

# PSR-SCP- 24UC/ESL4/3X1/1X2/B - Safety relays



2981059

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Safety relay for emergency stop, safety doors, and light grids up to SIL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual, monitored start, 3 enabling current paths,  $U_S = 24 \text{ V DC}$ , plug-in screw terminal block

## Your advantages

- Manually monitored and automatic activation
- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- Three enabling and one signaling current path
- 1- and 2-channel control

## Commercial data

Item number	2981059
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA123
GTIN	4017918927202
Weight per piece (including packing)	182.8 g
Weight per piece (excluding packing)	193.61 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	III
Degree of pollution	2

#### Times

Typical response time	125 ms (automatic start)
	110 ms (manual, monitored start)
Typ. starting time with $U_S$	125 ms (when controlled via A1)
Typical release time	10 ms (on demand via the sensor circuit)
	45 ms (on demand via A1)
Restart time	< 1 s (Boot time)
Recovery time	1 s (following demand of the safety function)
Start pulse length	$\geq 500$ ms (manual start)

### Electrical properties

Maximum power dissipation for nominal condition	16.44 W (at $U_S = 26.4$ V, $I_L^2 = 72$ A <sup>2</sup> ; $P_{Total\ max} = 2.04$ W + 14.4 W)
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V
Rated surge voltage/insulation	See data sheet, section "Insulation coordination".

#### Supply

Designation	A1/A2
Rated control circuit supply voltage $U_S$	24 V DC -15 % / +10 %
Rated control supply current $I_S$	typ. 70 mA (at $U_S$ )
Power consumption at $U_S$	typ. 1.68 W
Inrush current	< 3.5 A (typ. with $U_S$ , $\Delta t = 3$ ms)
Filter time	5 ms (in the event of voltage dips at $U_S$ , no test pulses allowed)
Protective circuit	Serial protection against polarity reversal; Suppressor diode

## Input data

### Digital: Logic (S12, S22)

Description of the input	safety-related
Number of inputs	2
Input voltage range "0" signal	0 V DC ... 5 V DC
Input voltage range "1" signal	20.4 V ... 26.4 V
Input current range "0" signal	0 mA ... 2 mA
Inrush current	max. 110 mA (typ. with $U_S$ , $\Delta t = 3$ ms)
Filter time	max. 2 ms (Test pulse width low test pulses, at 100 ms test pulse rate) No brightness test pulses / high test pulses permitted.
Concurrency	$\infty$
Max. permissible overall conductor resistance	50 $\Omega$
Protective circuit	Suppressor diode
Current consumption	38 mA (typ. with $U_S$ )

### Digital: Start circuit (S34, S35)

Description of the input	non-safety-related
Number of inputs	2
Input voltage range "1" signal	20.4 V ... 26.4 V
Inrush current	< 6 mA (typ. with $U_S$ at S34/S35, $\Delta t = 70$ ms)
Filter time	No test pulses permitted
Max. permissible overall conductor resistance	50 $\Omega$
Protective circuit	Suppressor diode
Current consumption	0 mA (typ. with $U_S$ at S34) 1 mA (typ. with $U_S$ at S35)

## Output data

### Relay: Enabling current paths (13/14, 23/24, 33/34)

Output description	2 N/O contacts each in series, safety-related, floating
Number of outputs	3
Contact switching type	3 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 10 V max. 250 V AC/DC
Switching power	min. 100 mW
Inrush current	min. 10 mA max. 6 A
Switching capacity	5 A (AC15) 6 A (DC13)
Limiting continuous current	6 A (Observe derating and load limit curve)
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.5 Hz

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Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	10 A gL/gG
	4 A gL/gG (for low-demand applications)

## Relay: Signaling current path (41/42)

Output description	2 N/C contacts parallel, non-safety-related, floating
Number of outputs	1
Contact switching type	1 signaling current path
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 10 V AC/DC
	max. 250 V AC/DC
Switching power	min. 100 mW
Inrush current	min. 10 mA
	max. 6 A
Switching capacity	1.5 A (AC15)
	2 A (DC13)
Limiting continuous current	6 A
Sq. Total current	36 A <sup>2</sup> (observe derating)
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG

## Connection data

### Connection technology

pluggable	yes
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### Conductor connection

Connection method	Screw connection
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

## Signaling

Status display	2 x LED (green)
Operating voltage display	1 x LED (green)

## Dimensions

Width	22.5 mm
Height	99 mm
Depth	114.5 mm

## Material specifications

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

## Characteristics

### Safety data

Stop category (EN 60204-1)	0
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### Safety data: EN ISO 13849

