

PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



1086946

<https://www.phoenixcontact.com/us/products/1086946>

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Coupling relay for SIL 3 high and low-demand applications, coupled digital output signals to the I/O, 2 independently controllable enabling current paths, 2 confirmation current paths, safe state off applications, test pulse filter, pluggable Push-in terminal block

Product description

The safe coupling relay couples digital output signals from failsafe controllers to I/O devices and is used for power adaptation and electrical isolation. The safe coupling relay can be used in high- and low-demand applications. The safe coupling relay safely interrupts circuits.

Your advantages

- Up to SIL 3 in accordance with IEC 61508, IEC 61511, and IEC 50156
- Approved for Class I, Zone 2 applications
- Force-guided contacts in accordance with EN 50205
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Low housing width of just 12.5 mm
- Long service life thanks to filtering of controller test pulses
- 2 enabling current paths, 2 confirmation current paths
- Independent control of the relay channels possible

Commercial data

Item number	1086946
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA182
GTIN	4055626881669
Weight per piece (including packing)	203.05 g
Weight per piece (excluding packing)	114.755 g
Customs tariff number	85364190
Country of origin	DE

PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



1086946

<https://www.phoenixcontact.com/us/products/1086946>

Technical data

Notes

Note on application

Note on application	Only for industrial use
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Utilization restriction

CCCex note	Use in potentially explosive areas is not permitted in China.
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Product properties

Product type	Coupling relay
Product family	PSRmini
Application	Safe switch off
	High demand
	Low demand
	Ex
Mechanical service life	10x 10 ⁶ cycles
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Data management status

Article revision	04
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Times

Typ. starting time with U _s	< 70 ms (when controlled via A1 or A3 at U _S)
Typical release time	< 30 ms (when controlled via A1 or A3 at U _S)
Recovery time	500 ms

Electrical properties

Maximum power dissipation for nominal condition	7.05 W (S1, S2, S3, S4 = ON, 2-channel load, U _B = 30 V, U _S = 24 V, I _S = 2*46 mA, I _L ² = 36 A, R _{contact} = 0.05 Ω)
Nominal operating mode	100% operating factor

Air clearances and creepage distances between the power circuits

Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6.4 kV from (A1/A2, A3/A4, 21/22, 41/42) to (13/14, 33/34) and between (13/14) and (33/34)
	Basic insulation 4 kV between all current paths and housing
	500 V isolation between (A1/A2, A3/A4) and (21/22, 41/42)

Supply

Designation	A1/A2, A3/A4
Rated control circuit supply voltage U _S	19.2 V DC ... 30 V DC
Rated control circuit supply voltage U _S	24 V DC -20 % / +25 %
Rated control supply current I _S	typ. 15 mA (per channel (configurable))
	typ. 25 mA (per channel (configurable))

PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



1086946

<https://www.phoenixcontact.com/us/products/1086946>

Power consumption at U_S	typ. 40 mA (per channel (configurable))
	typ. 46 mA (per channel (configurable))
	typ. 360 mW (per channel (configurable))
	typ. 600 mW (per channel (configurable))
	typ. 960 mW (per channel (configurable))
Inrush current	typ. 1.1 W (per channel (configurable))
	typ. 200 mA ($\Delta t = 10 \mu s$ at U_S , per channel (configurable))
Filter time	typ. 300 mA ($\Delta t = 10 \mu s$ at U_S , per channel (configurable))
Protective circuit	2 ms (in the event of voltage dips at U_S)
	Serial protection against polarity reversal; 38.6 V suppressor diode

Output data

Relay: Enabling current paths (13/14, 33/34)

Output description	2 N/O contacts parallel, without delay, safety-related, floating
Number of outputs	2
Contact switching type	2 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 12 V DC
	max. 250 V AC/DC
Switching capacity	min. 60 mW
Inrush current	min. 3 mA
	max. 6 A
Switching capacity in accordance with IEC 60947-5-1	4 A (24 V (DC13))
	4 A (250 V (AC15), low demand)
	2 A (250 V (AC15), high demand)
Limiting continuous current	6 A (High demand)
	4 A (Low demand)
Sq. Total current	72 A ² (High-demand, observe derating)
	32 A ² (Low-demand, observe derating)
Switching frequency	max. 0.1 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

