

2981813
<https://www.phoenixcontact.com/us/products/2981813>

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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, 2 N/O contacts with a fixed dropout delay of 0.1 s ... 30 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
- Protective labels to prevent manipulation of the set time (PSR-ESD-300) or electronic protection against manipulation (PSR-ESD-30)
- Fixed delay times of 0.1 s ... 300 s

Commercial data

Item number	2981813
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA131
GTIN	4046356117265
Weight per piece (including packing)	229.76 g
Weight per piece (excluding packing)	209.68 g
Customs tariff number	85371098
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	approx. 10^7 cycles
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics

Overvoltage category	II
Degree of pollution	2

Times

Typical response time	150 ms (Monitored/manual and auto-start)
Typical release time	20 ms (Undelayed contacts)
	100 ms
Delay time range	0.1 s ... 30 s ± 30 % (adjustable)
Recovery time	330 ms (Restart)
	1 s (Electric torque)

Electrical properties

Maximum power dissipation for nominal condition	1.8 W
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V
Rated surge voltage/insulation	4 kV / basic insulation

Supply

Rated control circuit supply voltage U_S	24 V DC
Inrush current	typ. 250 mA

Input data

General

Nominal input voltage U_N	24 V DC
Input voltage range in reference to U_N	0.85 ... 1.1
Typical input current at U_N	75 mA DC

PSR-SPP- 24DC/ESD/4X1/30 - Safety relays



2981813

<https://www.phoenixcontact.com/us/products/2981813>

Voltage at input/start and feedback circuit	approx. 24 V DC
Typical response time	150 ms (Monitored/manual and auto-start)
Typical release time	20 ms (Undelayed contacts)
	100 ms (delayed contacts)
Typical release time range	0.1 s ... 30 s
Recovery time	330 ms (Restart)
	1 s (Electric torque)
Protective circuit	Suppressor diode, 33 V DC
Max. permissible overall conductor resistance	500 Ω (Input and reset circuit at U_N)
Operating voltage display	Green LED
Status display	LED K1/K2 and K3(t)/K4(t), green

Output data

Contact switching type	4 enabling current paths
Contact material	AgSnO ₂
Maximum switching voltage	250 V AC/DC
Minimum switching voltage	15 V AC/DC
Limiting continuous current	6 A (N/O contact)
Maximum inrush current	6 A
Inrush current, minimum	25 mA
Sq. Total current	120 A ² (see to derating)
Interrupting rating (ohmic load) max.	144 W (24 V DC, $\tau = 0$ ms)
	288 W (48 V DC, $\tau = 0$ ms)
	90 W (110 V DC, $\tau = 0$ ms)
	88 W (220 V DC, $\tau = 0$ ms)
	1500 VA (250 V AC, $\tau = 0$ ms)
Maximum interrupting rating (inductive load)	42 W (24 V DC, $\tau = 40$ ms)
	33 W (48 V DC, $\tau = 40$ ms)
	25 W (110 V DC, $\tau = 40$ ms)
	23 W (220 V DC, $\tau = 40$ ms)
Switching capacity min.	0.4 W
Switching capacity (360/h cycles)	on request
Switching capacity (3600/h cycles)	3 A (24 V (DC13))
	3 A (230 V (AC15))
Output fuse	10 A gL/gG NEOZED (N/O 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 ² ... 1.5 mm ²
Conductor cross-section flexible	0.2 mm ² ... 1.5 mm ²

PSR-SPP- 24DC/ESD/4X1/30 - Safety relays



2981813

<https://www.phoenixcontact.com/us/products/2981813>

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

Dimensions

Width	22.5 mm
Height	112 mm
Depth	114.5 mm

Material specifications

Housing material	PA
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Characteristics

Safety data

Stop category	0
	1

Safety data: EN ISO 13849

Category	4
Performance level (PL)	e

Safety data

Safety Integrity Level (SIL)	3
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Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3
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Environmental and real-life conditions

