

Coupling relay - PSR-PS22-1NO-1NC-24VDC-SC - 2702524

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Coupling relay for SIL 3 high and low-demand applications, couples digital output signals to the I/O, 1 enabling current path, 1 confirmation current path, safe state off applications, test pulse filter, fixed screw terminal block

Your advantages

- ✓ Up to SIL 3 according to IEC 61508
- ✓ Forcibly guided contacts according to EN 50205
- ✓ Easy proof test according to IEC 61508
- ✓ Low housing width of just 6.8 mm
- ✓ 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



Key Commercial Data

Packing unit	1 pc
GTIN	 4 055626 280240
GTIN	4055626280240
Weight per Piece (excluding packing)	71.490 g
Custom tariff number	85364900
Country of origin	Germany

Technical data

Note

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

Width	6.8 mm
Height	93.1 mm

Coupling relay - PSR-PS22-1NO-1NC-24VDC-SC - 2702524

Technical data

Dimensions

Depth	102.5 mm
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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. 45 mA
Power consumption at U_s	typ. 1.08 W
Inrush current	typ. 150 mA ($\Delta t < 5$ ms at U_s)
Filter time	max. 3 ms (at A1-A2 in the event of voltage dips at U_s)
	max. 3 ms (at A1-A2; low test pulse width)
	≥ 50 ms (at A1-A2; low test pulse rate)
	max. 17 ms (at A1-A2; high test pulse width)
	≥ 600 ms (at A1-A2; high test pulse rate)
Diagnostic supply voltage U_D	24 V DC -15 % / +10 % (21/0V)
Input current at U_D	6 mA (at the contacts 21/0V for U_D ; + 100 mA depending on load at contact 22)
Inrush current at U_D	typ. 200 mA ($\Delta t < 1$ ms; for contacts 21 - 0 V at U_D)
Protective circuit	Serial protection against polarity reversal 33 V suppressor diode (A1-A2)33 V suppressor diode (21/0V)

Relay outputs: enabling current path

Output name	Enabling current path
Output description	2 N/O contacts in series, without delay, floating
Number of outputs	1 (safety-related N/O contacts: 13/14)
Contact type	1 enabling current path
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	36 A ² (observe derating)
Switching capacity	min. 60 mW
Switching frequency	max. 1 Hz

Coupling relay - PSR-PS22-1NO-1NC-24VDC-SC - 2702524

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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)

Relay outputs: return current/signaling current path

Output name	Confirmation current path
Output description	2 N/C contacts in series, without delay, not floating (reference ground: A2)
Number of outputs	1 (safety-related N/C contacts: 21/22)
Contact type	1 confirmation current path
Contact material	AgCuNi, + Au
Output voltage	Output of diagnostic supply voltage at contact 22: U _D - 1.6 V
Switching voltage	min. 20.4 V DC
	max. 26.4 V DC
Limiting continuous current	100 mA
Inrush current	min. 1 mA
	max. 100 mA
Switching capacity	min. 20 mW
Switching frequency	max. 1 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	150 mA Fast-blow

Times

Typical pickup time at US	< 150 ms (with U _s when controlled via A1)
Typical release time at US	< 30 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	71.494 g
Mounting position	vertical or horizontal
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

Coupling relay - PSR-PS22-1NO-1NC-24VDC-SC - 2702524

Technical data

General

Indication	1 x red LED
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Connection data

Connection method	Screw connection
pluggable	no
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section AWG min.	26
Conductor cross section AWG max.	12
Stripping length	12 mm
Screw thread	M3
Torque	0.5 Nm ... 0.6 Nm

Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	3
	3
Designation	IEC 61508 - Low demand
Safety Integrity Level (SIL)	3
Designation	EN 50156-2
Safety Integrity Level (SIL)	3 (Reference IEC 61508)

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	Basic insulation 4 kV between all current paths and housing
	Safe isolation, 6 kV reinforced insulation from the control circuit (A1/A2) and diagnostics circuit (0V/21/22) to the enabling current path (13/14)
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant
ATEX	# II 3 G Ex nA nC IIC T4 Gc
IECEx	Ex nA nC IIC T4 Gc
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
Environmental simulation test	ISA-S71.04 (G3)

