

**1 & 2 Pole - Low profile (15.7 mm height)**  
**41.31 - 1 Pole 12 A (3.5 mm pin pitch)**  
**41.52 - 2 Pole 8 A (5 mm pin pitch)**  
**41.61 - 1 Pole 16 A (5 mm pin pitch)**

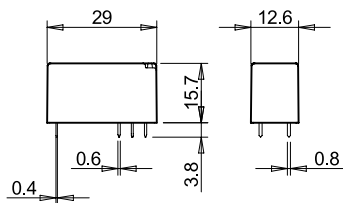
**PCB mount**

- direct or via PCB socket

**35 mm rail mount**

- via screw and screwless sockets

- AC and DC coils
- 8 mm, 6 kV (1.2/50  $\mu$ s) isolation, coil-contacts
- Cadmium Free contact materials
- Flux proof: RT II standard, (RT III option)



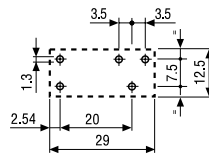
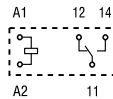
FOR UL RATINGS SEE:

"General technical information" page V

**41.31**



- 3.5 mm contact pin pitch
- 1 Pole 12 A
- PCB direct or via socket

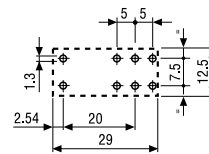
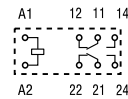


Copper side view

**41.52**



- 5 mm contact pin pitch
- 2 Pole 8 A
- PCB direct or via socket

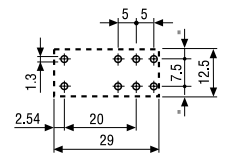
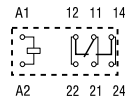


Copper side view

**41.61**



- 5 mm contact pin pitch
- 1 Pole 16 A
- PCB direct or via socket



Copper side view

**Contact specification**

Contact configuration		1 CO (SPDT)	2 CO (DPDT)	1 CO (SPDT)
Rated current/ Maximum peak current	A	12/25	8/15	16/30
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400	250/400
Rated load AC1	VA	3000	2000	4000
Rated load AC15 (230 V AC)	VA	600	400	750
Single phase motor rating (230 V AC)	kW	0.5	0.3	0.5
Breaking capacity DC1: 30/110/220 V	A	12/0.3/0.12	8/0.3/0.12	16/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi	AgNi

**Coil specification**

Nominal voltage ( $U_N$ )	V AC (50/60 Hz)	24 - 115 - 230	24 - 115 - 230	24 - 115 - 230
	V DC	5 - 6 - 12 - 24 - 48 - 60 - 110	5 - 6 - 12 - 24 - 48 - 60 - 110	5 - 6 - 12 - 24 - 48 - 60 - 110
Rated power AC/DC	VA (50 Hz)/W	0.75/0.4	0.75/0.4	0.75/0.4
Operating range	AC	(0.8...1.1) $U_N$	(0.8...1.1) $U_N$	(0.8...1.1) $U_N$
	DC	(0.7...1.5) $U_N$	(0.7...1.5) $U_N$	(0.7...1.5) $U_N$
Holding voltage	AC/DC	0.8/0.4 $U_N$	0.8/0.4 $U_N$	0.8/0.4 $U_N$
Must drop-out voltage	AC/DC	0.15/0.1 $U_N$	0.15/0.1 $U_N$	0.15/0.1 $U_N$

**Technical data**

Mechanical life AC/DC	cycles	$10 \cdot 10^6 / 10 \cdot 10^6$	$10 \cdot 10^6 / 10 \cdot 10^6$	$10 \cdot 10^6 / 10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$	$60 \cdot 10^3$	$50 \cdot 10^3$
Operate/release time	ms	8/6	8/6	8/6
Insulation between coil and contacts (1.2/50 $\mu$ s)	kV	6 (8 mm)	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1000	1000	1000
Ambient temperature range	$^{\circ}$ C	-40...+70 (AC); +85 (DC)	-40...+70 (AC); +85 (DC)	-40...+70 (AC); +85 (DC)
Environmental protection		RT II	RT II	RT II

**Approvals** (according to type)



**1 & 2 Pole - Polarized bistable, Low profile  
(15.7 mm height)**
**41.52 - 2 Pole 8 A (5 mm pin pitch)**
**41.61 - 1 Pole 16 A (5 mm pin pitch)**
**Printed Circuit mount**

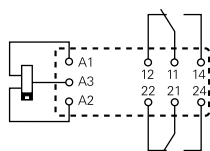
- Polarized bistable relay with 2 coils
- 10 mm, 6 kV (1.2/50  $\mu$ s) isolation, coil-contacts
- Cadmium Free contact materials
- Flux proof: RT II standard

