



12 A / 250 V AC

- Miniature dimensions
- Cadmium - free contacts
- AC and DC coils
- For plug-in sockets, 35 mm DIN rail mount, EN 50022 or on panel mounting
- For PCB and soldering connections - option
- General purpose relays
- WT (mechanical indicator + lockable front test button) - standard features of relays for plug-in sockets. Relays may be provided with the test buttons type P (no latching) and plugs.

• Recognitions, certificates, directives: RoHS,    

### Contacts

Contact number & arrangement		2C/O
Contact material		<b>AgNi</b> , AgNi/Au 0.2 um, AgNi/Au 5 um
Max. switching voltage	AC/DC	250 V / 250 V
Min. switching voltage		5 V
Rated load	AC1	12 A / 250 V AC <b>①</b> 10 A / 250 V AC <b>②</b>
	DC1	12 A / 24 V DC <b>①</b> 10 A / 24 V DC <b>②</b>
Min. switching current		5 mA AgNi, 5 mA AgNi/Au 0.2 um, 2 mA AgNi/Au 5 um
Max. inrush current		24 A
Rated current		12 A <b>①</b> 10 A <b>②</b>
Max. breaking capacity	AC1	3 000 VA <b>①</b> 2 500 VA <b>②</b>
Min. breaking capacity		0.3 W AgNi, 0.3 W AgNi/Au 0.2 um, 0.1 W AgNi/Au 5 um
Resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

### Coil

Rated voltage	50/60 Hz AC	6...240 V
	DC	5...220 V
Must release voltage		AC: ≥ 0.2 U <sub>n</sub> DC: ≥ 0.1 U <sub>n</sub>
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	1,6 VA
	DC	0,9 W

### Insulation

Insulation category		C250
Insulation rated voltage		250 V AC
Rated surge voltage		4 000 V AC
Overvoltage category		III IEC 61810-5 (PN-IEC 664-1)
Insulation pollution degree		3
Dielectric strength		
• coil - contact		2 500 V AC
• contact - contact		1 500 V AC
• pole - pole		2 500 V AC
Contact - coil distance		
• clearance		≥ 2.5 mm
• creepage		≥ 4 mm

### General data

Operating time (typical value)		AC: 10 ms      DC: 13 ms
Release time (typical value)		AC: 8 ms      DC: 3 ms
Electrical life		
• resistive AC1		≥ 10 <sup>5</sup> 12 A, 250 V AC
• cos φ		see Fig. 2
Mechanical life (cycles)		≥ 2 x 10 <sup>7</sup>
Dimensions (L x W x H)		27.5 x 21.2 x 35.6 mm <b>①</b> 27.5 x 21.1 x 33.5 mm <b>②</b> 27.5 x 21.2 x 33 mm <b>③</b>
Weight		35 g
Ambient temperature		
• storage		-40...+85 °C
• operating		AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 40
Environmental protection		RTI IEC 61810-7
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g    10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

Standard contact materials are marked with bold type.

**①** For plug-in sockets version: standard (WT)    **②** For PCB version    **③** For version with threaded bolt

**Coil data - DC voltage version**

Table 1

Coil code	Rated voltage V DC	Coil resistance (±10%) at 20 °C Ω	Coil operating range V DC	
			min. (at 20 °C)	max. (at 55 °C)
1005	5	28	4.0	5.5
1006	6	40	4.8	6.6
1012	12	160	9.6	13.2
<b>1024</b>	<b>24</b>	<b>640</b>	<b>19.2</b>	<b>26.4</b>
1048	48	2 600	38.4	52.8
1060	60	4 000	48.0	66.0
1080	80	7 100	64.0	88.0
1110	110	13 600	88.0	121.0
1125	125	16 000	100.0	137.5
<b>1220</b>	<b>220</b>	<b>54 000</b>	<b>176.0</b>	<b>242.0</b>

Standard coil rated voltages marked with bold type.

