

# PSR-SPP- 24DC/FSP/1X1/1X2 - Coupling relay



2981981

<https://www.phoenixcontact.com/us/products/2981981>

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The figure shows a version with a screw connection

Safe coupling relay for SIL 3 high- and low-demand applications, couples digital output signals to the periphery, one enabling current path, one signal contact, module for safe state off applications, test pulse filter, fuse, plug-in Push-in connection, width: 17.5 mm

## Your advantages

- Narrow 17.5 mm housing
- Up to SIL 3 in accordance with IEC 61508
- With built-in, replaceable fuse in the enabling current path
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Long service life thanks to filtering of controller test pulses
- Force-guided contacts in accordance with EN 50205
- 1 enabling current path
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation

## Commercial data

Item number	2981981
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA161
GTIN	4046356448345
Weight per piece (including packing)	149.58 g
Weight per piece (excluding packing)	128.79 g
Customs tariff number	85364900
Country of origin	DE

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## Technical data

### Product properties

Product type	Coupling relay
Product family	PSRclassic
Application	Safe switch off
	High demand
	Low demand
Control	1-channel
Mechanical service life	10x 10 <sup>6</sup> 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

Typ. starting time with U <sub>s</sub>	50 ms (with U <sub>s</sub> when controlled via A1)
Typical release time	50 ms (with U <sub>s</sub> when controlled via A1)
Recovery time	1 s

### Electrical properties

Maximum power dissipation for nominal condition	2.4 W
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6 kV between the control circuits (A1/A2), (21/22), (13/14)

### Supply

Designation	A1/A2
Rated control circuit supply voltage U <sub>s</sub>	24 V DC -15 % / +10 %
Rated control supply current I <sub>s</sub>	typ. 55 mA (at U <sub>s</sub> )
Power consumption at U <sub>s</sub>	typ. 1.32 W
Inrush current	max. 100 mA
Filter time	max. 5 ms (at A1 in the event of voltage dips at U <sub>s</sub> )
	max. 2 ms (Test pulse width; high test pulse at A1/A2)
	≥ 100 ms (Test pulse width; high test pulse at A1/A2)
	Test pulse rate = 80 x Test pulse width
	max. 5 ms (Test pulse width; low test pulse at A1/A2)
	≥ 50 ms (Test pulse rate; low test pulse at A1/A2)
	Test pulse rate = 15 x Test pulse width
Protective circuit	Surge protection; Suppressor diode, 33 V (A1 - A2)

### Output data

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## Relay: Enabling current path (13/14)

Output description	1 NO, undelayed
Number of outputs	1
Contact switching type	1 enabling current path
Contact material	AgCuNi, + 0.2 µm Au
Switching voltage	min. 15 V AC/DC max. 250 V AC/DC
Switching power	min. 75 mW
Inrush current	min. 5 mA max. 5 A
Switching capacity	5 A (24 V (DC13)) 5 A (230 V (AC15))
Limiting continuous current	5 A (N/O contact, pay attention to the derating)
Sq. Total current	25 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.5 Hz
Interrupting rating (ohmic load) max.	see load limit curve
Maximum interrupting rating (inductive load)	see load limit curve
Output fuse	5 A T fuse

## Relay: Confirmation current path (21/22)

Output description	1 N/C signal contact
Number of outputs	1
Contact switching type	1 confirmation current path
Contact material	AgCuNi, + 0.2 µm Au
Switching voltage	min. 15 V AC/DC max. 250 V AC/DC
Switching power	min. 75 mW
Inrush current	5 mA max. 100 mA
Switching capacity	5 A (24 V (DC13)) 5 A (230 V (AC15))
Limiting continuous current	100 mA
Output fuse	150 mA Fast-blow

## 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	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)

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sleeve	
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Signaling

Operating voltage display	1 x yellow LED
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## Dimensions

Width	17.5 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 (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$ )
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### Safety data: EN 50156

Safety Integrity Level (SIL)	3
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### Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ )
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### Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ )
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### Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$ )
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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	$\leq 2000$ m (Above sea level)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)

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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
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## Mounting

Mounting type	DIN rail mounting
Mounting position	any

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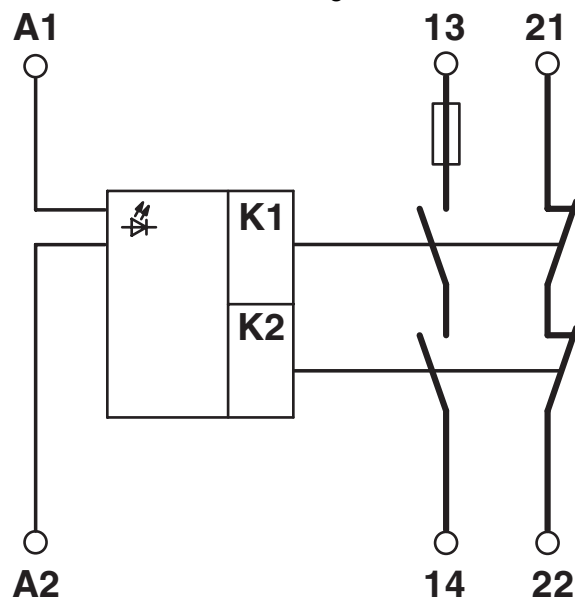
## Drawings

Application drawing



Example of electrical isolation of a safety PLC output from the field.

