

# PSR-PS22-1NO-1NC-24VDC-SC - Coupling relay



2702524

<https://www.phoenixcontact.com/us/products/2702524>

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Coupling relay for SIL 3 high and low-demand applications, couples digital output signals to the I/O, 1 enabling current path, 1 confirmation current path, safe state off applications, test pulse filter, fixed screw terminal block

## Your advantages

- Up to SIL 3 in accordance with IEC 61508
- Force-guided contacts in accordance with EN 50205
- Easy proof test according to IEC 61508
- Low housing width of just 6.8 mm
- Long service life thanks to filtering of controller test pulses
- 1 enabling current path, 1 diagnostic current path
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation
- Corrosion protection through protective coating on the PCB

## Commercial data

Item number	2702524
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA172
Catalog page	Page 250 (C-6-2019)
GTIN	4055626280240
Weight per piece (including packing)	166.2 g
Weight per piece (excluding packing)	71.494 g
Customs tariff number	85364900
Country of origin	DE

## 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
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 $U_s$	< 150 ms (with $U_s$ when controlled via A1)
Typical release time	< 30 ms (when controlled via A1)
Recovery time	500 ms

### Electrical properties

Maximum power dissipation for nominal condition	3.28 W ( $I_L^2 = 36 \text{ A}^2$ )
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	Basic insulation 4 kV between all current paths and housing
	Safe isolation, 6 kV reinforced insulation from the control circuit (A1/A2) and diagnostics circuit (0V/21/22) to the enabling current path (13/14)

#### Supply

Designation	A1/A2
Rated control circuit supply voltage $U_S$	20.4 V DC ... 26.4 V DC
Rated control circuit supply voltage $U_S$	24 V DC -15 % / +10 %
Rated control supply current $I_S$	typ. 45 mA
Power consumption at $U_S$	typ. 1.08 W
Inrush current	typ. 150 mA ( $\Delta t < 5 \text{ ms}$ at $U_S$ )
	max. 3 ms (at A1-A2 in the event of voltage dips at $U_S$ )

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Filter time	max. 3 ms (at A1-A2; low test pulse width)
	≥ 50 ms (at A1-A2; low test pulse rate)
	max. 17 ms (at A1-A2; high test pulse width)
	≥ 600 ms (at A1-A2; high test pulse rate)
Protective circuit	Serial protection against polarity reversal; Suppressor diode 33 V

## Supply

Designation	21/0V
Diagnostic supply voltage $U_D$	24 V DC -15 % / +10 %
Input current at $U_D$	6 mA (at the contacts 21/0V for $U_D$ ; + 100 mA depending on load at contact 22)
Inrush current at $U_D$	typ. 200 mA ( $\Delta t < 1$ ms; for contacts 21 - 0 V at $U_D$ )
Protective circuit	Serial protection against polarity reversal; Suppressor diode 33 V

## Output data

### Relay: Enabling current path

Output description	2 N/O contacts in series, without delay, floating
Number of outputs	1 (safety-related N/O contacts: 13/14)
Contact switching type	1 enabling current path
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 12 V AC/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 (250 V (AC15))
Limiting continuous current	6 A (High demand)
	4 A (Low demand)
Sq. Total current	36 A <sup>2</sup> (observe derating)
Switching frequency	max. 1 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

### Relay: Confirmation current path

Output description	2 N/C contacts in series, without delay, not floating (reference ground: 0V)
Number of outputs	1 (safety-related N/C contacts: 21/22)
Contact switching type	1 confirmation current path
Contact material	AgCuNi, + Au
Switching voltage	min. 20.4 V DC
	max. 26.4 V DC
Switching capacity	min. 20 mW
Inrush current	min. 1 mA

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	max. 100 mA
Limiting continuous current	100 mA
Switching frequency	max. 1 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	150 mA Fast-blow

## Connection data

### Connection technology

pluggable	no
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### Conductor connection

Connection method	Screw connection
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	26 ... 12
Stripping length	12 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

## Signaling

Status display	2 x LED (green)
Operating voltage display	1 x yellow LED
Error indication	1 x red LED

## Dimensions

Width	6.8 mm
Height	93.1 mm
Depth	102.5 mm

## Material specifications

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

## Characteristics

### Safety data

Stop category	0
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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

Safety Integrity Level (SIL)	3
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### Safety data

Safety Integrity Level (SIL)	3
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3
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Safety data

Safety Integrity Level (SIL)	3
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Safety data: IEC 61508 - Low demand

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	UL 22 ATEX 2912X

IECEX

Identification	Ex ec nC IIC T4 Gc
Certificate	IECEX UL 22.0037X

UL, USA/Canada

Identification	cULus
Certificate	E140324

UL Ex, USA / Canada

Identification	Class I, Zone 2, AEx nA nC IIC T4 / Ex nA 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

