finder
RELAYING INNOVATION

46
SERIES

Miniature Industrial relay 8 - 16 A

- Automation for blinds, grilles and shutters
- Elevators and lifts
- Shipyards
- Road / tunnel lighting
- Hoists and cranes
- Bottling plant
- Control panels
- Panels for electrical distribution

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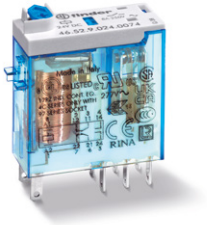
1 & 2 CO industrial style power relays
For socket mount or direct connection via Faston connectors

Type 46.52
- 2 CO 8 A

Type 46.61
- 1 CO 16 A

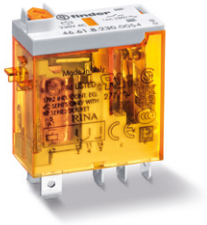
- AC coils & DC coils
- Available with: lockable test button, mechanical indicator & LED indicator
- 8 mm, 6 kV (1.2/50 µs) isolation, coil-contacts
- Cadmium free contacts
- 97 series 35 mm rail (EN 60715) Box clamp or Push-in terminals and PCB mount sockets
- Coil Indication and EMC suppression modules 99 series and Timer module 86.30 options
- Optional alternative mounting adaptors
- European Patent

46.52

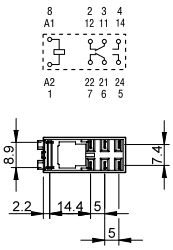


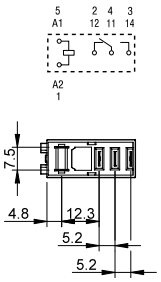
- 2 CO 8 A
- Plug-in/Solder terminals

46.61



- 1 CO 16 A
- Plug-in/Faston 187





For UL ratings see:
"General technical information" page VIII

For outline drawing see page 6

Contact specification			
Contact configuration		2 CO (DPDT)	1 CO (SPDT)
Rated current/Maximum peak current	A	8/15	16/25*
Rated voltage/ Maximum switching voltage	V AC	250/440	250/440
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: 24/110/220 V	A	6/0.5/0.15	12/0.5/0.15
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 48 - 110 - 120 - 230 - 240	
	V DC	12 - 24 - 48 - 110 - 125	
Rated power	VA/W	1.2/0.5	1.2/0.5
Operating range	AC	$(0.8\ldots1.1)U_N$	$(0.8\ldots1.1)U_N$
	DC	$(0.73\ldots1.1)U_N$	$(0.73\ldots1.1)U_N$
Holding voltage	AC/DC	$0.8\ U_N$ / $0.4\ U_N$	$0.8\ U_N$ / $0.4\ U_N$
Must drop-out voltage	AC/DC	$0.2\ U_N$ / $0.1\ U_N$	$0.2\ U_N$ / $0.1\ U_N$
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	10/3	15/5
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1000	1000
Ambient temperature range	°C	–40…+70	–40…+70
Environmental protection		RT II	RT II
Approvals (according to type)			

* With the $AgSnO_2$ material the maximum peak current is 80 A - 5 ms on normally open contact.

A

Ordering information

Example: 46 series Miniature industrial relay, 1 CO, 24 V DC coil, lockable test button and mechanical indicator.

46	.	6	1	.	9	.	024	.	A: 0	B: 0	C: 4	D: 0

Series

Type
5 = Spade/blade solder terminal (2.5 x 0.5)mm
6 = Spade/blade terminal Faston 187 (4.8 x 0.5)mm

No. of poles
1 = 1 pole, 16 A
2 = 2 poles, 8 A

Coil version
9 = DC
8 = AC (50/60 Hz)

Coil voltage
See coil specifications

A: Contact material
0 = AgNi
4 = $AgSnO_2$ (46.61 only)
5 = AgNi + Au

B: Contact circuit
0 = CO (nPDT)

