

# PSR-... 24UC/URM/5X1/2X2 PSR-...120UC/URM/5X1/2X2

## Universal Safety Relay With Positively Driven Contacts

### INTERFACE

Data Sheet  
101594\_en\_01

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### 1 Description

The PSR-...UC/URM/5X1/2X2 safety relay is a universal safety relay with positively driven contacts according to EN 50205, class A.

The relay has five N/O contacts and two N/C contacts with positively driven operation, therefore, for example, if an N/O contact fails as a result of not opening, all the other N/O contacts open when switching to the idle position. The N/C contacts remain open as before.

Positively driven contacts mean that the contacts of a contact assembly (at least one N/C contact and one N/O contact) must be mechanically connected with one another in such a way that the N/C and N/O contact can never be closed at the same time.

It must always be ensured that there is still a gap of at least 0.5 mm between the open contacts, even in the event of an error.

### 1.1 Features

- Universal safety relay
- Plug-in screw or spring-cage connection terminal blocks
- Safe isolation
- Housing width of 22.5 mm
- Five N/O contacts and two N/C contacts



#### **WARNING: Risk of electric shock**

Observe the safety instructions on page 4.



Make sure you always use the latest documentation.  
It can be downloaded at [www.download.phoenixcontact.com](http://www.download.phoenixcontact.com).  
A conversion table is available on the Internet at  
[www.download.phoenixcontact.com/general/7000\\_en\\_00.pdf](http://www.download.phoenixcontact.com/general/7000_en_00.pdf).



This data sheet is valid for all products listed on the following page:

## 2 Ordering Data

### Safety Relays With 24 V AC/DC Input Voltage

Description	Type	Order No.	Pcs./Pck.
Universal safety relay with positively driven contacts, with screw connection	PSR-SCP- 24UC/URM/5X1/2X2	2963747	1
Universal safety relay with positively driven contacts, with spring-cage connection	PSR-SPP- 24UC/URM/5X1/2X2	2963970	1

### Safety Relays With 120 V AC/DC Input Voltage

Description	Type	Order No.	Pcs./Pck.
Universal safety relay with positively driven contacts, with screw connection	PSR-SCP-120UC/URM/5X1/2X2	2981402	1
Universal safety relay with positively driven contacts, with spring-cage connection	PSR-SPP-120UC/URM/5X1/2X2	2981415	1

### Documentation

Description	Type	Order No.	Pcs./Pck.
Application manual for PSR safety relays	UM EN SAFETY RELAY APPLICATION	2888712	1

## 3 Technical Data

Input Data	24UC	120UC
Nominal input voltage $U_N$	24 V AC/DC	120 V AC/DC
Permissible range	0.8 ... 1.1 x $U_N$	0.8 ... 1.1 x $U_N$
Typical current consumption at $U_N$	47 mA per channel	11 mA per channel
Typical response time (K1)	20 ms	20 ms
Typical release time (K1)	20 ms	20 ms
Status indicator (Power)	Green LED	Green LED

### Output Data

Contact type: Positively driven contact assembly class A according to EN 50205	5 N/O contacts, 2 N/C contacts	
Contact material	Silver tin oxide, gold-flashed (AgSnO <sub>2</sub> , 0.2 μm Au)	
Maximum switching voltage	250 V AC/DC	
Minimum switching voltage	15 V AC/DC	
Limiting continuous current		
N/O contact	6 A	
N/C contact	3 A	
$I_{TH}^2 = I_1^2 + I_2^2 + \dots + I_N^2$	72 A <sup>2</sup>	
Maximum inrush current		
N/O contact	6 A	
N/C contact	6 A	
Minimum switching current	25 mA	
Maximum shutdown power	Ohmic load $\tau = 0$ ms      Inductive load $\tau = 40$ ms	
	24 V DC	144 W      42 W
	48 V DC	288 W      42 W
	110 V DC	110 W      42 W
	220 V DC	88 W      42 W
	250 V AC	1500 VA
Minimum switching power	0.4 W	

**Output Data (Continued)**

Mechanical service life	10 <sup>7</sup> cycles, approximately			
Switching capacity according to DIN EN 60947-5-1/VDE 0660-200	Cycles		DC13	AC15
	3600/h:	24 V	2.5 A	-
		230 V	-	3 A
	360/h:	24 V DC/4 A		
230 V AC/4 A				
Short-circuit protection of the output circuits, external	6 A fast-blow or 4 A slow-blow			

