

PSR-MC37-3NO-1NC-24DC-SC - Safety relays



2702411

<https://www.phoenixcontact.com/us/products/2702411>

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Safety relay for emergency switching off and safety doors as well as for elevator applications up to SIL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual start, cross-circuit detection, 3 enabling current paths, $U_S = 24 \text{ V DC}$, plug-in screw terminal block

Your advantages

- Low housing width of only 22.5mm
- 3 enabling current paths, 1 signaling current path, 1 digital signal output
- Cross-circuit detection
- Automatic and manual activation
- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061
- Suitable for elevator applications in accordance with EN 81-20

Commercial data

Item number	2702411
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA181
GTIN	4055626276960
Weight per piece (including packing)	228 g
Weight per piece (excluding packing)	183.88 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	PSRmini
Application	Emergency stop
	Safety door
	Magnetic switch
	Transponder
Control	1 and 2 channel
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	< 100 ms (automatic start)
Typ. starting time with U_S	< 100 ms (when controlled via A1)
Typical release time	< 20 ms (when controlled via A1 or S12 and S22.)
Restart time	< 1 s (Boot time)
Recovery time	< 500 ms

Electrical properties

Maximum power dissipation for nominal condition	17.03 W ($U_B = 30$ V , $U_S = 24$ V , $I_S = 70$ mA, $I_L^2 = 72$ A ² , $R_{Contact} = 0.2$ Ω <small>IEC 60954</small>)
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Basic insulation 4 kV between all current paths
	Basic insulation 4 kV between all current paths and housing

Supply

Designation	A1/A2
Rated control circuit supply voltage U_S	19.2 V DC ... 30 V DC
Rated control circuit supply voltage U_S	24 V DC -20 % / +25 %
Rated control supply current I_S	typ. 70 mA
Power consumption at U_S	typ. 1.68 W
Inrush current	2 A ($\Delta t = 300$ μ s at U_S)
Protective circuit	Serial protection against polarity reversal; Suppressor diode

Input data

Digital: Sensor circuit (S12, S22)

Description of the input	safety-related sensor inputs
Number of inputs	2
Input voltage range "0" signal	< 5 V (S12) 0 V DC ... 5 V DC (S22)
Input current range "0" signal	< 2 mA (S12) 0 mA ... 2 mA (S22)
Inrush current	< 5 mA (typ. with U_S at S12, $\Delta t = 500 \mu s$) < 5 mA (typ. with U_S at S22/24 V, $\Delta t = 500 \mu s$) > -5 mA (typ. with U_S at S22/0 V, $\Delta t = 500 \mu s$)
Filter time	max. 3 ms (at S12, S22; test pulse width; blanking pulses/dark test) > 1 s (at S12, S22; test pulse rate; blanking pulses/dark test) Where test pulse width ≤ 1 ms: test pulse rate = 5 x test pulse width max. 1 ms (at S12, S22; test pulse width; switch-on pulses/light test) > 100 ms (at S12, S22; test pulse rate; switch-on pulses/light test) Unless test pulses are safety-related, they should be disabled.
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 4 mA (typ. with U_S at S12) < 4 mA (typ. with U_S at S22/24 V) > -15 mA (typ. with U_S at S22/0 V)

Digital: Start circuit (S35)

Description of the input	non-safety-related NPN
Number of inputs	1
Input voltage range "1" signal	19.2 V DC ... 30 V DC
Inrush current	< 10 mA (typ. with U_S , $\Delta t = 500 \mu s$)
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 0.5 mA (typ. with U_S)

Output data

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

Output description	safety-related N/O contacts
Number of outputs	3 (undelayed)
Contact switching type	3 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 5 V AC/DC

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	max. 250 V AC/DC
Switching capacity	min. 50 mW
Inrush current	min. 10 mA
	max. 6 A
Limiting continuous current	6 A
Sq. Total current	72 A ² (observe derating)
Switching frequency	0.5 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	6 A gL/gG (N/O contact)

Relay: Signaling current path (41/42)

Output description	non-safety-related N/C contact
Number of outputs	1 (undelayed)
Contact switching type	1 signaling current path
Contact material	AgSnO ₂
Switching voltage	min. 5 V AC/DC
	max. 250 V AC/DC
Switching capacity	min. 50 mW
Inrush current	min. 10 mA
	max. 6 A ($\Delta t = 100$ ms)
Limiting continuous current	1 A
Sq. Total current	1 A ²
Switching frequency	0.5 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	1 A gL/gG

Signal: Y32

Output description	non-safety-related
	PNP
Number of outputs	1 (digital)
Voltage	23 V DC ($U_s - 1$ V)
Current	max. 100 mA
Maximum inrush current	1 A ($\Delta t = 5$ ms at U_s)
Short-circuit protection	Yes

Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Screw connection
Conductor cross section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm

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Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

Signaling

Status display	3 x LED (green)
Operating voltage display	1 x LED (green)

Dimensions

Width	22.5 mm
Height	112.2 mm
Depth	114.5 mm

Material specifications

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

Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	4
Performance level (PL)	e (5 A DC13; 5 A AC15; 8760 switching cycles/year)

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)	-40 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °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 for $\Delta t = 11$ ms (continuous shock: 10g for $\Delta t = 16$ ms)
Vibration (operation)	10 Hz ... 150 Hz, amplitude 0.15 mm, 2g

