PSR-… 24UC/URM/5X1/2X2
PSR-…120UC/URM/5X1/2X2

Universal Safety Relay With Positively Driven Contacts

INTERFACE

Data Sheet
101594_en_01

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.

A conversion table is available on the Internet at
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 ($AgSnO_2$, 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	
$I_{TH}^2 = I_1^2 + I_2^2 + ... I_N^2$		72 A^2	
Maximum inrush current			
N/O contact		6 A	
N/C contact		6 A	
Minimum switching current		25 mA	
Maximum shutdown power		Ohmic load τ = 0 ms	Inductive load τ = 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	10^7 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[1]	According to DIN EN 50178:1998-04
Impulse voltage withstand level	4 kV[1]
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^2 ... 2.5 mm^2 (24 - 12 AWG)
Spring-cage connection	0.2 mm^2 ... 1.5 mm^2 (24 - 16 AWG)
Stripping length	
Screw connection	7 mm
Spring-cage connection	8 mm
Housing material	Polyamide PA, not reinforced

[1] 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

c UL us
LISTED

3.1 Block Diagram

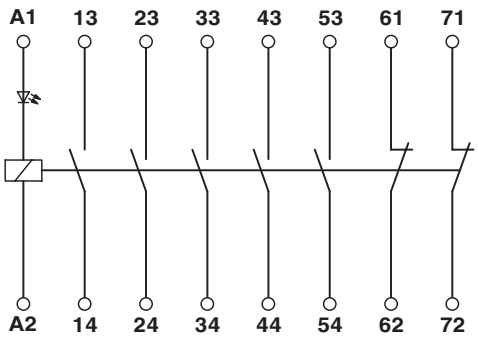


Figure 1 Block diagram

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.

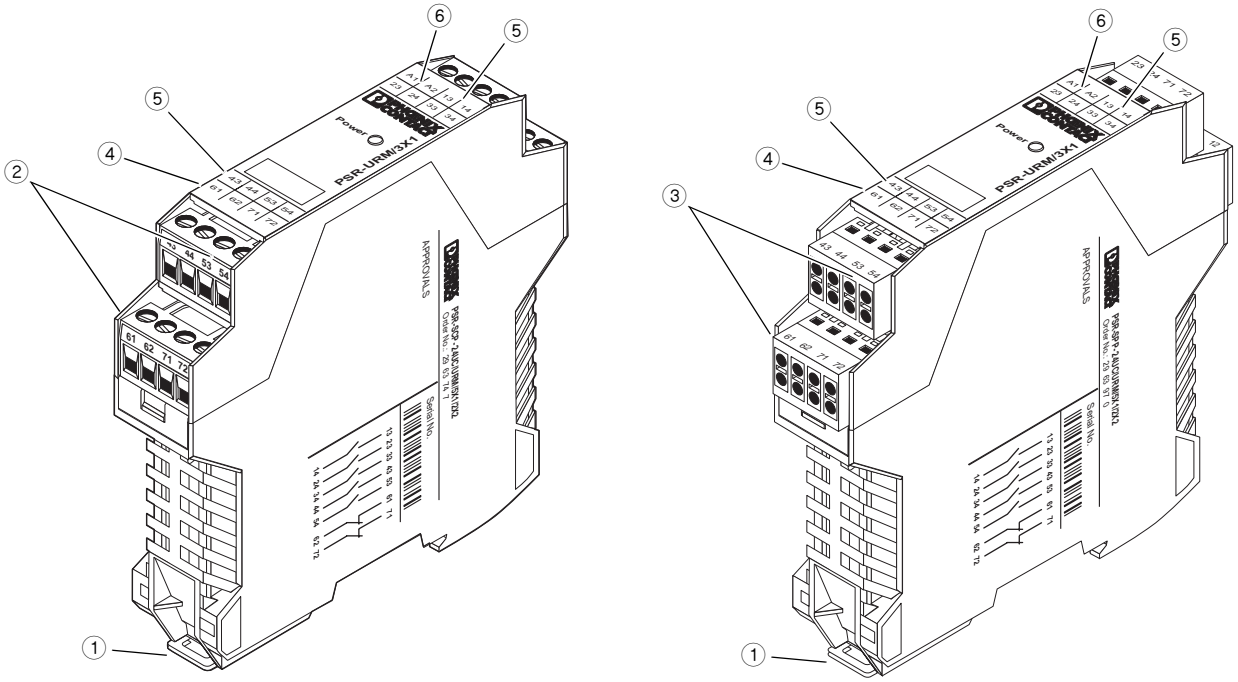
ATTENTION: Risk of damage to equipment due to incorrect installation

- 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



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

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

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°C. For reliable and safe-to-touch contacts, strip the cable ends as follows:

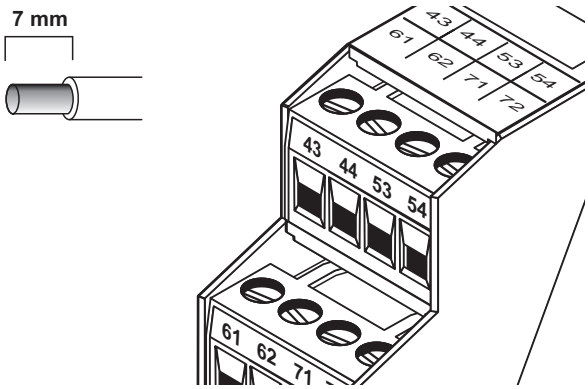


Figure 3 PSR-SCP- 24UC/URM/5X1/2X2

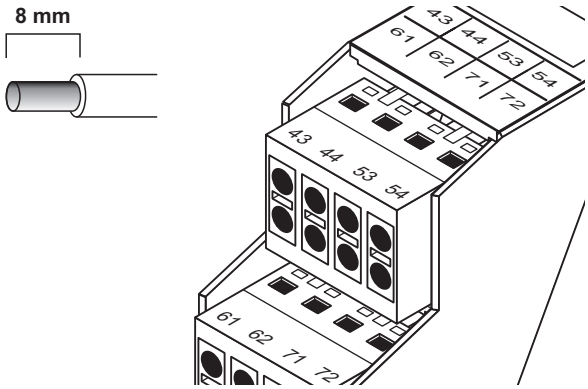


Figure 4 PSR-SPP- 24UC/URM/5X1/2X2

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