C: Options
2 = Mechanical indicator
4 = Lockable test button + mechanical indicator
54 = Lockable test button + LED (AC) + mechanical indicator
74 = Lockable test button + double LED (DC non-polarized) + mechanical indicator

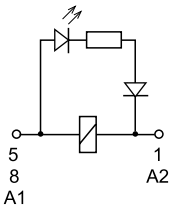
D: Special versions
0 = Standard

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

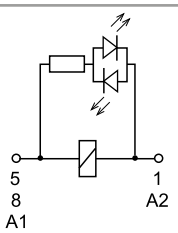
Type	Coil version	A	B	C	D
46.52	AC - DC	**0** - 5	**0**	2 - **4**	**0**
	AC	0 - 5	0	54	/
	DC	0 - 5	0	74	/
46.61	AC - DC	**0** - 4 - 5	**0**	2 - **4**	**0**
	AC	0 - 4 - 5	0	54	/
	DC	0 - 4 - 5	0	74	/

Special versions for Rail Applications on request

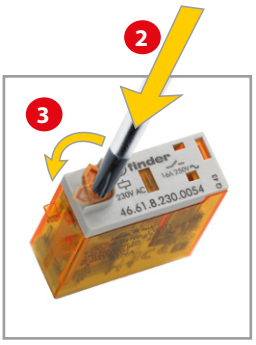
Descriptions: Options



C: Option 54
LED (AC)



C: Option 74
LED (DC, non-polarized)



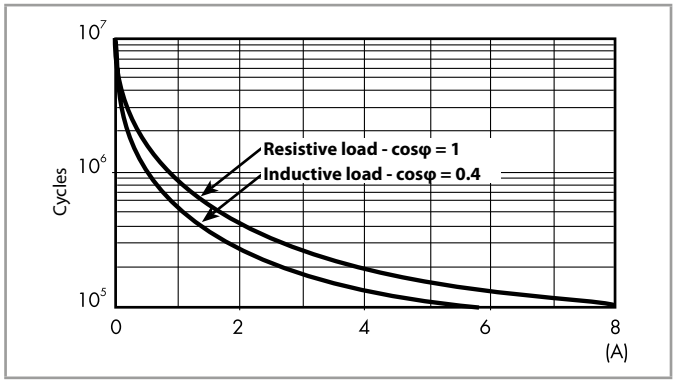
Lockable test button and mechanical flag indicator (0040, 0054, 0074)
The dual-purpose Finder test button can be used in two ways:
Case 1) The plastic pip (located directly below the test button) remains intact. In this case, when the test button is pushed, the contacts operate. When the test button is released the contacts return to their former state.
Case 2) The plastic pip is broken-off (using an appropriate cutting tool). In this case, (in addition to the above function), when the test button is pushed and rotated, the contacts are latched in the operating state, and remain so until the test button is rotated back to its former position.
In both cases ensure that the test button actuation is swift and decisive.

