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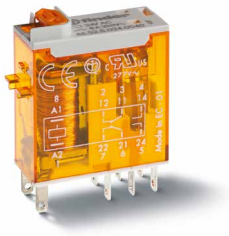
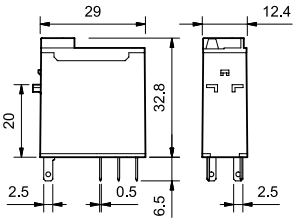
1 & 2 CO industrial style power relays
For socket mount or direct connection via Faston connectors

Type 46.52
- 2 CO 8 A

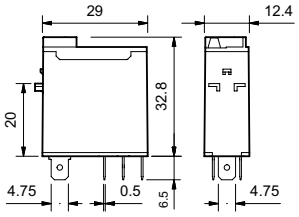
Type 46.61
- 1 CO 16 A

- 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) Screw, Screwless 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

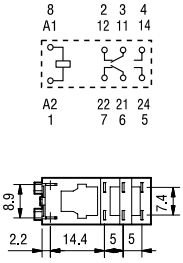
	46.52	46.61
		
	• 2 CO 8 A • Plug-in/Solder terminals	• 1 CO 16 A • Plug-in/Faston 187

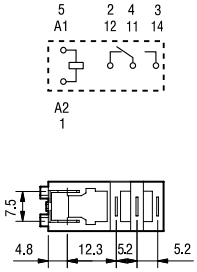


46.52



46.61





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

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: 30/110/220 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…1.1)U_N	(0.8…1.1)U_N
		DC	(0.73…1.1)U_N	(0.73…1.1)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.

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Ordering information

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

								A		B	C	D	
4	6	.	6	1	.	9	.	0	2	4	.	0	0	4	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

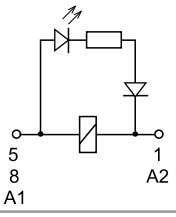
D: Special versions
0 = Standard

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

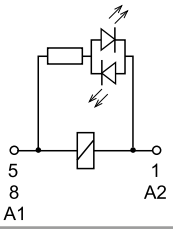
Type	Coil version	A	B	C	D
46.52	AC - DC	**0** - 5	**0**	2 - **4**	**0**
	AC	0 - 5	0	54	/
	DC	0 - 5	0	74	/
46.61	AC - DC	**0** - 4 - 5	**0**	2 - **4**	**0**
	AC	0 - 4 - 5	0	54	/
	DC	0 - 4 - 5	0	74	/

Special versions for Rail Applications on request

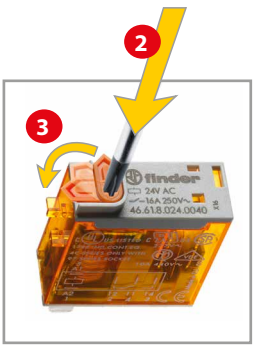
Descriptions: Options



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.

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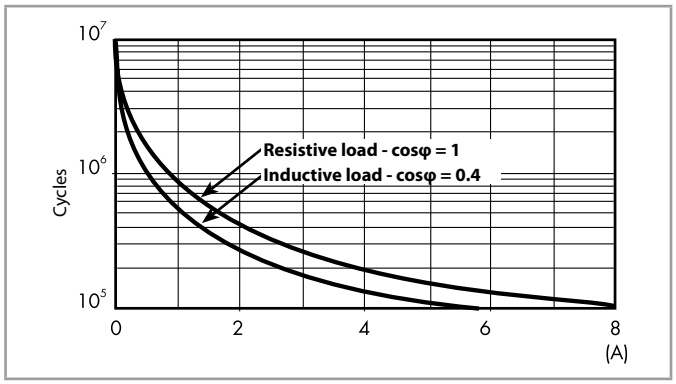
Technical data

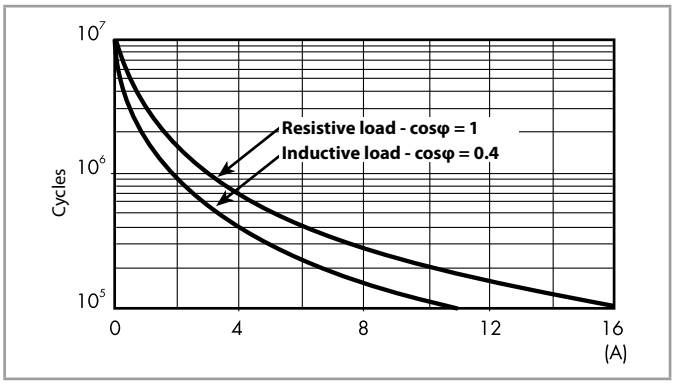
Insulation according to EN 61810-1						
			1 pole		2 pole	
Nominal voltage of supply system		V AC	230/400		230/400	
Rated insulation voltage		V AC	250	400	250	400
Pollution degree			3	2	3	2
Insulation between coil and contact set						
Type of Insulation			Reinforced (8 mm)		Reinforced (8 mm)	
Overvoltage 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	
Conducted disturbance immunity						
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)	
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	
	with rated current	W	1.6		2	
Recommended distance between relays mounted on PCB		mm	≥ 5			