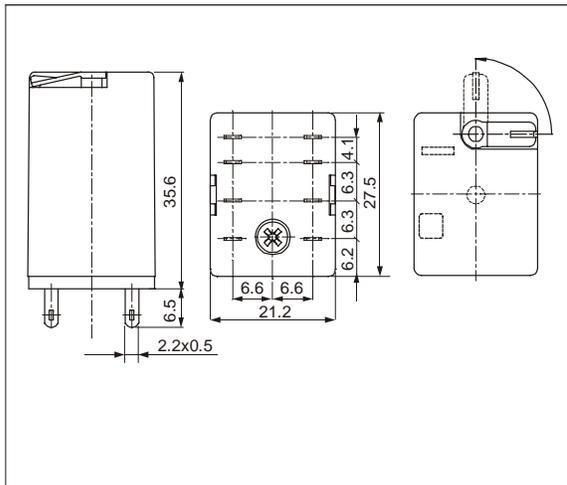
**Coil data - AC 50/60 Hz voltage version**

Table 2

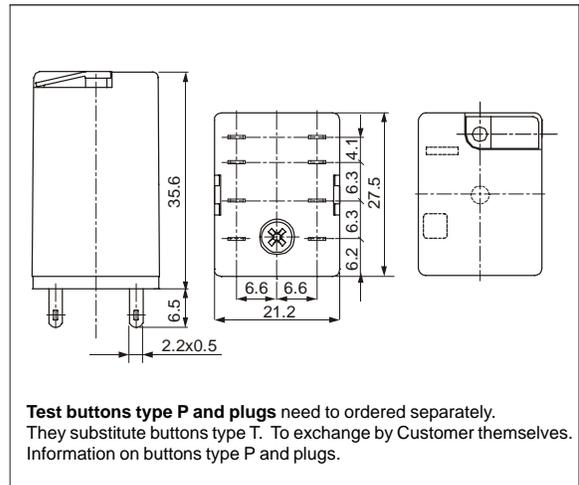
Coil code	Rated voltage V AC	Coil resistance (±10%) at 20 °C Ω	Coil operating range V AC	
			min. (at 20 °C)	max. (at 55 °C)
5006	6	9.8	4.8	6.6
5012	12	39.5	9.6	13.2
<b>5024</b>	<b>24</b>	<b>158.0</b>	<b>19.2</b>	<b>26.4</b>
5042	42	470.0	33.6	46.2
5048	48	640.0	38.4	52.8
5060	60	930.0	48.0	66.0
5080	80	1 720.0	64.0	88.0
5110	110	3 450.0	88.0	121.0
5120	120	3 770.0	96.0	132.0
5127	127	4 000.0	101.6	139.0
5220	220	15 400.0	176.0	242.0
<b>5230</b>	<b>230</b>	<b>16 100.0</b>	<b>184.0</b>	<b>253.0</b>
5240	240	16 800.0	192.0	264.0

Standard coil rated voltages marked with bold type.