Technical data

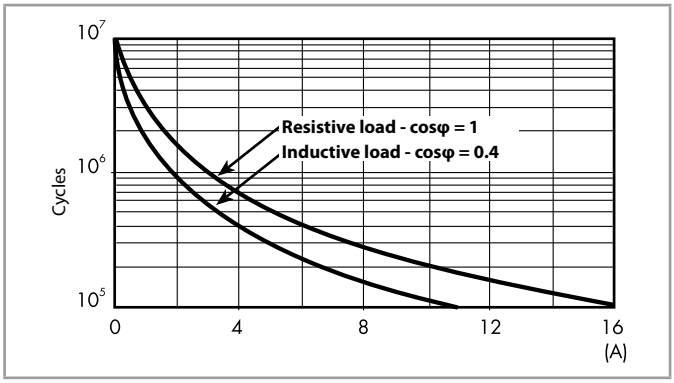
Insulation according to EN 61810-1					
		1 pole		2 pole	
Nominal voltage of supply system	V AC	230/400		230/400	
Rated insulation voltage	V AC	250	400	250	400
Pollution degree		3	2	3	2
Insulation between coil and contact set					
Type of Insulation		Reinforced (8 mm)		Reinforced (8 mm)	
Overvoltage category		III		III	
Rated impulse voltage	kV (1.2/50 µs)	6		6	
Dielectric strength	V AC	4000		4000	
Insulation between adjacent contacts					
Type of insulation		—		Basic	
Overvoltage category		—		III	
Rated impulse voltage	kV (1.2/50 µs)	—		4	
Dielectric strength	V AC	—		2000	
Insulation between open contacts					
Type of disconnection		Micro-disconnection		Micro-disconnection	
Dielectric strength	V AC/kV (1.2/50 µs)	1000/1.5		1000/1.5	
Insulation between coil terminals					
Rated impulse voltage (according to EN 61180)	kV (1.2/50 µs)	1.5			
Other data		**46.61**		**46.52**	
Bounce time: NO/NC	ms	2/6		1/4	
Vibration resistance (10…150)Hz: NO/NC	g	20/12		20/15	
Shock resistance	g	20		20	
Power lost to the environment — without contact current	W	0.6		0.6	
Power lost to the environment — with rated current	W	1.6		2	
Recommended distance between relays mounted on PCB	mm	≥ 5			

Contact specification

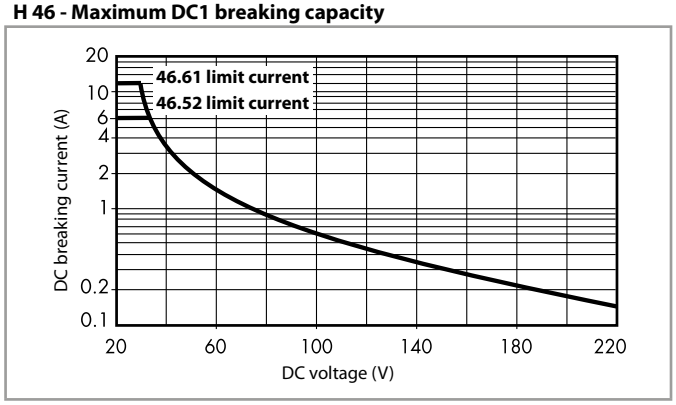
F 46 - Electrical life (AC) v contact current
Type 46.52



F 46 - Electrical life (AC) v contact current
Type 46.61



H 46 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ 100 · 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.

A

Coil specifications

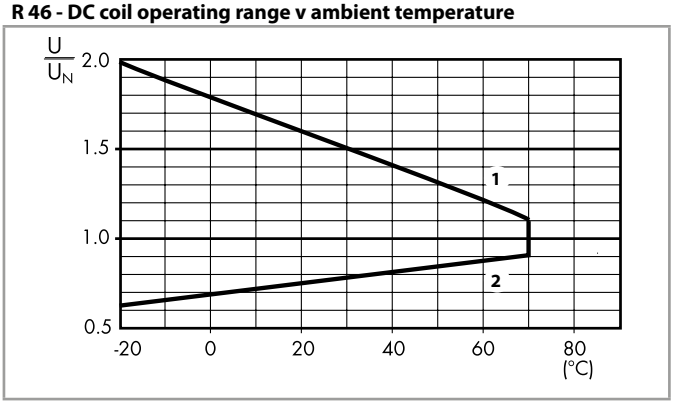
DC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
12	**9**.012	8.8	13.2	300	40
24	**9**.024	17.5	26.4	1200	20
48	**9**.048	35	52.8	4800	10
110	**9**.110	80	121	23500	4.7
125	**9**.125	91.2	138	32000	3.9

