

# Safety relays - PSR-MC32-3NO-1NC-24-230UC-SP - 2700525

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Safety relay for emergency stop, safety doors and light grids up to SILCL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual, monitored start, 3 enabling current paths, 1 signaling current path,  $U_s = 24 \dots 230 \text{ V AC/DC}$ , pluggable Push-in terminal block

The figure shows a version with a screw connection

## Your advantages

- Up to Cat.4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061
- One or two-channel activation
- 3 enabling current paths, 1 signaling current path
- Manually monitored and automatic activation in a single device
- Cross-circuit detection



## Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4046356912709

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	22.5 mm
Height	117.4 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-40 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)

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## Technical data

### Ambient conditions

Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

### Power supply

Designation	A1/A2
Rated control circuit supply voltage $U_s$	24 V AC/DC ... 230 V AC/DC -15 % / +10 %
Rated control supply current $I_s$	typ. 103 mA (24 V DC)
	typ. 47 mA (48 V DC)
	typ. 38 mA (110 V AC)
	typ. 21 mA (230 V AC)
Power consumption at $U_s$	2.7 W (with DC)
	2.9 W (with AC)
Apparent power	typ. 5 VA (at $U_s$ )
Inrush current	< 80 A ( $\Delta t = 50 \mu s$ at $U_s$ )
Filter time	2 ms (at A1 in the event of voltage dips at $U_s$ )
Protective circuit	$U_s$ : surge protection 275 V varistor / 411 V suppressor diode

### Digital inputs

Input name	Sensor circuit
	S10, S11, S12, S13, S21, S22
Description of the input	safety-related sensor inputs
Input voltage range "0" signal	0 V DC ... 5 V DC (for safe Off; at S10/S12/S13)
Input current range "0" signal	0 mA ... 2 mA (for safe Off; at S10/S12/S13)
Inrush current	< 5 mA (with $U_s/I_x$ at S10/S12/S13)
	> -5 mA (with $U_s/I_x$ to S22)
Current consumption	< 5 mA (with $U_s/I_x$ at S10/S12/S13)
	> -5 mA (with $U_s/I_x$ to S22)
Filter time	max. 1.5 ms (to S10-S12; test pulse width; at 24 V DC)
	7.5 ms (to S10-S12; test pulse rate; at 24 V DC)
	Test pulse rate = 5 x Test pulse width
Max. permissible overall conductor resistance	150 $\Omega$
Concurrence input 1/2	$\infty$
Type of protection	Inputs: protection against polarity reversal, surge protection
Protective circuit/component	38.6 V suppressor diode
Input name	Start circuit
	S34, S35
Description of the input	non-safety-related
Number of inputs	2
Inrush current	< 10 mA ( $\Delta t = 330$ ms)
Current consumption	typ. 2.5 mA (S34)
	typ. 1 mA (S35)

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## Technical data

### Digital inputs

Max. permissible overall conductor resistance	150 Ω
Protective circuit/component	Suppressor diode

### Relay outputs: enabling current path

Output name	Enabling current paths
	13/14, 23/24, 33/34
Output description	safety-related N/O contacts
Number of outputs	3 (undelayed)
Contact type	3 enabling current paths
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 5 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Limiting continuous current	6 A (observe derating)
Inrush current	min. 10 mA
	max. 6 A
Sq. Total current	72 A <sup>2</sup> (observe derating)
Switching capacity	min. 50 mW
Switching frequency	max. 1 Hz
Interrupting rating (ohmic load) max.	1500 VA (250 V AC, τ = 0 ms)
	For additional values, see load curve
Maximum interrupting rating (inductive load)	48 W (24 V DC, τ = 40 ms)
	40 W (48 V DC, τ = 40 ms)
	36 W (60 V DC, τ = 40 ms)
	35 W (110 V DC, τ = 40 ms)
	33 W (220 V DC, τ = 40 ms)
	1500 VA (250 V AC, τ = 40 ms)
Mechanical service life	10x 10 <sup>6</sup> cycles
Switching capacity according to IEC 60947-5-1	5 A (24 V (DC13))
	5 A (250 V (AC15))
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

