

PSR-SPP-24DC/ESD/5X1/1X2/300 - Safety relays



2981431

<https://www.phoenixcontact.com/us/products/2981431>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e (EN ISO 13849), one- or two-channel operation, automatic or manual activation, 3 N/O contacts, 1 N/C contact, 2 N/O contacts with dropout delay of 0.2 s ... 300 s, pluggable Push-in terminal block

The figure shows the versions with screw connection

Your advantages

- Maximum of 3 undelayed and 2 dropout delay contacts
- Manually monitored and automatic activation
- Up to Cat. 3/4 and PL d/e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- For emergency stop and safety door monitoring, plus evaluation of light grids
- 1- and 2-channel control
- Adjustable delay time of 0.2 s ... 300 s (24 increments)
- Protective labels to prevent manipulation of the set time (PSR-ESD-300) or electronic protection against manipulation (PSR-ESD-30)

Commercial data

Item number	2981431
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA131
GTIN	4017918975234
Weight per piece (including packing)	417.2 g
Weight per piece (excluding packing)	372.22 g
Customs tariff number	85371098
Country of origin	DE

Technical data

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

Times

Typical response time	< 70 ms (Monitored/manual start)
	< 600 ms (automatic start)
Typ. starting time with U _s	< 600 ms (with U _s / when controlled via A1)
Typical release time	< 20 ms (with U _s / when controlled via S11/S12 and S21/S22)
	< 20 ms (with U _s / when controlled via A1)
Delay time range	0.2 s ... 300 s ±1% (FS can be parameterized)
Recovery time	< 1 s

Electrical properties

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

Supply

Rated control circuit supply voltage U _S	24 V DC -15 % / +10 %
Rated control supply current I _S	typ. 155 mA (at U _S)
Power consumption at U _S	typ. 3.72 W
Inrush current	typ. 200 mA (at U _S)
Filter time	1 ms (in the event of voltage dips at U _S)
Protective circuit	Serial protection against polarity reversal; Suppressor diode

Input data

Digital: Logic (S10, S12, S22)

Description of the input	safety-related
--------------------------	----------------

PSR-SPP-24DC/ESD/5X1/1X2/300 - Safety relays



2981431

<https://www.phoenixcontact.com/us/products/2981431>

Number of inputs	3
Input voltage range "1" signal	20.4 V ... 26.4 V
Inrush current	< 40 mA (with U_s/I_x to S10) < 190 mA (with U_s/I_x to S12) > -60 mA (with U_s/I_x to S22)
Filter time	max. 1.5 ms (Test pulse width of low test pulses) 7.5 ms (Test pulse rate)
Concurrence	∞
Max. permissible overall conductor resistance	approx. 22 Ω (Input and start circuits at U_N)
Protective circuit	Suppressor diode
Current consumption	< 40 mA (with U_s/I_x to S10) < 50 mA (with U_s/I_x to S12) > -40 mA (with U_s/I_x to S22)

Digital: Start circuit (S34, S35)

Description of the input	non-safety-related
Number of inputs	2
Inrush current	< 40 mA (with U_s/I_x to S34) < 40 mA (with U_s/I_x to S35)
Max. permissible overall conductor resistance	approx. 22 Ω (Input and start circuits at U_N)
Protective circuit	Suppressor diode
Current consumption	typ. 0 mA (with U_s/I_x to S34) < 5 mA (typ. with U_s/I_x at S35)

Output data

Relay: Enabling current paths (13/14, 23/24, 33/34, 57/58, 67/68)

Output description	2 N/O contacts each in series, safety-related, floating
Number of outputs	3 (undelayed: 13/14, 23/24, 33/34) delayed: 47/48/58
Contact switching type	3 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 5 V AC/DC max. 250 V AC/DC (Observe the load curve)
Switching power	min. 50 mW
Inrush current	min. 10 mA max. 20 A ($\Delta t \leq \text{[diagram]} \text{ ms}$, undelayed contacts) max. 8 A (delayed contacts)
Switching capacity	3 A (AC15) 2.5 A (DC13)
Limiting continuous current	6 A (observe derating)
Sq. Total current	55 A ² (observe derating)
Switching frequency	max. 0.1 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	10 A gL/gG

PSR-SPP-24DC/ESD/5X1/1X2/300 - Safety relays



2981431

<https://www.phoenixcontact.com/us/products/2981431>

Relay: Signaling current path (41/42)

Output description	2 N/C contacts parallel, non-safety-related, floating
Number of outputs	1 (undelayed)
Contact material	AgSnO ₂
Switching voltage	min. 5 V AC/DC max. 250 V AC/DC
Switching power	min. 50 mW
Inrush current	max. 20 A (≤ 100 ms)
Switching capacity	3 A (AC15) 2.5 A (DC13)
Limiting continuous current	6 A (observe derating)
Sq. Total current	55 A ² (observe derating)
Switching frequency	max. 0.1 Hz
Output fuse	6 A (gL/gG)

Connection data

Connection technology

pluggable	yes
-----------	-----

Conductor connection

Connection method	Push-in connection
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

Signaling

Status display	4 x LED (green)
Operating voltage display	1 x LED (green)

Dimensions

Width	45 mm
Height	112 mm
Depth	114.5 mm

Material specifications

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

Characteristics

Safety data

PSR-SPP-24DC/ESD/5X1/1X2/300 - Safety relays



2981431

<https://www.phoenixcontact.com/us/products/2981431>

Stop category (EN 60204-1)	0 (Undelayed contacts)
	1 (delayed contacts)
Safety data: EN ISO 13849	
Performance level (PL)	e (Undelayed contacts)
	d (delayed contacts)
Safety data: IEC 61508 - High demand	
Safety Integrity Level (SIL)	3 (for delayed contacts SIL 2)
Safety data: IEC 61508 - Low demand	
Safety Integrity Level (SIL)	3 (for delayed contacts SIL 2)
Safety data: EN IEC 62061	
Safety Integrity Level (SIL)	3 (Undelayed contacts)
	2 (delayed contacts)

