

2986957

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Safe coupling relay for SIL 3 high and low demand applications, coupled digital output signals to the I/O, 2 enabling current paths, 1 signal contact, module for safe state off applications, integrated test pulse filter, width: 17.5 mm, pluggable Push-in terminal block

Your advantages

- Narrow 17.5 mm housing
- Up to SIL 3 in accordance with IEC 61508
- 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
- 2 enabling current paths
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation

Commercial data

Item number	2986957
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNA161
GTIN	4046356520928
Weight per piece (including packing)	160.89 g
Weight per piece (excluding packing)	128.26 g
Customs tariff number	85364900
Country of origin	DE

PSR-SPP- 24DC/FSP/2X1/1X2 - Coupling relay



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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 ⁶ 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 _s	50 ms (with U _s when controlled via A1)
Typical release time	50 ms (with U _s 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
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6 kV between the control circuits (A1/A2), (31/32), (13/14, 23/24)

Supply

Designation	A1/A2
Rated control circuit supply voltage U _s	24 V DC -15 % / +10 %
Rated control supply current I _s	typ. 55 mA (typ. with U _s)
Power consumption at U _s	typ. 1.32 W
Inrush current	max. 100 mA (typ. with U _s)
Filter time	max. 5 ms (in the event of voltage dips at U _s)
	max. 1 ms (Test pulse width; high test pulse at A1/A2)
	≥ 100 ms (Test pulse width; high test pulse at A1/A2)
	Test pulse rate = 100 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 paths (13/14, 23/24)

Output description	2 x N/O, undelayed
Number of outputs	2
Contact switching type	2 enabling current paths
Contact material	AgCuNi, + 0.2 µm Au
Switching capacity	min. 75 mW
Inrush current	max. 5 A
Limiting continuous current	5 A
Sq. Total current	50 A ² (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10 ⁷ cycles
Output fuse	10 A gL/gG

Relay: 31/32

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 capacity	min. 75 mW
Inrush current	max. 100 mA
Limiting continuous current	100 mA
Mechanical service life	10 ⁷ cycles
Output fuse	4 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 ² ... 1.5 mm ²
Conductor cross-section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Conductor cross-section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
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

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Depth	114.5 mm
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Material specifications

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

Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	4 (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$)
Performance level (PL)	e (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$)

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	≤ 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	any