**General Data**

Permissible ambient operating temperature	-20°C ... +55°C
Nominal operating mode	100% operating factor
Degree of protection according to VDE 0470-1	
Housing	IP20
Connection terminal blocks	IP20
Installation location	IP54, minimum
Mounting position	Any
Air and creepage distances between the circuits	
Basic insulation <sup>1</sup>	According to DIN EN 50178:1998-04
Impulse voltage withstand level	4 kV <sup>1</sup>
Pollution degree	2
Surge voltage category	III
Dimensions (W x H x D)	
Screw connection	22.5 mm x 114.5 mm x 99 mm
Spring-cage connection	22.5 mm x 114.5 mm x 112 mm
Conductor cross-section	
Screw connection	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (24 - 12 AWG)
Spring-cage connection	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (24 - 16 AWG)
Stripping length	
Screw connection	7 mm
Spring-cage connection	8 mm
Housing material	Polyamide PA, not reinforced

<sup>1</sup> Only for PSR-...120UC/URM/5X1/2X2: Safe isolation, reinforced insulation, and 6 kV between A1-A2, 11-12, 23-24, 71-72 and 33-34, 43-44, 53-54, 63-64.

**Tests/Approvals**

UL/CUL



**3.1 Block Diagram**

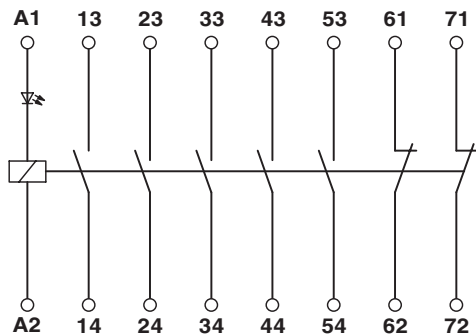


Figure 1 Block diagram

## 4 Safety Notes

**WARNING: Risk of electric shock**

During operation, parts of electrical switching devices carry hazardous voltages.

- Before working on the device, disconnect the power.
- Please observe the safety regulations of electrical engineering and industrial safety and liability associations. Disregarding these safety regulations may result in death, serious personal injury or damage to equipment.
- Startup, assembly, modifications, and upgrades may only be carried out by a skilled electrical engineer.

**WARNING: Risk of automatic machine restart**

- For emergency stop applications, the machine must be prevented from restarting automatically by a higher-level control system.
- Protective covers must not be removed when operating electrical switching devices.

**WARNING: Danger due to faulty devices**

The devices may be damaged following an error and correct operation can no longer be ensured.

- In the event of an error, replace the device immediately.
- Repairs to the device, especially if the housing must be opened, may only be carried out by the manufacturer or authorized persons. Otherwise the warranty is invalidated.

**ATTENTION: Risk of damage to equipment due to incorrect installation**

- For reliable operation, the safety relay must be installed in housing protected from dust and humidity (IP54).
- Carry out wiring according to the application.

**ATTENTION: Risk of damage to equipment due to noise emission**

When operating relay modules, the operator must meet the requirements for noise emission for electrical and electronic equipment (EN 61000-6-4) on the contact side and, if required, take appropriate measures.