**41.52.6.xxx**

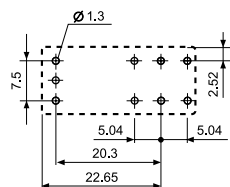

- 2 Pole, 8 A
- PCB direct mount

**41.61.6.xxx**

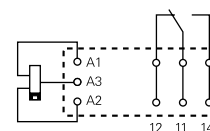

- 1 Pole, 16 A
- PCB direct mount



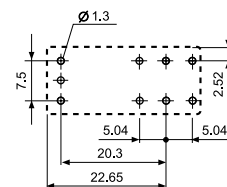
2 coil version:  
A3(+) A2 (-) = Set  
A3(+) A1 (-) = Reset



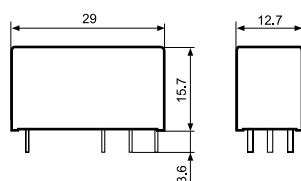
Copper side view



2 coil version:  
A3(+) A2 (-) = Set  
A3(+) A1 (-) = Reset



Copper side view


**Contact specification**

		2 CO (DPDT)	1 CO (SPDT)
Contact configuration		2 CO (DPDT)	1 CO (SPDT)
Rated current/ Maximum peak current ( $I_N/I_{max}$ )	A	8/15	16/30
Rated voltage/ Maximum switching voltage ( $U_N/U_{max}$ )	V AC	250/400	250/400
Rated load AC1	VA	2000	4000
Rated load AC15 (230 V AC)	VA	350	750
Single phase motor rating (230 V AC)	kW	0.37	0.55
Breaking capacity DC1: 30/110/220 V	A	8/0.3/0.12	16/0.3/0.12
Minimum switching load	mW (V/mA)	500 (5/100)	500 (5/100)
Standard contact material		AgSnO <sub>2</sub>	AgSnO <sub>2</sub>



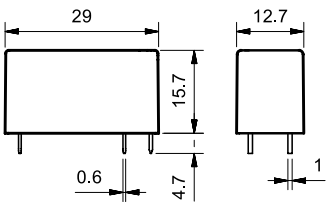
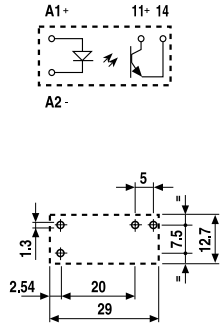
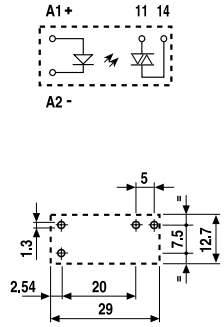

**Coil specification**

Nominal voltage ( $U_N$ )	V DC	5 - 12 - 24	5 - 12 - 24
Rated power ( $P_N$ )	W	0.65	0.65
Operating range	DC	(0.7...1.1) $U_N$	(0.7...1.1) $U_N$
Min. impulse duration	ms	20	20
Max. impulse duration	s	30	30

**Technical data**

Mechanical life DC	cycles	$5 \cdot 10^6$	$5 \cdot 10^6$
Electrical life at rated load AC1	cycles	$30 \cdot 10^3$	$30 \cdot 10^3$
Operate/release time	ms	10/5	10/10
Insulation between coil and contacts (1.2/50 $\mu$ s)	kV	6 (10 mm)	6 (10 mm)
Dielectric strength between open contacts	V AC	1000	1000
Ambient temperature range	°C	-40...+85	-40...+85
Environmental protection		RT II	RT II