Contact specification

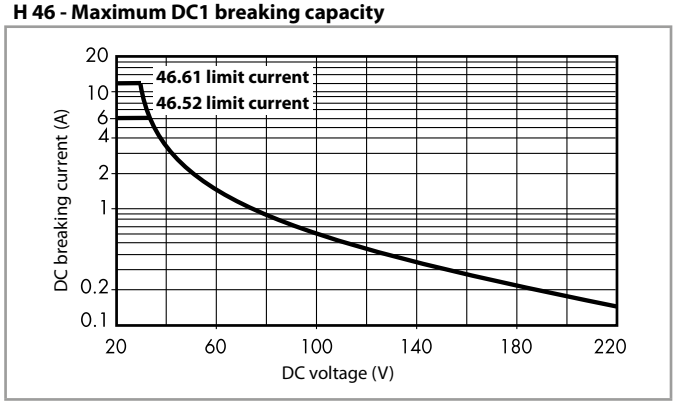
F 46 - Electrical life (AC) v contact current
Type 46.52



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 ≥ $100 \cdot 10^3$ 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.

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Coil specifications

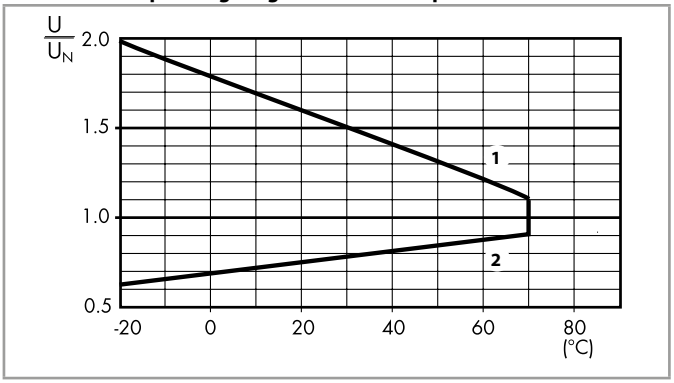
DC coil data

Nominal voltage	Coil code	Operating range		Resistance	Rated coil consumption
U_N		U_{min}	U_{max}	R	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

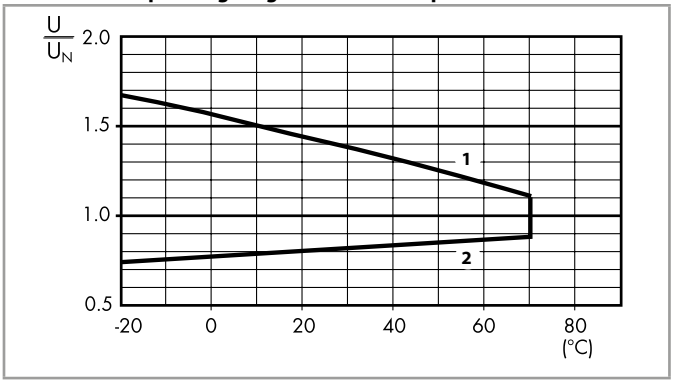
Nominal voltage	Coil code	Operating range		Resistance	Rated coil consumption
U_N		U_{min}	U_{max}	R	I at U_N
V		V	V	Ω	mA
12	**8**.012	9.6	13.2	80	90
24	**8**.024	19.2	26.4	320	45
48	**8**.048	38.4	52.8	1350	21
110	**8**.110	88	121	6900	9.4
120	**8**.120	96	132	9000	8.4
230	**8**.230	184	253	28000	5
240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

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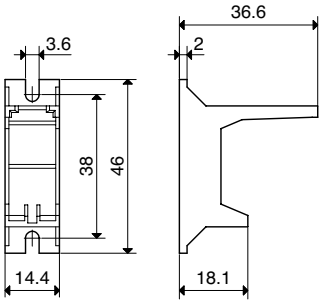
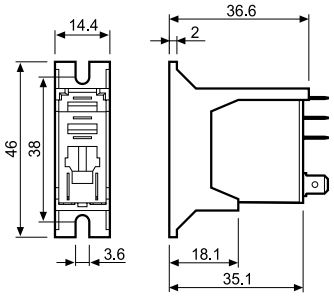
Accessories