### Relay outputs: return current/signaling current path

Output name	Signaling current path
Output description	non-safety-related N/C contact
Number of outputs	1 (undelayed)
Contact type	1 signaling current path
Contact material	AgSnO <sub>2</sub>
Switching voltage	min. 5 V AC/DC
	max. 250 V AC/DC
Limiting continuous current	6 A

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## Technical data

Relay outputs: return current/signaling current path

Inrush current	min. 10 mA
	max. 6 A
Switching capacity	min. 50 mW
Switching frequency	1 Hz
Mechanical service life	10x 10 <sup>6</sup> cycles
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

## Times

Typical pickup time at US	< 200 ms (when controlled via A1)
Typical response time at US	< 150 ms (automatic start)
	< 100 ms (manual, monitored start)
Typical release time at US	< 20 ms (when actuation is via the sensor circuit)
Restart time	< 1 s
Recovery time	< 500 ms

## General

Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3
Nominal operating mode	100% operating factor
Net weight	235.4 g
Mounting position	vertical or horizontal
Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Housing material	PBT
Housing color	yellow
Operating voltage display	1 x green LED
Status display	3 x green LED

## Connection data

Connection method	Push-in connection
pluggable	Yes
Conductor cross section solid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16
Conductor cross-section flexible with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Conductor cross-section flexible with ferrule and plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (only together with CRIMPFOX 6)
Stripping length	8 mm

## Safety-related characteristic data

Stop category	0
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## Safety relays - PSR-MC32-3NO-1NC-24-230UC-SP - 2700525

### Technical data

#### Safety-related characteristic data

Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	3
Designation	IEC 61508 - Low demand
Safety Integrity Level (SIL)	3
Designation	EN ISO 13849
Performance level (PL)	e
Category	4 (5 A DC13; 5 A AC15; 8760 switching cycles/year)
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3

#### Standards and Regulations

Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178; EN 60947-5-1
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	Basic insulation 4 kV between enabling current path (23/24) and enabling current path (33/34) and signaling current path (41/42)
	Basic insulation 4 kV between all current paths and housing
	Safe isolation, reinforced insulation 6 kV between all other circuits
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

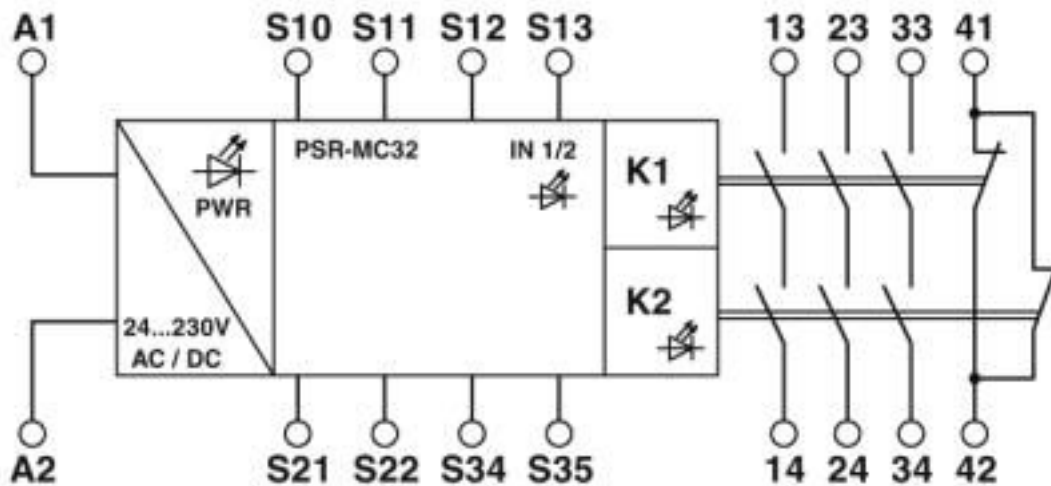
#### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

