

# PSR-MC30-2NO-1DO-24DC-SC - Safety relays



2700498

<https://www.phoenixcontact.com/ae/products/2700498>

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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 or manual, monitored start, cross-circuit detection, 2 enabling current paths,  $U_S = 24 \text{ V DC}$ , plug-in 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
- Cross-circuit detection
- Low housing width of just 12.5 mm
- Manually monitored and automatic activation in a single device
- 2 enabling current paths, 1 digital signal output
- 2 channel control

## Commercial data

Item number	2700498
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DNA
Product key	DNA181
Catalog page	Page 221 (C-6-2019)
GTIN	4046356912860
Weight per piece (including packing)	169 g
Weight per piece (excluding packing)	130.5 g
Customs tariff number	85371098
Country of origin	DE

## Technical data

### Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop
	Safety door
	Solenoid switch
Mechanical service life	approx. $10^7$ cycles
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

### Times

Typical response time	< 175 ms (automatic start)
	< 175 ms (manual, monitored start)
Typ. starting time with $U_S$	< 250 ms (when controlled via A1)
Typical release time	< 20 ms (on demand via A1)
	< 20 ms (on demand via the sensor circuit)
Restart time	< 1 s (Boot time, after switching on the supply voltage)
Recovery time	< 500 ms (following demand of the safety function)

### Electrical properties

Maximum power dissipation for nominal condition	5.5 W ( $U_S = 26.4$ V, $I_L^2 = 72$ A <sup>2</sup> , $P_{Total\ max} = 1.9$ W + 3.6 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	See section "Insulation coordination"

### 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. 65 mA (at $U_S$ )
Power consumption at $U_S$	typ. 1.56 W
Inrush current	typ. 4 A ( $\Delta t = 200$ $\mu$ s at $U_S$ )
Filter time	1 ms (in the event of voltage dips at $U_S$ )
Protective circuit	Serial protection against polarity reversal; Suppressor diode

### Input data

#### Digital: Sensor circuit (S12, S22)

Description of the input	safety-related sensor inputs
	NPN (S12), NPN/PNP (S22)
Number of inputs	2

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Input voltage range "0" signal	< 5 V (S12)
	Input S22 can interpret low-resistance outputs of a PLC as a continuous HIGH signal.
Input voltage range "1" signal	20.4 V ... 26.4 V
Input current range "0" signal	< 2 mA (S12)
	0 mA ... 2 mA (S22)
Inrush current	< 20 mA (Typically with $U_S$ at S12)
	< 5 mA (typically with $U_S$ at S22/24 V)
	> -15 mA (typically with $U_S$ at S22/0 V)
Filter time	max. 1.5 ms (at S12, S22; test pulse width)
	min. 7.5 ms (at S12, S22; test pulse rate)
Concurrency	$\infty$
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 5 mA (Typically with $U_S$ at S12)
	< 5 mA (typically with $U_S$ at S22/24 V)
	> -5 mA (typically with $U_S$ at S22/0 V)

## Digital: Start circuit (S34)

Description of the input	non-safety-related
	NPN/PNP
Number of inputs	1
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	max. 200 mA (typically with $U_S$ )
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit	Suppressor diode
Current consumption	< 10 mA (at S34/24 V)
	> -5 mA (at S34/0 V)

## Output data

### Relay: Enabling current paths (13/14, 23/24)

Output description	safety-related N/O contacts
Number of outputs	2 (undelayed)
Contact switching type	2 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 12 V
	max. 250 V AC/DC (Observe the load curve)
Switching capacity	min. 60 mW
Inrush current	min. 3 mA
	max. 6 A
Switching capacity in accordance with IEC 60947-5-1	5 A (AC15)
	4 A (DC13)
Limiting continuous current	6 A (observe derating)
Sq. Total current	72 A <sup>2</sup> (observe derating)

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Switching frequency	0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG
	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 <sub>s</sub> - 2 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 1 ms at U <sub>s</sub> )
Switching frequency	0.5 Hz (Resistive, inductive, capacitive)
Protective circuit	Suppressor diode
Short-circuit protection	no

## Connection data

Connection technology

pluggable	yes
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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	24 ... 12
Stripping length	7 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

## Signaling

Status display	3 x green LED
Operating voltage display	1 x green LED

## Dimensions

Width	12.5 mm
Height	112.2 mm
Depth	114.5 mm

## Material specifications

Housing material	Polyamide
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## Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

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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
Safety data: IEC 61508 - Low demand	
Safety Integrity Level (SIL)	3
Safety data: EN IEC 62061	
Safety Integrity Level (SIL)	3

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-40 °C ... 55 °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

Identification	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
Connection method	Screw connection

