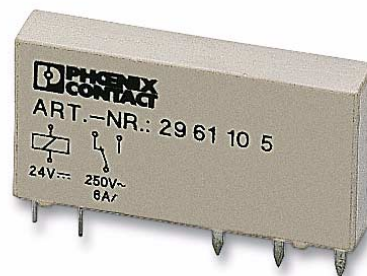


# REL-MR-...21

## Miniature Relays With PDT for Loads up to 6 A



## INTERFACE

### Data Sheet

© PHOENIX CONTACT - 10/2005

### Description

With the REL-MR-...21 plug-in miniature relay, the high end of the latest relay developments are made available to the innovative PLC range. Despite its compact dimensions, the device is rugged and equipped with features which are not normally found in plug-in relays:

- 5 mm wide
- High level of operational safety
- Cadmium-free, environmentally friendly power contacts up to 250 V AC/6 A
- Available with gold plating for low power switching levels (mA) as an option
- 4 kV<sub>rms</sub> electrical isolation between input and output
- Safe isolation according to EN 50178
- High degree of protection, up to IP67 depending on the type

The miniature relays are not just designed to be used as components for the PLC range, but can also be used as PCB relays in industrial products of any kind, such as:

- Interface technology, timer relays
- Measuring and control technology
- PLC and bus I/O modules



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

[http://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 the following products:

## Ordering Data

### Plug-In Miniature Relays With Power Contact

Description	Type	Order No.	Pcs./Pkt.
Plug-in miniature relays with power contact, 4.5 V DC input voltage	REL-MR- 4,5DC/21	29 61 36 7	10
Plug-in miniature relays with power contact, 12 V DC input voltage	REL-MR- 12DC/21	29 61 15 0	10
Plug-in miniature relays with power contact, 18 V DC input voltage	REL-MR- 18DC/21	29 61 38 3	10
Plug-in miniature relays with power contact, 24 V DC input voltage	REL-MR- 24DC/21	29 61 10 5	10
Plug-in miniature relays with power contact, 60 V DC input voltage	REL-MR- 60DC/21	29 61 11 8	10

### Plug-In Miniature Relays With Multi-Layer Contact

Description	Type	Order No.	Pcs./Pkt.
Plug-in miniature relays with multi-layer contact, 4.5 V DC input voltage	REL-MR- 4,5DC/21AU	29 61 37 0	10
Plug-in miniature relays with multi-layer contact, 12 V DC input voltage	REL-MR- 12DC/21AU	29 61 16 3	10
Plug-in miniature relays with multi-layer contact, 18 V DC input voltage	REL-MR- 18DC/21AU	29 61 49 3	10
Plug-in miniature relays with multi-layer contact, 24 V DC input voltage	REL-MR- 24DC/21AU	29 61 12 1	10
Plug-in miniature relays with multi-layer contact, 60 V DC input voltage	REL-MR- 60DC/21AU	29 61 13 4	10





## Technical Data

Coil Side	...4.5VDC...	...12VDC...	...18VDC...	...24VDC...	...60VDC...
Nominal input voltage $U_N$	4.5 V DC	12 V DC	18 V DC	24 V DC	60 V DC
Permissible range (with reference to $U_N$ )	See "Permissible Operating Voltage Range" on page 4				
Typical input current at $U_N$	38 mA	14 mA	9 mA	7 mA	3 mA
Typical response time at $U_N$	5 ms	5 ms	5 ms	5 ms	5 ms
Typical release time at $U_N$	2.5 ms	2.5 ms	2.5 ms	2.5 ms	2.5 ms
Coil resistance at 20°C	119 $\Omega$ $\pm$ 10%	848 $\Omega$ $\pm$ 10%	1906 $\Omega$ $\pm$ 10%	3390 $\Omega$ $\pm$ 10%	20500 $\Omega$ $\pm$ 15%

Contact Side	REL-MR-...21	REL-MR-...21AU
Contact type	Single contact, 1 PDT	Single contact, 1 PDT
Contact material	AgSnO	Ag alloy, hard gold-plated <sup>1</sup>
Maximum switching voltage	250 V AC/DC	30 V AC/36 V DC (250 V AC/DC)
Minimum switching voltage	12 V AC/DC	100 mV (12 V AC/DC)
Limiting continuous current	6 A	50 mA (6 A)
Maximum inrush current	On request	50 mA
Minimum switching current	10 mA	1 mA (10 mA)
Maximum shutdown power (ohmic load), (see "Shutdown Power" on page 4)	24 V DC 48 V DC 60 V DC 110 V DC 220 V DC 250 V AC	140 W 20 W 18 W 23 W 40 W 1500 VA
Minimum switching power	120 mW	100 $\mu$ W (120 mW)

<sup>1</sup> If the specified maximum values are exceeded, the gold coating will be damaged. In subsequent operation, the maximum values given in brackets will apply. This can then result in reduced service life compared to simple power contacts.