## 5 Structure

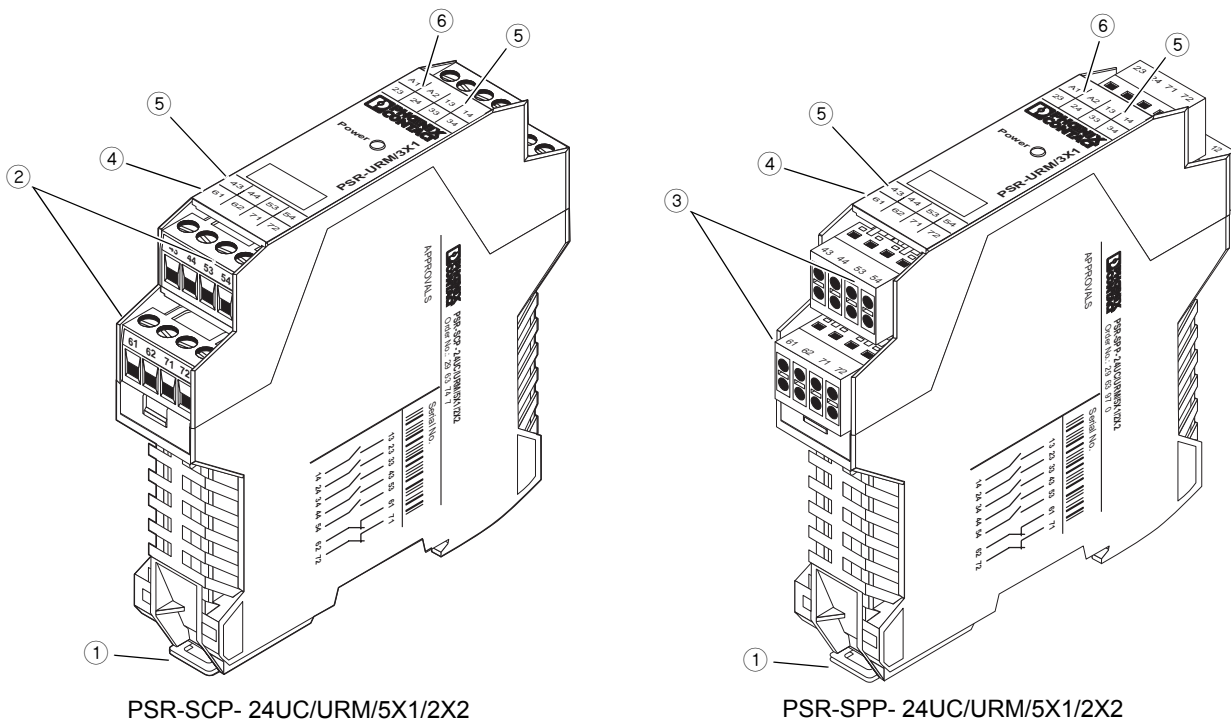


Figure 2 Structure

- 1 Metal lock for mounting on the DIN rail
- 2 COMBICON plug-in screw terminal blocks
- 3 COMBICON plug-in spring-cage terminal blocks
- 4 61-62, 71-72: N/C contacts
- 5 13-14, 23-24, 33-34, 43-44, and 53-54: N/O contacts
- 6 A1, A2: Supply voltage connection

## 6 Function

When the supply voltage is applied at terminal blocks A1-A2 (24 V AC/DC or 120 V AC/DC depending on the version), the "Power" LED lights up. Contacts 13-14, 23-24, 33-34, 43-44, and 53-54 close. Contacts 61-62 and 71-72 open.

## 7 Connection Notes



### WARNING: Risk of electric shock

During operation, parts of electrical switching devices carry hazardous voltages.

- Before working on the device, disconnect the power.



### ATTENTION: Risk of damage to equipment due to incorrect installation

- For reliable operation, the safety relay must be installed in housing protected from dust and humidity (IP54).
- Carry out wiring according to the application.

In order to comply with UL approval, use copper cables that are designed for operating temperatures  $> 75^{\circ}\text{C}$ . For reliable and safe-to-touch contacts, strip the cable ends as follows:

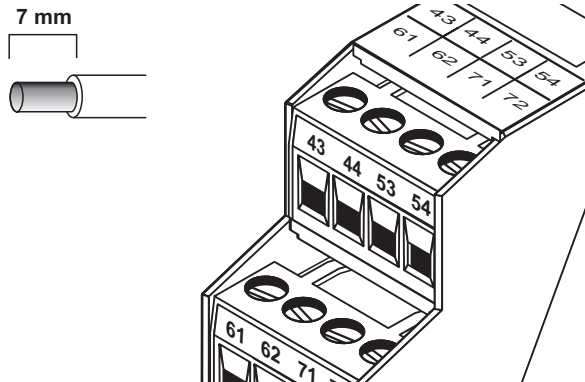


Figure 3 PSR-SCP- 24UC/URM/5X1/2X2

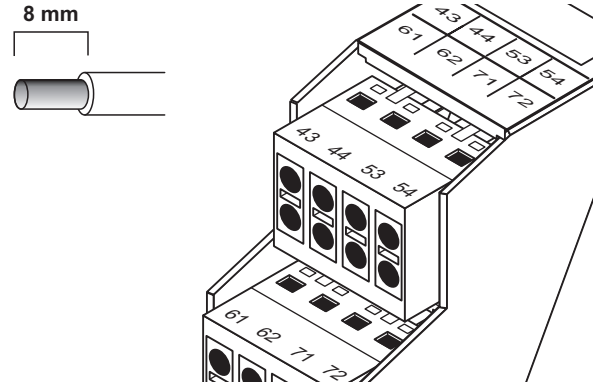


Figure 4 PSR-SPP- 24UC/URM/5X1/2X2