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## CCC / China-Ex

Identification	Ex ec nC IIC T4 Gc
Certificate	2022122304115695

## Standards and regulations

### Air clearances and creepage distances between the power circuits

Standards/regulations	EN 60664-1, EN 60079-7, EN 60079-15
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## Mounting

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

# PSR-PS22-1NO-1NC-24VDC-SC - Coupling relay

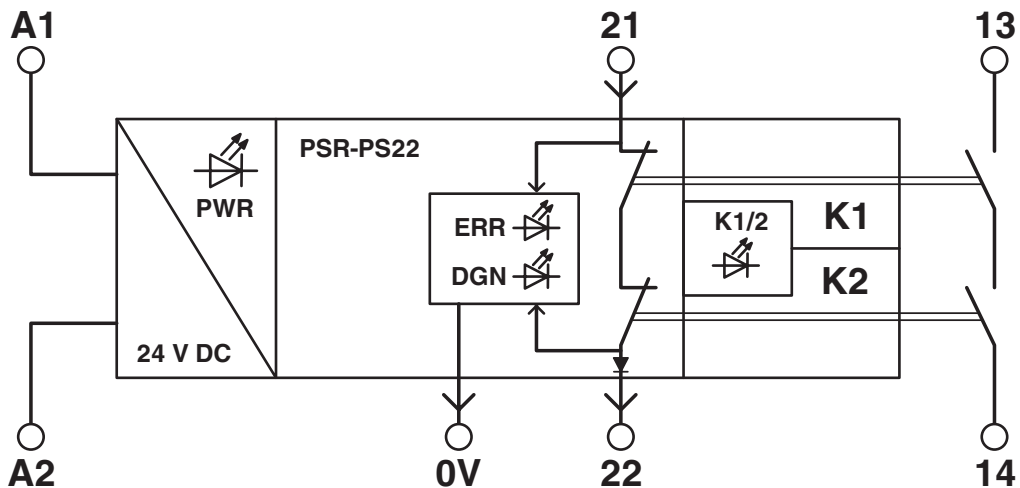


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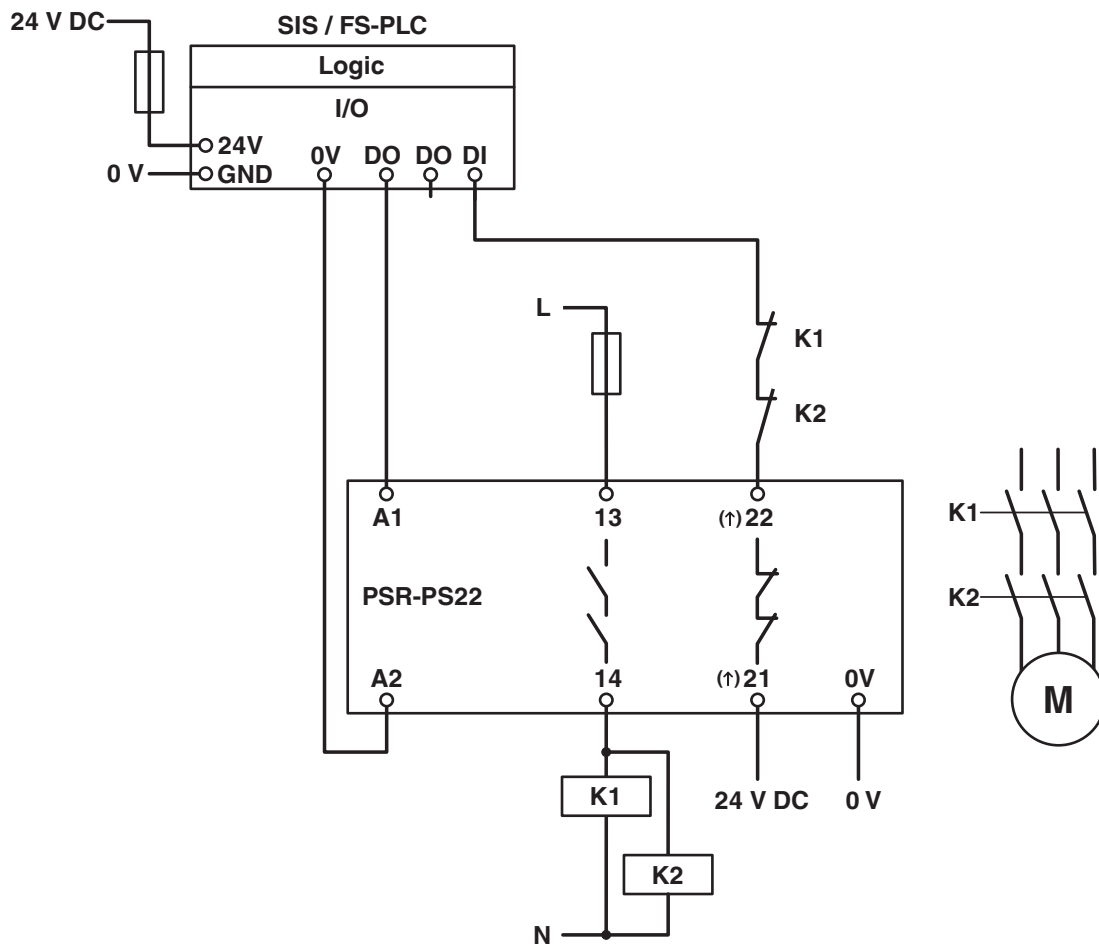
## Drawings