AC coil data

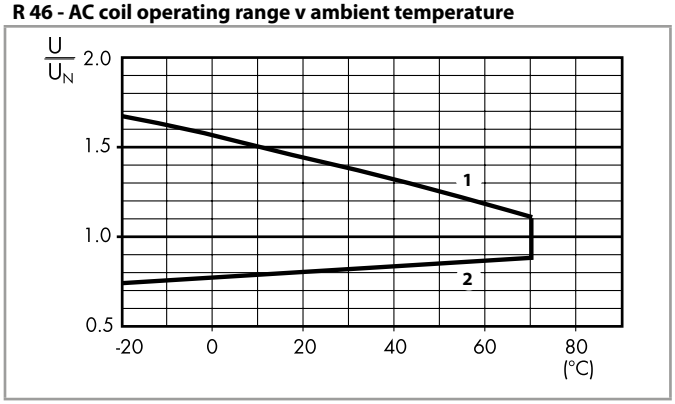
Nominal voltage U_N	Coil code	Operating range U_{min}	U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
12	**8**.012	9.6	13.2	80	90
24	**8**.024	19.2	26.4	320	45
48	**8**.048	38.4	52.8	1350	21
110	**8**.110	88	121	6900	9.4
120	**8**.120	96	132	9000	8.4
230	**8**.230	184	253	28000	5
240	**8**.240	192	264	31500	4.1

R 46 - DC coil operating range v ambient temperature



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

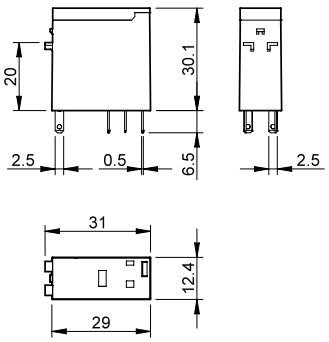
R 46 - AC coil operating range v ambient temperature



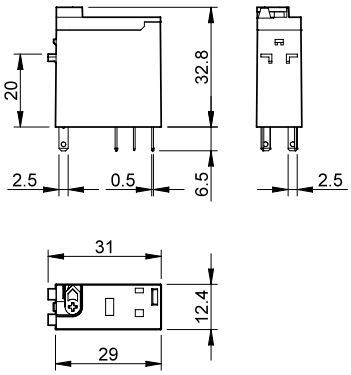
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

Outline drawings

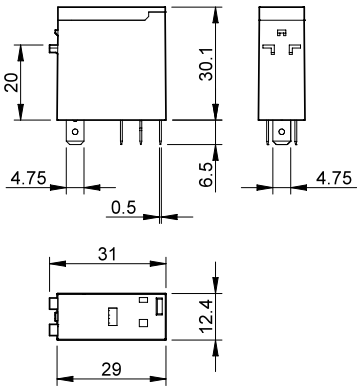
Type 46.52.xx2x



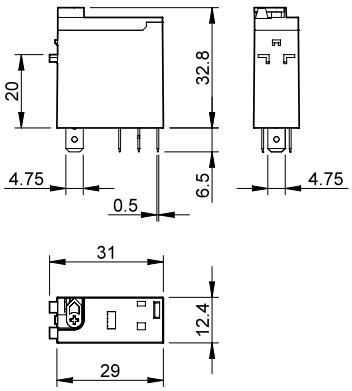
Type 46.52.xx4x



Type 46.61.xx2x

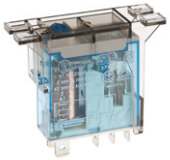


Type 46.61.xx4x



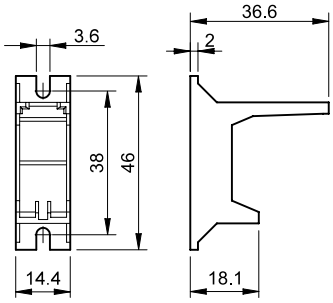
Accessories

046.05



046.05 with relay

Flange mount adaptor for relays types 46.52 and 46.61 | 046.05



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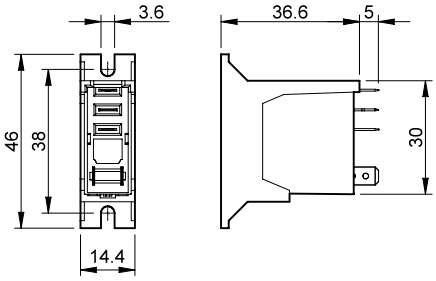
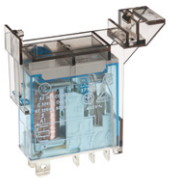


