

PSR-PC40-2NO-1DO-24DC-SP - Coupling relay



2700589

<https://www.phoenixcontact.com/us/products/2700589>

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The figure shows a version with a screw connection

Coupling relay for SIL 3 high and low-demand applications, couples digital output signals to the I/O, 2 enabling current paths, 1 digital signal output, safe state off applications, test pulse filter, pluggable Push-in 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 thanks to integrated signal contact
- Approved for Class I, Zone 2 applications
- Low housing width of just 12.5 mm
- Manually monitored and automatic activation in a single device
- Self-regulation with device-internal lock
- Long service life thanks to filtering of controller test pulses
- 2 enabling current paths, 1 digital signal output
- 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	2700589
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA182
GTIN	4046356916141
Weight per piece (including packing)	152 g
Weight per piece (excluding packing)	152.55 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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Product properties

Product type	Coupling relay
Product family	PSRmini
Application	Safe switch off
	High demand
	Low demand
	Ex
Control	1-channel
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	< 200 ms (when controlled via A1, automatic start)
Typical release time	< 35 ms (when controlled via A1)
Recovery time	500 ms

Electrical properties

Maximum power dissipation for nominal condition	5.5 W ($I_L^2 = 60 \text{ A}^2$)
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Safe isolation, 6 kV reinforced insulation from control circuit, start circuit, signal output to the enabling current paths, 4 kV/basic insulation between the enabling current paths and between all current paths and housing

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. 75 mA (depending on load M1 +100 mA)
Power consumption at U_s	typ. 1.8 W
Inrush current	typ. 400 mA ($\Delta t < 100 \mu\text{s}$ at U_s)
Filter time	max. 2 ms (at A1-A2; test pulse width)
	≥ 100 ms (at A1-A2; test pulse rate)
Protective circuit	Serial protection against polarity reversal; Suppressor diode 33 V

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Input data

Digital: Start circuit (Y1, Y2)

Number of inputs	2 (non-safety-related)
Inrush current	< 10 mA
Max. permissible overall conductor resistance	150 Ω
Voltage at input/start and feedback circuit	24 V DC -15 % / +10 %
Current consumption	< 5 mA

Output data

Relay: Enabling current paths (13/14, 23/24)

Output description	2 NO contacts each in series, without delay, floating
Number of outputs	2 (safety-related)
Contact switching type	2 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 12 V AC/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)) 5 A (250 V (AC15))
Limiting continuous current	6 A (High demand) 4 A (Low demand)
Sq. Total current	60 A ² (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)

Signal: M1

Output description	PNP
Number of outputs	1 (non-safety-related)
Voltage	approx. 22 V DC (U _s - 2 V)
Current	max. 100 mA
Maximum inrush current	500 mA ($\Delta t = 1$ ms at U _s)
Short-circuit protection	no
Output fuse	150 mA fast blow

Connection data

Connection technology

pluggable	yes
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Conductor connection

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Connection method	Push-in connection
Conductor cross-section rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross-section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

Signaling

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

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
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Safety data: EN 50156

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

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)

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Shock	15g
Vibration (operation)	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 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	2022122304115695

DNV

Identification	C, EMC2
Certificate	11253-14 HH

Mounting

Mounting type	DIN rail mounting
Assembly note	See derating curve
Mounting position	vertical, horizontal, with front of module upward

