

Coupling relay - PSR-PC40-2NO-1DO-24DC-SP - 2700589

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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, plug-in spring-cage terminal block


The figure shows a version with a screw connection

Why buy this product

- ✓ Up to SIL 3 according to IEC 61508
- ✓ Forcibly guided contacts according to 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
- ✓ Self-regulation with device-internal lock
- ✓ Manually monitored and automatic activation in a single device
- ✓ 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



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 916141
GTIN	4046356916141

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Width	12.5 mm
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Dimensions

Height	116.6 mm
Depth	114.5 mm

Ambient conditions

Ambient temperature (operation)	-40 °C ... 70 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

Power supply

Rated control circuit supply voltage U_S	24 V DC -15 % / +10 % (A1/A2)
	20.4 V DC ... 26.4 V DC
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 ($\Delta t < 100 \mu s$ 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 33 V suppressor diode

Digital inputs

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

Relay outputs: enabling current path

Output name	Enabling current path
Output description	2 NO contacts each in series, without delay, floating
Number of outputs	2 (safety-related N/O contacts: 13/14, 23/24)
Contact type	2 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Limiting continuous current	6 A (High demand)
	4 A (Low demand)
Inrush current	min. 3 mA
	max. 6 A
Sq. Total current	60 A ² (observe derating)
Switching capacity	min. 60 mW
Switching frequency	max. 0.5 Hz

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Relay outputs: enabling current path

Mechanical service life	10x 10 ⁶ cycles
Switching capacity according to IEC 60947-5-1	4 A (24 V (DC13))
	5 A (250 V (AC15))
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

Alarm outputs

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 (Δt = 1 ms at U _s)
Short-circuit protection	no
Output fuse	150 mA fast blow

Times

Typical pickup time at US	< 200 ms (when controlled via A1, automatic start)
Typical release time at US	< 35 ms (when controlled via A1)
Recovery time	500 ms

General

Relay type	Electromechanical relay with forcibly guided contacts in accordance with IEC/EN 61810-3 (EN 50205)
Nominal operating mode	100% operating factor
Net weight	197 g
Mounting position	vertical, horizontal, with front of module upward
Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Housing material	PBT
Housing color	yellow
Operating voltage display	1 x yellow LED
Status display	2 x green LEDs
Indication	1 x red LED

Connection data

Connection method	Spring-cage connection
pluggable	Yes
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	1.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	1.5 mm ²

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Connection data

Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	8 mm

Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	3
Designation	IEC 61508 - Low demand
Safety Integrity Level (SIL)	3
Designation	EN 50156
Safety Integrity Level (SIL)	3

Standards and Regulations

Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178, EN 60079-15
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
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	2g
Conformance	CE-compliant
UL, USA/Canada	cULus
	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
GL	C, EMC2
Environmental simulation test	ISA-S71.04 (G3)

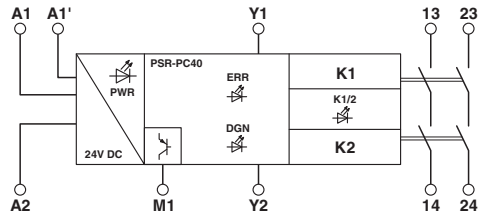
Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

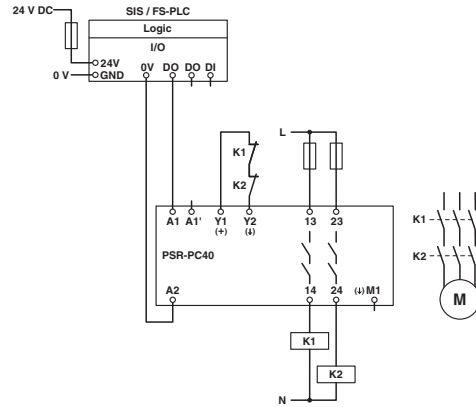
Drawings

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Block diagram



Circuit diagram



Approvals

Approvals

Approvals

UL Listed / cUL Listed / EAC / GL / Functional Safety / cULus Listed

Ex Approvals

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
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cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
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EAC			RU C- DE.A*30.B.01082
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GL		http://exchange.dnv.com/tari/	11253-14 HH
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Approvals

Functional Safety		44-780-13755202
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cULus Listed		
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