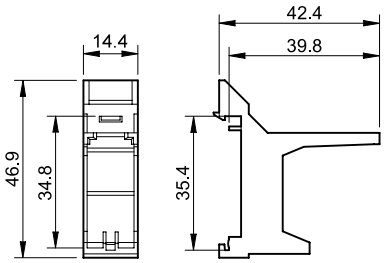
046.05 with relay

046.07



046.07 with relay

35 mm rail adaptor for relays types 46.52 and 46.61 | 046.07



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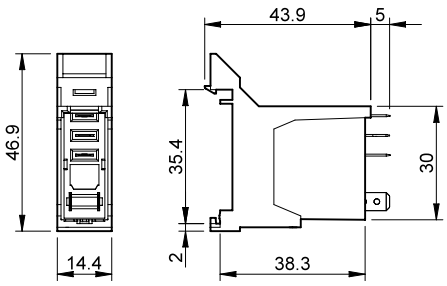
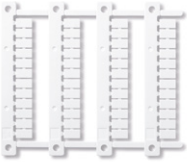


046.07 with relay



060.48

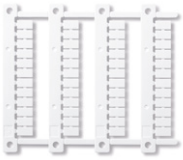
Sheet of marker tags (CEMBRE Thermal transfer printers) for relays types 46.52 and 46.61, (48 tags) 6 x 12 mm | 060.48

A

97.P2

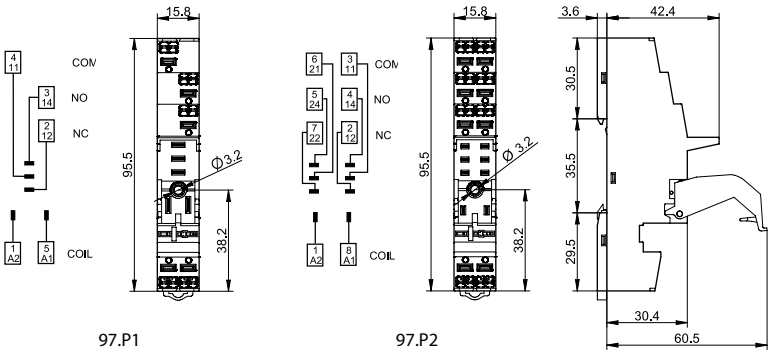
Approvals
(according to type):

097.01

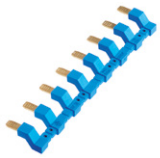


060.48

Push-in terminal socket panel or 35 mm rail (EN 60715) mount		**97.P1**	**97.P2**
For relay type		46.61	46.52
Accessories			
Plastic retaining and release clip (supplied with socket - packaging code SPA)		097.01	
Metal retaining clip		097.71	
Identification tag		095.00.4	
8-way jumper link		097.58	
2-way jumper link		097.52	
2-way jumper link		097.42	
Marker tag holder		097.00	
Modules (see table below)		99.02	
Timer modules (see table below)		86.30	
Sheet of marker tags for marker tag holder 097.00, 48 tags, 6 x 12 mm, for CEMBRE thermal transfer printers		060.48	
Technical data			
Rated values		10 A-250 V AC	8 A-250 V AC
Dielectric strength		6 kV (1.2/50 µs) between coil and contacts	
Protection category		IP 20	
Ambient temperature	°C	–40…+70	
Wire strip length	mm	10	
Min. wire size for 97.P1 and 97.P2 socket		solid wire	stranded wire
	mm²	0.5	0.5
	AWG	21	21
Max. wire size for 97.P1 and 97.P2 socket		solid wire	stranded wire
	mm²	2 x 1.5 / 1 x 2.5	2 x 1.5 / 1 x 2.5
	AWG	2 x 16 / 1 x 14	2 x 16 / 1 x 14

