

Safety relays - PSR-SPP- 24UC/ESA2/4X1/1X2/B



2963954

<https://www.phoenixcontact.com/pc/products/2963954>

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Safety relay for emergency stop and safety door up to SIL 1, SIL CL 1, Cat. 1, PL c, depending on the application up to SIL 3, SIL CL 3, Cat. 4, PL e, single-channel operation, 4 enabling current paths, $U_S = 24 \text{ V AC/DC}$, pluggable Push-in terminal block

Your advantages

- Up to Cat. 1/PL c in accordance with ISO 13849-1, SIL 1 in accordance with IEC 62061, SIL 1 in accordance with IEC 61508
- Depending on the application, up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with IEC 62061, SIL 3 in accordance with IEC 61508
- Basic insulation
- 1-channel control

Commercial Data

Item number	2963954
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	DNA111
Catalog Page	Page 229 (C-6-2019)
GTIN	4017918904821
Weight per Piece (including packing)	213.1 g
Weight per Piece (excluding packing)	194.38 g
Country of origin	DE

Technical Data

Product properties

Product type	Safety relays
Application	Emergency stop Safety door
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
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Electrical properties

Maximum power dissipation for nominal condition	1.56 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 A1/A2 and 13/14, 23/24, 33/34, 43/44 between S11/S12/S33/S34 and 13/14, 23/24, 33/34, 43/44 between 51/52 and 13/14, 23/24, 33/34, 43/44

Input data

General

Rated control circuit supply voltage U_S	24 V AC/DC -15 % / +10 %
Power consumption at U_S	typ. 3.36 W (AC) typ. 1.56 W (DC)
Rated control supply current I_S	typ. 140 mA AC typ. 65 mA DC
Inrush current	2 A ($\Delta t = 10$ ms at U_S) < 40 mA (with U_S/I_x to S34)
Current consumption	< 50 mA (with U_S/I_x to S12) 0 mA (with U_S/I_x to S34)
Voltage at input/start and feedback circuit	24 V DC -15 % / +10 %
Filter time	2 ms (at A1 in the event of voltage dips at U_S) max. 1.5 ms (at S12; test pulse width) 7.5 ms (at S12; test pulse rate) Test pulse rate = 5 x Test pulse width
Typical response time	< 65 ms (automatic start) < 40 ms (manual start)
Typ. starting time with U_S	< 65 ms (when controlled via A1)
Typical release time	< 45 ms (when controlled via S12) < 200 ms (when controlled via A1)

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Recovery time	< 1 s
Maximum switching frequency	1 Hz
Protective circuit	Surge protection; Suppressor diode Protection against polarity reversal for rated control circuit supply voltage
Max. permissible overall conductor resistance	approx. 22 Ω (Input and start circuits at U _S)
Operating voltage display	1 x green LED
Status display	2 x green LEDs

Output data

Contact type	4 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 (Δt □ 100 ms)
Inrush current, minimum	10 mA
Sq. Total current	72 A ² (observe derating)
Interrupting rating (ohmic load) max.	144 W (24 V DC, τ = 0 ms)
	288 W (48 V DC, τ = 0 ms)
	110 W (110 V DC, τ = 0 ms)
	88 W (220 V DC, τ = 0 ms)
	1500 VA (250 V AC, τ = 0 ms)
Maximum interrupting rating (inductive load)	42 W (24 V DC, τ = 40 ms)
	42 W (48 V DC, τ = 40 ms)
	42 W (110 V DC, τ = 40 ms)
	42 W (220 V DC, τ = 40 ms)
Switching capacity 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))
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 solid	0.2 mm ² ... 1.5 mm ²

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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

Dimensions

Width	22.5 mm
Height	112 mm
Depth	114.5 mm

Material specifications

Housing material	Polyamide
Housing color	yellow

Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	1 (up to Cat. 4 depending on the application)
Performance level (PL)	c (up to PL e depending on the application)

Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
Probability of a hazardous failure per hour (PFH _D)	4.05 x 10 ⁻¹⁰
Proof test interval	240 Months
Duration of use	240 Months

Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	1 (up to SIL 3 depending on the application)
Probability of a hazardous failure on demand (PFD _{AVG})	1.49 x 10 ⁻⁴
Proof test interval	78 Months
Duration of use	240 Months

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-20 °C ... 65 °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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Approval data

CE

Designation	CE
Certificate	CE-compliant

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
Assembly instructions	See derating curve
Mounting position	vertical or horizontal

