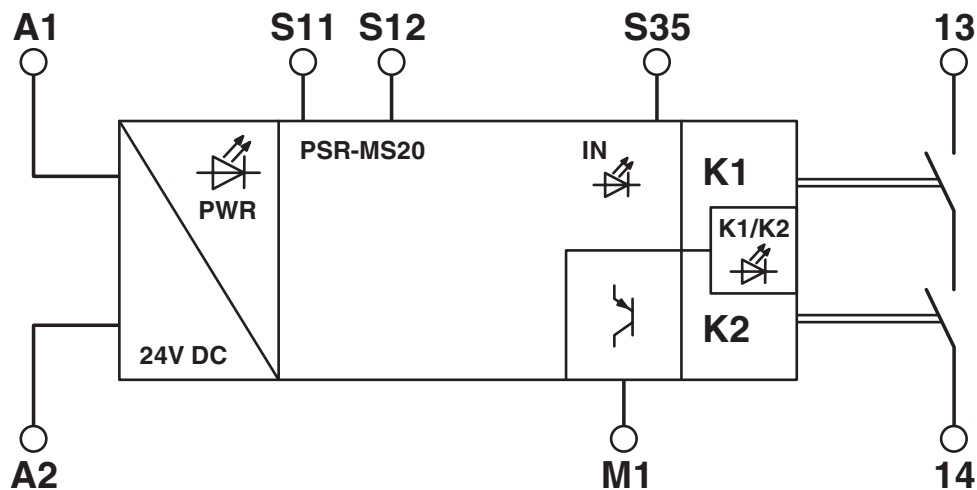
# PSR-MS20-1NO-1DO-24DC-SC - Safety relays