Performance level (PL)	e (5 A DC13; 5 A AC15; 8760 switching cycles/year)
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### Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3
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### Safety data: IEC 61508 - Low demand

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 ... 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, amplitude 0.15 mm, 2g

## Approvals

### CE

Identification	CE-compliant
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## Mounting

Mounting type	DIN rail mounting
Assembly note	See derating curve
Mounting position	vertical or horizontal

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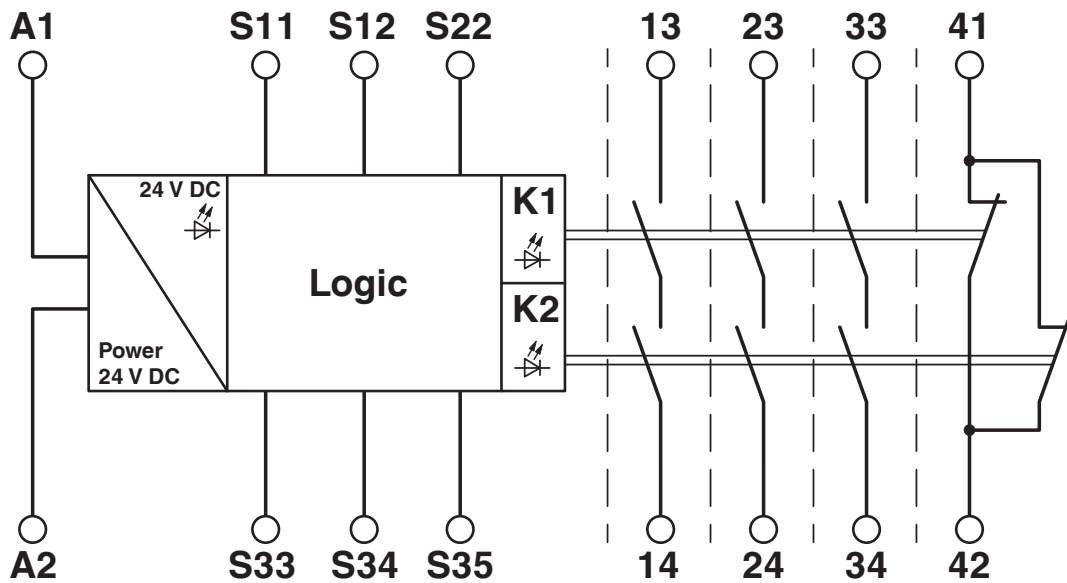


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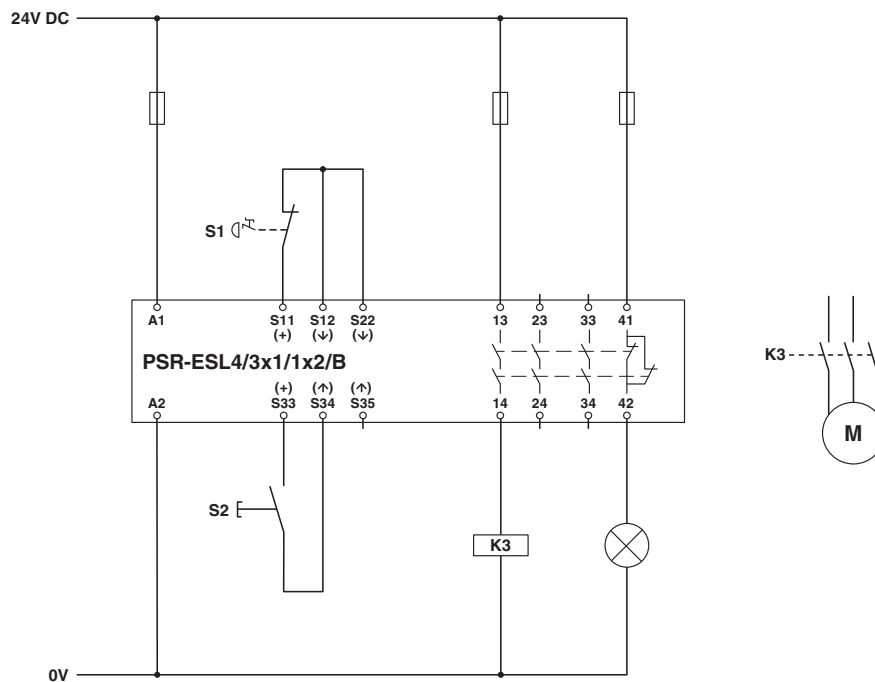
## Drawings

