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

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

ELEKTROGERÄTE RÜCKNAHME

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)	133.26 g
Weight per piece (excluding packing)	115.62 g
Customs tariff number	85364190
Country of origin	DE

Technical data

Notes

Note on application

Note on application	Only for industrial use

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))

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 (Δt = 10 µs at U_s, per channel (configurable))
	typ. 300 mA (Δt = 10 µs 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

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 mm² ... 1.5 mm²
Conductor cross-section flexible	0.2 mm² ... 1.5 mm²
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6)
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6)
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

Signaling

Status display	2 x LED (green)

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

Safety data: EN ISO 13849

Performance level (PL)	e

Safety data: EN 50156-2

Safety Integrity Level (SIL)	3 (Reference IEC 61508)

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

Safety Integrity Level (SIL)	3

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

Safety Integrity Level (SIL)	2

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

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	Ⓔx 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

Environmental simulation test

Identification	G3
Certificate	ISA-S71.04

CCC / China-Ex

Identification	Ex ec nC IIC T4 Gc
Certificate	2022122304115696

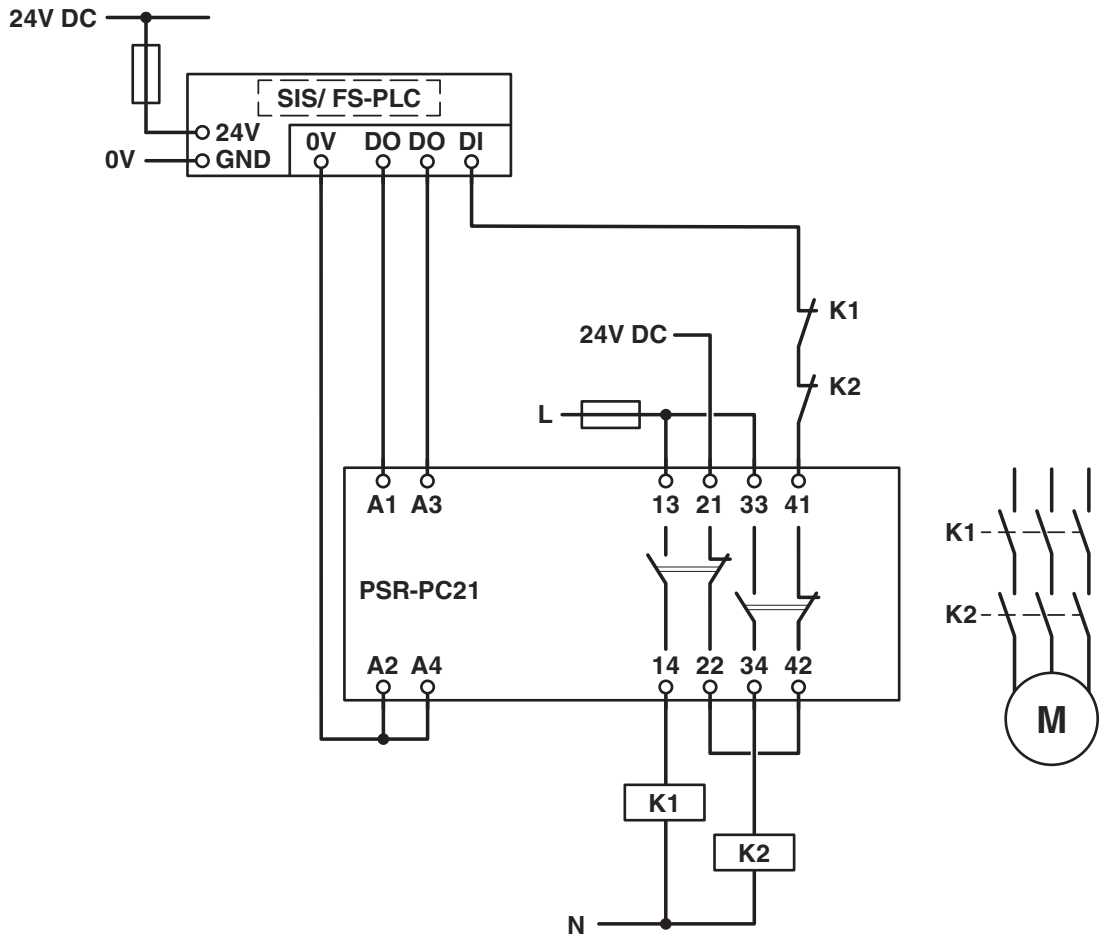
Mounting

Mounting type	DIN rail mounting

Assembly note	See derating curve
Mounting position	vertical or horizontal

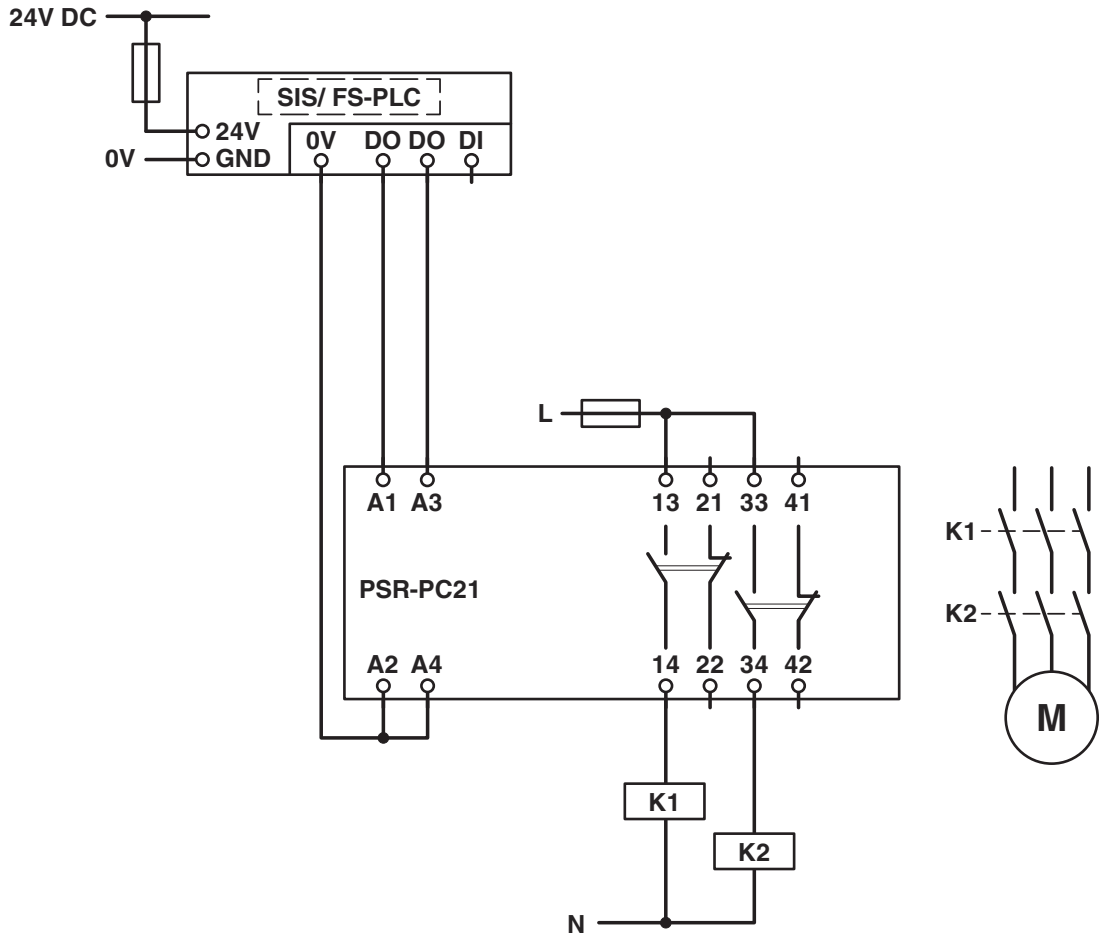
Drawings

Circuit diagram



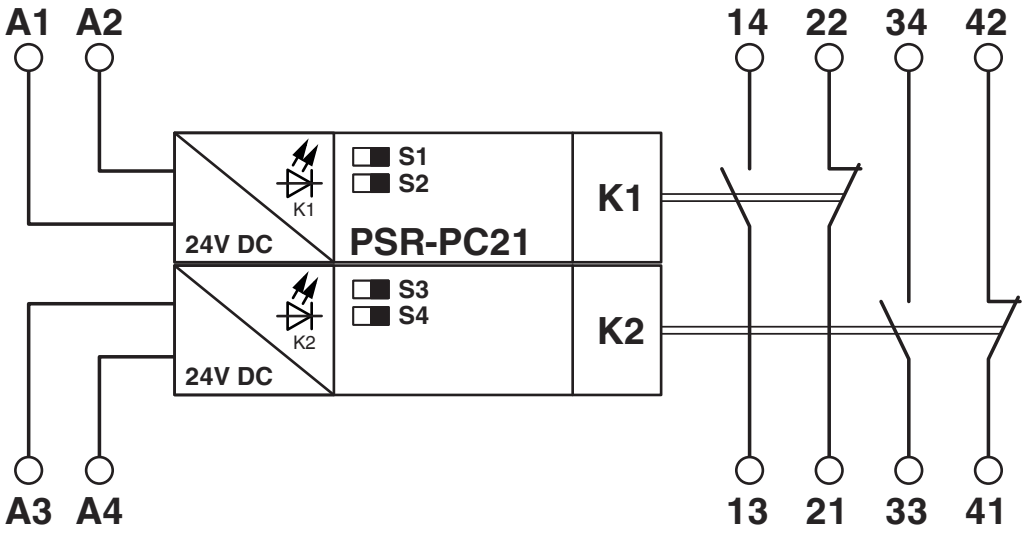
High-demand application with failsafe controller

Circuit diagram



High-demand application with failsafe controller

Block diagram



Block diagram

Approvals

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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

Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819

ETIM

ETIM 10.0	EC001449

UNSPSC

UNSPSC 21.0	39122200

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

EF3.1 Climate Change

CO2e kg	14.146 kg CO2e

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