**Approvals** (according to type)

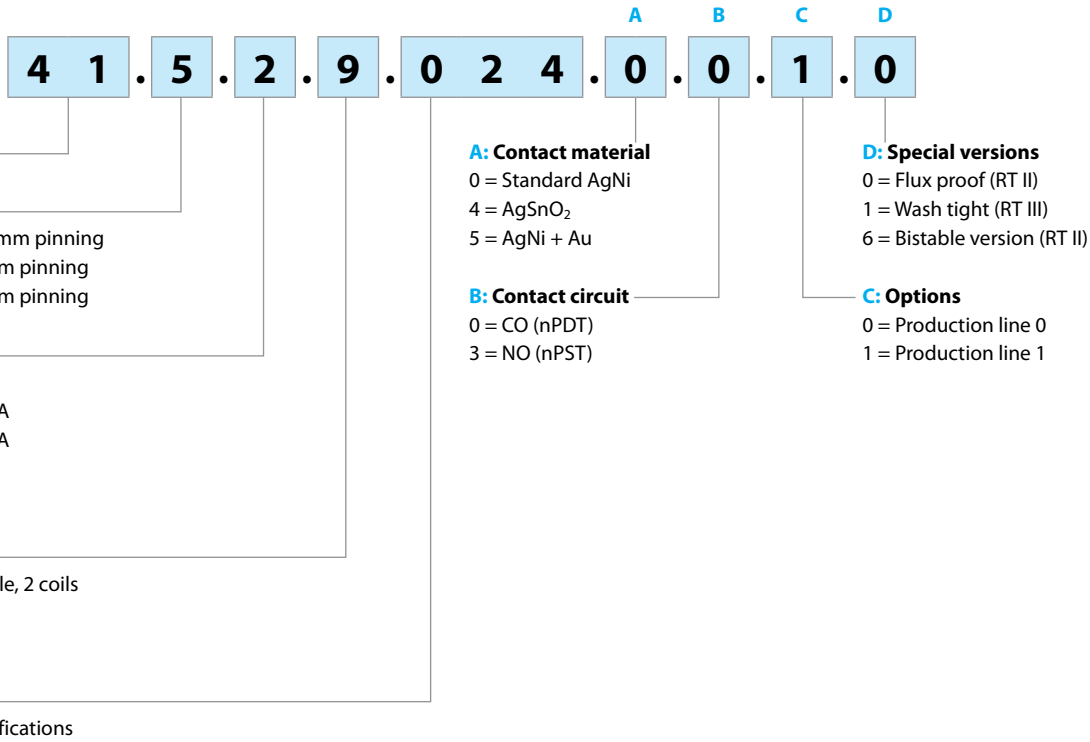
<p><b>Solid State Relays</b></p> <p><b>Printed circuit mount:</b> - direct or via PCB socket</p> <p><b>35 mm rail mount:</b> - via screw or screwless sockets)</p> <ul style="list-style-type: none"> <li>• Single circuit output switching options                     <ul style="list-style-type: none"> <li>- 5 A 24 V DC</li> <li>- 3 A 240 V AC</li> </ul> </li> <li>• Silent, high speed switching with long electrical life</li> <li>• LED indicator</li> <li>• Low profile (15.7 mm)</li> <li>• Wash tight: RT III</li> <li>• 2500 V AC insulation, input-output</li> </ul>	<p><b>41.81 - 9024</b></p>  <ul style="list-style-type: none"> <li>• 5 A, 24 V DC output switching</li> <li>• PCB or 93 Series sockets</li> </ul>	<p><b>41.81 - 8240</b></p>  <ul style="list-style-type: none"> <li>• 3 A, 240 V AC output switching</li> <li>• Zero crossing switching</li> <li>• PCB or 93 Series sockets</li> </ul>
	 <p>Copper side view</p>	 <p>Copper side view</p>
<p><b>Output circuit</b></p>		
<p>Contact configuration</p>	<p>1 NO (SPST-NO)</p>	<p>1 NO (SPST-NO)</p>
<p>Rated current/ Maximum peak current (10 ms)</p>	<p>A 5/40</p>	<p>3/40</p>
<p>Rated voltage/ Maximum blocking voltage</p>	<p>V (24/35)DC</p>	<p>(240/—)AC</p>
<p>Switching voltage range</p>	<p>V (1.5...24)DC</p>	<p>(12...275)AC</p>
<p>Repetitive peak off-state voltage</p>	<p>V<sub>pk</sub> —</p>	<p>600</p>
<p>Minimum switching current</p>	<p>mA 1</p>	<p>50</p>
<p>Max. "OFF-state" leakage current</p>	<p>mA 0.01</p>	<p>1</p>
<p>Max. "ON-state" voltage drop</p>	<p>V 0.3</p>	<p>1.1</p>
<p><b>Input circuit</b></p>		
<p>Nominal voltage</p>	<p>V DC 12 24</p>	<p>12 24</p>
<p>Operating range</p>	<p>V DC 8...17 14...32</p>	<p>8...17 14...32</p>
<p>Control current</p>	<p>mA 5.5 9</p>	<p>8.8 9</p>
<p>Release voltage</p>	<p>V DC 4 9</p>	<p>4 9</p>
<p>Impedance</p>	<p>Ω 1550 2600</p>	<p>1030 2600</p>
<p><b>Technical data</b></p>		
<p>Operate/release time</p>	<p>ms 0.05/0.25</p>	<p>10/10</p>
<p>Dielectric strength between input/output</p>	<p>V AC 2500</p>	<p>2500</p>
<p>Ambient temperature range</p>	<p>°C -20...+60</p>	<p>-20...+60</p>
<p>Environmental protection</p>	<p>RT III</p>	<p>RT III</p>
<p><b>Approvals</b> (according to type)</p>		

## Ordering information

### Electromechanical relay (EMR)

Example: 41 series low-profile PCB relay, 2 CO (DPDT), 24 V DC coil.