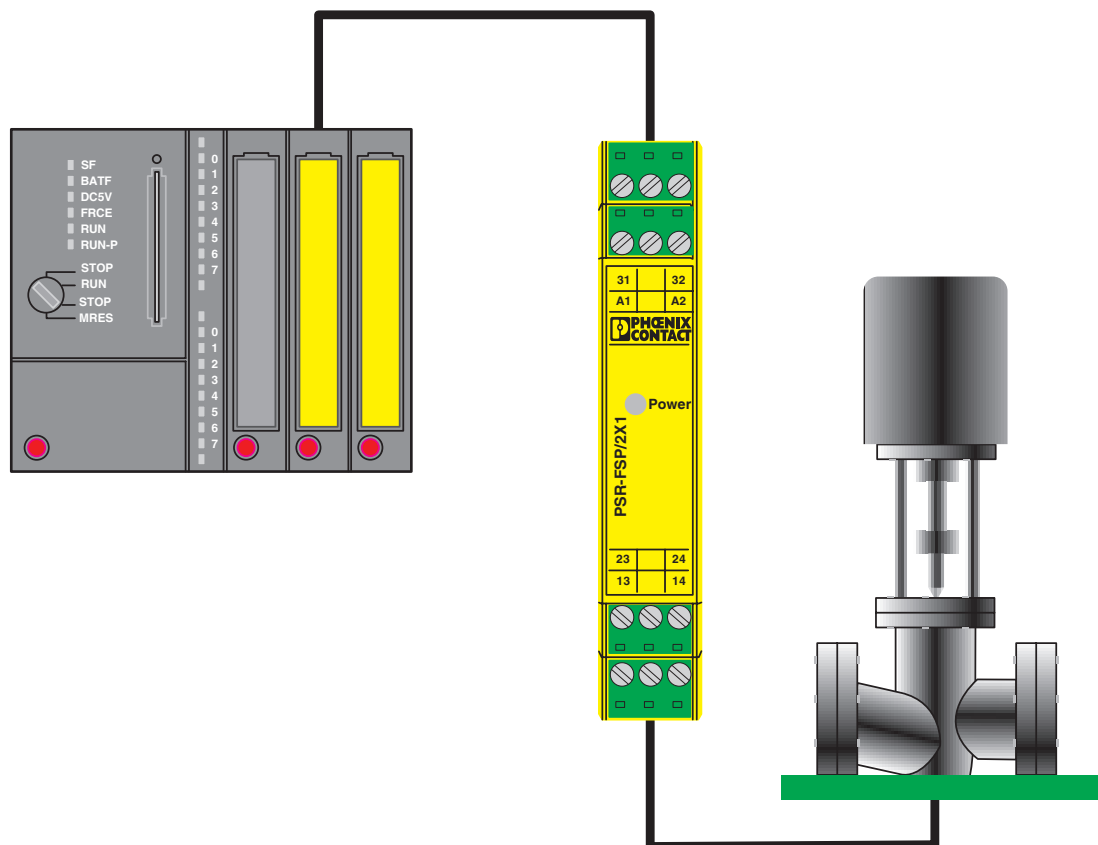
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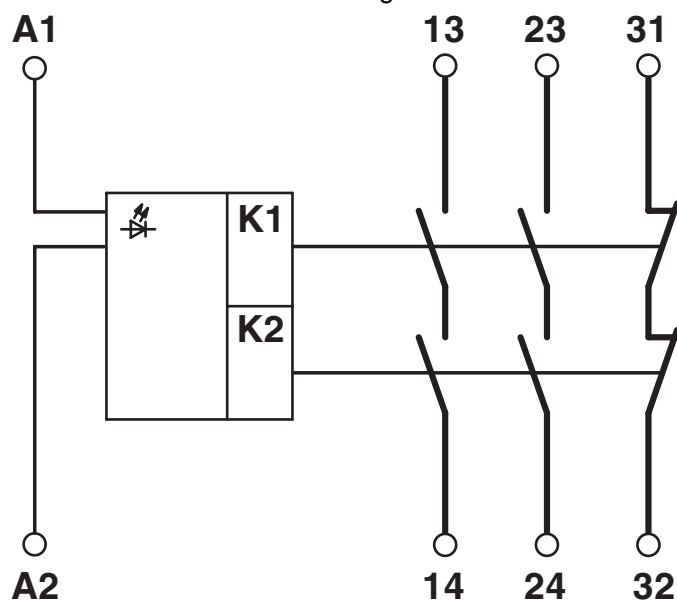
Drawings

Application drawing



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

Circuit diagram



Block diagram

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The diagram illustrates the internal wiring of a 24V DC power supply unit (PSR) and its connection to a PLC and a motor. The PSR unit is labeled "PSR-...-24DC/FSP/2X1/1X2". It has terminals A1, A2, 13, 14, 23, 24, 31, and 32. The PLC is labeled "SIS / FS-PLC" and has terminals 0V, DO, DO, and DI. The motor is labeled "M" and has terminals K1 and K2. The 24V DC source is connected to the PSR unit via a fuse. The neutral line (N) is also connected to the PSR unit. The wiring connections are as follows:

- The 24V DC source is connected to terminal A1 of the PSR unit.
- The 0V terminal of the PLC is connected to terminal A2 of the PSR unit.
- The DO terminal of the PLC is connected to terminal 13 of the PSR unit.
- The DO terminal of the PLC is connected to terminal 14 of the PSR unit.
- The DI terminal of the PLC is connected to terminal 23 of the PSR unit.
- The DI terminal of the PLC is connected to terminal 24 of the PSR unit.
- The K1 terminal of the motor is connected to terminal 31 of the PSR unit.
- The K2 terminal of the motor is connected to terminal 32 of the PSR unit.
- The 24V DC source is connected to terminal 31 of the PSR unit.
- The neutral line (N) is connected to terminal 32 of the PSR unit.

The diagram illustrates a two-motor control system. A 24V DC power source is connected to a SIS / FS-PLC. The PLC's DO (Digital Output) and DI (Digital Input) terminals are connected to two relays (K1, K2) and two relays (K3, K4). The relays are connected to two motors (M). The wiring is detailed with terminal blocks and connection points.

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Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/2986957>



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
ECLASS-15.0 ASSET	27250101

ETIM

ETIM 9.0	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	78ce5460-44b8-49ea-84b4-f7904567882e

EF3.0 Climate Change

CO2e kg	3.39 kg CO2e
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Accessories

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 mm² ... 6.0 mm², lateral entry, trapezoidal crimp

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