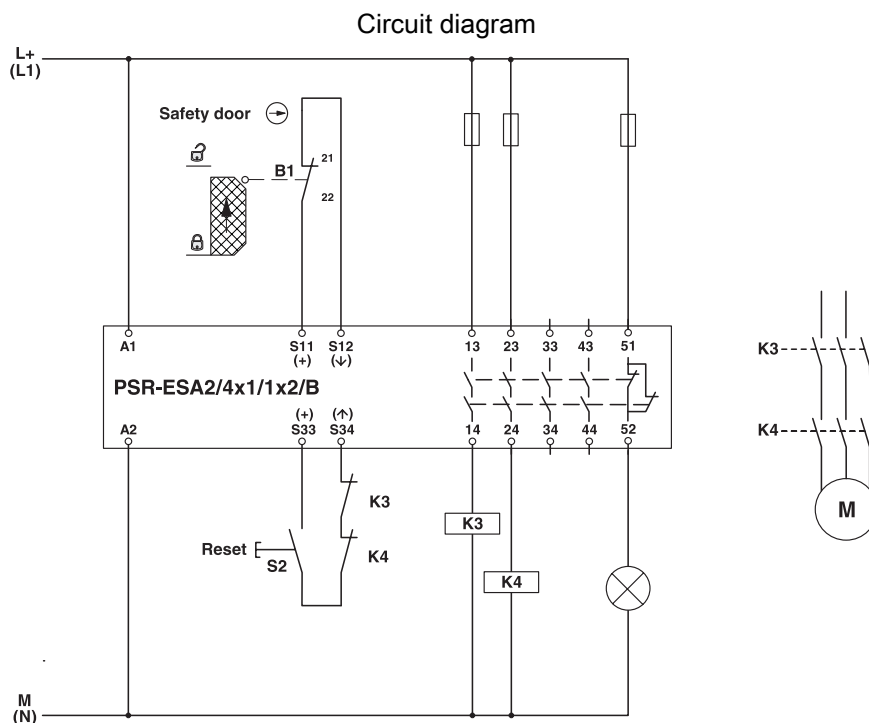
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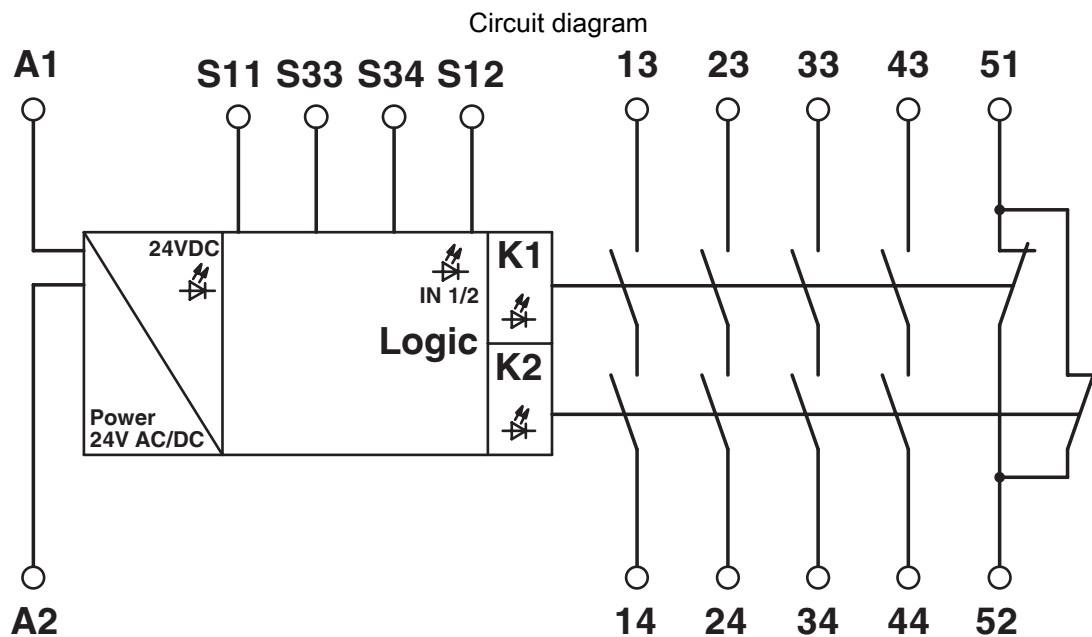
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Drawings



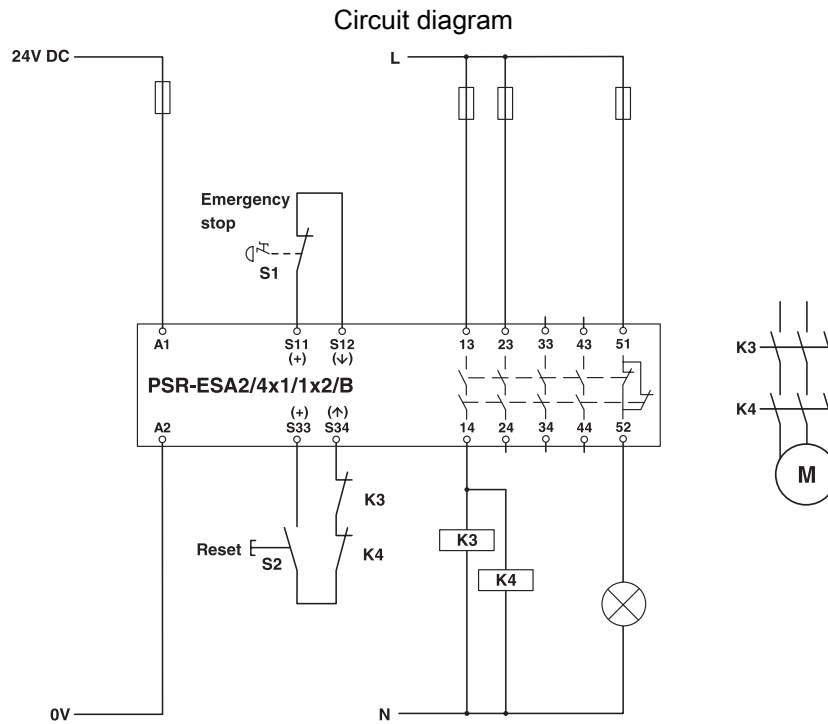
Single-channel safety door monitoring



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Single-channel emergency stop monitoring

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Approvals



EAC

Approval ID: TR_TS_D_00573_c



UL Listed

Approval ID: FILE E 140324



cUL Listed

Approval ID: FILE E 140324



Functional Safety

Approval ID: 01/205/0653.03/21

cULus Listed

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Classifications

ECLASS

ECLASS-9.0	27371819
ECLASS-10.0.1	27371819
ECLASS-11.0	27371819

ETIM

ETIM 8.0	EC001449
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UNSPSC

UNSPSC 21.0	39122200
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Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstraße 8
D-32825 Blomberg
+49 (0) 5235-3 00
info@phoenixcontact.com