

# PSR-SPP- 24UC/ESA4/3X1/1X2/B - Safety relays



2963941

<https://www.phoenixcontact.com/us/products/2963941>

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Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e in accordance with EN ISO 13849, 2-channel operation, 3 enabling current paths, nominal input voltage: 24 V DC, pluggable Push-in terminal block

## Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with IEC 62061, SIL 3 in accordance with IEC 61508
- 2 channel control
- 3 enabling current paths, 1 signaling current path
- Manually monitored and automatic activation in a single device

## Commercial Data

Item number	2963941
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	DN01
Product Key	DNA113
Catalog Page	Page 21 (IF-2009)
GTIN	4017918904784
Weight per Piece (including packing)	192.3 g
Weight per Piece (excluding packing)	159.02 g
Customs tariff number	85371098
Country of origin	DE

## Technical Data

### Product properties

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

### Electrical properties

Maximum power dissipation for nominal condition	16.44 W ( $U_S = 26.4$ V, $I_L^2 = 72$ A <sup>2</sup> , $P_{Total\ max} = 2.04$ W + 14.4 W)
Nominal operating mode	100% operating factor

### Air clearances and creepage distances between the power circuits

Rated insulation voltage	250 V
Rated surge voltage/insulation	See section "Insulation coordination"

### Input data

#### General

Rated control circuit supply voltage $U_S$	24 V DC -15 % / +10 %
Power consumption at $U_S$	typ. 1.68 W (DC)
Rated control supply current $I_S$	typ. 70 mA
Input voltage range in reference to $U_N$	0.85 ... 1.1
Typical input current at $U_N$	70 mA DC (at $U_S$ )
Inrush current	< 3.5 A ( $\Delta t = 3$ ms at $U_S$ )
	< 100 mA ( $\Delta t = 500$ ms, with $U_S/I_x$ at S12)
	> -100 mA ( $\Delta t = 300$ ms, with $U_S/I_x$ at S22)
	< 6 mA (with $U_S/I_x$ to S34)
Current consumption	typ. 38 mA (S12)
	typ. -38 mA (S22)
	typ. 1 mA (with $U_S/I_x$ to S34)
Voltage at input/start and feedback circuit	approx. 24 V DC
Filter time	5 ms (at A1 in the event of voltage dips at $U_S$ )
	No test pulses permitted
Typical response time	150 ms (automatic start)
Typ. starting time with $U_S$	250 ms (with $U_S$ when controlled via A1)
Typical release time	20 ms (on demand via the sensor circuit)
	45 ms (on demand via A1)
Concurrence	$\infty$
Recovery time	1 s (following demand of the safety function)
	< 1 s (Boot time)
Protective circuit	Surge protection; Suppressor diode

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Max. permissible overall conductor resistance	approx. 50 Ω (Input and start circuits at U <sub>S</sub> )
Operating voltage display	Green LED
Status display	Green LED

## Output data

Contact switching type	3 enabling current paths
	1 signaling current path
Contact material	AgSnO <sub>2</sub> , + 0.2 μm Au
Maximum switching voltage	250 V AC
Minimum switching voltage	10 V AC/DC
Limiting continuous current	6 A (N/O contact)
Maximum inrush current	6 A
Inrush current, minimum	10 mA
Sq. Total current	72 A <sup>2</sup> (Enabling current paths)
	36 A <sup>2</sup> (Signaling current path 31/32)
Switching capacity min.	100 mW
Switching capacity in accordance with IEC 60947-5-1	DC13, enabling current paths
	AC15, enabling current paths
	2 A (DC13, signaling current paths)
	1.5 A (AC15, signaling current paths)
Output fuse	10 A gL/gG (Enabling current paths)
	4 A gL/gG (Low-demand enabling current paths)
	6 A gL/gG (Signaling current path)

## Connection data

### Connection technology

pluggable	yes
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### Conductor connection

Connection method	Push-in connection
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Dimensions

Width	22.5 mm
Height	112 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

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

## Safety data: IEC 61508 - High demand

Equipment type	Type A
Safety Integrity Level (SIL)	3
Probability of a hazardous failure per hour (PFH <sub>D</sub> )	$5.5 \times 10^{-10}$ (5 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> )	$1.37 \times 10^{-4}$
Proof test interval	66 Months
Duration of use	240 Months

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-20 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 70 °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

## Standards and regulations

### Air clearances and creepage distances between the power circuits

Standards/regulations	DIN 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	Push-in connection

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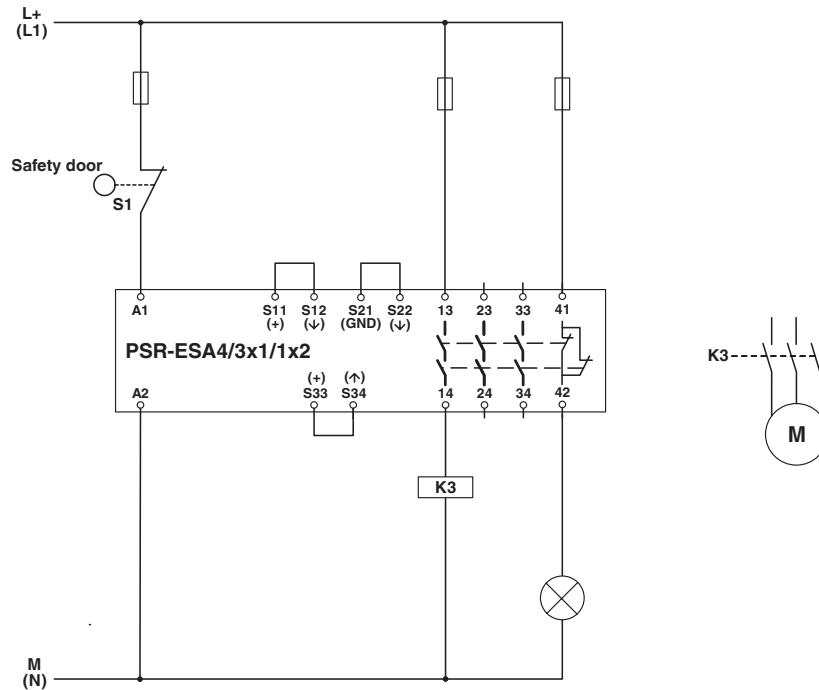


