

IOA-PSR-PS22-1NO-1NC-24DC - Coupling relay



2702971

<https://www.phoenixcontact.com/us/products/2702971>

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Plug-in SIL coupling relay as an input/output accessory for VIP base module, SIL 3 high- and low-demand applications, safe-state-off, couples digital output signals to the periphery, one enabling current path, one confirmation current path, test pulse filter

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 thanks to integrated signal contact
- Easy proof test according to IEC 61508
- 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

Commercial data

Item number	2702971
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	NULL
Product key	DNA172
GTIN	4055626510941
Weight per piece (including packing)	136.333 g
Weight per piece (excluding packing)	51.124 g
Customs tariff number	85364900
Country of origin	DE

Technical data

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

Times

Typ. starting time with U_S	150 ms (when controlled via pins 05/06)
Typical release time	30 ms (when controlled via pins 05/06)
Recovery time	500 ms

Electrical properties

Maximum power dissipation for nominal condition	1.86 W (at $U_B = 30$ V DC, $U_{BD} = 30$ V DC, $I_L = 9$ 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 (05/06) and diagnostics circuit (03/04/02) to the enabling current path (15/19)

Supply

Rated control circuit supply voltage U_S	19.5 V DC ... 30 V DC
Rated control circuit supply voltage U_S	24 V DC -20 % / +25 %
Rated control supply current I_S	typ. 25 mA
Power consumption at U_S	typ. 0.77 W
Inrush current	typ. 100 mA ($\Delta t < 50$ ms at U_S)
Filter time	max. 3 ms (at pins 05/06 in the event of voltage dips at U_S)
	max. 3 ms (at pins 05/06; low test pulse width)
	≥ 50 ms (at pins 05/06; low test pulse width)
	max. 17 ms (at pins 05/06; high test pulse width)
	≥ 600 ms (at pins 05/06; high test pulse width)
Diagnostic supply voltage U_D	24 V DC -20 % / +25 % (at pin 04)
Input current at U_D	7 mA (at pins 04/03 for U_D ; + 100 mA depending on load at pin 02)
Inrush current at U_D	typ. 200 mA ($\Delta t < 1$ ms; at pins 04/03 for U_D)
Protective circuit	Surge protection; 35 V suppressor diode (pins 05/06)33 V suppressor diode (pins 04/03)35 V suppressor diode (pins 02/03)
	Polarity reversal protection for rated control circuit supply voltage

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and diagnostic supply voltage

Output data

Relay: Enabling current path

Output description	safety-related N/O contacts
Number of outputs	1 (undelayed)
Contact switching type	1 enabling current path
Contact material	AgSnO ₂
Switching voltage	min. 12 V AC/DC max. 230 V AC/DC (Observe the load curve)
Switching capacity	min. 60 mW
Inrush current	min. 3 mA max. 3 A
Switching capacity in accordance with IEC 60947-5-1	3 A (24 V (DC13)) 3 A (230 V (AC15))
Limiting continuous current	3 A (observe derating)
Sq. Total current	9 A ² (observe derating)
Mechanical service life	10x 10 ⁶ cycles
Output fuse	3 A gL/gG

Relay: Confirmation current path

Output description	Safety-related N/C contacts
Number of outputs	1 (undelayed)
Contact switching type	1 confirmation current path
Contact material	AgCuNi, + Au
Switching voltage	min. 19.2 V DC max. 30 V DC
Switching capacity	min. 20 mW
Inrush current	min. 1 mA max. 100 mA
Limiting continuous current	100 mA
Output fuse	150 mA Fast-blow

Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Pluggable onto VIP base module
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Signaling

Status display	2 x LED bi-color (green, red)
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Dimensions

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Width	10 mm
Height	75 mm
Depth	112 mm

Material specifications

Color (Housing)	yellow (RAL 1018)
Housing material	PA 6.6

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

Safety Integrity Level (SIL)	3 (< 15% of the overall SIL)
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Safety data

Safety Integrity Level (SIL)	3 (< 15% of the overall SIL)
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3 (< 15% of the overall SIL)
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Safety data

Safety Integrity Level (SIL)	3 (< 15% of the overall SIL)
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3 (< 15% of the overall SIL)
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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	15 g (in the event of continuous stress caused by shock, contact

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	reactions are possible.)
Vibration (operation)	10 Hz ... 150 Hz, 2g

Approvals

ATEX

Identification	⊕ II 3G Ex ec nC IIC T4 Gc
Certificate	Sira 17ATEX4293X

IECEX

Identification	Ex ec nC IIC T4 Gc
Certificate	IECEX SIR 17.0078X

UL, USA/Canada

Identification	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC T4

CSA, USA/Canada

Identification	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, AEx ec nC IIC T4 Gc
	Ex ec nC IIC T4 Gc

CE

Identification	CE-compliant
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Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	EN 60947-1, EN 60079-0, EN 60079-15
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Mounting

Mounting type	Plug-in mounting
Assembly instructions	See derating curve
Mounting position	vertical or horizontal

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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

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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