Relay: Confirmation current paths (21/22, 41/42)

Output description	2 N/C contacts parallel, without delay, safety-related, floating
Number of outputs	2
Contact switching type	2 confirmation current paths
Contact material	AgCuNi, + Au
Switching voltage	min. 5 V DC
	max. 30 V DC
Switching capacity	min. 20 mW
Inrush current	min. 1 mA

PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



1086946

<https://www.phoenixcontact.com/us/products/1086946>

	max. 100 mA
Limiting continuous current	100 mA
Mechanical service life	10x 10 ⁶ cycles
Output fuse	150 mA Fast-blow

Connection data

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

Status display	2 x LED (green)
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Dimensions

Width	12.5 mm
Height	116.6 mm
Depth	114.5 mm

Material specifications

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

Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	4
Performance level (PL)	e

Safety data: EN 50156-2

Safety Integrity Level (SIL)	3 (Reference IEC 61508)
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Safety data: IEC 61508 – High-demand for 2-channel wiring (1oo2 structure)

Safety Integrity Level (SIL)	3
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Safety data: IEC 61508 – High-demand for 1-channel wiring (1oo1 structure)

Safety Integrity Level (SIL)	2
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Safety data: IEC 61508 – Low-demand for 2-channel wiring (1oo2 structure)

PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



1086946

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Safety Integrity Level (SIL)	3
Safety data: IEC 61508 – Low-demand for 1-channel wiring (1oo1 structure)	
Safety Integrity Level (SIL)	2
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)	-40 °C ... 70 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °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

ATEX

Identification	Ex II 3G Ex ec nC IIC T4 Gc
Certificate	DEMKO 19 ATEX 2240X

IECEx

Identification	Ex ec nC IIC T4 Gc
Certificate	IECEx ULD 19.0023X

UL, USA/Canada

Identification	cULus
Certificate	E140324

UL Ex, USA / Canada

Identification	Class I, Zone 2, AEx ec nC IIC T4 / Ex ec nC IIC Gc T4 X
	Class I, Div. 2, Groups A, B, C, D, T4
Certificate	E360692

CE

Identification	CE-compliant
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Environmental simulation test

Identification	G3
Certificate	ISA-S71.04

CCC / China-Ex

Identification	Ex ec nC IIC T4 Gc
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PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



1086946

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Certificate	2022122304115696
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Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	EN 61010-1, EN 60947-1, EN 60079-7, EN 60079-15
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Mounting