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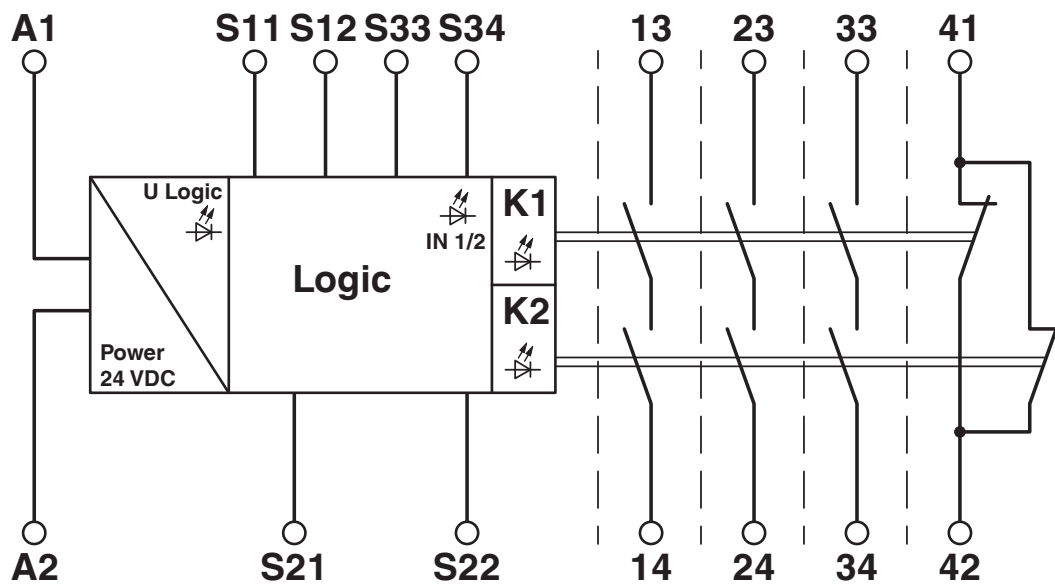
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## Drawings

Circuit diagram



Circuit diagram



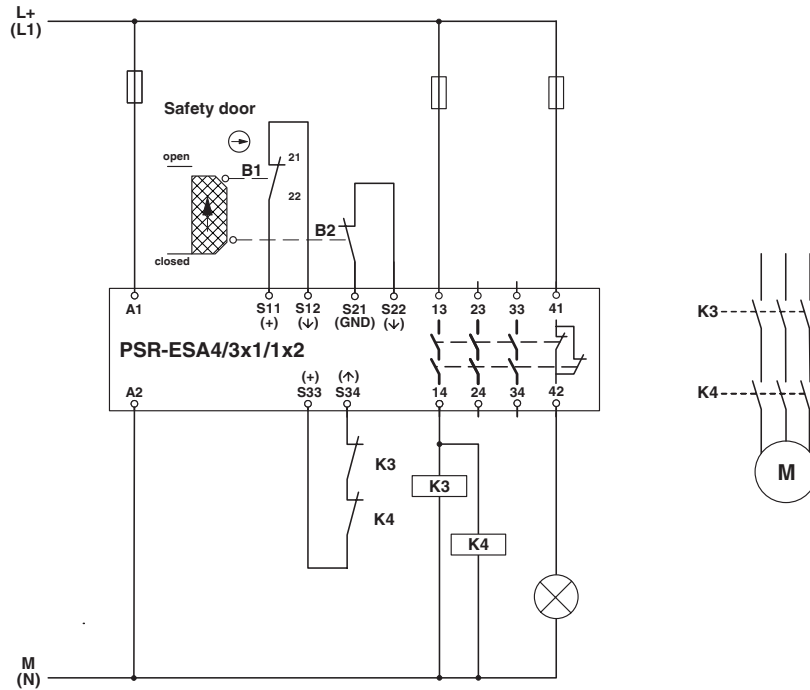
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Circuit diagram



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## Approvals

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**EAC**

Approval ID: EAC-Zulassung



**EAC**

Approval ID: TR\_TS\_D\_00573\_c



**UL Listed**

Approval ID: FILE E 140324



**cUL Listed**

Approval ID: FILE E 140324



**cUL Listed**

Approval ID: FILE E 140324



**UL Listed**

Approval ID: FILE E 140324



**Functional Safety**

Approval ID: 01/205/0652.05/22



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**Functional Safety**

Approval ID: 968/EZ 404.07/22



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## Classifications

### ECLASS

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

### ETIM

ETIM 8.0	EC001449
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### UNSPSC

UNSPSC 21.0	39122205
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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/us/products/1734634>

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



### CR-MSTB - Coding section

1734401

<https://www.phoenixcontact.com/us/products/1734401>

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



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