

PSR-SPP- 24DC/ESD/5X1/1X2/T10S - Safety relays



2981509

<https://www.phoenixcontact.com/us/products/2981509>

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The figure shows a version of the product

Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e in accordance with EN ISO 13849, automatic or manual activation, 3 N/O contacts, 1 N/C contact, 2 N/O contacts with a fixed dropout delay of 10 s, pluggable Push-in terminal block

Your advantages

- Up to Cat. 3/PL d in accordance with EN ISO 13849-1, SIL 2 for delayed contacts
- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508 for undelayed contacts
- 1- and 2-channel control
- 3 undelayed and 2 dropout delay contacts
- Fixed delay times of 10 s
- For emergency stop and safety door monitoring, plus evaluation of light grids

Commercial data

Item number	2981509
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNA132
GTIN	4017918981105
Weight per piece (including packing)	445 g
Weight per piece (excluding packing)	445 g
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	Safety relays
Product family	PSRclassic
Application	Emergency stop Safety door Light grid
Control	1 and 2 channel
Mechanical service life	10x 10 ⁶ cycles
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics

Overvoltage category	III
Degree of pollution	2

Electrical properties

Maximum power dissipation for nominal condition	3.6 W
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Basic insulation 4 kV: between all current paths and housing Safe isolation, reinforced insulation 6 kV: between 13/14, 23/24, 33/34, and the remaining current paths between 13/14, 23/24, 33/34 among one another

Input data

General

Rated control circuit supply voltage U_S	24 V DC -15 % / +10 %
Power consumption at U_S	typ. 3.6 W
Rated control supply current I_S	typ. 150 mA
Inrush current	200 mA (at U_S) < 40 mA (with U_S/I_x to S10) < 150 mA (with U_S/I_x to S12) > -60 mA (with U_S/I_x to S22) < 40 mA (with U_S/I_x to S34) < 40 mA (with U_S/I_x to S35)
Current consumption	< 40 mA (with U_S/I_x to S10) < 40 mA (with U_S/I_x to S12)

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	> -40 mA (with U_s/I_x to S22)
	0 mA (with U_s/I_x to S34)
	< 5 mA (with U_s/I_x to S35)
Voltage at input/start and feedback circuit	24 V DC -15 % / +10 %
Filter time	1 ms (at A1 in the event of voltage dips at U_s)
	max. 1.5 ms (at S10, S12; test pulse width)
	7.5 ms (at S10, S12; test pulse rate)
	Test pulse rate = 5 x Test pulse width
Typical response time	< 600 ms (automatic start)
	< 70 ms (manual start)
Typ. starting time with U_s	< 600 ms (when controlled via A1)
Typical release time	< 20 ms (when controlled via S11/S12 and S21/S22)
	< 20 ms (when controlled via A1)
Concurrence	∞
Recovery time	< 1 s
Delay time	K3(t), K4(t) fixed depending on model
Maximum switching frequency	0.5 Hz
Protective circuit	Surge protection; Suppressor diode
Max. permissible overall conductor resistance	approx. 11 Ω (Input and start circuits at U_s)
Operating voltage display	1 x LED (green)
Status display	4 x LED (green)

Output data

Contact switching type	5 enabling current paths
	1 signaling current path
Contact material	AgSnO ₂
Maximum switching voltage	250 V AC/DC (Observe the load curve)
Minimum switching voltage	5 V AC/DC
Limiting continuous current	6 A (N/O contact, pay attention to the derating)
	6 A (N/C contact)
Maximum inrush current	20 A ($\Delta t \leq \text{[Symbol]} \text{ ms}$, undelayed contacts)
	8 A (delayed contacts)
Inrush current, minimum	10 mA
Sq. Total current	55 A ² (observe derating)
Switching power min.	50 mW
Output fuse	10 A gL/gG (N/O contact)
	6 A gL/gG (N/C contact)

Connection data

Connection technology	
pluggable	yes
Conductor connection	
Connection method	Push-in connection

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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

Dimensions

Width	45 mm
Height	112 mm
Depth	114.5 mm

Material specifications

Color (Housing)	yellow (RAL 1018)
Housing material	PA

Characteristics

Safety data

Stop category (EN 60204-1)	0 (Undelayed contacts)
	1 (delayed contacts)

Safety data: EN ISO 13849

Performance level (PL)	e (for delayed contacts PL d)
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Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3 (for delayed contacts SIL 2)
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3 (for delayed contacts SIL 2)
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Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3 (for delayed contacts SIL 2)
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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)	-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

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Approvals

CE

Certificate	CE-compliant
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Mounting

Mounting type	DIN rail mounting
Mounting position	any

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Drawings

Circuit diagram



Block diagram

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Approvals

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cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/5347.04/23

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Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819
ECLASS-15.0 ASSET	27250101

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	f14bb188-fea4-4d5d-9ca1-096d60cd194c

EF3.1 Climate Change

CO2e kg	14.611 kg CO2e
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