A

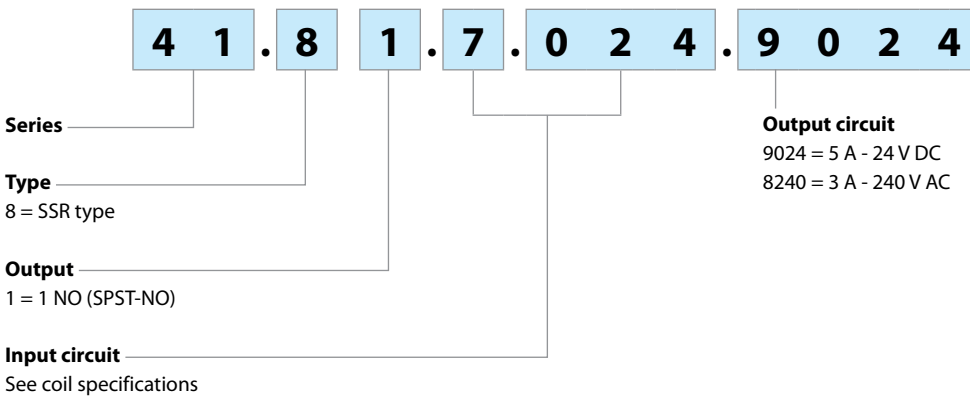


**Selecting features and options: only combinations in the same row are possible.**  
Preferred selections for best availability are shown in **bold**.

Type	Coil version	A	B	C	D
41.31	DC	<b>0</b> - 4 - 5	<b>0</b> - 3	<b>1</b>	<b>0</b> - 1
41.52	DC	<b>0</b> - 5	<b>0</b> - 3	<b>1</b>	<b>0</b> - 1
41.61	DC	<b>0</b> - 4	<b>0</b> - 3	<b>1</b>	<b>0</b> - 1
41.31/52/61	AC	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
41.52	DC bistable	4	<b>0</b>	<b>1</b>	<b>6</b>
41.61	DC bistable	4	<b>0</b> - 3	<b>1</b>	<b>6</b>

### Solid state relay (SSR)

Example: 41 series SSR relay, 5 A output, 24 V DC supply.



*Electromechanical relay*

A

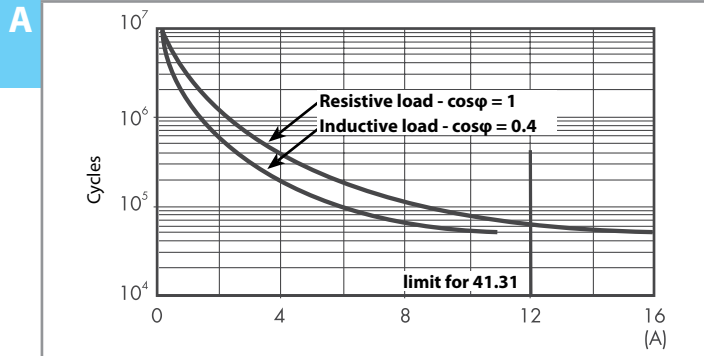
**Technical data**

<b>Insulation according to EN 61810-1</b>		<b>1 pole</b>		<b>1 pole bistable</b>	<b>2 pole</b>		<b>2 pole bistable</b>	
Nominal voltage of supply system	V AC	230/400		230/400	230/400		230/400	
Rated insulation voltage	V AC	250	400	250	250	400	250	
Pollution degree		3	2	2	3	2	2	
<b>Insulation between coil and contact set</b>								
Type of insulation		Reinforced (8 mm)		Reinforced (10 mm)	Reinforced (8 mm)		Reinforced (10 mm)	
Overvoltage category		III		III	III		III	
Rated impulse voltage	kV (1.2/50 µs)	6		6	6		6	
Dielectric strength	V AC	4000		4000	4000		4000	
<b>Insulation between adjacent contacts</b>								
Type of insulation		—		—	Basic		Basic	
Overvoltage category		—		—	III		III	
Rated impulse voltage	kV (1.2/50 µs)	—		—	4		4	
Dielectric strength	V AC	—		—	2000		2000	
<b>Insulation between open contacts</b>								
Type of disconnection		Micro-disconnection			Micro-disconnection			
Dielectric strength	V AC/kV (1.2/50 µs)	1000/1.5			1000/1.5			
<b>Conducted disturbance immunity</b>								
Burst (5...50)ns, 5 kHz, on A1 - A2		EN 61000-4-4			level 4 (4 kV)			
Surge (1.2/50 µs) on A1 - A2 (differential mode)		EN 61000-4-5			level 3 (2 kV)			
<b>Other data</b>								
Bounce time: NO/NC	ms	4/6 (monostable) - 2/10 (bistable)						
Vibration resistance (5...55)Hz: NO/NC	g	15/2 (monostable) - 5/3 (bistable)						
Shock resistance	g	16 (monostable) - 10 (bistable)						
Power lost to the environment	without contact current	W	0.4 (monostable)					
	with rated current	W	1.7 (41.31)		1.2 (41.52)		1.8 (41.61)	
Recommended distance between relays mounted on PCB	mm	≥ 5						