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

Identification	CE-compliant
----------------	--------------

Mounting

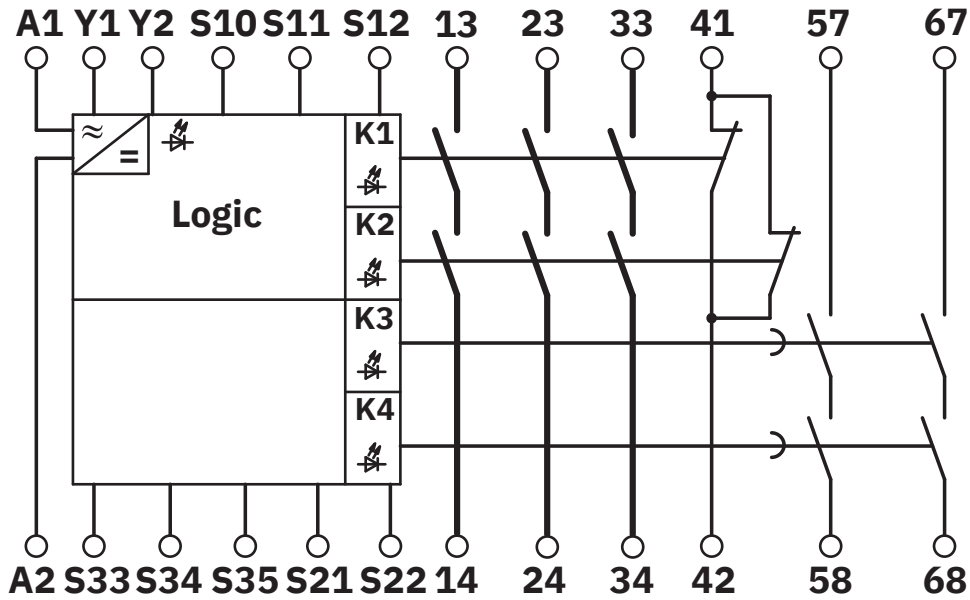
Mounting type	DIN rail mounting
Mounting position	any

2981431

<https://www.phoenixcontact.com/us/products/2981431>

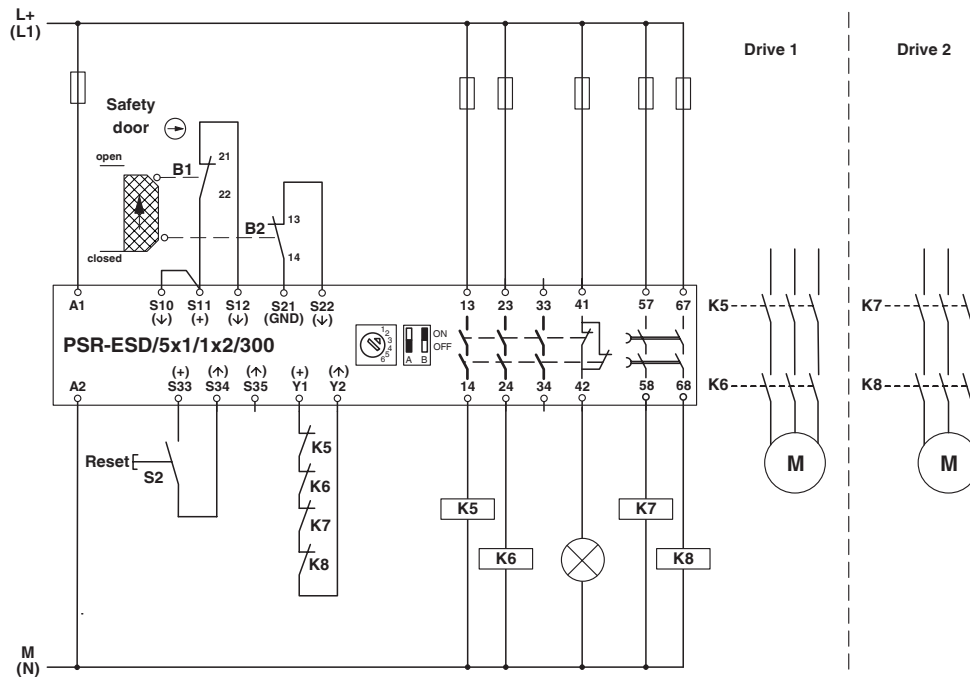
Drawings

Circuit diagram



Block diagram

Circuit diagram



Two-channel safety door monitoring

PSR-SPP-24DC/ESD/5X1/1X2/300 - Safety relays



2981431

<https://www.phoenixcontact.com/us/products/2981431>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2981431>



cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/5347.04/23

PSR-SPP-24DC/ESD/5X1/1X2/300 - Safety relays



2981431

<https://www.phoenixcontact.com/us/products/2981431>

Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819

ETIM

ETIM 10.0	EC001449
-----------	----------

UNSPSC

UNSPSC 21.0	39122200
-------------	----------

2981431

<https://www.phoenixcontact.com/us/products/2981431>

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	f52e6dc7-fc43-4307-ac98-19aa98af4ca4

EF3.1 Climate Change

CO2e kg	10.458 kg CO2e
---------	----------------

Phoenix Contact 2026 © - all rights reserved
<https://www.phoenixcontact.com>

Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com