## General Data

Test voltage: Winding/contact	4 kV, 50 Hz, 1 minute
Ambient operating temperature range	-40°C to +85°C
Nominal operating mode	100% operating factor
Mechanical service life	2 x 10 <sup>7</sup> cycles
Electrical service life	See "Service Life Reduction Factor" on page 4
Standards/specifications	IEC 60255/DIN VDE 0435 (in relevant parts) DIN EN 50178/VDE 0160 (in relevant parts) EN 60730/DIN VDE 0631 IEC 60664/IEC 60064 A/DIN VDE 0110 Pollution degree 3, surge voltage category III, DIN EN 50178/VDE 0160, increased isolation I/O
Approvals	    <sup>1</sup>
Mounting position/mounting	Any/can be mounted without spacing

<sup>1</sup> Instead of  and :  is also possible.

## Dimensions

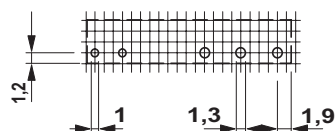


Figure 1 Dimensions (in mm)

## Pin Assignment

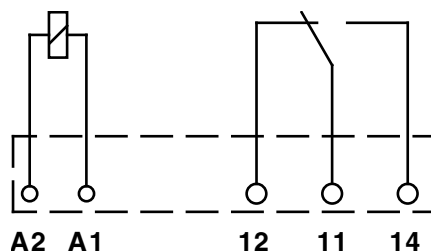
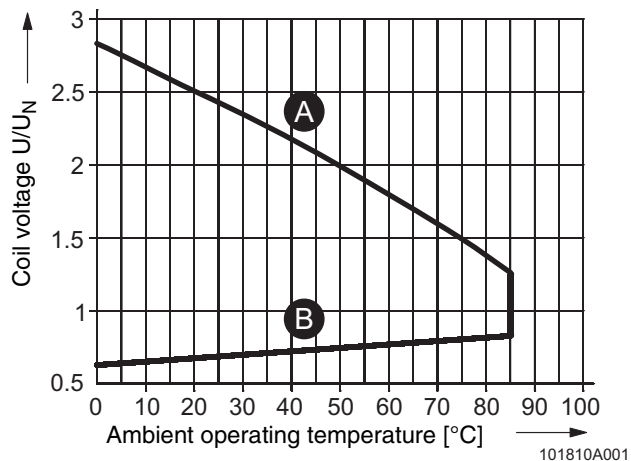


Figure 2 Pin assignment (view of the connections)

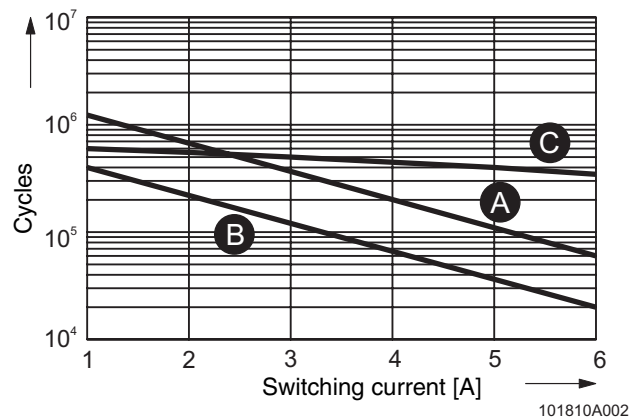
## Diagrams

**Permissible Operating Voltage Range**



- A** Maximum permissible continuous voltage  $U_{\max}$  with limiting continuous current on the contact side
- B** Minimum permissible relay operate voltage  $U_{\text{op}}$  following pre-excitation

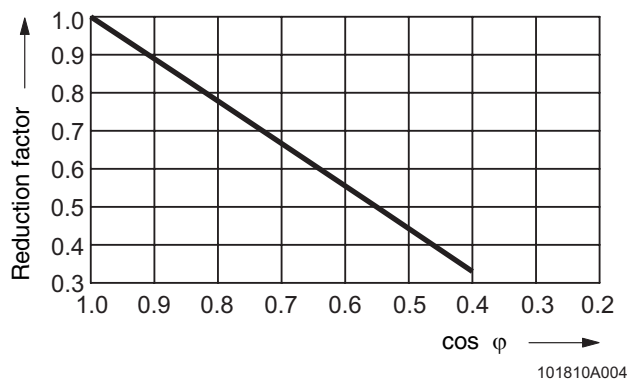
**Electrical Service Life**



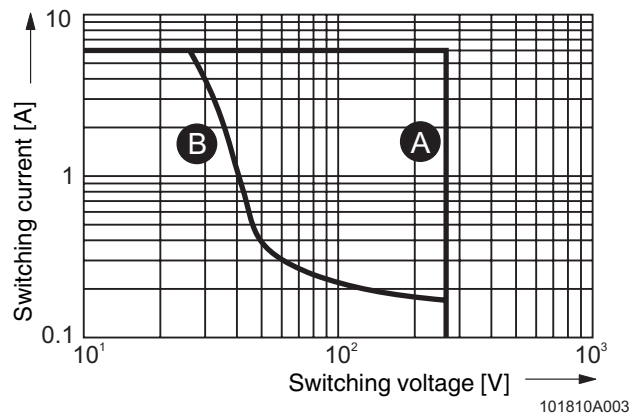
- A** 250 V AC, ohmic load
- B** 250 V AC,  $\cos \varphi = 0.4$
- C** 24 V DC, ohmic load

**Service Life Reduction Factor**

(with varying  $\cos \varphi$ )



**Shutdown Power**



- A** AC, ohmic load
- B** DC, ohmic load