

Coupling relay - PSR-SPP- 24DC/FSP/1X1/1X2 - 2981981

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Coupling relay for SIL 3 high/low-demand applications, couples digital output signals to the I/O, 1 enabling current path, 1 signal contact, module for safe state off applications, test pulse filter, fuse, plug-in spring-cage terminal block, width: 17.5 mm


The figure shows a version with a screw connection

Your advantages

- ✓ Narrow 17.5 mm housing
- ✓ Forcibly guided contacts according to EN 50205
- ✓ Up to SIL 3 according to IEC 61508
- ✓ Easy proof test according to IEC 61508 thanks to integrated signal contact
- ✓ Long service life thanks to filtering of controller test pulses
- ✓ With built-in, replaceable fuse in the enabling current path
- ✓ Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation
- ✓ One enabling current path



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 448345
GTIN	4046356448345

Technical data

Note

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

Width	17.5 mm
Height	112 mm
Depth	114.5 mm

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Ambient conditions

Ambient temperature (operation)	-20 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 70 °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)

Input data

Rated control circuit supply voltage U_s	24 V DC -15 % / +10 %
Rated control supply current I_s	typ. 55 mA
Power consumption at U_s	typ. 1.32 W
Inrush current	max. 100 mA
Typ. starting time with U_s	50 ms
Typical release time	50 ms
Recovery time	1 s
Operating voltage display	1 x yellow LED
Protective circuit	Surge protection Suppressor diode, 33 V (A1 - A2)
Maximum switching frequency	0.5 Hz
Filter time	max. 5 ms (at A1 in the event of voltage dips at U_s)
	max. 2 ms (Test pulse width; high test pulse at A1/A2)
	≥ 100 ms (Test pulse width; high test pulse at A1/A2)
	Test pulse rate = 80 x Test pulse width
	max. 5 ms (Test pulse width; low test pulse at A1/A2)
	≥ 50 ms (Test pulse rate; low test pulse at A1/A2)
	Test pulse rate = 15 x Test pulse width

Output data

Contact type	1 enabling current path
	1 confirmation current path
Contact material	AgCuNi, + 0.2 μm Au
Maximum switching voltage	250 V AC/DC (N/O contact / N/C contact, observe the load curve)
Minimum switching voltage	15 V AC/DC (N/O contact / N/C contact)
Limiting continuous current	5 A (N/O contact, pay attention to the derating)
	100 mA (N/C contact)
Maximum inrush current	5 A (N/O contact)
	100 mA (N/C contact)
Inrush current, minimum	5 mA (N/O contact / N/C contact)
Sq. Total current	25 A ² (observe derating)
Interrupting rating (ohmic load) max.	120 W (24 V DC, τ = 0 ms, N/C contact: 2.4 W)
	192 W (48 V DC, τ = 0 ms, N/C contact: 4.8 W)
	162 W (60 V DC, τ = 0 ms, N/C contact: 6 W)
	66 W (110 V DC, τ = 0 ms, N/C contact: 11 W)

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Output data

	60 W (220 V DC, $\tau = 0$ ms, N/C contact: 22 W)
	1250 VA (250 V AC, $\tau = 0$ ms, N/C contact: 25 VA)
Maximum interrupting rating (inductive load)	72 W (24 V DC, $\tau = 40$ ms, N/C contact: 2.4 W)
	43 W (48 V DC, $\tau = 40$ ms, N/C contact: 4.8 W)
	41 W (60 V DC, $\tau = 40$ ms, N/C contact: 6 W)
	35 W (110 V DC, $\tau = 40$ ms, N/C contact: 11 W)
	48 W (220 V DC, $\tau = 40$ ms, N/C contact: 22 W)
Switching capacity	min. 75 mW
Mechanical service life	10x 10 ⁶ cycles
Output fuse	5 A T fuse (N/O contact)
	150 mA Fast-blow (N/C contact)

General

Relay type	Electromechanical relay with forcibly guided contacts in accordance with EN 50205
Nominal operating mode	100% operating factor
Net weight	99.99 g
Mounting position	any
Mounting type	DIN rail mounting
Degree of protection	IP20
	IP54
Min. degree of protection of inst. location	IP54
Housing material	PBT
Housing color	yellow

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
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 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)
Designation	IEC 61508 - Low demand

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Safety-related characteristic data