Ambient conditions

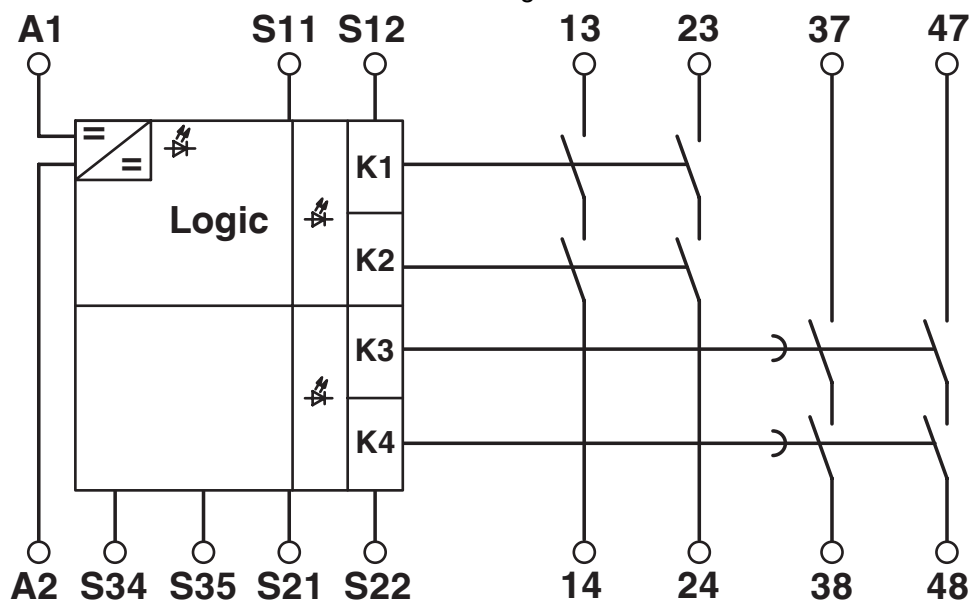
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-20 °C ... 45 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Maximum altitude	≤ 2000 m (Above sea level)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g