### Contact specification

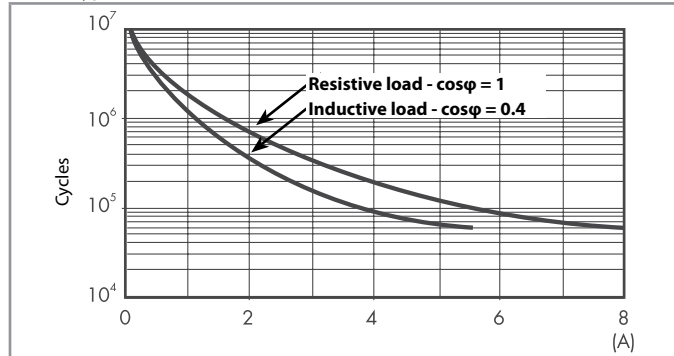
F 41 - Electrical life (AC) v contact current (monostable)

Types 41.31/61

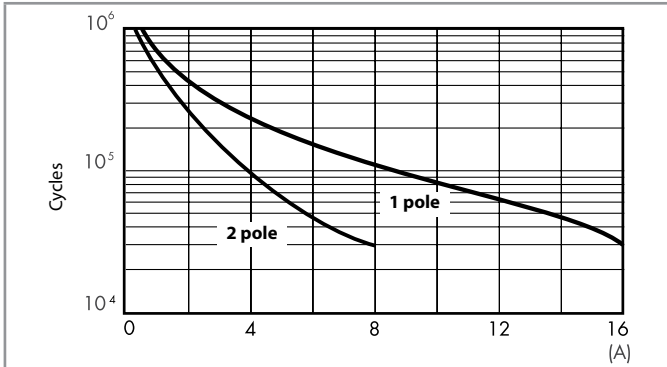


F 41 - Electrical life (AC) v contact current (monostable)

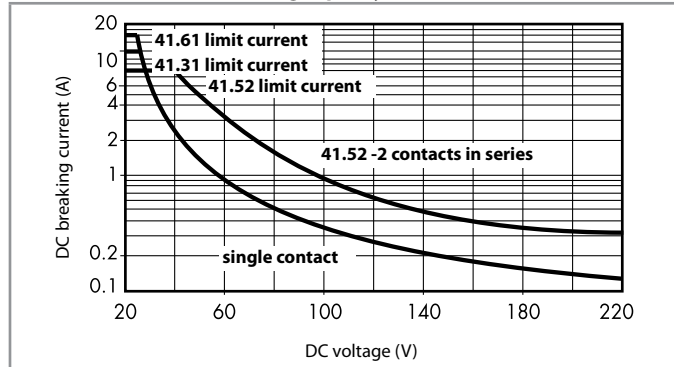
Type 41.52



F 41 - Electrical life (AC) v contact current (bistable)



H 41- Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of  $\geq 100 \cdot 10^3$  can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load. Note: the release time for the load will be increased.

### Coil specifications

#### AC coil data

Nominal voltage $U_N$ V	Coil code	Operating range		Resistance R $\Omega$	Rated coil consumption I at $U_N$ mA
		$U_{min}$ V	$U_{max}$ V		
24	8.024	19.2	26.4	350	31.6
115	8.115	92	126.5	8100	6
230	8.230	184	253	32500	3.2

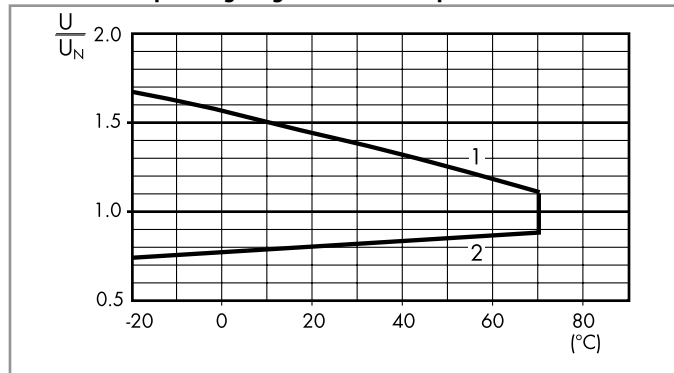
#### DC coil data

Nominal voltage $U_N$ V	Coil code	Operating range		Resistance R $\Omega$	Rated coil consumption I at $U_N$ mA
		$U_{min}$ V	$U_{max}$ V		
5	9.005	3.5	7.5	62	80
6	9.006	4.2	9	90	66.7
12	9.012	8.4	18	360	33.3
24	9.024	16.8	36	1440	16.7
48	9.048	33.6	72	5760	8.3
60	9.060	42	90	9000	6.6
110	9.110	77	165	24200	4.5