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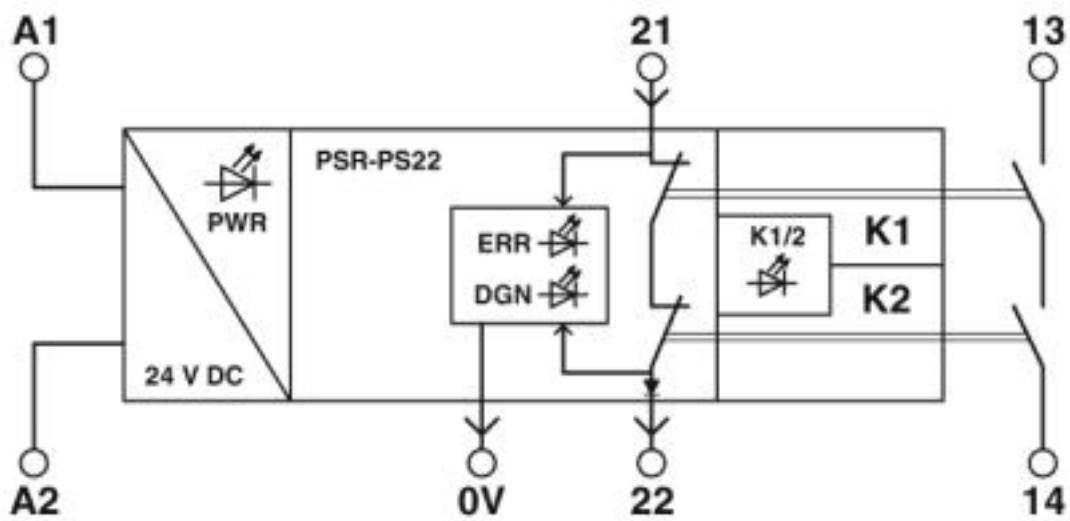
Technical data

