

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



2981156

<https://www.phoenixcontact.com/gb/products/2981156>

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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 1.0 s, plug-in Push-in terminal block

## Your advantages

- Fixed delay times of 1 s
- 3 undelayed and 2 dropout delay contacts
- 1- and 2-channel control
- For emergency stop and safety door monitoring, plus evaluation of light grids
- Manually monitored and automatic activation

## Commercial data

Item number	2981156
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNA132
GTIN	4017918949044
Weight per piece (including packing)	410.4 g
Weight per piece (excluding packing)	410.4 g
Country of origin	DE

## Technical data

### Product properties

Product type	Safety relays
Application	Emergency stop
	Safety door
	Light grid
Control	1 and 2 channel
Mechanical service life	10x 10 <sup>6</sup> cycles
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics: Air clearances and creepage distances between the power circuits

Overvoltage category	III
Degree of pollution	2

### Electrical properties

Maximum power dissipation for nominal condition	3.6 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	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)
	> -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 %

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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	$\infty$
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 $\Omega$ (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 <sub>2</sub>
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 ( $\Delta t \leq \text{[trapezoidal pulse symbol]} \text{ ms}$ , undelayed contacts)
	8 A (delayed contacts)
Inrush current, minimum	10 mA
Sq. Total current	55 A <sup>2</sup> (observe derating)
Interrupting rating (ohmic load) max.	144 W (24 V DC, $\tau = 0$ ms)
	288 W (48 V DC, $\tau = 0$ ms)
	110 W (110 V DC, $\tau = 0$ ms, delayed contacts: 77 W)
	88 W (220 V DC, $\tau = 0$ ms)
	1500 VA (250 V AC, $\tau = 0$ ms, delayed contacts: 2000 VA)
Maximum interrupting rating (inductive load)	42 W (24 V DC, $\tau = 40$ ms, delayed contacts: 48 W)
	42 W (48 V DC, $\tau = 40$ ms, delayed contacts: 40 W)
	42 W (110 V DC, $\tau = 40$ ms, delayed contacts: 35 W)
	42 W (220 V DC, $\tau = 40$ ms, delayed contacts: 33 W)
Switching power min.	50 mW
Switching capacity (360/h cycles)	4 A (24 V DC)
	4 A (230 V AC)
Switching capacity (3600/h cycles)	2.5 A (24 V (DC13))
	3 A (230 V (AC15))

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Output fuse	10 A gL/gG (N/O contact)
	6 A gL/gG (N/C contact)

## Connection data

### Connection technology

pluggable	yes
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### Conductor connection

Connection method	Push-in connection
Conductor cross-section, rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (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	yellow
Housing material	PBT

## 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
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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

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## Drawings

Circuit diagram



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## Classifications

### UNSPSC

UNSPSC 21.0	39122205
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## Environmental product compliance

### 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.)	No substance above 0.1 wt%
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