

# PSR-SPP- 24DC/ESP4/2X1/1X2 - Safety relays



2981017

<https://www.phoenixcontact.com/us/products/2981017>

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The figure shows a version with a screw connection

Safety relay for SIL 3 high-demand and low-demand applications, also approved in accordance with EN 50156, DNV, and EN ISO 13849, emergency stop and safety door monitoring, 1-channel, 2 enabling current paths, 1 signal contact, width: 22.5 mm, pluggable Push-in terminal block

## Your advantages

- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- 1-channel control
- Safe isolation
- With inrush current reduction, therefore suitable for coupling to failsafe controllers (PSR-ESP4)

## Commercial data

Item number	2981017
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA161
GTIN	4017918911072
Weight per piece (including packing)	175.5 g
Weight per piece (excluding packing)	199.6 g
Customs tariff number	85371098
Country of origin	DE

## Technical data

### Notes

#### Note on application

Note on application	Only for industrial use
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### Product properties

Product type	Safety relays
Product family	PSRclassic
Application	Emergency stop
	Process technology
	Safety door
Control	1-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. 60 ms (For $U_s$ manual, monitored start)
	60 ms (For $U_s$ autostart)
Typ. starting time with $U_s$	60 ms (At $U_s$ /on demand via A1)
Typical release time	typ. 20 ms (At $U_s$ /on demand via A1)
Restart time	< 1 s (Boot time)
Recovery time	≥ 1 s (following demand of the safety function)
Start pulse length	≥ 500 ms (manual start)

### Electrical properties

Maximum power dissipation for nominal condition	16.12 W (At $U_S = 26.4$ V, $I_L^2 = 72$ A <sup>2</sup> , $P_{Total\ max} = 1.72$ 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".

### Input data

#### Digital: Logic (A1)

Description of the input	safety-related
Number of inputs	1
Input voltage range "1" signal	20.4 V ... 26.4 V
Inrush current	max. 1 A (typ. with $U_S$ , $\Delta t = < 10$ ms)
	max. 3 ms (Test pulse width of low test pulses)

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2981017

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Filter time	min. 200 ms (Test pulse rate for low test pulse) No brightness test pulses / high test pulses permitted.
Max. permissible overall conductor resistance	50 Ω
Protective circuit	Suppressor diode
Current consumption	65 mA (typ. with U <sub>S</sub> )

## Digital: Start circuit (Y2)

Description of the input	non-safety-related
Number of inputs	1
Input voltage range "1" signal	20.4 V ... 26.4 V
Inrush current	< 14 mA (typ. with U <sub>S</sub> at Y2, Δt - 10 ms)
Filter time	No test pulses permitted
Max. permissible overall conductor resistance	50 Ω
Protective circuit	Suppressor diode
Current consumption	0 mA (typ. with U <sub>S</sub> at Y2)

## Output data

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

Output description	2 N/O contacts each 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 max. 250 V AC/DC
Switching power	min. 100 mW
Inrush current	min. 10 mA max. 6 A
Switching capacity	5 A (AC15) 5 A (DC13)
Limiting continuous current	6 A (Observe derating and load limit curve)
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10 <sup>7</sup> cycles
Output fuse	10 A gL/gG 4 A gL/gG (for low-demand applications)

### 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
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 10 V AC/DC max. 250 V AC/DC
Switching power	min. 100 mW

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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> (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10 <sup>7</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	LED (green)
Operating voltage display	Green LED

## 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
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Safety data: IEC 61508 - High demand

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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)	-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
Mounting position	On horizontal and vertical DIN rail

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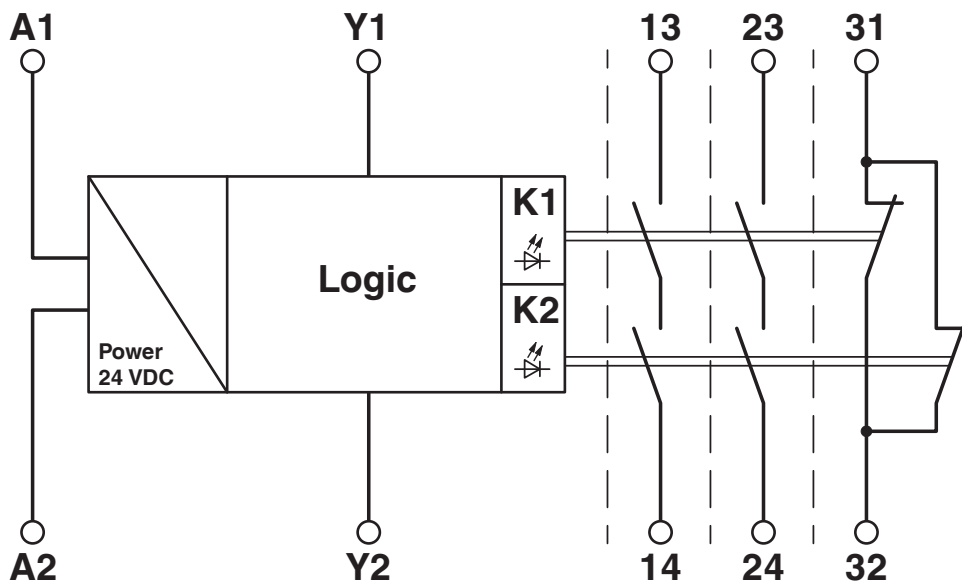


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## Drawings

Circuit diagram



Block diagram

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## Approvals

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### DNV

Approval ID: TAA00000K4



### cULus Listed

Approval ID: E140324



### Functional Safety

Approval ID: 01/205/0763.04/23

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## Classifications

### ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819
ECLASS-15.0 ASSET	27250101

### ETIM

ETIM 10.0	EC001449
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### UNSPSC

UNSPSC 21.0	39122200
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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	7c96e563-ee87-4e0e-b3fe-09599e14b35a

### EF3.1 Climate Change

CO2e kg	4.026 kg CO2e
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