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

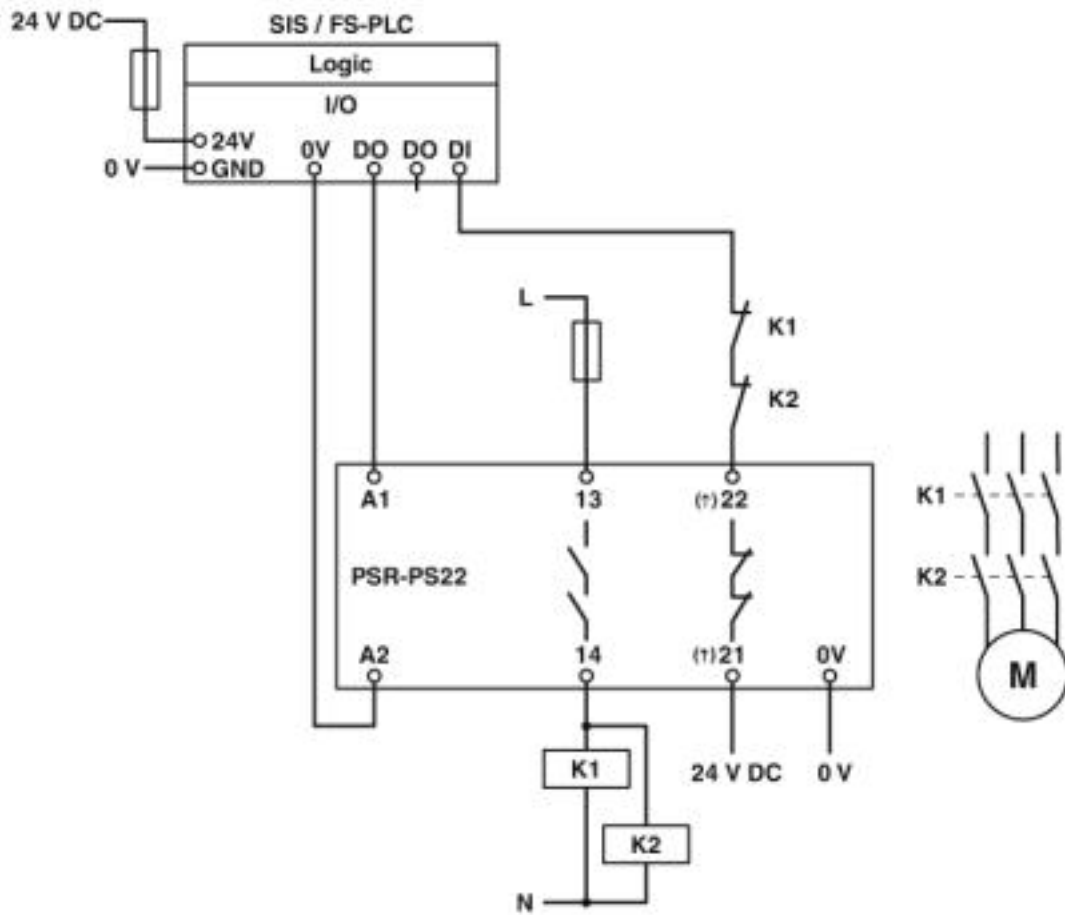
Drawings

Block diagram



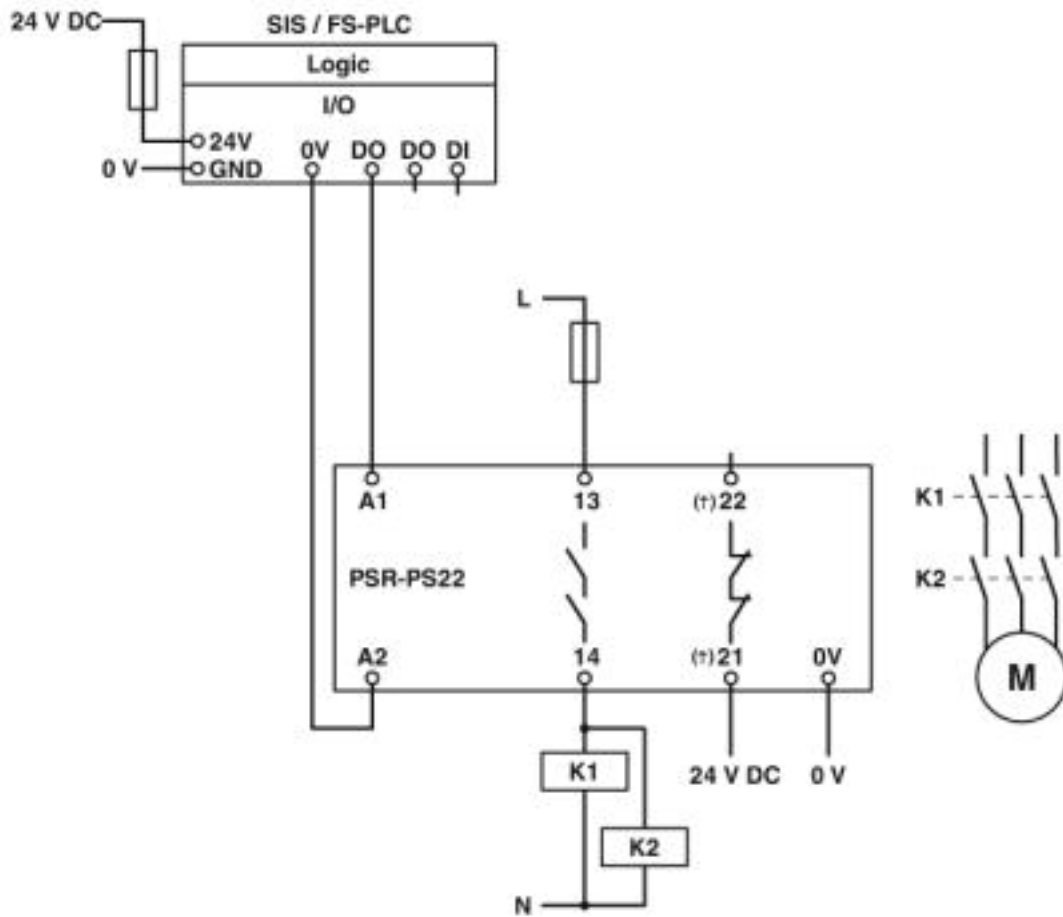
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Circuit diagram



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Circuit diagram



Classifications

eCl@ss

eCl@ss 5.1	27371901
eCl@ss 6.0	27371800
eCl@ss 7.0	27371819
eCl@ss 8.0	27371819
eCl@ss 9.0	27371819

ETIM

ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449

Approvals

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Approvals

Approvals

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

Ex Approvals

UL Listed / cUL Listed / cULus Listed

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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Functional Safety			44-780-15124306
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EAC			RU C- DE.A*30.B.01082
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cULus Listed			
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Accessories

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Terminal marking

Zack Marker strip, flat - ZBF 6:UNBEDRUCKT - 0808710



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snap into flat marker groove, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