#### DC coil data (bistable)

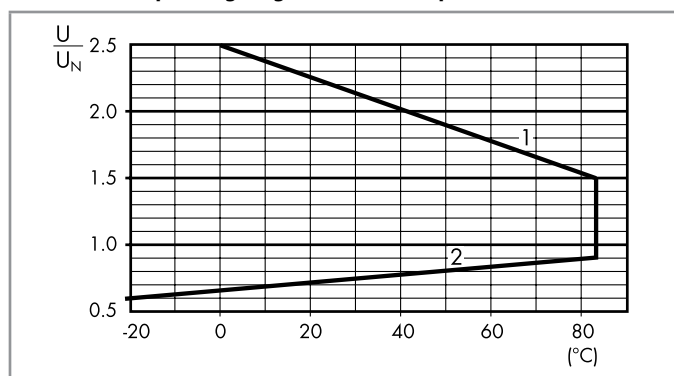
Nominal voltage $U_N$ V	Coil code	Operating range			Resistance R $\Omega$	Rated coil power I at $U_N$ mW
		Set $U_{min}$ V	Reset $U_{min}$ V	Set/Reset $U_{max}$ V		
5	6.005	3.5	3.5	5.5	38	650
12	6.012	8.4	8.4	13.2	220	650
24	6.024	16.8	16.8	26.4	885	650

R 41 - AC coil operating range v ambient temperature



- 1 - Max. permitted coil voltage.
- 2 - Min. pick-up voltage with coil at ambient temperature.

R 41 - DC coil operating range v ambient temperature



- 1 - Max. permitted coil voltage.
- 2 - Min. pick-up voltage with coil at ambient temperature.

**Solid state relay**

**Technical data**

Other data		41.81 - 9024	41.81 - 8240
Power lost to the environment	without current	W 0.25	0.25
	with maximum current	W 1.75	3.5

**Input specification**

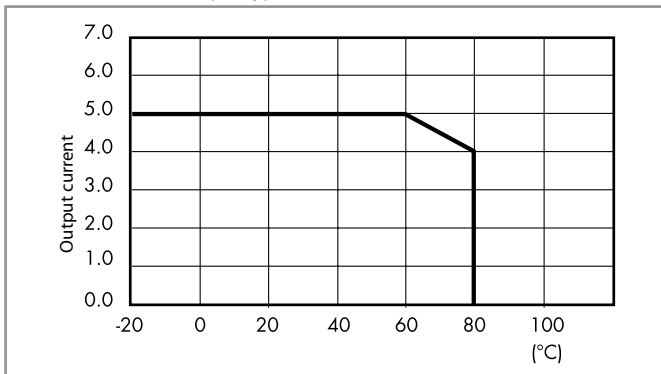
**Input data - DC types**

Nominal voltage $U_N$	Input code	Operating range		Release voltage	Impedance	Control current I at $U_N$
		$U_{min}$	$U_{max}$			
V		V	V	V	$\Omega$	mA
12	7.012	8	17	4	1550	5.5
24	7.024	14	32	9	2600	9

**Output specification**

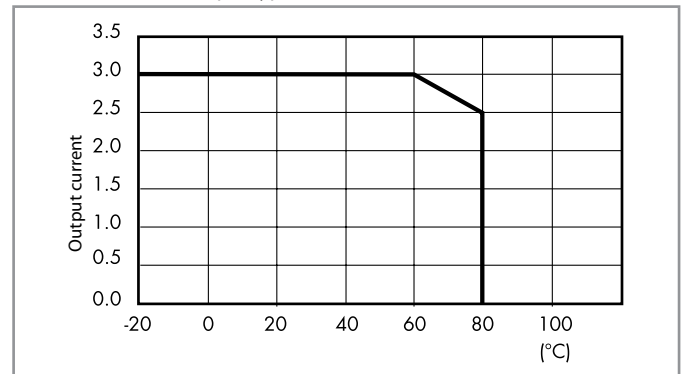
**L 41 - Output current v ambient temperature**

SSR - 5 A DC output types



**L 41 - Output current v ambient temperature**

SSR - 3 A AC output types



A



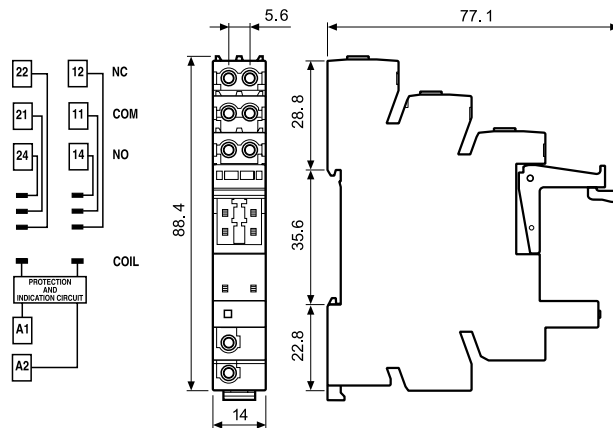
93.02

Approvals  
(according to type):



