

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



1086945

<https://www.phoenixcontact.com/us/products/1086945>

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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 screw 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	1086945
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA182
GTIN	4055626881904
Weight per piece (including packing)	207.1 g
Weight per piece (excluding packing)	206.52 g
Customs tariff number	85364190
Country of origin	DE

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Technical data

Notes

Utilization restriction

EMC note	EMC: class A product, see manufacturer's declaration in the download area
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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

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, $I_S = 2 \times 46$ mA, $I_L^2 = 36$ A, $R_{\text{contact}} = 0.05 \Omega$)
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))
	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 (Observe the load curve)
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))
	5 A (230 V (AC15))
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	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
	max. 100 mA
Limiting continuous current	100 mA
Switching frequency	1 Hz

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Mechanical service life	10x 10 ⁶ cycles
Output fuse	150 mA Fast-blow

Connection data

Conductor connection

Connection method	Screw connection
Conductor cross section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3
Tightening torque	0.6 Nm

Signaling

Status display	2 x green LEDs
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Dimensions

Width	12.5 mm
Height	112.2 mm
Depth	114.5 mm

Material specifications

Housing material	Polyamide
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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
	2

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

Safety Integrity Level (SIL)	3
	2

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

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 instructions	See derating curve
Mounting position	vertical or horizontal
Connection method	Screw connection

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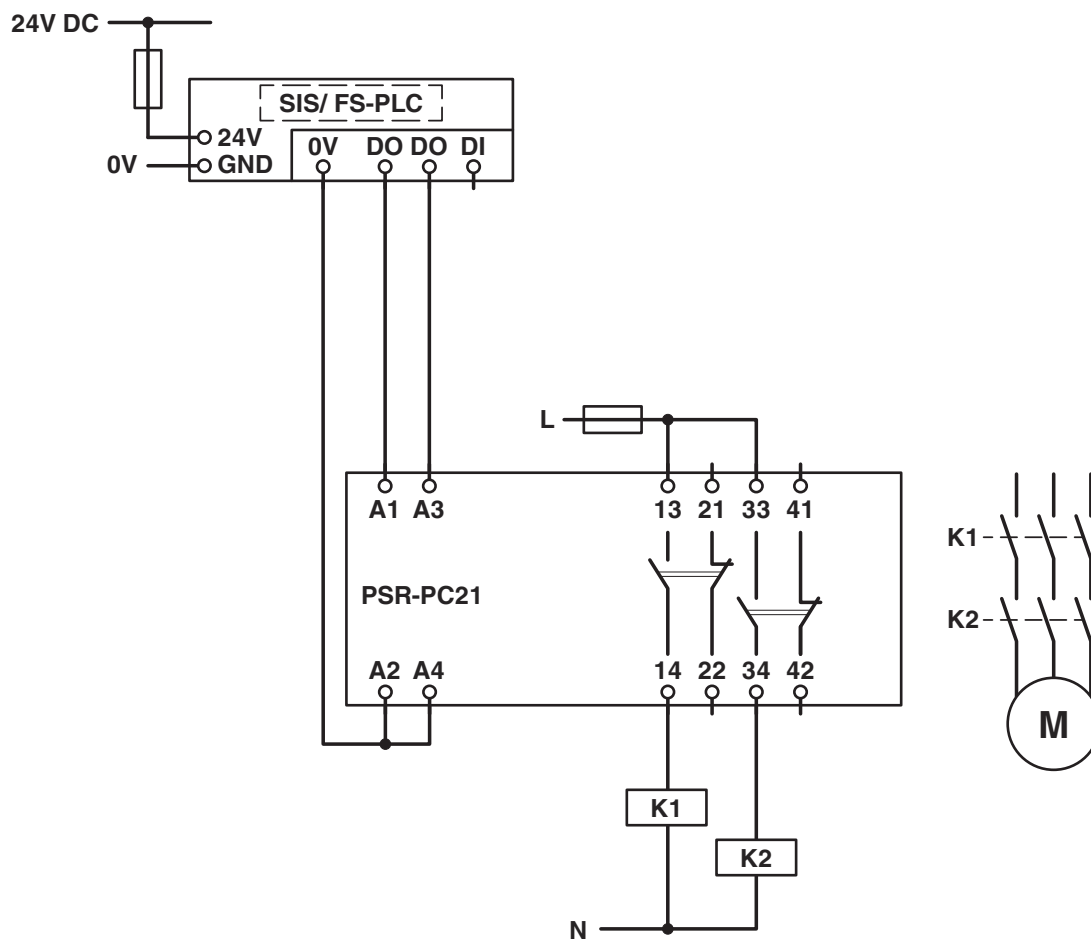
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Drawings