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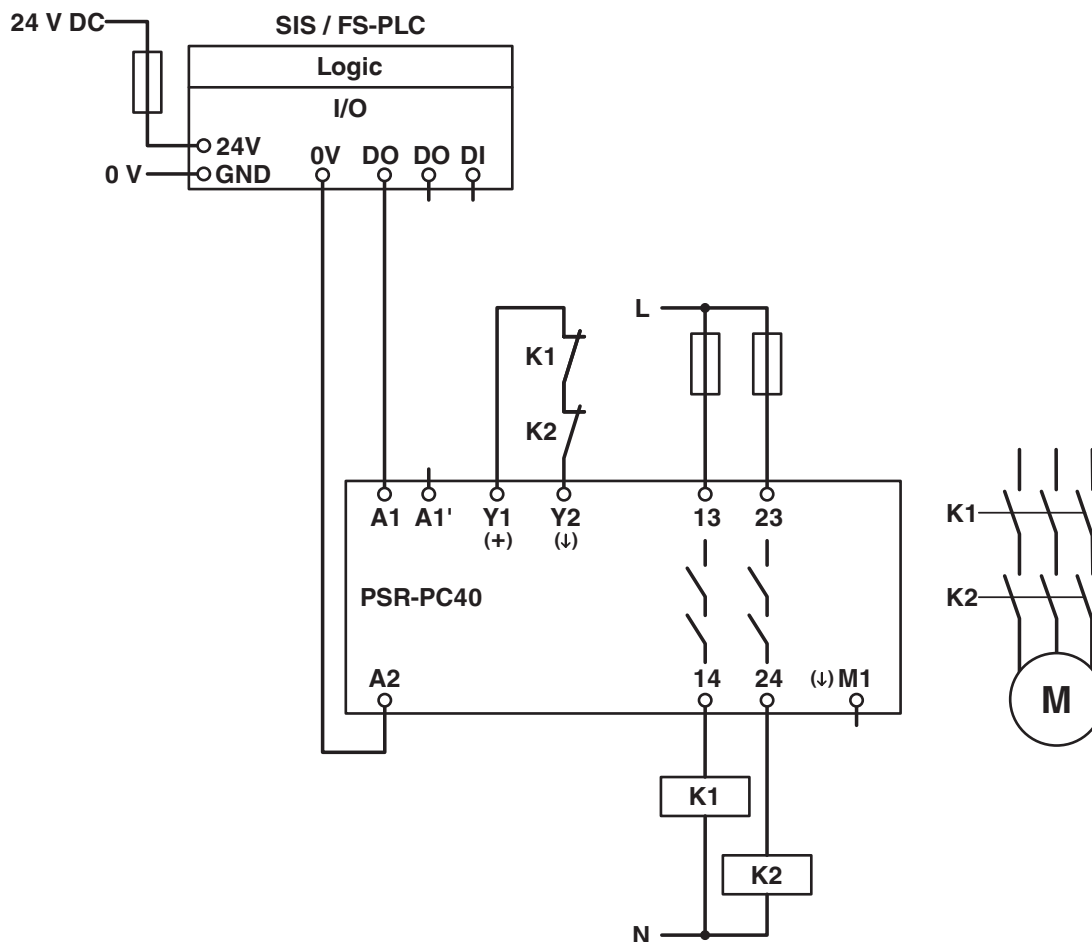


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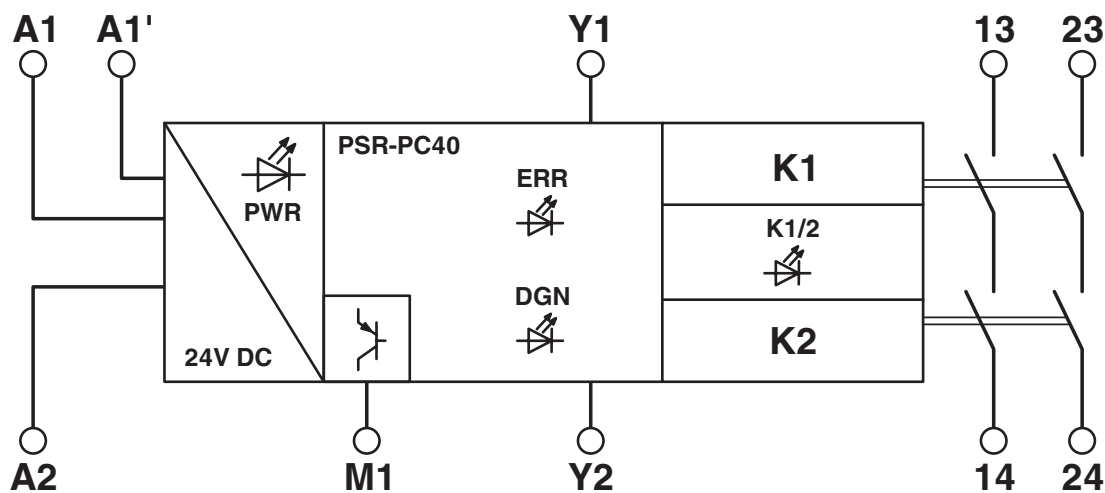
Drawings

Circuit diagram



Example application

Block diagram




Block diagram


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Approvals


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 **Functional Safety**
Approval ID: 44-780-13755202


 **Functional Safety**
Approval ID: 44 205 13755204

 **cULus Listed**
Approval ID: E140324

 **IECEx**
Approval ID: IECEx ULD 22.0037X

 **ATEX**
Approval ID: UL 22 ATEX 2912X

 **cULus Listed**
Approval ID: E360692

 **CCC**
Approval ID: 2022122304115695

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Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819

ETIM

ETIM 10.0	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	d8d54064-8adc-4370-9973-0b87cdb61c02

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