**Screw terminal socket 35 mm (EN 60715) mounting**

Supply voltage	Relay type	Socket type	
6 V AC/DC	41.52.9.005.0010 or 41.61.9.005.0010	93.02.0.024	
12 V AC/DC	41.52.9.012.0010 or 41.61.9.012.0010	93.02.0.024	
24 V AC/DC	41.52/61.9.024.0010 or 41.81.7.024.xxxx	93.02.0.024	
60 V AC/DC	41.52.9.060.0010 or 41.61.9.060.0010	93.02.0.060	
(110...125)V AC/DC	41.52.9.110.0010 or 41.61.9.110.0010	93.02.0.125	
(220...240)V AC/DC	41.52.9.110.0010 or 41.61.9.110.0010	93.02.0.240	
(230...240)V AC	41.52.9.110.0010 or 41.61.9.110.0010	93.02.8.230	
6 V DC	41.52.9.005.0010 or 41.61.9.005.0010	93.02.7.024	
12 V DC	41.52/61.9.012.0010 or 41.81.7.012.xxxx	93.02.7.024	
24 V DC	41.52/61.9.024.0010 or 41.81.7.024.xxxx	93.02.7.024	
48 V DC	41.52.9.048.0010 or 41.61.9.048.0010	93.02.7.060	
60 V DC	41.52.9.060.0010 or 41.61.9.060.0010	93.02.7.060	
<b>Accessories</b>			
8-way jumper link	093.08 (see specification next page)		
Plastic separator	093.01 (see specification next page)		
Sheet of marker tags, 72 tags	060.72 (see specification next page)		
<b>Technical data</b>			
Rated values	10 A - 250 V		
Dielectric strength	6 kV (1.2/50 μs) between coil and contacts		
Protection category	IP 20		
Ambient temperature (U <sub>N</sub> ≤ 60 V / > 60 V)	°C -40...+70/-40...+55		
Screw torque	Nm	0.5	
Wire strip length	mm	8	
Max. wire size for 93.02 socket	solid wire	stranded wire	
	mm <sup>2</sup>	1 x 6 / 2 x 2.5	1 x 4 / 2 x 2.5
	AWG	1 x 10 / 2 x 14	1 x 12 / 2 x 14



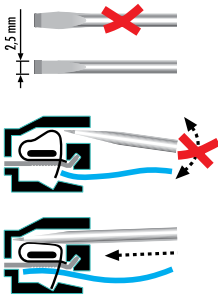
Note: Not for bistable relays





93.52

Approvals  
(according to type):



**Screw terminal socket 35 mm (EN 60715) mounting**

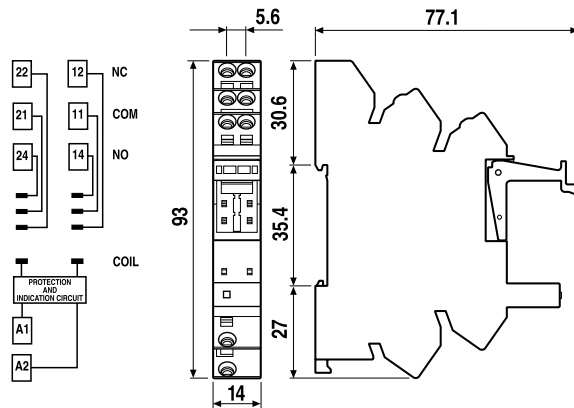
Supply voltage	Relay type	Socket type
6 V AC/DC	41.52.9.005.0010 or 41.61.9.005.0010	93.52.0.024
12 V AC/DC	41.52.9.012.0010 or 41.61.9.012.0010	93.52.0.024
24 V AC/DC	41.52/61.9.024.0010 or 41.81.7.024.xxxx	93.52.0.024
60 V AC/DC	41.52.9.060.0010 or 41.61.9.060.0010	93.52.0.060
(110...125)V AC/DC	41.52.9.110.0010 or 41.61.9.110.0010	93.52.0.125
(220...240)V AC/DC	41.52.9.110.0010 or 41.61.9.110.0010	93.52.0.240
(230...240)V AC	41.52.9.110.0010 or 41.61.9.110.0010	93.52.8.230
6 V DC	41.52.9.005.0010 or 41.61.9.005.0010	93.52.7.024
12 V DC	41.52/61.9.012.0010 or 41.81.7.012.xxxx	93.52.7.024
24 V DC	41.52/61.9.024.0010 or 41.81.7.024.xxxx	93.52.7.024
48 V DC	41.52.9.048.0010 or 41.61.9.048.0010	93.52.7.060
60 V DC	41.52.9.060.0010 or 41.61.9.060.0010	93.52.7.060