Safety Integrity Level (SIL)	3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)
Designation	EN ISO 13849
Performance level (PL)	e (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$)
Category	4 (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$)
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)
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/VDE 0160
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6 kV between the control circuits (A1/A2), (21/22), (13/14)
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

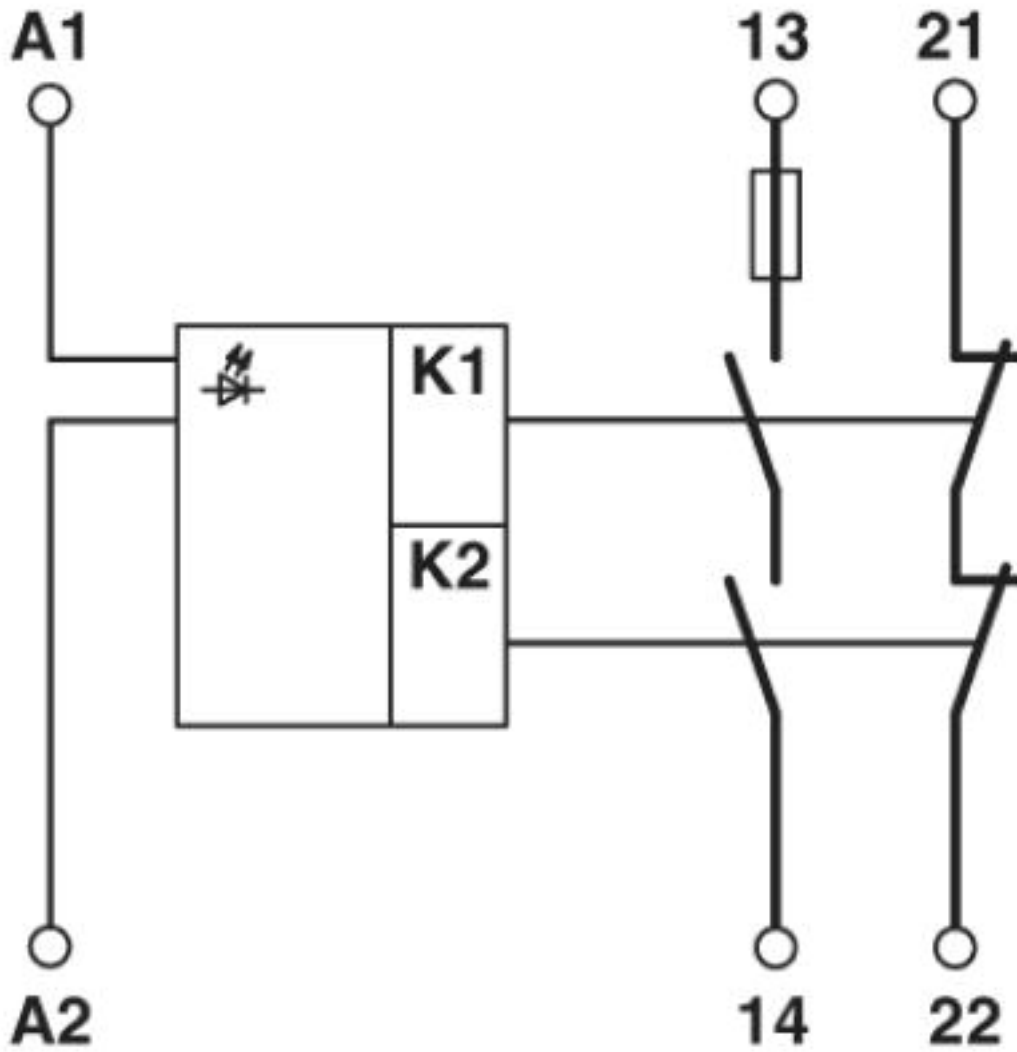
Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