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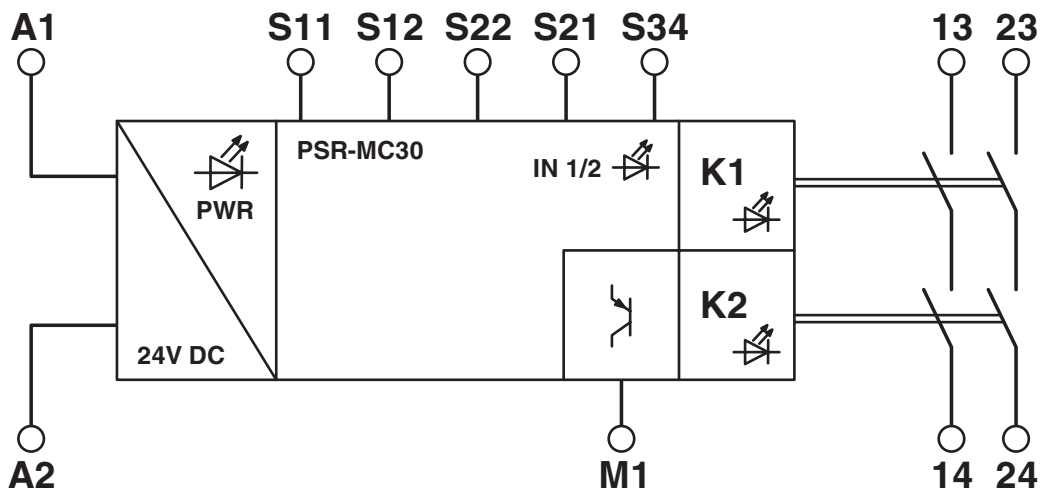


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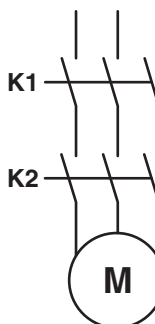
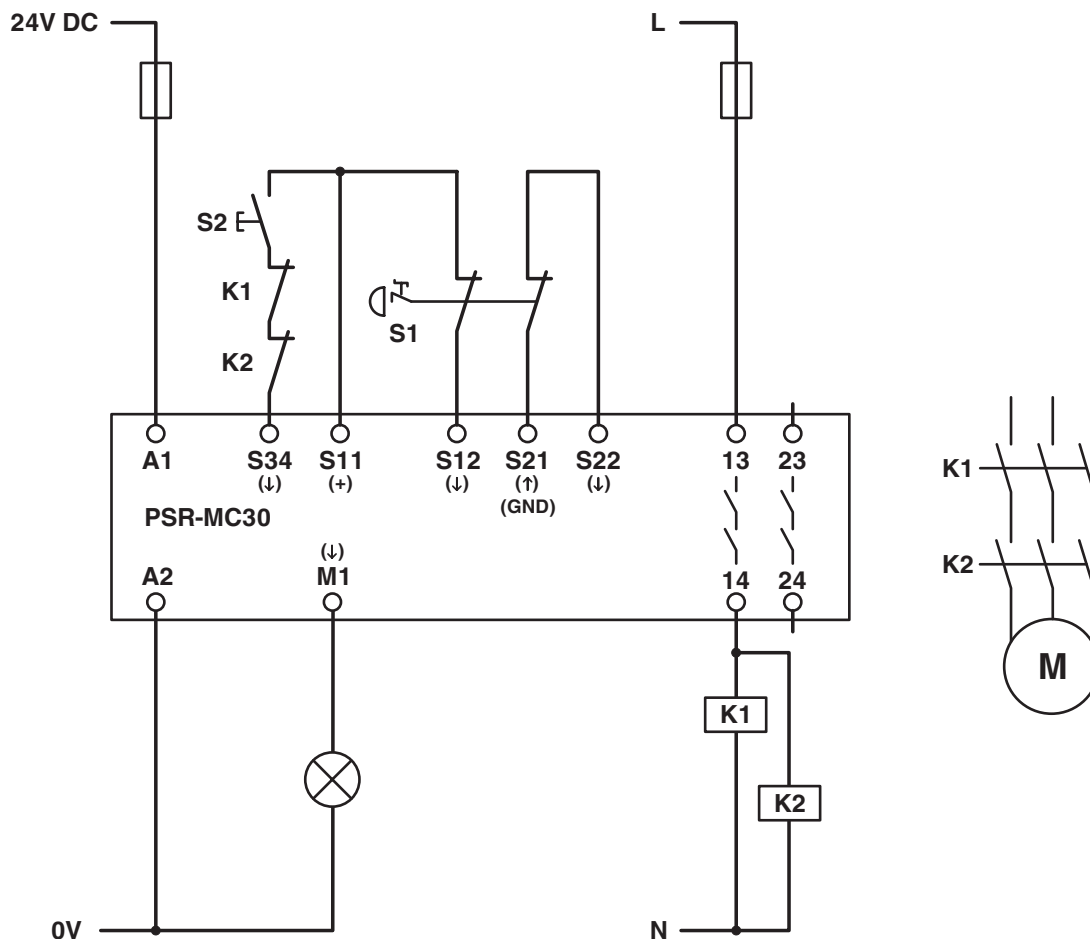
## Drawings