Approvals

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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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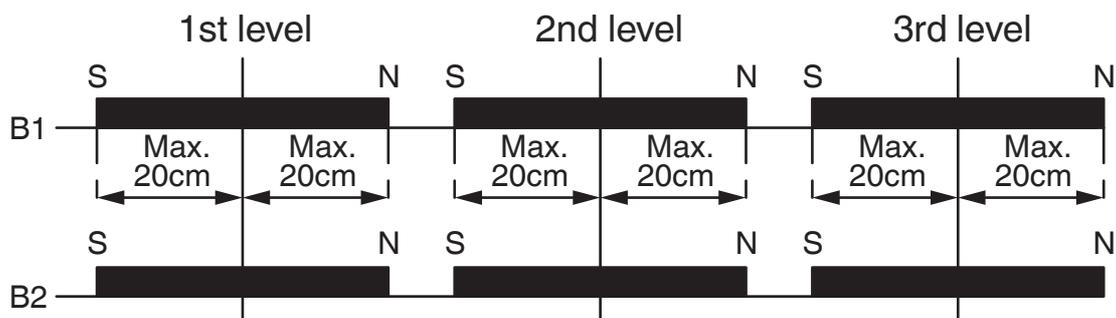
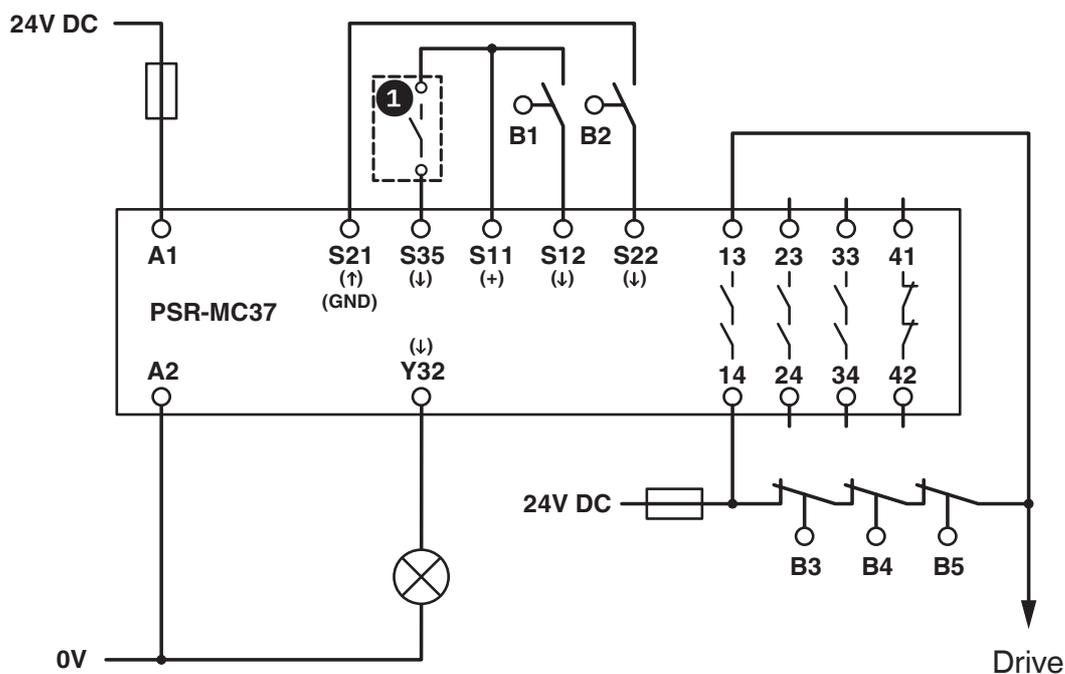


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Drawings

Circuit diagram



Example application

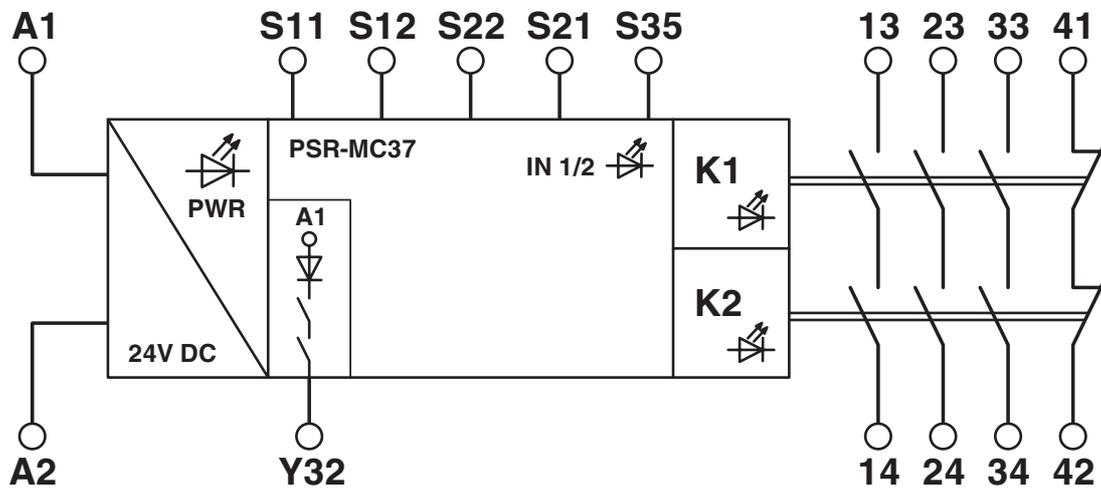
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Block diagram



Block diagram

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Approvals

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cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01_208_4A_6151_00_25



Functional Safety

Approval ID: 4420515124305



Functional Safety

Approval ID: 4478015124305

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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	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	c6ec8599-d6d5-4a78-919b-15dc2622b818

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