Circuit diagram



Block diagram

Circuit diagram



Single-channel safety door monitoring

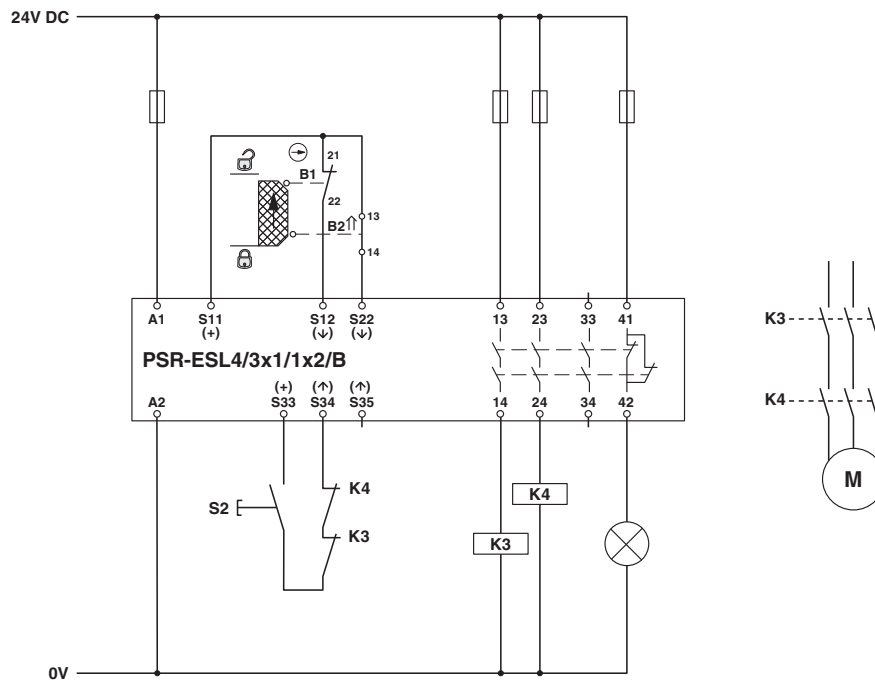
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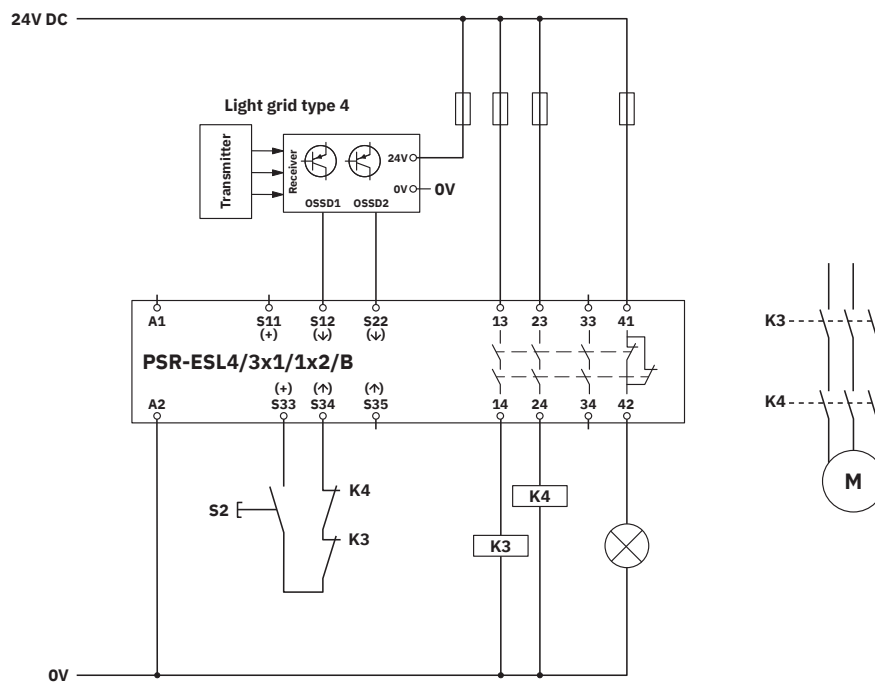
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Circuit diagram



Two-channel safety door monitoring

Circuit diagram



Light grid monitoring



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## Approvals

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**cULus Listed**

Approval ID: E140324



**Functional Safety**

Approval ID: 01/205/5265.04/23

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## Classifications

### ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819
ECLASS-15.0 ASSET	27250101

### ETIM

ETIM 10.0	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	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	8c3db85c-8969-449e-86af-0a14d7f5919c

### EF3.1 Climate Change

CO2e kg	7.133 kg CO2e
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