Circuit diagram



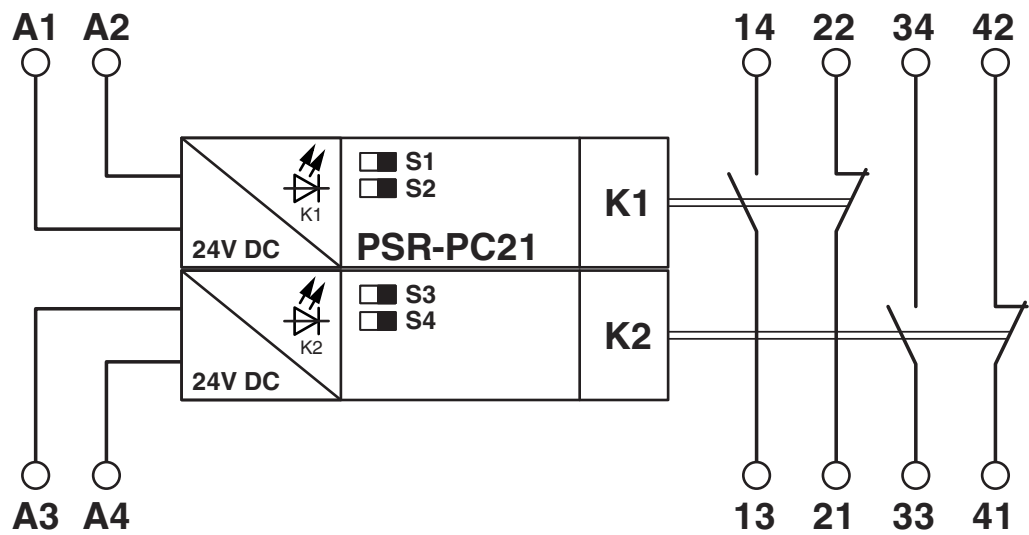
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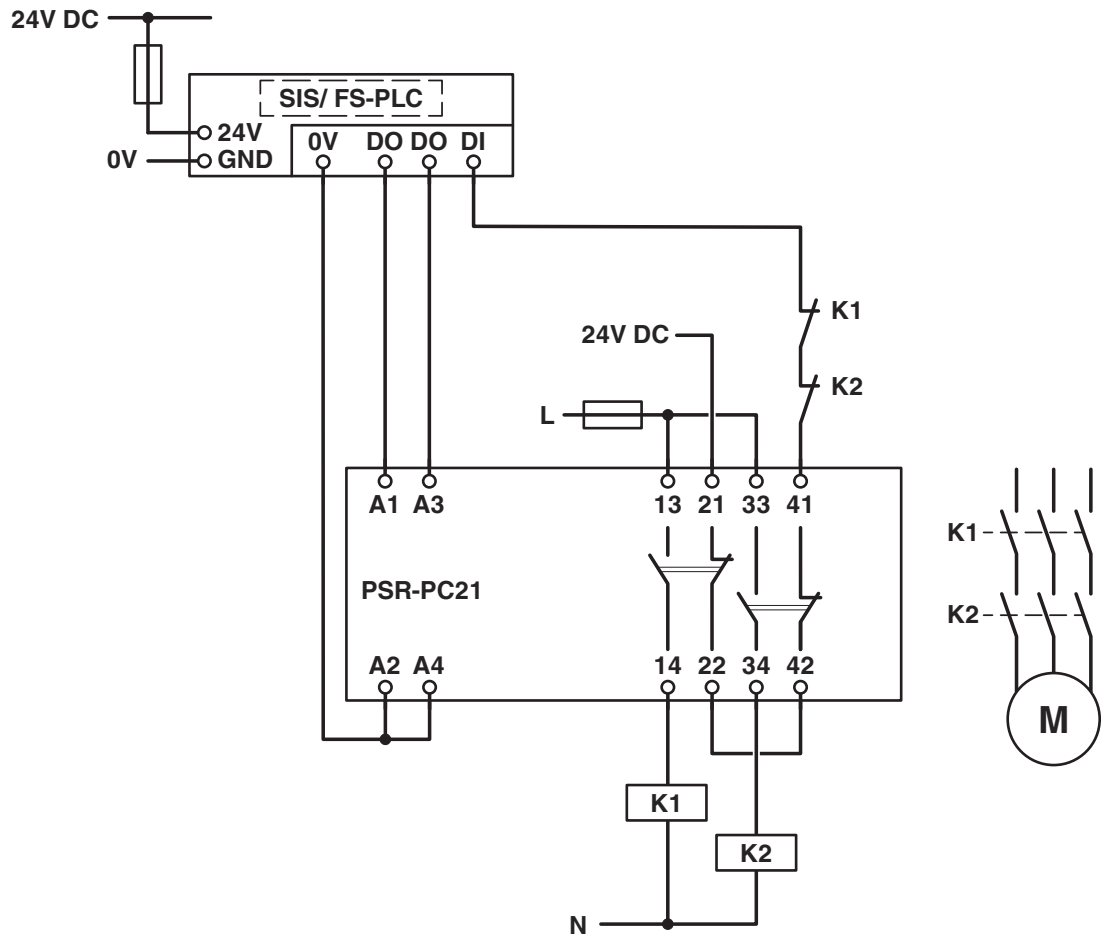
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Block diagram



Block diagram

Circuit diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1086945>



UL Listed

Approval ID: FILE E 140324



cUL Listed

Approval ID: FILE E 140324



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: File E 360692



UL Listed

Approval ID: File E 360692



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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 8.0	EC001449
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UNSPSC

UNSPSC 21.0	39122200
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Environmental product compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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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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