

PSR-SCP- 24DC/FSP2/2X1/1X2 - Coupling relay



2986575

<https://www.phoenixcontact.com/in/products/2986575>

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Safe coupling relay for SIL 2 high- and low-demand applications, couples digital output signals to the periphery, two enabling current paths, one signal contact, module for safe state off applications, integrated test pulse filter, plug-in screw connection, width: 17.5 mm

Your advantages

- Narrow 17.5 mm housing
- Up to SIL 2 in accordance with EN 61508
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Long service life thanks to filtering of controller test pulses
- Force-guided contacts in accordance with EN 50205
- 2 enabling current paths
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation

Commercial Data

Item number	2986575
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	DNA
Product Key	DNA161
Catalog Page	Page 255 (C-6-2019)
GTIN	4046356553322
Weight per Piece (including packing)	141.05 g
Weight per Piece (excluding packing)	109.96 g
Customs tariff number	85364190
Country of origin	DE

Technical Data

Product properties

Product type	Coupling relay
Product family	PSRclassic
Application	Safe switch off
	High demand
	Low demand
Mechanical service life	10x 10 ⁶ cycles
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Electrical properties

Maximum power dissipation for nominal condition	2.4 W
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	Safe isolation, reinforced insulation 6 kV between the control circuits (A1/A2), (31/32), (13/14, 23/24)

Input data

General

Rated control circuit supply voltage U_S	24 V DC -15 % / +10 %
Power consumption at U_S	typ. 1.32 W
Rated control supply current I_S	typ. 55 mA
Input voltage range	20.4 V DC ... 26.4 V DC
Inrush current	max. 100 mA
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	
Typ. starting time with U_S	50 ms
Typical release time	50 ms
Recovery time	1 s
Maximum switching frequency	0.5 Hz
Protective circuit	Surge protection; Suppressor diode, 33 V (A1 - A2)
Operating voltage display	1 x yellow LED

Output data

Contact type	2 enabling current paths
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	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	50 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)
	60 W (220 V DC, τ = 0 ms, N/C contact: 22 W)
	1250 VA (250 V AC, τ = 0 ms, N/C contact: 25 VA)
Maximum interrupting rating (inductive load)	72 W (24 V DC, τ = 40 ms, N/C contact: 2.4 W)
	43 W (48 V DC, τ = 40 ms, N/C contact: 4.8 W)
	41 W (60 V DC, τ = 40 ms, N/C contact: 6 W)
	35 W (110 V DC, τ = 40 ms, N/C contact: 11 W)
	48 W (220 V DC, τ = 40 ms, N/C contact: 22 W)
Switching capacity	min. 75 mW
Switching capacity (3600/h cycles)	5 A (24 V (DC13))
	5 A (230 V (AC15))
Output fuse	10 A gL/gG (N/O contact)
	4 A gL/gG (for low-demand applications)
	150 mA Fast-blow (N/C contact)

Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Screw connection
Conductor cross section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3

Dimensions

Width	17.5 mm
Height	99 mm
Depth	114.5 mm

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Material specifications

Housing material	Polyamide
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Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	1 (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)
Performance level (PL)	c (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)

Safety data: EN 50156

Safety Integrity Level (SIL)	2
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Safety data: IEC 61508 - High demand

Equipment type	Type A
Safety Integrity Level (SIL)	2 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)
Safe Failure Fraction (SFF)	99.61 %
MTBF	361 Years (includes errors which are not part of the safety function; MTTR = 8 h)
λ_{SU}	55.7 FIT
λ_{SD}	99 FIT
λ_{DU}	1 FIT
λ_{DD}	99 FIT
Probability of a hazardous failure per hour (PFH _D)	1.00×10^{-9} (4 A DC13; 5 A AC15; 8760 switching cycles/year)
Diagnostic coverage (DC)	99 % (during evaluation of the confirmation current path)
Proof test interval	240 Months
Duration of use	240 Months

Safety data: IEC 61508 - Low demand

Designation	The safety characteristic data is calculated assuming an average ambient temperature of 40°C. At higher ambient temperatures, a safety factor of 1.8 should be applied to the characteristics.
Equipment type	Type A
Safety Integrity Level (SIL)	2 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$)
Safe Failure Fraction (SFF)	81.97 %
MTBF	185 Years (includes errors which are not part of the safety function; MTTR = 8 h)
λ_{SU}	455 FIT
λ_{SD}	0 FIT
λ_{DU}	100 FIT
λ_{DD}	0 FIT
Probability of a hazardous failure on demand (PFD _{AVG})	9.86×10^{-4}

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	4.38 x 10 ⁻⁴ (for proof test interval = 1 year)
Proof test interval	27 Months
Duration of use	240 Months

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-20 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 70 °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	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g

Approvals

CE

Certificate	CE-compliant
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Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	DIN EN 50178/VDE 0160
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Mounting

Mounting type	DIN rail mounting
Mounting position	any
Connection method	Screw connection