**Dimensions** - plug-in version (WT), with lockable front test button type T

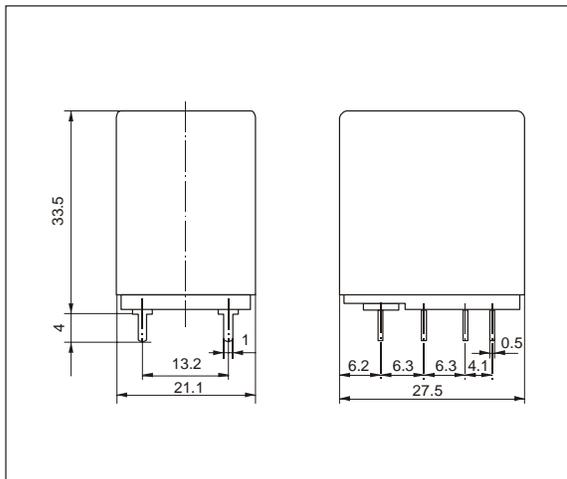


**Dimensions** - plug-in version (WT), with test button type P (no latching) or with plug (no manual operation)

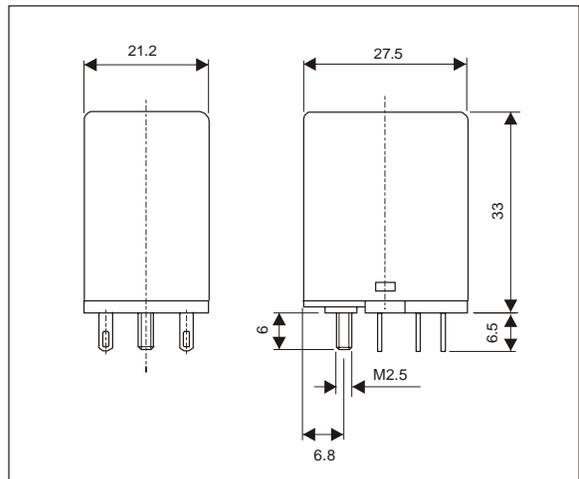


**Test buttons type P and plugs** need to be ordered separately. They substitute buttons type T. To be exchanged by the Customer themselves. Information on buttons type P and plugs.

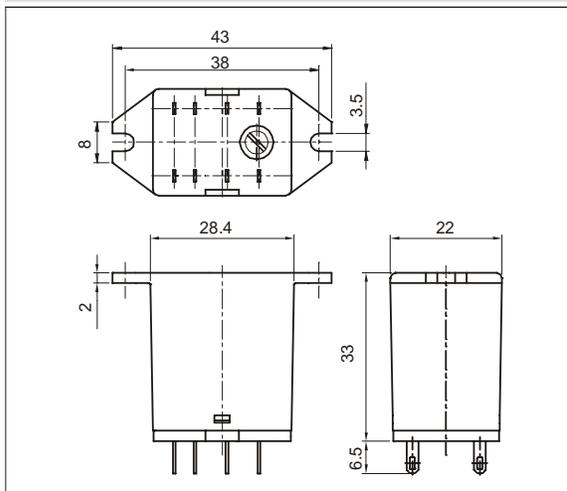
**Dimensions** - PCB version (without WT)



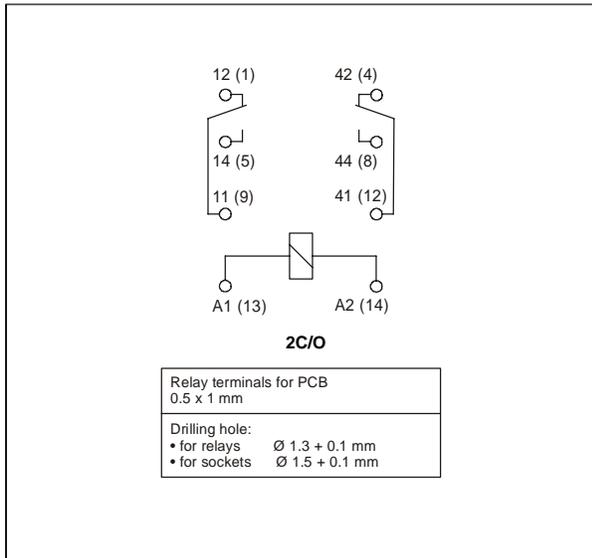
**Dimensions** - version with threaded bolt



**Dimensions** - version with mounting flange in the upper wall of the cover (without WT)

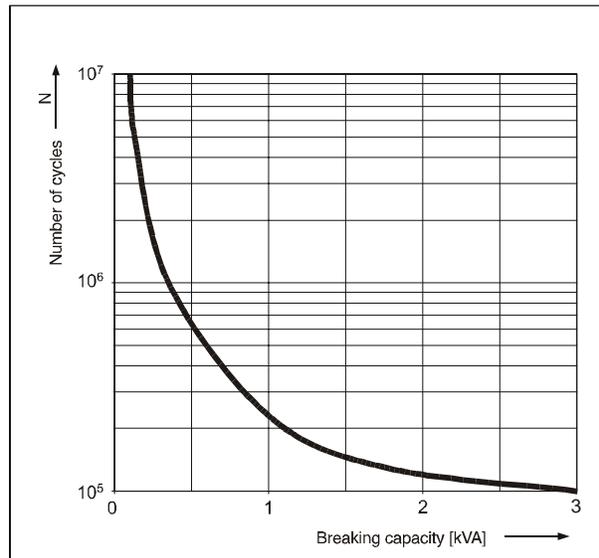


Connections diagram (pin side view)



