

# PSR-PC50-1NO-1DO-24DC-SP - Coupling relay



2904665

<https://www.phoenixcontact.com/in/products/2904665>

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Coupling relay for SIL 3 low-demand applications, couples digital output signals to the I/O, 1 enabling current path, module for F&G applications, test pulse filter, width: 17.5 mm, pluggable Push-in terminal block

## Your advantages

- Up to SIL 3 in accordance with IEC 61508
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Installation in zone 2 permitted
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation

## Commercial Data

Item number	2904665
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	DNA
Product Key	DNA182
Catalog Page	Page 253 (C-6-2019)
GTIN	4046356919920
Weight per Piece (including packing)	221.2 g
Weight per Piece (excluding packing)	212.4 g
Customs tariff number	85364900
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
Installation location	IP 54
Application	Safe switch on Low demand Ex
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

### Times

Typ. starting time with $U_S$	30 ms (when controlled via A1)
Typical release time	30 ms (when controlled via A1)
Recovery time	1 s

### Electrical properties

Maximum power dissipation for nominal condition	1.56 W
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	6 kV/safe isolation (through protective impedance)

### Supply

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 % (A1/A2)
Rated control supply current $I_S$	typ. 65 mA (A1/A2)
Inrush current	≤ 200 mA (A1/A2)
Filter time	< 2 ms (Test pulse duration) ≥ 100 ms (Test pulse rate)
Diagnostic supply voltage $U_D$	24 V DC -15 % / +10 % (24V/A2)
Input current at $U_D$	typ. 15 mA (24V/A2; depending on load M1 +100 mA)
Inrush current at $U_D$	2.5 A (24V/A2; for 10 μs)
Protective circuit	Overload protection; Suppressor diode

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## Input data

### Digital

Number of inputs	3 (Test point for proof test)
Inrush current	200 mA (Inputs TP1, TP2 and TP3)
Current consumption	typ. 20 mA (Input TP1)
	typ. 18 mA (Input TP2)
	typ. 35 mA (Input TP3)

## Output data

### Relay: Enabling current path

Output description	safety-related N/O contacts
Number of outputs	1 (undelayed)
Contact type	1 enabling current path
Contact material	AgNi, gold-flashed
Switching voltage	min. 15 V AC/DC without diagnostics
	min. 20 V AC/DC (with diagnostics)
	max. 250 V AC
	max. 125 V DC
Switching capacity	min. 1.5 W
Inrush current	min. 100 mA
	max. 5 A
Max. permissible overall conductor resistance	< 10 Ω (LO/LO' and NI/NI' and load resistance in the event of a short circuit)
Limiting continuous current	5 A
Switching frequency	max. 0.5 Hz
Diagnostic threshold	20 Ω ... 18 kΩ (lower/upper)
Mechanical service life	approx. 5x 10 <sup>7</sup> cycles

### Signal

Output description	non-safety-related
Number of outputs	1 (digital)
Voltage	23 V DC
Current	max. 100 mA
Short-circuit protection	no
Output fuse	150 mA fast blow

## Connection data

### Connection technology

pluggable	yes
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### Conductor connection

Connection method	Push-in connection
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>

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Conductor cross section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Signaling

Status display	Green LED
Operating voltage display	Yellow LED
Error indication	Red LED

## Dimensions

Width	17.5 mm
Height	117.4 mm
Depth	114.5 mm

## Material specifications

Housing material	Polyamide
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## Characteristics

Safety data: IEC 61508 - Low demand

Equipment type	Type A
Safety Integrity Level (SIL)	3 (15 % of total SIL)
Safe Failure Fraction (SFF)	99.62 %
MTBF	110.5 Years
$\lambda_{SU}$	849 FIT
$\lambda_{SD}$	4.27 FIT
$\lambda_{DU}$	3.40 FIT
$\lambda_{DD}$	4.21 FIT
Probability of a hazardous failure on demand (PFD <sub>AVG</sub> )	1.49 x 10 <sup>-4</sup> 1.49 x 10 <sup>-5</sup> (for proof test interval = 1 year)
Proof test interval	120 Months
Duration of use	240 Months

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-20 °C ... 55 °C
Ambient temperature (storage/transport)	-40 °C ... 65 °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)

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Shock	15g
Vibration (operation)	2g

## Approvals

### ATEX

Identification	<input type="checkbox"/> II 3 G Ex nA nC IIC T4 Gc
Certificate	DEMKO 14 ATEX 1284X

### IECEX

Identification	Ex nA nC IIC T4 Gc
Certificate	IECEX ULD 14.0003X

### UL, USA/Canada

Identification	cULus
Certificate	E140324

### UL, 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

### DNV

Identification	C, EMC2
Certificate	11253-14 HH

### CE

Certificate	CE-compliant
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## Standards and regulations

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

Standards/regulations	DIN EN 50178
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## Mounting

Mounting type	DIN rail mounting
Mounting position	vertical or horizontal
Connection method	Push-in connection

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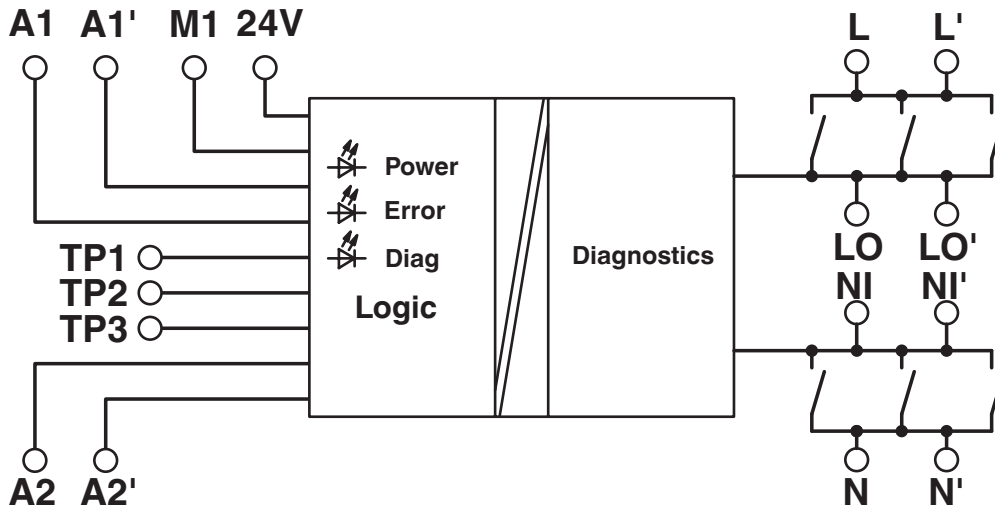


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## Drawings

Block diagram



Block diagram

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## Approvals



**EAC**

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



**DNV GL**

Approval ID: TAA00002VZ



**UL Listed**

Approval ID: FILE E 140324



**cUL Listed**

Approval ID: FILE E 140324



**Functional Safety**

Approval ID: 968/FSP 1011.02/20



**IECEx**

Approval ID: IECEx ULD 14.0003 X



**cUL Listed**

Approval ID: File E 360692



**UL Listed**

Approval ID: File E 360692



**ATEX**

Approval ID: DEMKO 14 ATEX 1284 X

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## Classifications

### ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	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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