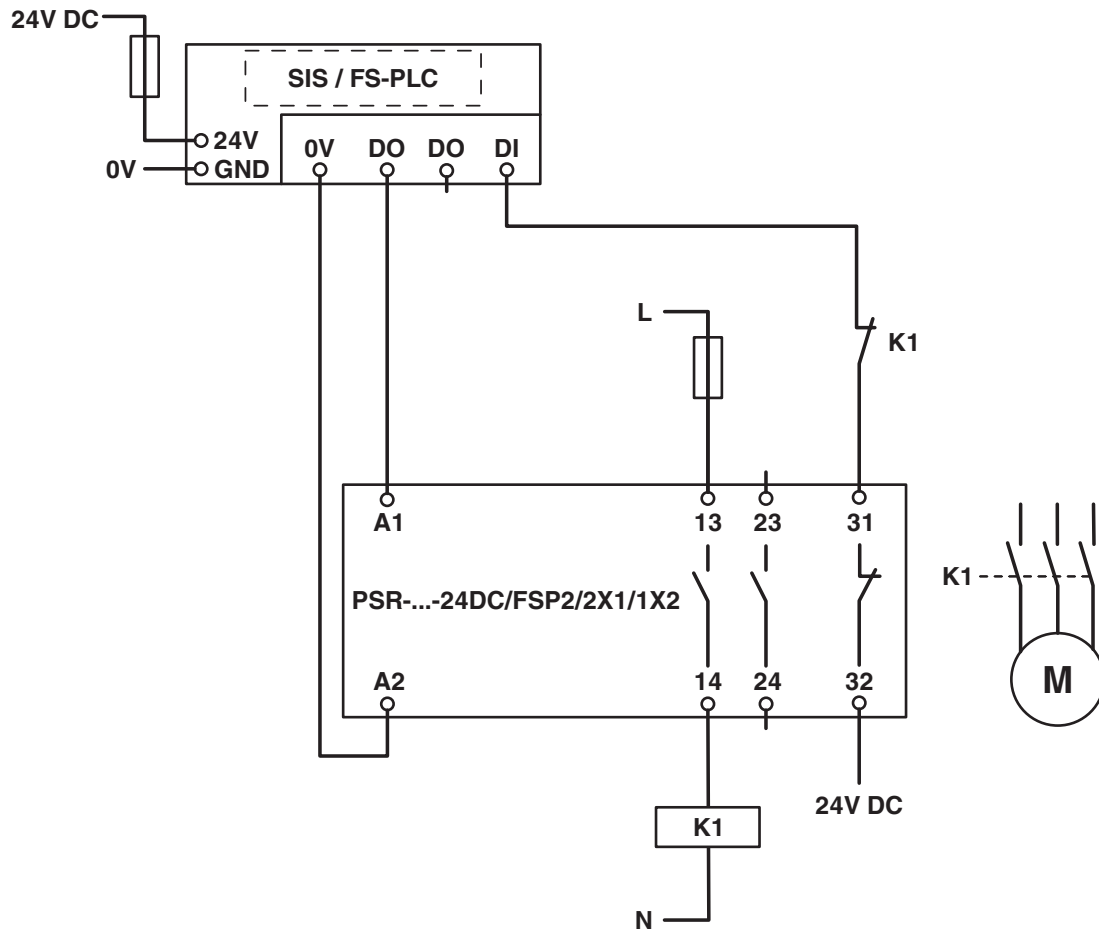
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Drawings

Circuit diagram



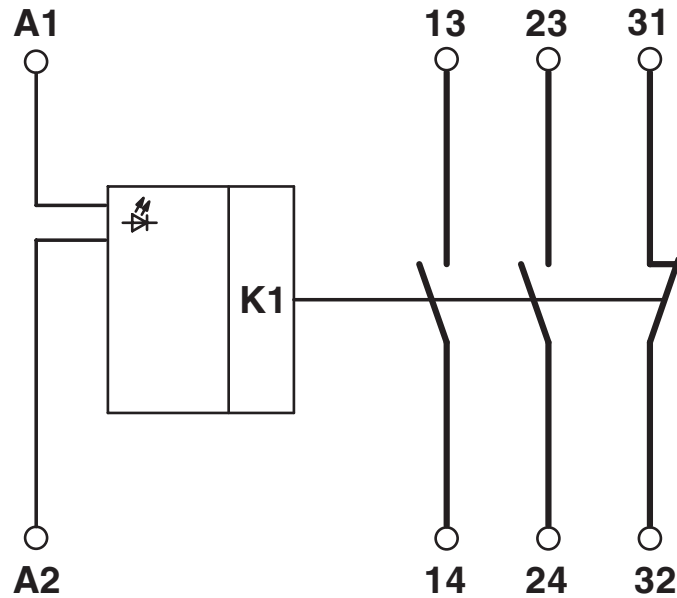
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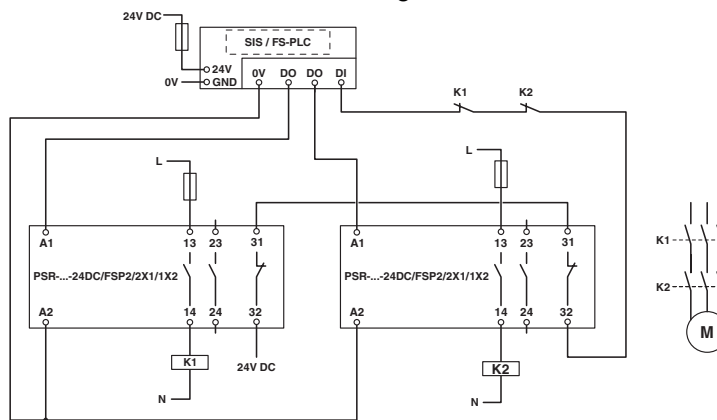
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Circuit diagram



Circuit diagram



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Approvals



EAC

Approval ID: TR_TS_D_00573_c



DNV GL

Approval ID: TAA00002UC



UL Listed

Approval ID: FILE E 140324



cUL Listed

Approval ID: FILE E 140324



Functional Safety

Approval ID: 968/EZ 365.09/22

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Classifications

ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	27371819

ETIM

ETIM 8.0	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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