2904950

<https://www.phoenixcontact.com/us/products/2904950>

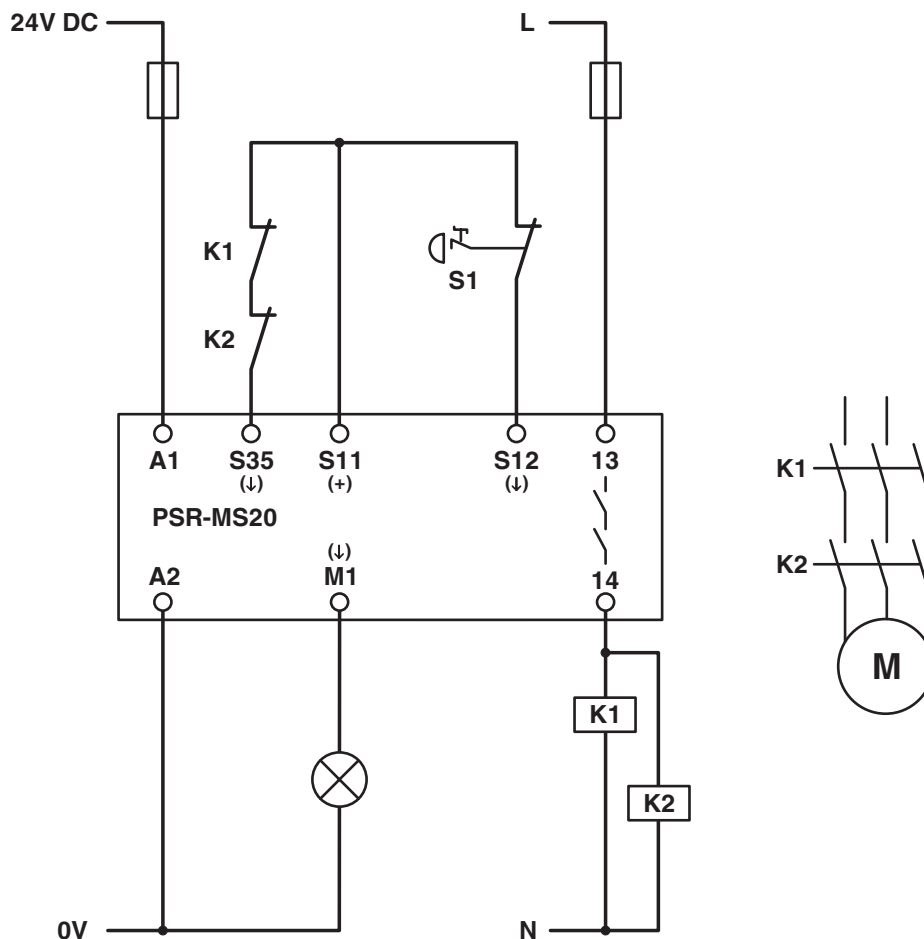
## Drawings

Block diagram



Block diagram

Application drawing



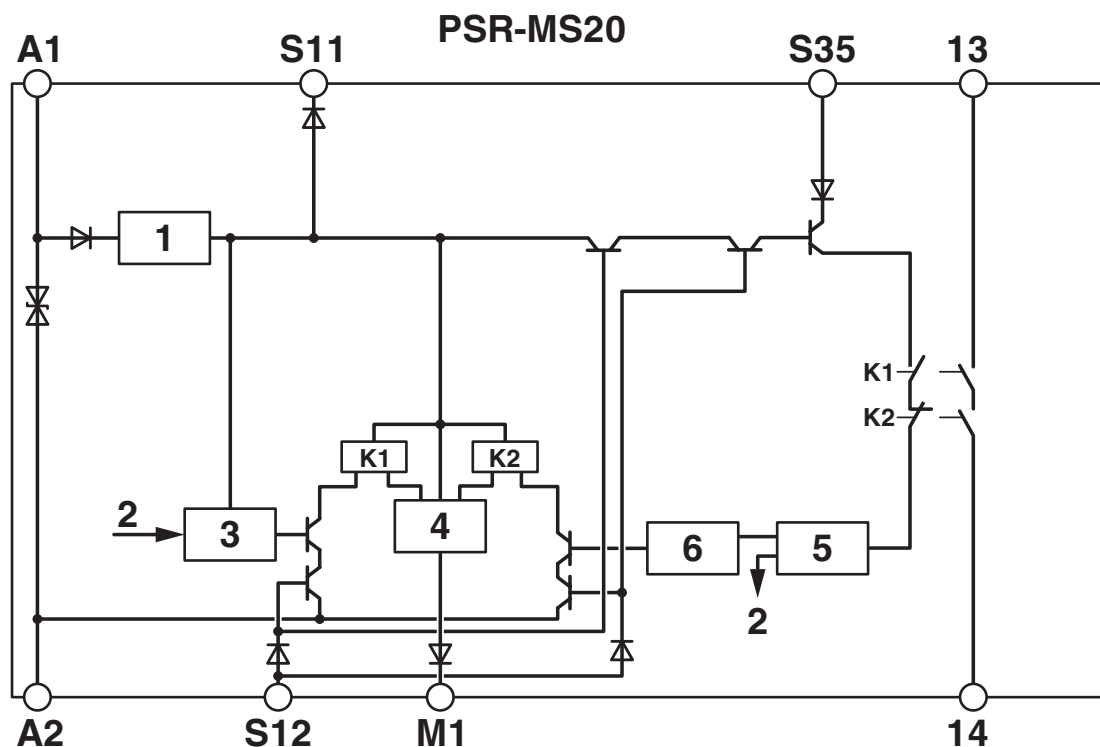
# PSR-MS20-1NO-1DO-24DC-SC - Safety relays



2904950

<https://www.phoenixcontact.com/us/products/2904950>

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

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





2904950


<https://www.phoenixcontact.com/us/products/2904950>


## Approvals


To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2904950>

**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

**Functional Safety**  
Approval ID: 44-780-13755207

**cULus Listed**



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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

## Classifications

### ECLASS

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

### ETIM

ETIM 9.0	EC001449
----------	----------

### UNSPSC

UNSPSC 21.0	39122200
-------------	----------

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

## 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"

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

## Accessories

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

0808710

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

---

### CRIMPFOX 6 - Crimping pliers

1212034

<https://www.phoenixcontact.com/us/products/1212034>



Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 mm<sup>2</sup> ... 6.0 mm<sup>2</sup>, lateral entry, trapezoidal crimp

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

## PSR-ESS-ACC-CB1-C3 - Module holder

1221747

<https://www.phoenixcontact.com/us/products/1221747>



Module holder for modular emergency stop switches, connects the contact block and actuator with bayonet lock, suitable for 3 elements

---

## PSR-ESS-ACC-CB1-NC-SC - Contact module

1221752

<https://www.phoenixcontact.com/us/products/1221752>



Contact module for modular emergency stop switches with force-guided N/C contact for safety-related shutdown, in conjunction with appropriate evaluation unit suitable for use up to PL e (EN ISO 13849-1), SIL 3 (EN IEC 62061)

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



2904950

<https://www.phoenixcontact.com/us/products/2904950>

## PSR-ESS-M0-H110 - Actuator

1221757

<https://www.phoenixcontact.com/us/products/1221757>



Actuator with anti-lock collar for modular emergency stop switches, for combination with module holder and contact module as a functional unit, panel installation, bayonet lock

---

Phoenix Contact 2024 © - all rights reserved

<https://www.phoenixcontact.com>

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