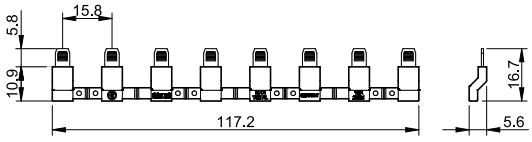


97.P1 97.P2



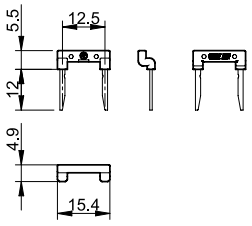
097.58

8-way jumper link for 97.P1 and 97.P2 sockets	097.58
Rated values	10 A - 250 V



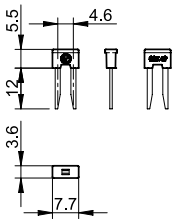
097.52

2-way jumper link for 97.P1 and 97.P2 sockets	097.52
Rated values	10 A - 250 V



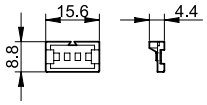
097.42

2-way jumper link for 97.P1 and 97.P2 sockets	097.42
Rated values	10 A - 250 V



097.00

Marker tag holder for 97.P1 and 97.P2 sockets	097.00



86.30

86 series timer modules	
(12…24)V AC/DC; Bi-function: AI, DI; (0.05 s…100 h)	86.30.0.024.0000
(110…125)V AC; Bi-function: AI, DI; (0.05 s…100 h)	86.30.8.120.0000
(230…240)V AC; Bi-function: AI, DI; (0.05 s…100 h)	86.30.8.240.0000

Approvals (according to type): CE UKCA EAC cULus

99.02

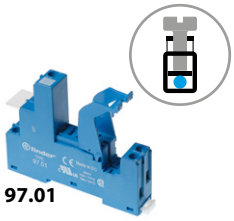
Approvals (according to type): EAC cULus

DC Modules with non-standard polarity (+A2) on request.

99.02 coil indication and EMC suppression modules for 97.P1 and 97.P2 sockets		
Diode (+A1, standard polarity)	(6…220)V DC	99.02.3.000.00
LED	(6…24)V DC/AC	99.02.0.024.59
LED	(28…60)V DC/AC	99.02.0.060.59
LED	(110…240)V DC/AC	99.02.0.230.59
LED + Diode (+A1, standard polarity)	(6…24)V DC	99.02.9.024.99
LED + Diode (+A1, standard polarity)	(28…60)V DC	99.02.9.060.99
LED + Diode (+A1, standard polarity)	(110…220)V DC	99.02.9.220.99
LED + Varistor	(6…24)V DC/AC	99.02.0.024.98
LED + Varistor	(28…60)V DC/AC	99.02.0.060.98
LED + Varistor	(110…240)V DC/AC	99.02.0.230.98
RC circuit	(6…24)V DC/AC	99.02.0.024.09
RC circuit	(28…60)V DC/AC	99.02.0.060.09
RC circuit	(110…240)V DC/AC	99.02.0.230.09
Residual current by-pass*	(110…240)V AC	99.02.8.230.07

* Additional 0.9 W power dissipation. Maximum ambient temperature +50°C.

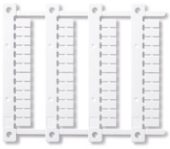
97 SERIES
Sockets and accessories for 46 series relays



97.01

Approvals (according to type):