Circuit diagram



Block diagram

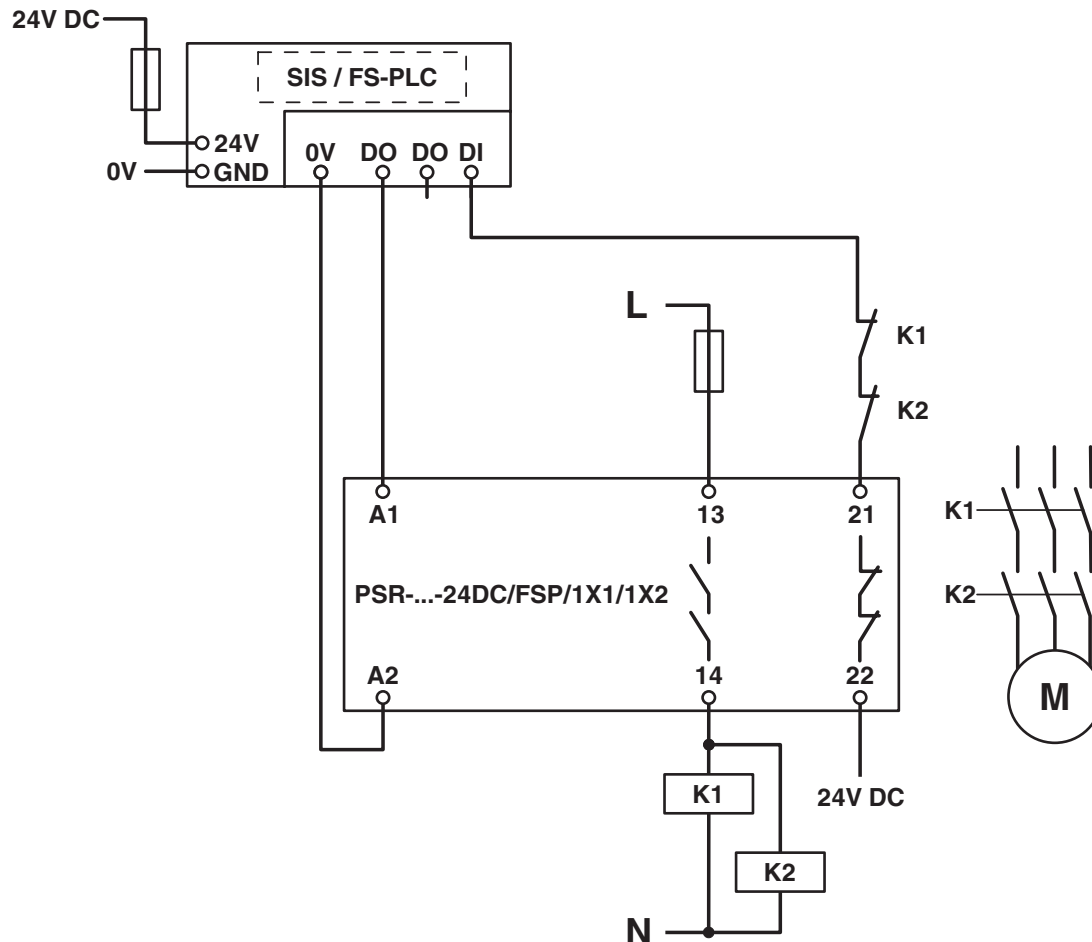
# PSR-SPP- 24DC/FSP/1X1/1X2 - Coupling relay



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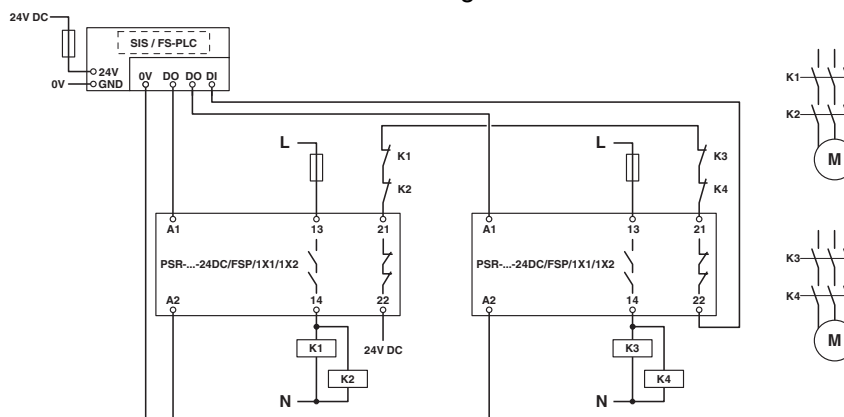
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Circuit diagram



Single-channel connection with integration of the confirmation current path

Circuit diagram



Two-channel connection with integration of the confirmation current path

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2981981>



**DNV GL**

Approval ID: TAA00002UC



**cULus Listed**

Approval ID: E140324



**Functional Safety**

Approval ID: 968/EZ 365.12/24

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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	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	1df8785d-9c3e-4974-bbf0-9660da3d3e01

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