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

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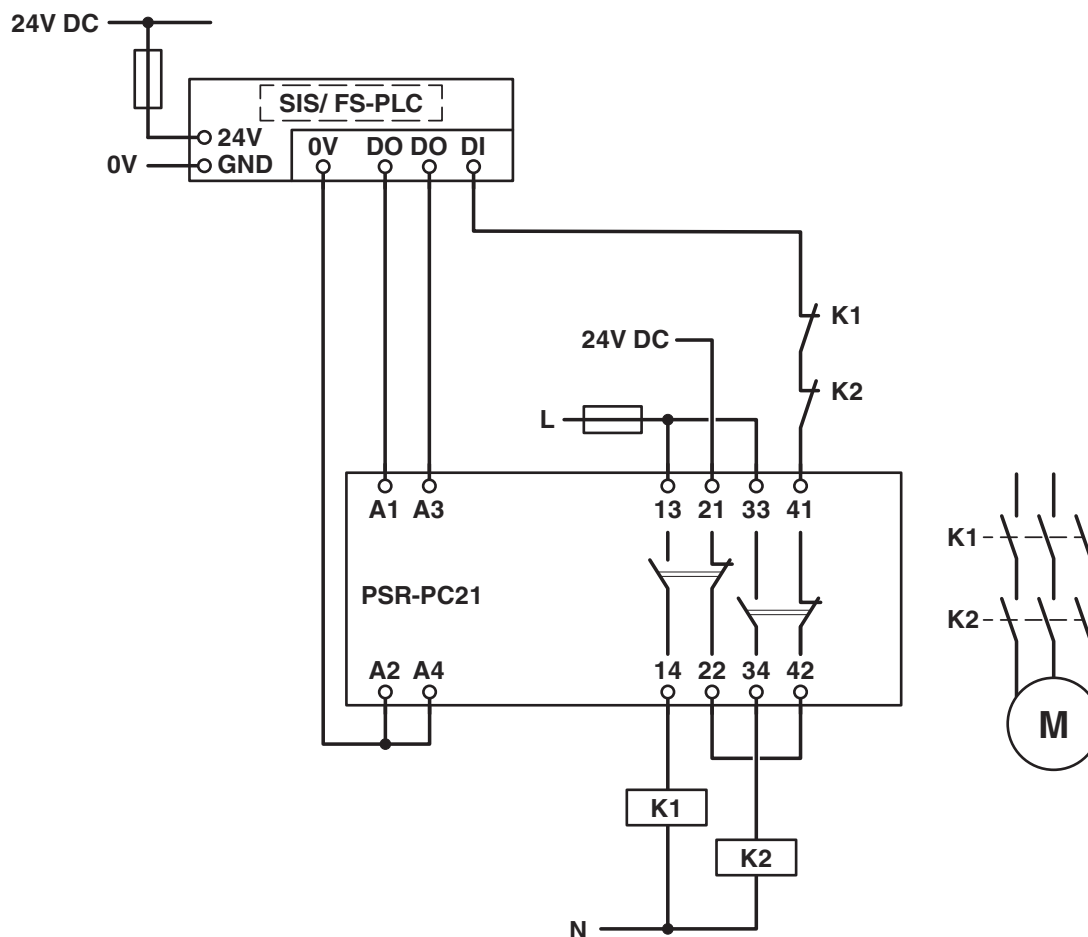
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Drawings

