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

2981431

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

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The figure shows the versions with screw connection

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

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 Us / when controlled via A1)
Typical release time	< 20 ms (with Us / when controlled via S11/S12 and S21/S22)
	< 20 ms (with Us / when controlled via A1)
Delay time range	0.2 s ... 300 s ± 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

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 (Δt ≤ 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

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 mm² ... 1.5 mm²
Conductor cross-section flexible	0.2 mm² ... 1.5 mm²
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6)
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm² ... 1.5 mm² (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

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

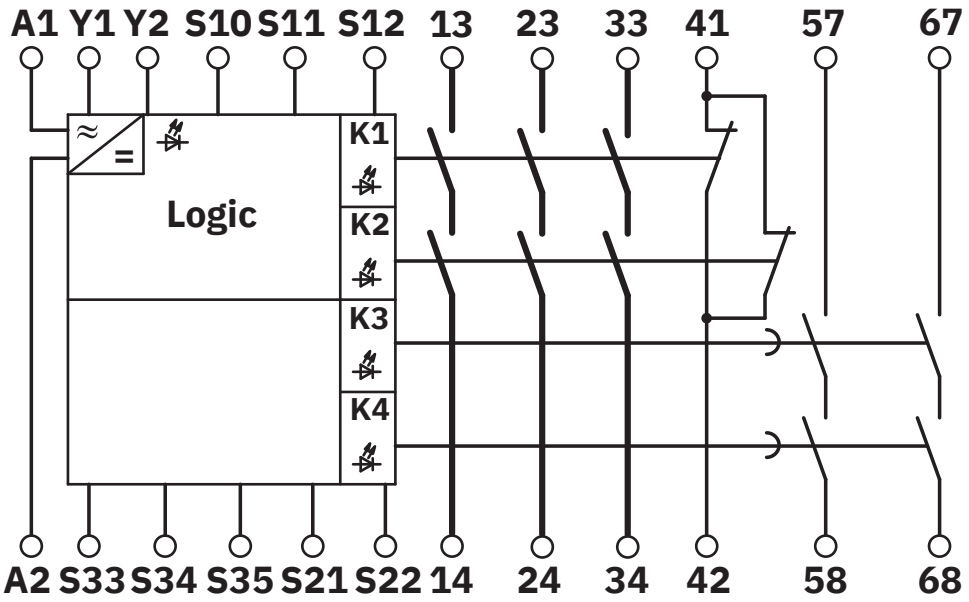
Identification	CE-compliant

Mounting

Mounting type	DIN rail mounting
Mounting position	any

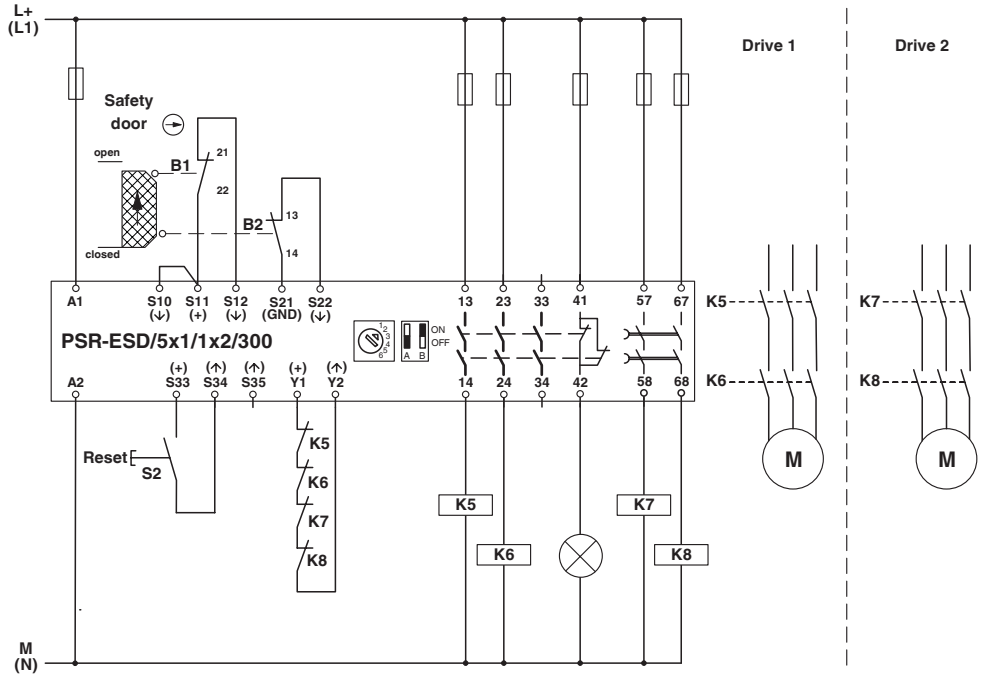
Drawings

Circuit diagram



Block diagram

Circuit diagram



Two-channel safety door monitoring

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

Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819

ETIM

ETIM 10.0	EC001449

UNSPSC

UNSPSC 21.0	39122200

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