Block diagram



Block diagram

Circuit diagram



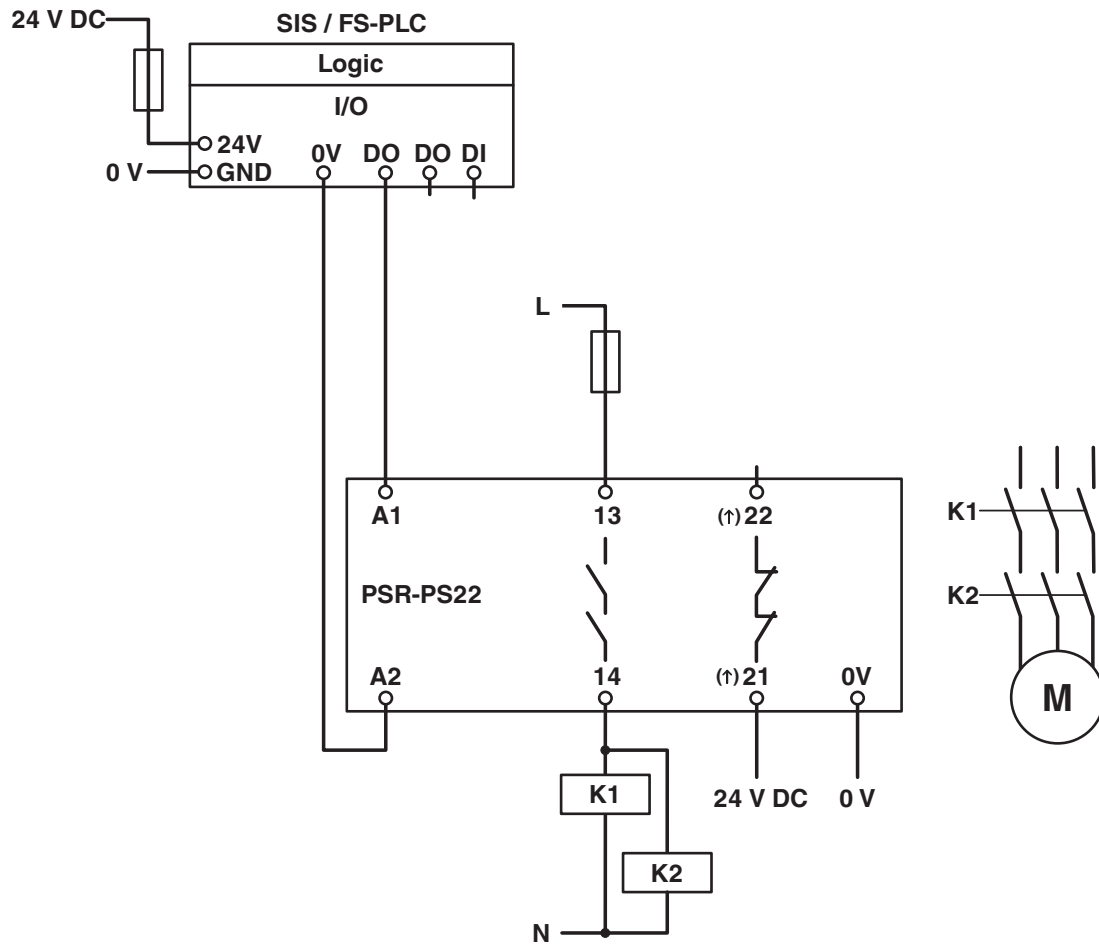
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Circuit diagram





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## Approvals


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 **UL Listed**  
Approval ID: E140324

 **cUL Listed**  
Approval ID: E140324


 **EAC**  
Approval ID: RU C-DE.A\*30.B.01082


 **Functional Safety**  
Approval ID: 44-780-15124306

 **Functional Safety**  
Approval ID: 44-205-15124306

 **IECEX**  
Approval ID: IECEX ULD 14.0003 X

 **cUL Listed**  
Approval ID: E360692

 **UL Listed**  
Approval ID: E360692

 **ATEX**  
Approval ID: DEMKO 14 ATEX 1284 X

**cULus Listed**

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## Classifications

### ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	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	b619f461-249e-46c4-89cf-a70789c77101

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