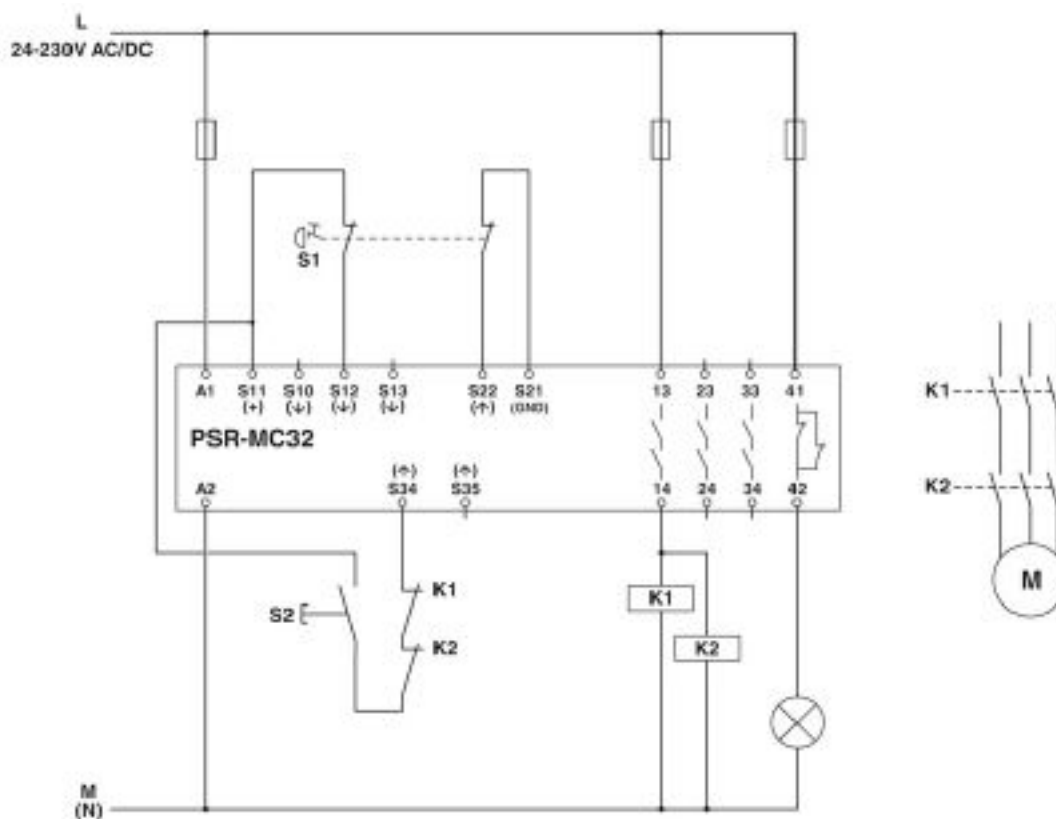
### Drawings

# Safety relays - PSR-MC32-3NO-1NC-24-230UC-SP - 2700525

Block diagram



Circuit diagram



## Classifications

eCl@ss

eCl@ss 10.0.1	27371819
eCl@ss 4.0	40020600

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## Classifications

### eCl@ss

eCl@ss 4.1	40020600
eCl@ss 5.0	27371900
eCl@ss 5.1	27371900
eCl@ss 6.0	27371800
eCl@ss 7.0	27371819
eCl@ss 8.0	27371819
eCl@ss 9.0	27371819

### ETIM

ETIM 3.0	EC001449
ETIM 4.0	EC001449
ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449

### UNSPSC

UNSPSC 13.2	39121501
UNSPSC 18.0	39122205
UNSPSC 19.0	39122205
UNSPSC 20.0	39122205
UNSPSC 21.0	39122205

## Approvals

### Approvals

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#### Approvals

UL Listed / cUL Listed / Functional Safety / cULus Listed


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#### Ex Approvals

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### Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
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## Safety relays - PSR-MC32-3NO-1NC-24-230UC-SP - 2700525

### Approvals

Functional Safety		44-205-15124310
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cULus Listed		
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