

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)	140.52 g
Weight per piece (excluding packing)	115.41 g
Customs tariff number	85364190
Country of origin	DE

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Technical data

Notes

Note on application

Note on application	Only for industrial use
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Product properties

Product type	Coupling relay
Product family	PSRmini
Application	Safe switch off
	High demand
	Low demand
	Ex
Control	1 and 2 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	< 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
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))
	typ. 40 mA (per channel (configurable))
	typ. 46 mA (per channel (configurable))

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Power consumption at U_S	typ. 360 mW (per channel (configurable))
	typ. 600 mW (per channel (configurable))
	typ. 960 mW (per channel (configurable))
	typ. 1.1 W (per channel (configurable))
Inrush current	typ. 200 mA ($\Delta t = 10 \mu s$ at U_S , per channel (configurable))
	typ. 300 mA ($\Delta t = 10 \mu s$ at U_S , per channel (configurable))
Filter time	2 ms (in the event of voltage dips at U_S)
Protective circuit	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 power	min. 60 mW
Inrush current	min. 3 mA
	max. 6 A
Switching capacity	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 power	min. 20 mW
Inrush current	min. 1 mA
	max. 100 mA
Limiting continuous current	100 mA

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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	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: 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)

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

Safety Integrity Level (SIL)	2
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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)	-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	⊕ 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
Certificate	2022122304115696

Mounting

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

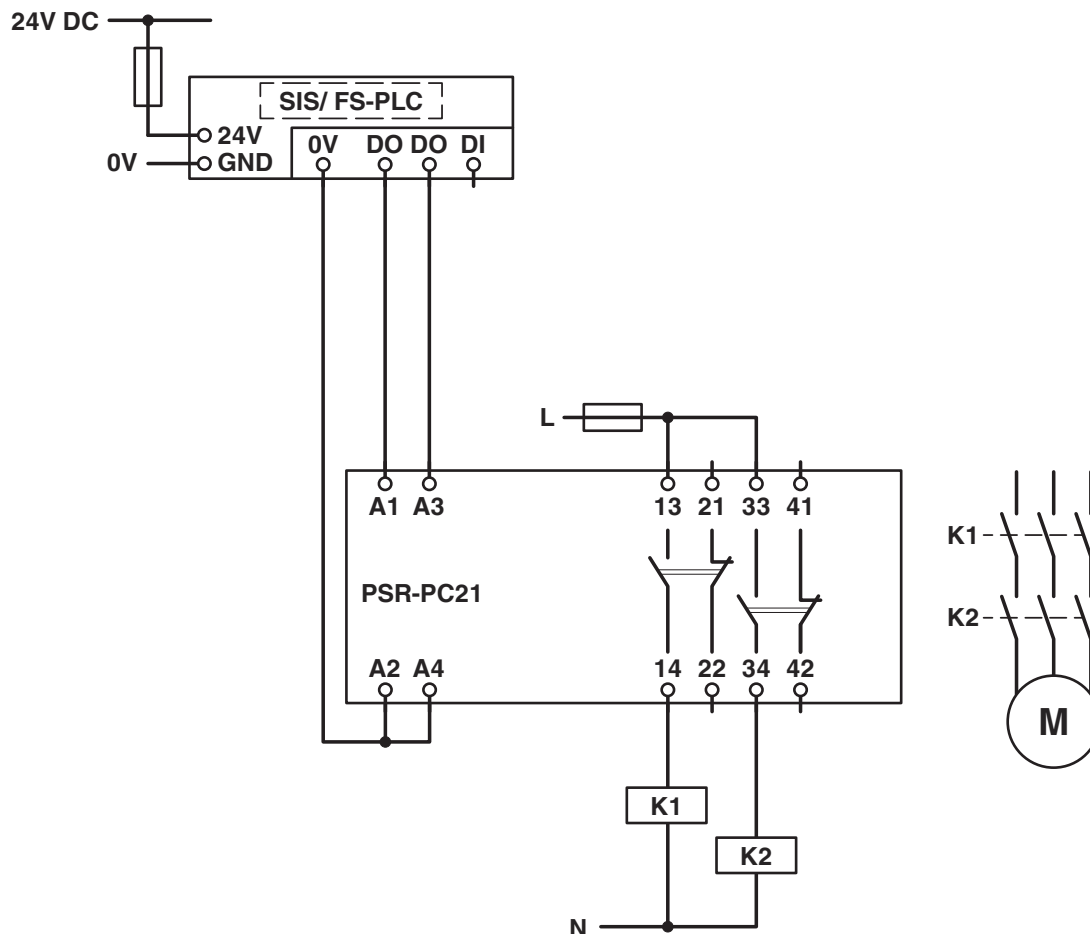
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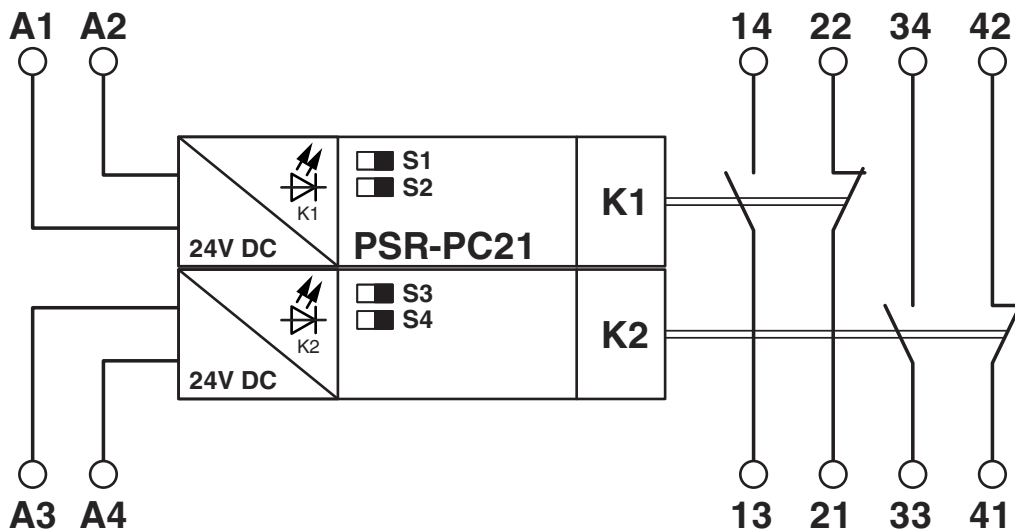
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Circuit diagram



High-demand application with failsafe controller

Block diagram



Block diagram

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Approvals

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



cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 968/FSP 1955.02/24



IECEx

Approval ID: IECEx ULD 19.0023X



ATEX

Approval ID: DEMKO 19 ATEX 2240X



cULus Listed

Approval ID: E360692



CCC

Approval ID: 2022122304115696

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

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