Mounting

Mounting type	DIN rail mounting
Mounting position	any

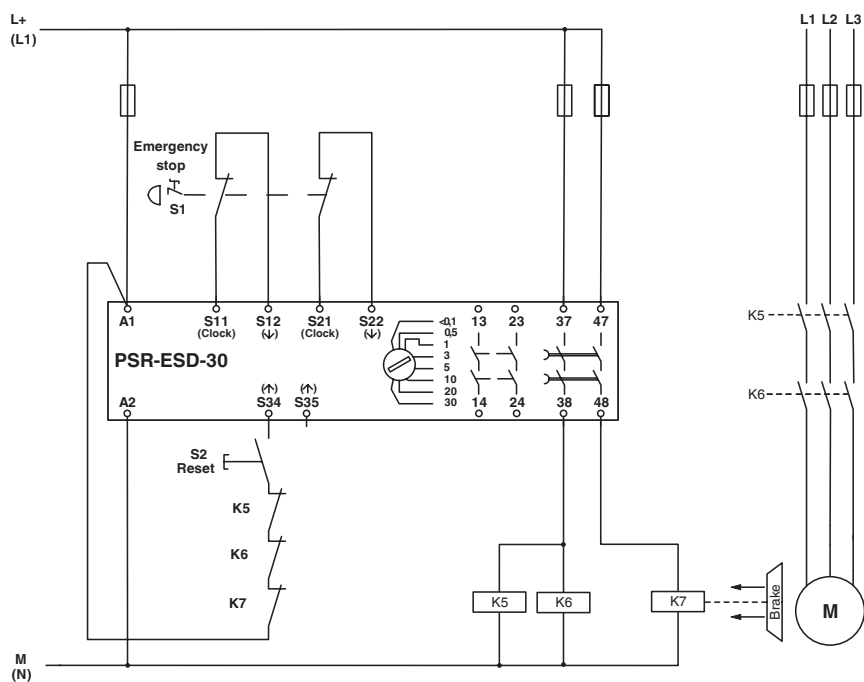
Drawings

Circuit diagram



Block diagram

Circuit diagram



2-channel emergency stop monitoring

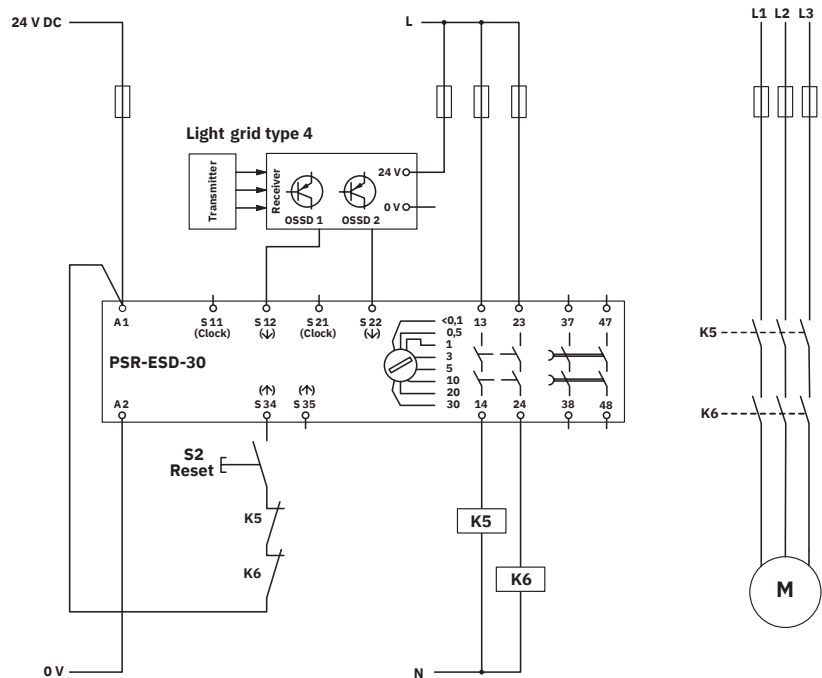
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2981813

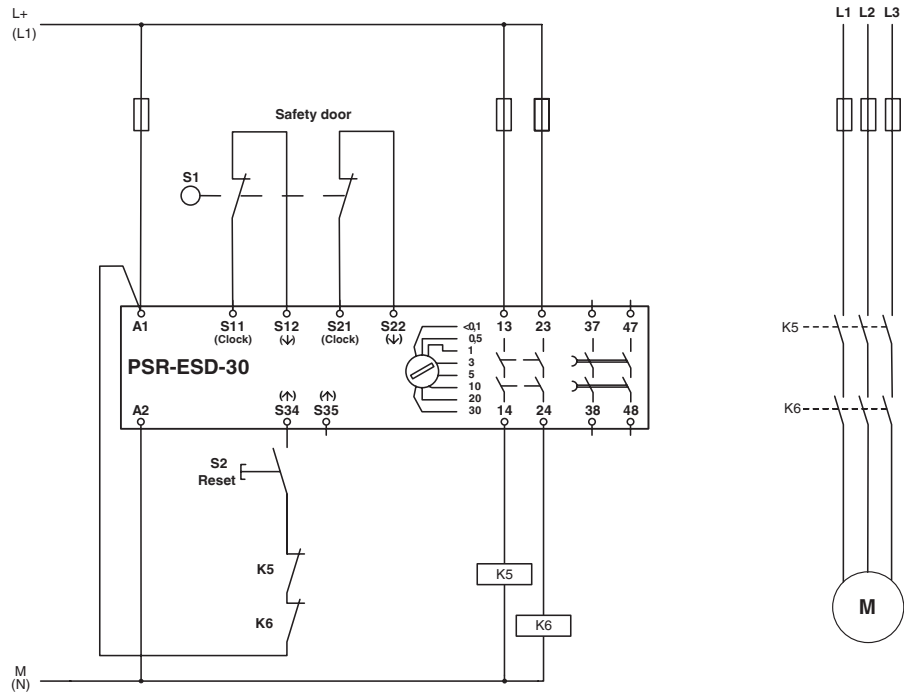
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Circuit diagram



Light grid monitoring

Circuit diagram



Two-channel safety door monitoring

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2981813>

Functional Safety

Approval ID: 968/EZ322.06/23



cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/0656.04/23

PSR-SPP- 24DC/ESD/4X1/30 - Safety relays



2981813

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Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819

ETIM

ETIM 9.0	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	34, 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.)	1-Methyl-2-pyrrolidone (NMP)(CAS: 872-50-4)
	Lead(CAS: n/a)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: n/a)
SCIP	6f773305-d4ee-4c30-9f1d-e1978693fe90