Block diagram



Block diagram

Circuit diagram



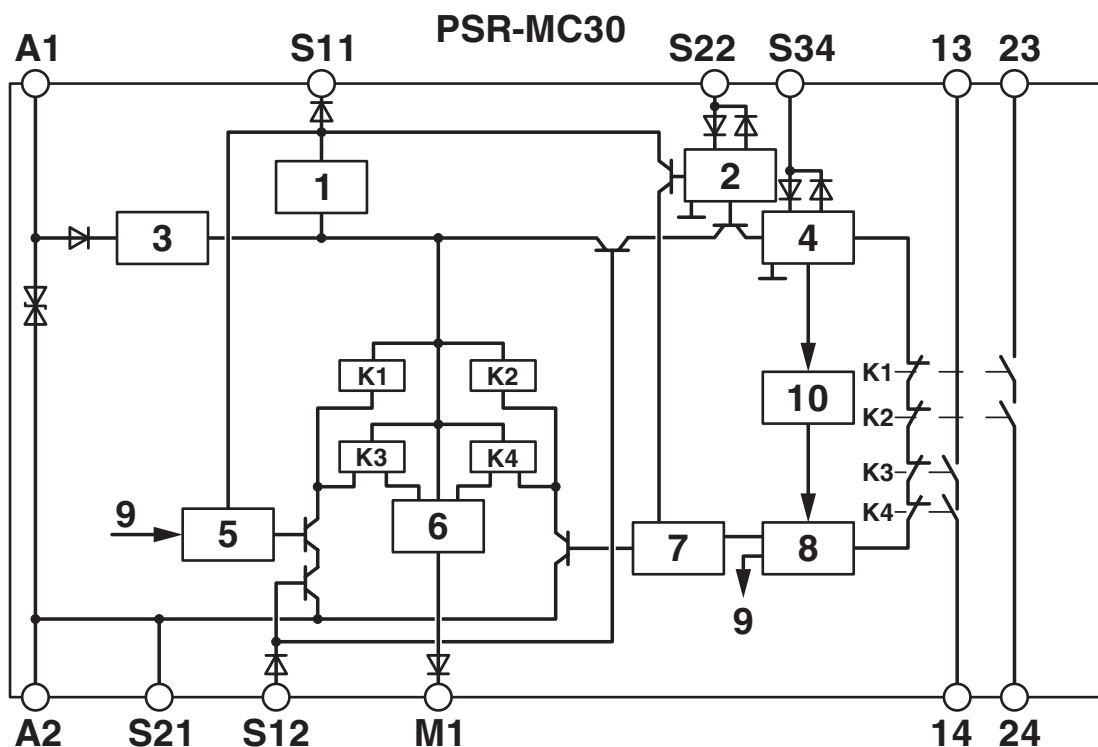
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Block diagram



## Key:

- 1 = Current limitation
- 2 = Input circuit
- 3 = Voltage limitation
- 4 = Start circuit
- 5 = Control circuit channel 1
- 6 = Control circuit signal output
- 7 = Control circuit channel 2
- 8 = Start channel 1 and 2
- 9 = Channel 1
- 10 = Diagnostics
- K1, K2 ... K4 = Force-guided elementary relays

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/ae/products/2700498>



**EAC**

Approval ID: RU C-DE.A\*30.B.01082



**DNV GL**

Approval ID: TAA00002VZ



**UL Listed**

Approval ID: FILE E 140324



**cUL Listed**

Approval ID: FILE E 140324



**Functional Safety**

Approval ID: 44-205-13755201



**Functional Safety**

Approval ID: 44-780-13755201

**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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## Accessories

### CP-MSTB - Coding profile

1734634

<https://www.phoenixcontact.com/ae/products/1734634>

Coding profile, is inserted into the slot on the plug or inverted header, red insulating material



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### CR-MSTB - Coding section

1734401

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Coding section, inserted into the recess in the header or the inverted plug, red insulating material



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## CRIMPFOX 6 - Crimping pliers

1212034

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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

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