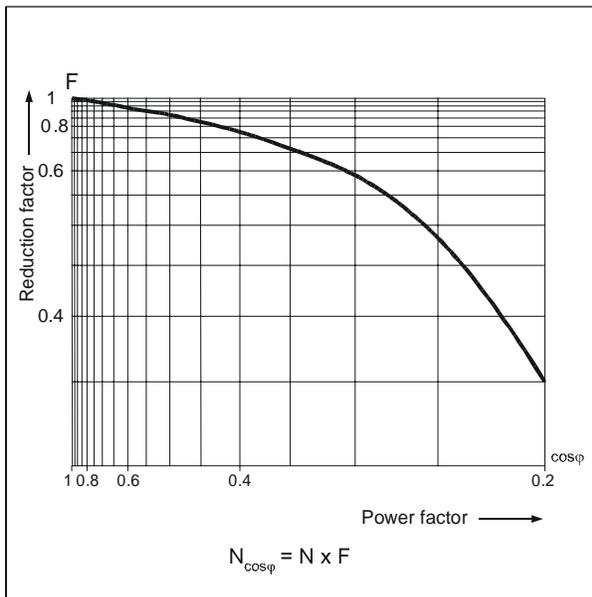
Electrical life at AC resistive load

Fig. 1



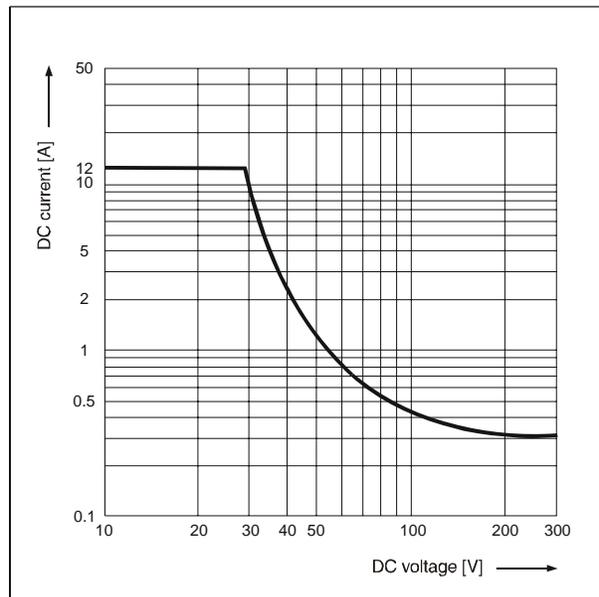
Electrical life reduction factor at AC inductive load

Fig. 2



Max. DC resistive load breaking capacity

Fig. 3



### Mounting

**Relays D2 are offered in versions:**

- standard WT (mechanical indicator + lockable front test button), for plug-in sockets. In standard version of relays (WT) is possibility self-exchange of button type T for: button type P (no latching) or plug (no manual operation). Buttons type P and plugs need to ordered separately
- for PCB (without WT)
- with threaded bolt
- with mounting flange in the upper wall of the cover (without WT).