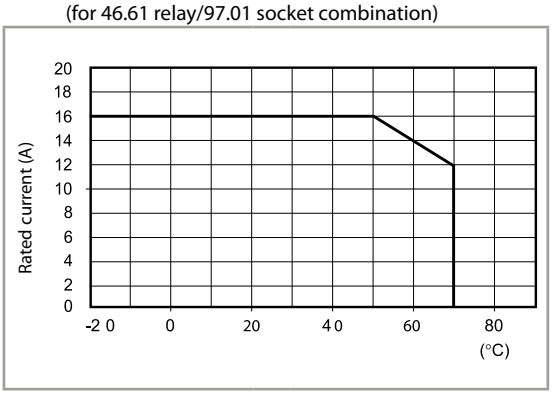
097.01

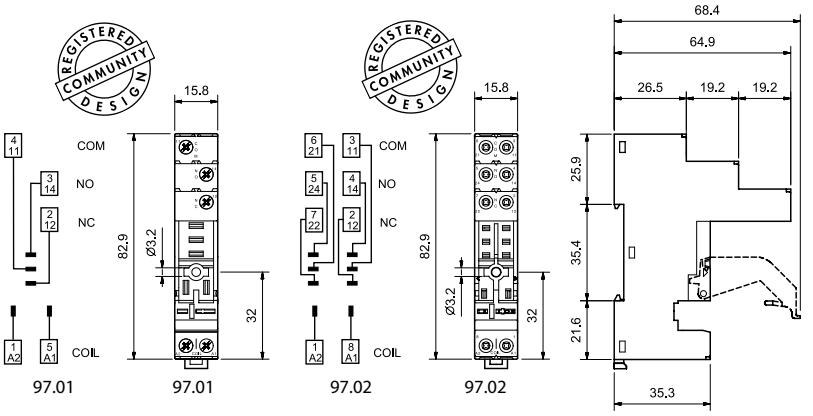


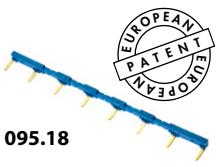
060.48

Box clamp socket panel or 35 mm rail (EN 60715) mount		**97.01 Blue**	**97.01.0 Black**	**97.02 Blue**	**97.02.0 Black**
For relay type		46.61		46.52	
Accessories					
Plastic retaining and release clip (supplied with socket - packaging code SPA)		097.01			
Metal retaining clip		097.71			
Marker tag holder		097.00			
Identification tag		095.00.4			
8-way jumper link		095.18 (blue)		095.18.0 (black)	
Modules (see table below)		99.02			
Timer modules (see table below)		86.30			
Sheet of marker tags for marker tag holder 097.00, 48 tags, 6 x 12 mm, for CEMBRE thermal transfer printers		060.48			
Technical data					
Rated values		16 A-250 V AC		8 A-250 V AC	
Dielectric strength		6 kV (1.2/50 µs) between coil and contacts			
Protection category		IP 20			
Ambient temperature	°C	–40…+70 (see diagram L97)			
Screw torque	Nm	0.8			
Wire strip length	mm	8			
Max. wire size for 97.01 and 97.02 socket		solid wire		stranded wire	
	mm²	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	

L 97 - Rated current v ambient temperature
(for 46.61 relay/97.01 socket combination)

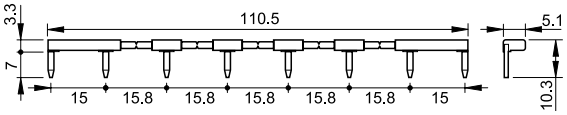






095.18

8-way jumper link for 97.01 and 97.02 sockets	095.18 (blue)	095.18.0 (black)
Rated values	10 A - 250 V	



86.30

86 series timer modules	
(12…24)V AC/DC; Bi-function: AI, DI; (0.05 s…100 h)	86.30.0.024.0000
(110…125)V AC; Bi-function: AI, DI; (0.05 s…100 h)	86.30.8.120.0000
(230…240)V AC; Bi-function: AI, DI; (0.05 s…100 h)	86.30.8.240.0000

Approvals (according to type):

99.02

Approvals (according to type):

DC Modules with non-standard polarity (+A2) on request.