Circuit diagram



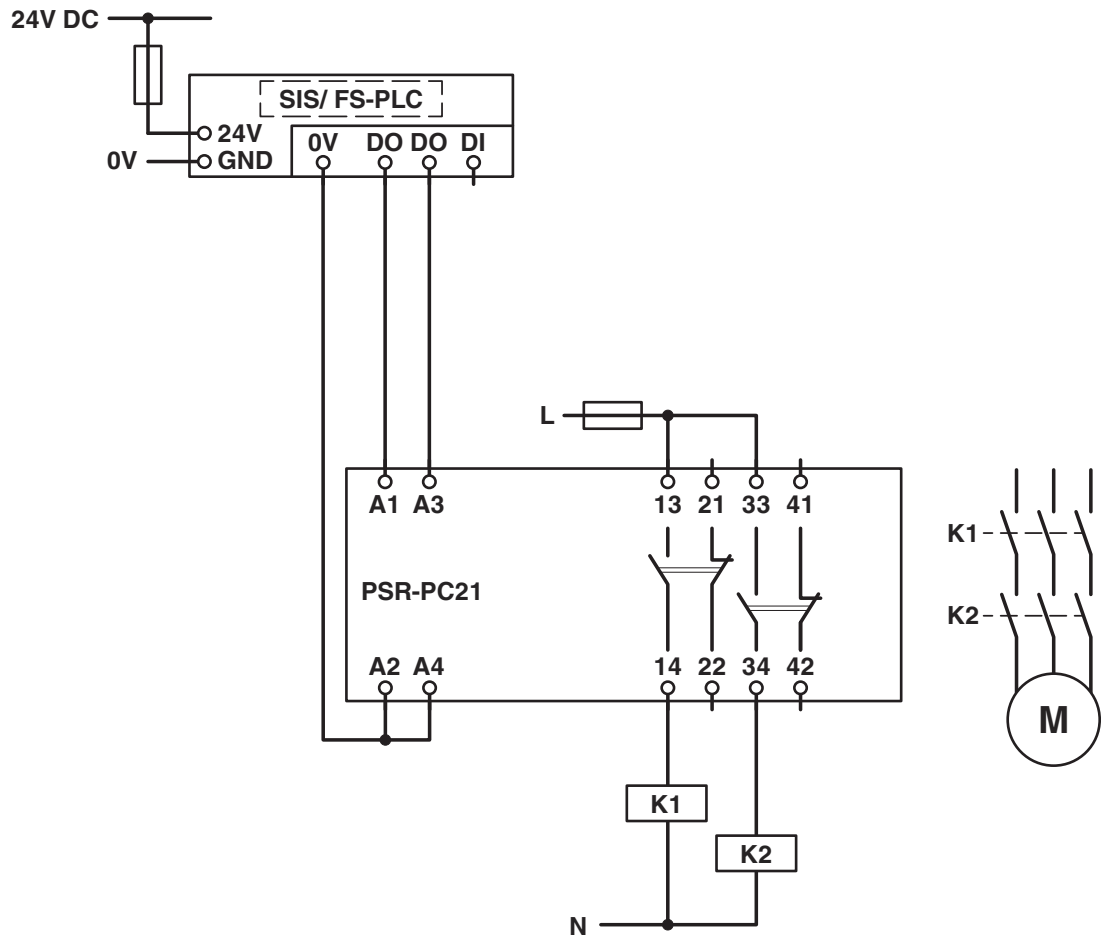
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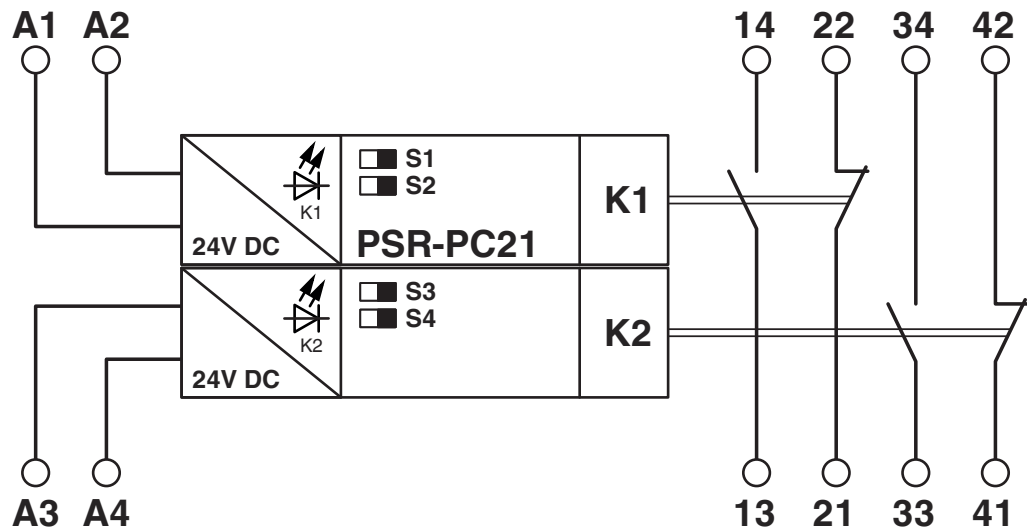
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Circuit diagram



Block diagram



Block diagram

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1086946>



UL Listed

Approval ID: E140324



cUL Listed

Approval ID: E140324



Functional Safety

Approval ID: 968/FSP 1955.01/22



Functional Safety

Approval ID: 968/FSP 1955.01/22



EAC

Approval ID: TR_TS_D_00573_c



EAC

Approval ID: RU*C-DE.*08.B.00010



IECEx

Approval ID: IECEx ULD 19.0023X



cUL Listed

Approval ID: E360692



UL Listed

Approval ID: E360692



UL Listed

Approval ID: E360692



cUL Listed

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PSR-PC21-2NO-2NC-24DC-SP - Coupling relay



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ATEX

Approval ID: DEMKO 19 ATEX 2240X

cULus Listed

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Classifications

ECLASS

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

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	60c80de9-918f-4455-8c74-685314cc2785

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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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CRIMPFOX 6 - Crimping pliers

1212034

<https://www.phoenixcontact.com/us/products/1212034>



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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