Drawings

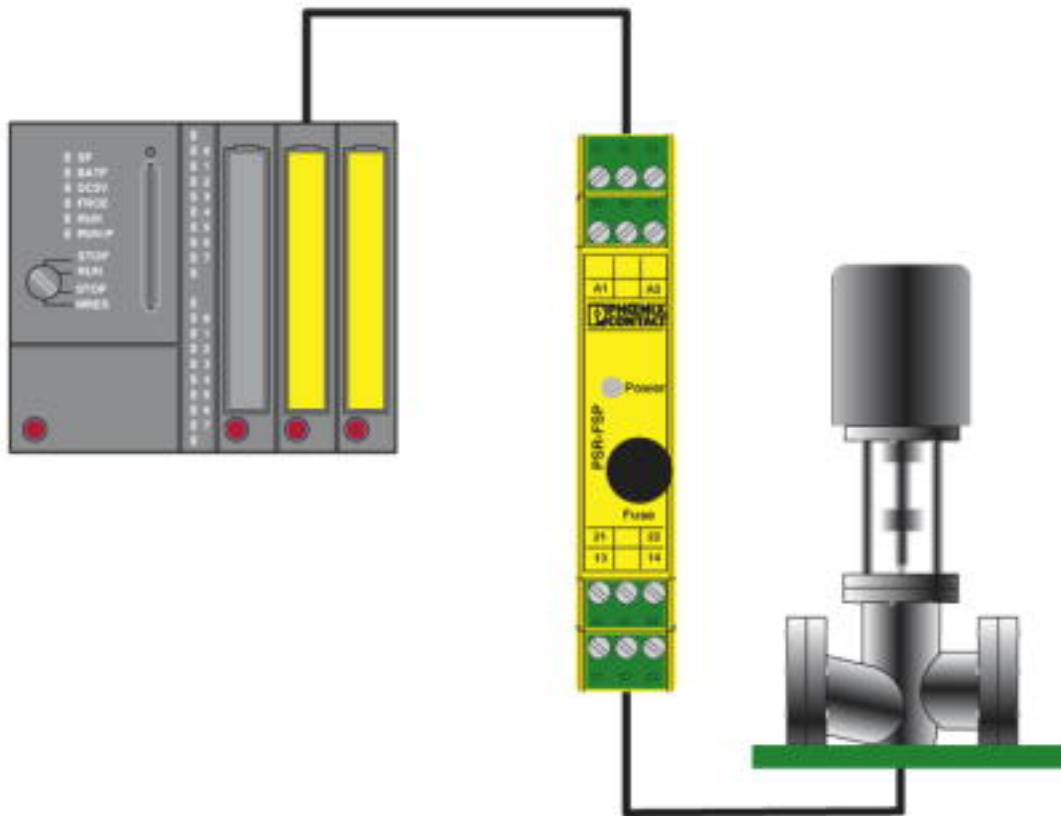
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Circuit diagram



Coupling relay - PSR-SPP- 24DC/FSP/1X1/1X2 - 2981981

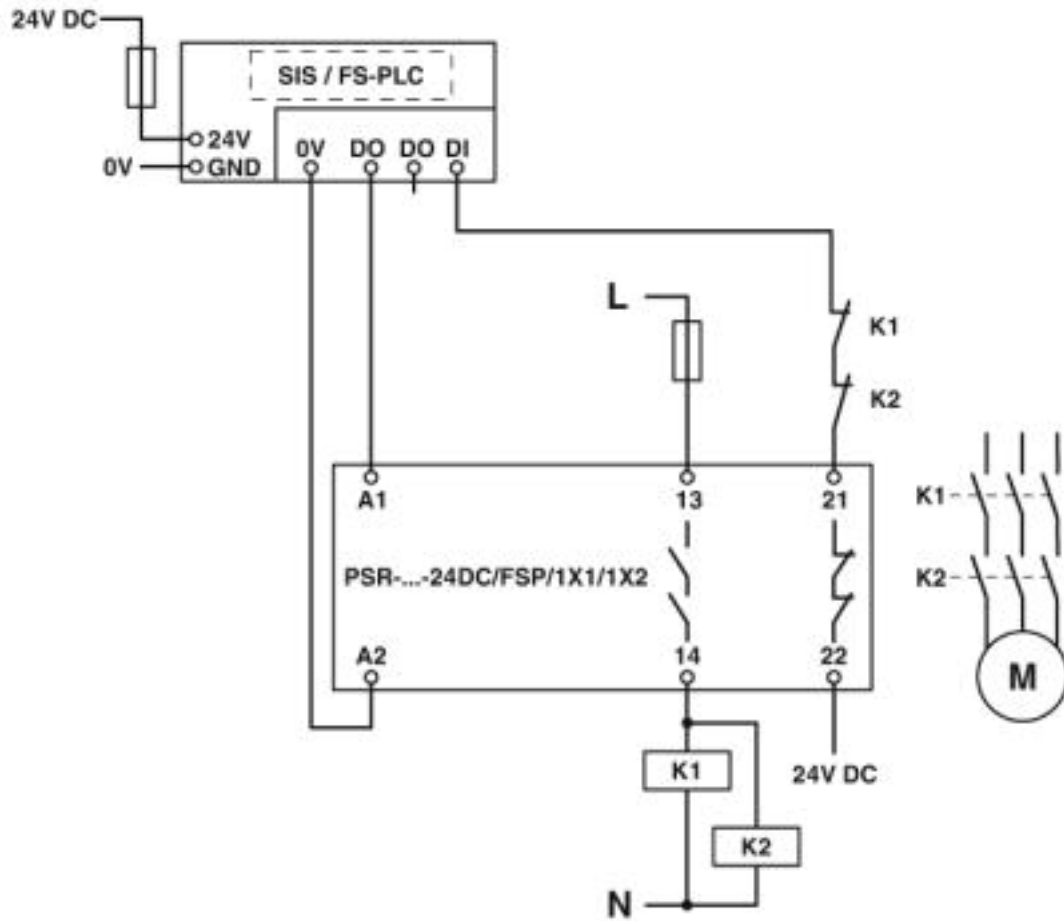
Application drawing



Example of electrical isolation of a safety PLC output from the field.

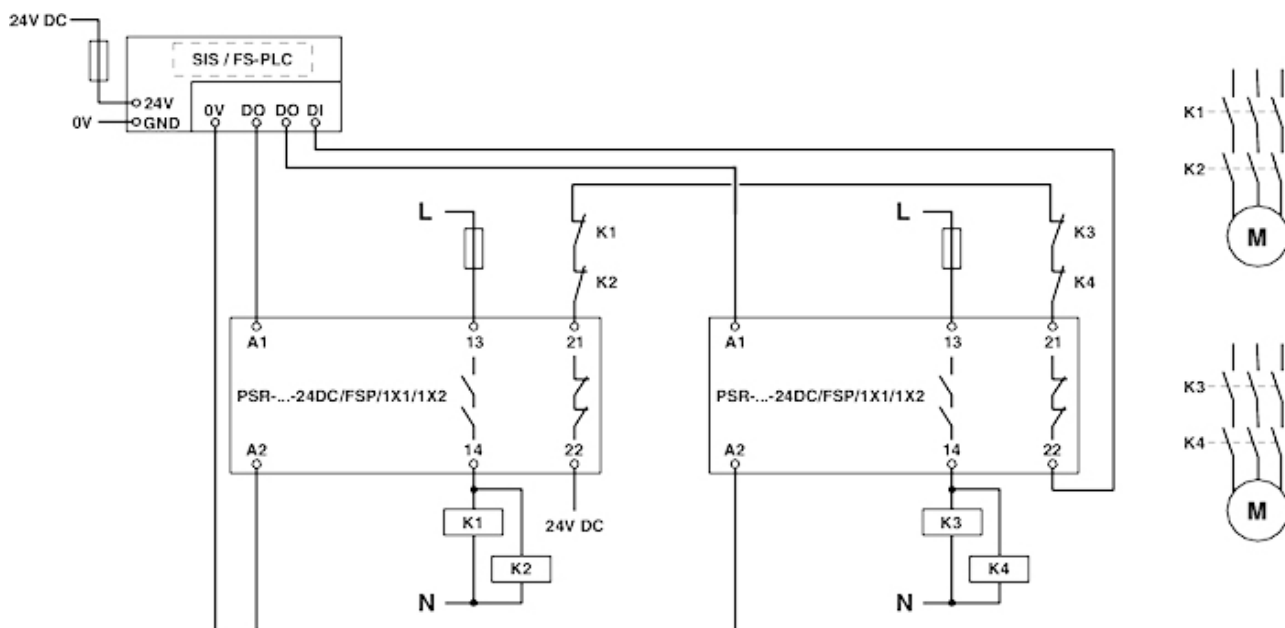
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Circuit diagram



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Circuit diagram



Approvals

Approvals

Approvals

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

Ex Approvals

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYVV/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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Functional Safety			968/EZ 365.05/16
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EAC			EAC-Zulassung
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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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Functional Safety			968/EZ 365.05/16
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GL		https://approvalfinder.dnvgl.com/	13979-15HH
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EAC			EAC-Zulassung
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