99.02 coil indication and EMC suppression modules for 97.01 and 97.02 sockets		
Diode (+A1, standard polarity)	(6…220)V DC	99.02.3.000.00
LED	(6…24)V DC/AC	99.02.0.024.59
LED	(28…60)V DC/AC	99.02.0.060.59
LED	(110…240)V DC/AC	99.02.0.230.59
LED + Diode (+A1, standard polarity)	(6…24)V DC	99.02.9.024.99
LED + Diode (+A1, standard polarity)	(28…60)V DC	99.02.9.060.99
LED + Diode (+A1, standard polarity)	(110…220)V DC	99.02.9.220.99
LED + Varistor	(6…24)V DC/AC	99.02.0.024.98
LED + Varistor	(28…60)V DC/AC	99.02.0.060.98
LED + Varistor	(110…240)V DC/AC	99.02.0.230.98
RC circuit	(6…24)V DC/AC	99.02.0.024.09
RC circuit	(28…60)V DC/AC	99.02.0.060.09
RC circuit	(110…240)V DC/AC	99.02.0.230.09
Residual current by-pass*	(110…240)V AC	99.02.8.230.07

* Additional 0.9 W power dissipation. Maximum ambient temperature +50°C.

97.11

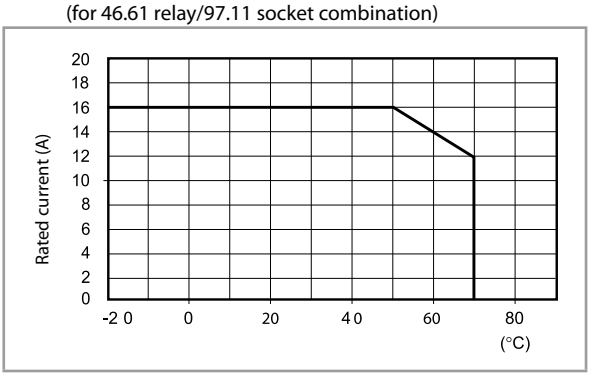
Approvals
(according to type):

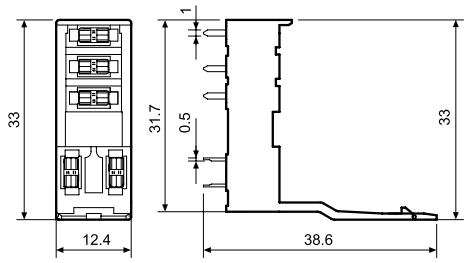
97.12

Approvals
(according to type):

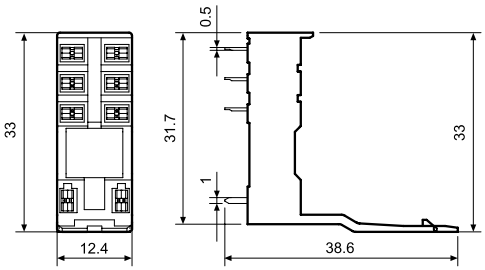
PCB socket	**97.11 Blue**	**97.12 Blue**
For relay type	46.61	46.52
Technical data		
Rated values	12 A - 250 V (see diagram L97)	8 A - 250 V
Dielectric strength	6 kV (1.2/50 µs) between coil and contacts	
Protection category	IP 20	
Ambient temperature °C	–40…+70	

L 97 - Rated current v ambient temperature
(for 46.61 relay/97.11 socket combination)

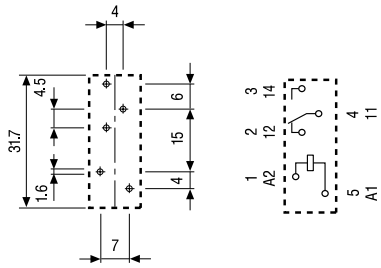




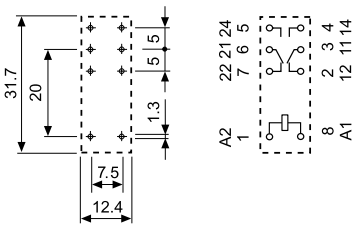
97.11



97.12



Copper side view



Copper side view

Packaging codes

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

Example:

9 7 . P 1 S P A

A	Standard packaging

SM	Metal retaining clip
SP	Plastic retaining clip