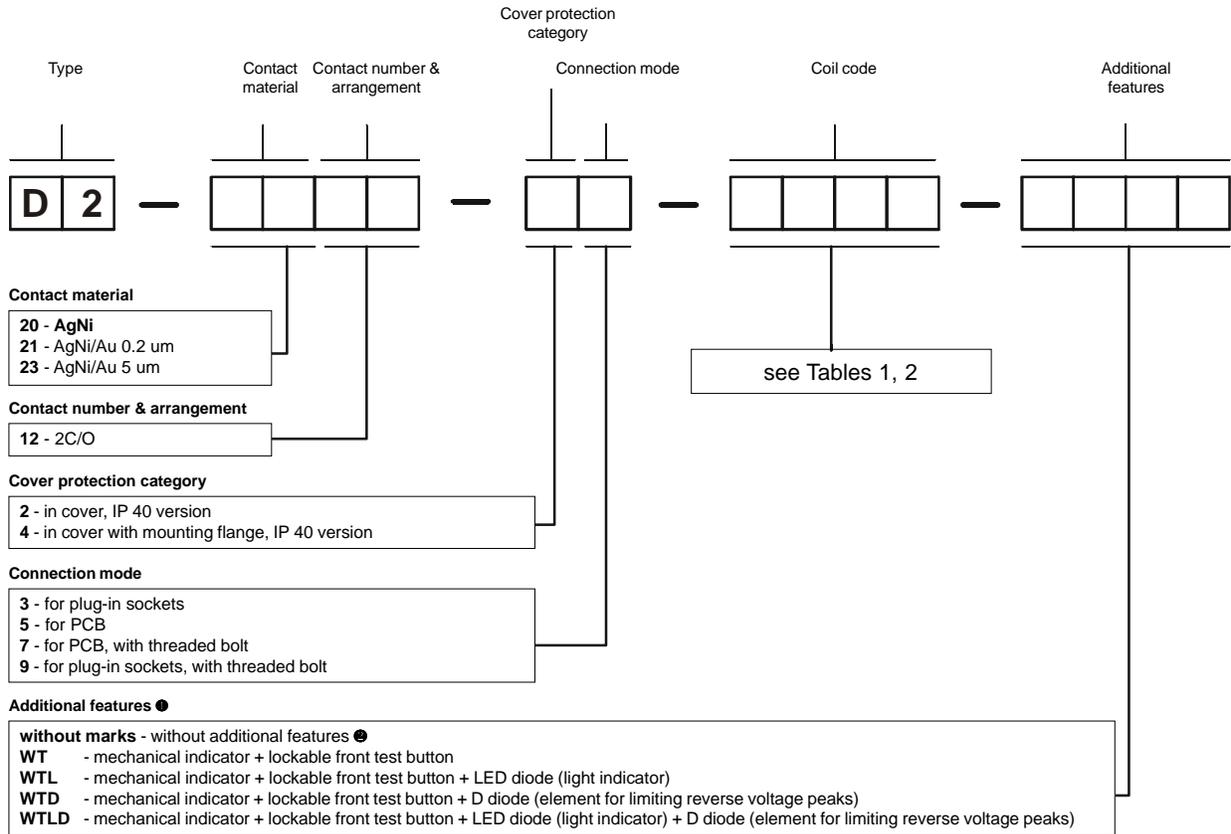
Relays D2 are designed for:

- screw terminals plug-in sockets DZT2 and DZM2 with clip DZT4-0040 or D4 1052; plug-in sockets DZR2 with clip D4 1052, 35 mm DIN rail mount, EN 50022 or on panel mounting. Signalling / protecting modules type DM... are available with sockets DZT2 and DZM2 (see page 240)
- plug-in sockets for PCB mounting DU4/2D with clip D4 1053 (WT) or D4 1050 (without WT)
- solder terminals sockets DU4/2L with clip D4 1053 (WT) or D4 1050 (without WT) and spring clamp D4 1040
- solder terminals sockets D4/2 with clip D4 1053 (WT) or D4 1050 (without WT)
- direct PCB mounting.

## Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au 0.2 um** - contact surface protection against oxidation during storage,
- **AgNi/Au 5 um** - for small resistive loads in control circuits.

## Ordering codes



- ① **WT** - standard features of relays for plug-in sockets. **WTD, WTLD** - only for DC coils
- ② Refer relays for PCB; with threaded bolt; with mounting flange in the upper wall of the cover

**Test buttons type P and plugs** need to ordered separately. They substitute buttons type T. To exchange by Customer themselves.

Information on buttons type P and plugs .

- Button R4P-0001-A - orange colour (AC coils)
- Button R4P-0001-D - green colour (DC coils)
- Plug R4W-0003-A - orange colour (AC coils)
- Plug R4W-0003-D - green colour (DC coils)

### Note:

For relays with DC coils and additional features inclusive: **D** - D diode (element for limiting reverse voltage peaks) and **L** - LED diode (light indicator) coil supply polarity is fixed. Terminal A1 (13) "+"; terminal A2 (14) "-". Supply polarity is marked on relay cover. Colour of lockable front test button type T represents type of coil supply current: orange - AC coil, green - DC coil.

Examples of ordering codes:

- D2-2012-23-1024-WT** relay **D2**, contact material AgNi, with two changeover contacts, in cover IP 40, for plug-in sockets, voltage version 24 V DC, with mechanical indicator and lockable front test button
- D2-2012-25-1024** relay **D2**, contact material AgNi, with two changeover contacts, in cover IP 40, for PCB, voltage version 24 V DC

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