**Accessories**

8-way jumper link	093.08 (see table below)
Plastic separator	093.01 (see table below)
Sheet of marker tags, 72 tags	060.72 (see table below)

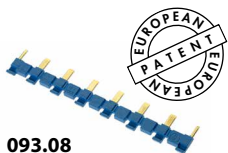
**Technical data**

Rated values	10 A - 250 V		
Dielectric strength	6 kV (1.2/50 μs) between coil and contacts		
Protection category	IP 20		
Ambient temperature (U <sub>N</sub> ≤ 60 V / > 60 V)	°C	-40...+70/-40...+55	
Wire strip length	mm	8	
Max. wire size for 93.52 socket	solid wire	stranded wire	
	mm <sup>2</sup>	1 x 2.5	1 x 2.5
	AWG	1 x 14	1 x 14



Note: Not for bistable relays

**Accessories**

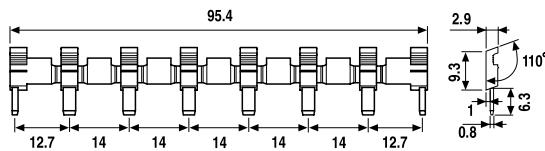


093.08

Approvals  
(according to type):



8-way jumper link for 93.02 and 93.52 sockets	093.08 (blue)	093.08.0 (black)	093.08.1 (red)
Rated values	10 A - 250 V		



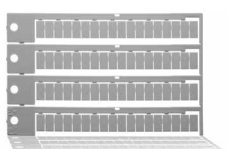
093.01

Plastic separator for 93.02 and 93.52 sockets	093.01
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Thickness 2 mm, required at the start and the end of a group of interfaces.

Can be used for visual separation group, must be used for:

- protective separation of different voltages of neighbouring PLC interfaces according to VDE 0106-101
- protection of cut jumper links



060.72

Sheet of marker tags for 38 x 2, plastic, 72 tags, 6 x 12 mm	060.72
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A



95.13.2



95.15.2

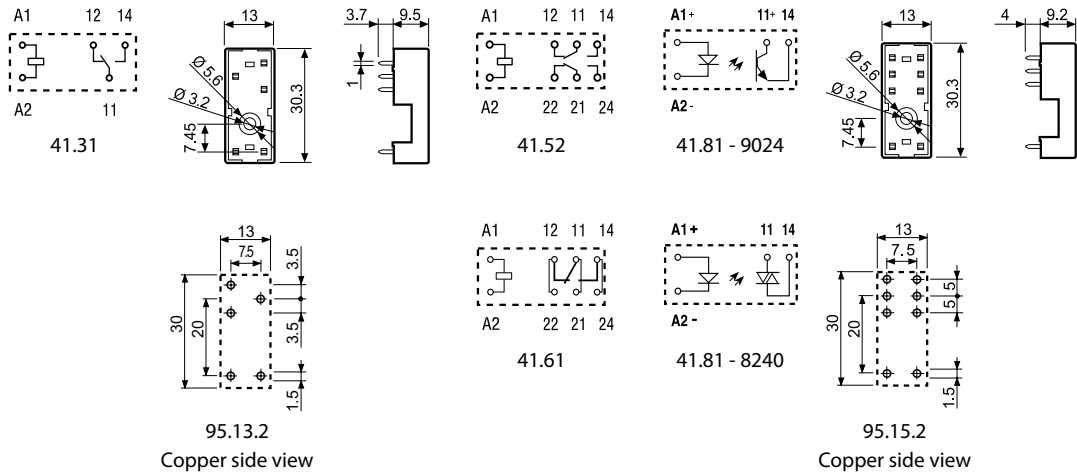
Approvals  
(according to type):



PCB socket	95.13.2 (blue)	95.13.20 (black)	95.15.2 (blue)	95.15.20 (black)
For relay type	41.31		41.52, 41.61, 41.81 <sup>(1)</sup>	
<b>Accessories</b>				
Plastic retaining clip	095.42			
<b>Technical data</b>				
Rated values	10 A - 250 V*			
Dielectric strength	6 kV (1.2/50 μs) between coil and contacts			
Protection category	IP 20			
Ambient temperature	°C -40...+70			

\* For currents > 10 A, contact terminals must be connected in parallel (21 with 11, 24 with 14, 22 with 12).

<sup>(1)</sup> With the relay 41.81 the NO change-over contact will be 11-14.



Note: Not for bistable relays

### Packaging codes

How to code and identify retaining clip and packaging options for sockets.

Example:

