

# PSR-SPP- 24UC/ESA4/2X1/1X2 - Safety relays



2963938

<https://www.phoenixcontact.com/us/products/2963938>

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The figure shows a version with a screw connection

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, 2 enabling current paths, nominal input voltage: 24 V DC, plug-in Push-in 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, SIL 3 in accordance with IEC 61508
- 2 channel control
- 2 enabling current paths, 1 signaling current path
- Manually monitored and automatic activation in a single device

## Commercial data

Item number	2963938
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA113
GTIN	4017918904777
Weight per piece (including packing)	181.3 g
Weight per piece (excluding packing)	193.9 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
Control	2-channel
Mechanical service life	approx. $10^7$ cycles
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	typ. 150 ms (For $U_S$ autostart)
Typ. starting time with $U_S$	typ. 250 ms (with $U_S$ / when controlled via A1)
Typical release time	typ. 20 ms (At $U_S$ on demand via sensor circuit) typ. 45 ms (At $U_S$ /on demand via A1)
Restart time	< 1 s (Boot time)
Recovery time	1 s (following demand of the safety function)

### 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
Rated insulation voltage	250 V
Rated surge voltage/insulation	See data sheet, section "Insulation coordination".

### Supply

Rated control circuit supply voltage $U_S$	24 V DC -15 % / +10 %
Rated control supply current $I_S$	typ. 70 mA (at $U_S$ )
Power consumption at $U_S$	typ. 1.68 W
Inrush current	< 3.5 A (typ. with $U_S$ , $\Delta t = 3$ ms)
Filter time	5 ms (in the event of voltage dips at $U_S$ )
Protective circuit	Serial protection against polarity reversal Suppressor diode

### Input data

#### Digital: Logic (S12, S22)

Description of the input	safety-related
Number of inputs	2
Input voltage range "0" signal	0 V DC ... 5 V DC (S12)
Input voltage range "1" signal	20.4 V ... 26.4 V (S12)

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Input current range "0" signal	0 mA ... 2 mA
Inrush current	< 100 mA (typ. with U <sub>S</sub> at S12)
	> -100 mA (typ. with U <sub>S</sub> at S22)
Filter time	No test pulses permitted
Concurrency	∞
Max. permissible overall conductor resistance	50 Ω
Protective circuit	Suppressor diode
Current consumption	38 mA (typ. with U <sub>S</sub> at S12)
	-38 mA (typ. with U <sub>S</sub> at S22)

## Digital: Start circuit (S34)

Description of the input	non-safety-related
Number of inputs	1
Input voltage range "1" signal	20.4 V ... 26.4 V
Inrush current	< 6 mA (typ. with U <sub>S</sub> )
Filter time	No test pulses permitted
Max. permissible overall conductor resistance	50 Ω
Protective circuit	Suppressor diode
Current consumption	1 mA (typ. with U <sub>S</sub> )

## Output data

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

Output description	2 N/O contacts in series, safety-related, floating
Number of outputs	2
Contact switching type	2 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 10 V AC/DC
	max. 250 V AC/DC
Switching power	min. 100 mW
Inrush current	min. 10 mA
	max. 6 A
Switching capacity	5 A (AC15)
	6 A (DC13)
Limiting continuous current	6 A
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	10 A gL/gG (High demand)
	4 A gL/gG (Low demand)

### Relay: Signaling current path (31/32)

Output description	2 N/C contacts parallel, non-safety-related, floating
Number of outputs	1
Contact switching type	1 signaling current path

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Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 10 V AC/DC
	max. 250 V AC/DC
Switching power	min. 100 mW
Inrush current	min. 10 mA
	max. 6 A
Switching capacity	1.5 A (AC15)
	2 A (DC13)
Limiting continuous current	6 A
Sq. Total current	36 A <sup>2</sup> (see to derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A (gL/gG)

## 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, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Signaling

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

## Dimensions

Width	22.5 mm
Height	112 mm
Depth	114.5 mm

## Material specifications

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

## Characteristics

### Safety data

Stop category (EN 60204-1)	0
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Safety data: EN ISO 13849

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

## Approvals

CE

Identification	CE-compliant
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## Mounting

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

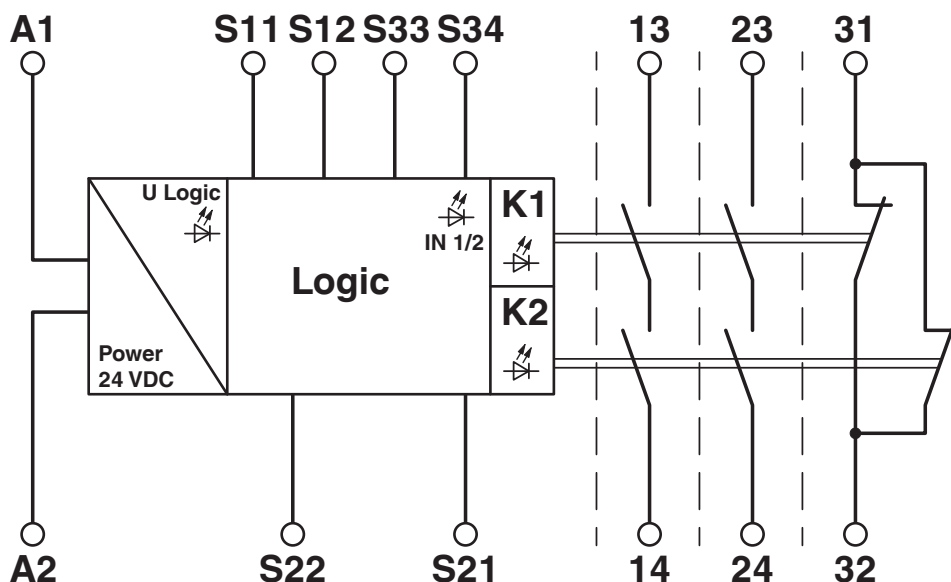
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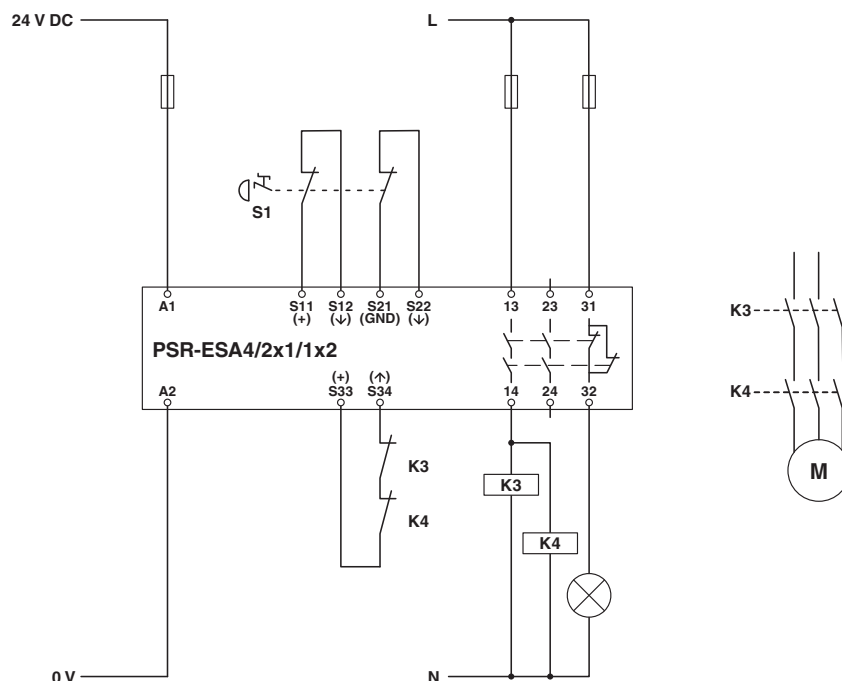
## Drawings

Circuit diagram



Block diagram

Circuit diagram



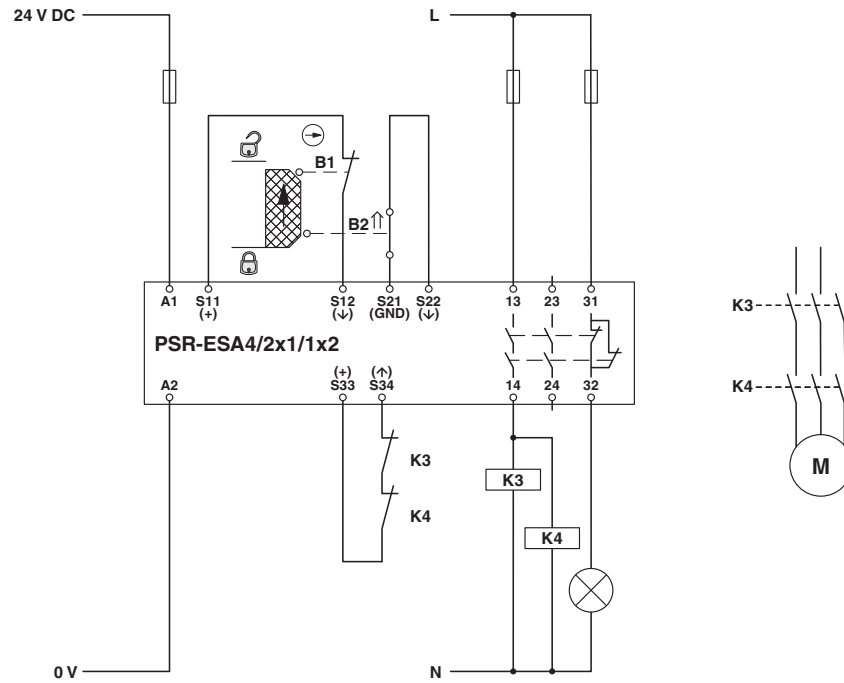
2-channel emergency stop monitoring

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Circuit diagram



Two-channel safety door monitoring

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## Approvals

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**cULus Listed**

Approval ID: E140324



**Functional Safety**

Approval ID: 01/205/0652.05/22

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## Classifications

### ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819

### ETIM

ETIM 10.0	EC001449
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### UNSPSC

UNSPSC 21.0	39122205
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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	25cda955-a831-4037-9eab-8a8e1e658c85

### EF3.1 Climate Change

CO2e kg	4.117 kg CO2e
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