046.05

Flange mount adaptor for relays types 46.52 and 46.61 — 046.05



046.05

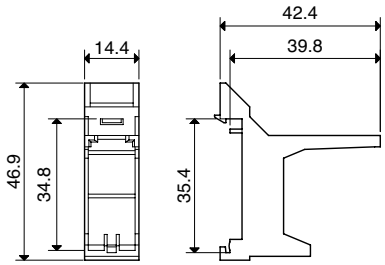


046.05 with relay

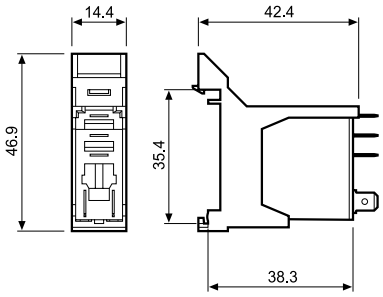
046.05 with relay

046.07

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



046.07

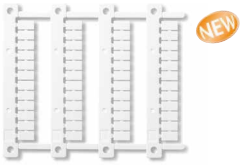


046.07 with relay

046.07 with relay

060.72

Sheet of marker tags (plotter printing) for relays types 46.52 and 46.61 (72 tags), 6 x 12 mm — 060.72



060.48

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

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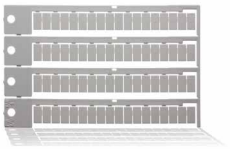
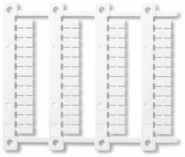
97.P2

Approvals
(according to type):

097.01

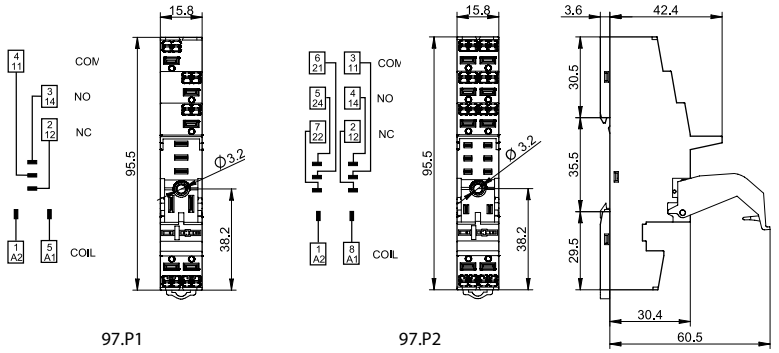


060.72



060.48

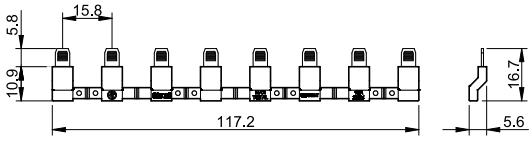
Push-in terminal socket panel or 35 mm rail (EN 60715) mount		**97.P1**	**97.P2**
For relay type		46.61	46.52
Accessories			
Plastic retaining and release clip (supplied with socket - packaging code SPA)		097.01	
Metal retaining clip		097.71	
Identification tag		095.00.4	
8-way jumper link		097.58	
2-way 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's thermal transfer printers		060.48	
Sheet of marker tags for marker tag holder 097.00, 72 tags, 6 x 12 mm, for plotter printing		060.72	
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	8	
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 18 / 1 x 14	2 x 18 / 1 x 14



97.P1 97.P2

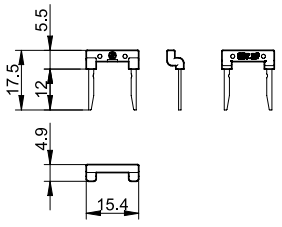
097.58

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



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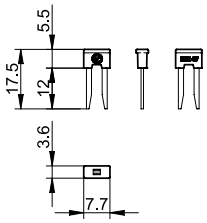
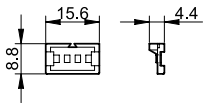
097.42

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 95.P3 and 95.P5 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):

99.02

Approvals (according to type):

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

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

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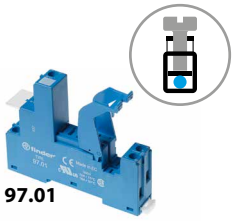
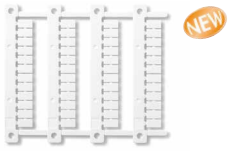


97.01

Approvals (according to type):

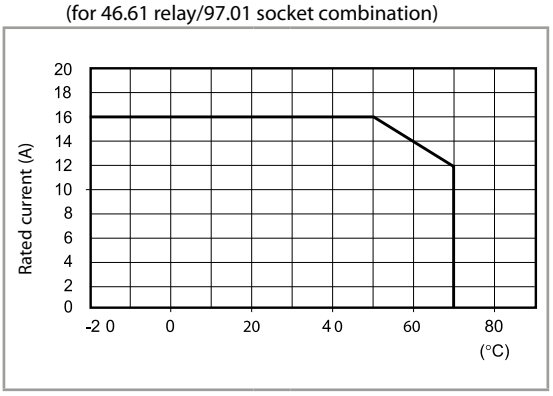
Screw terminal socket panel or 35 mm rail (EN 60715) mount		**97.01 (blue)**	**97.01.0 (black)**	**97.02 (blue)**	**97.02.0 (black)**
For relay type		46.61		46.52	
Accessories					
Plastic retaining and release clip (supplied with socket - packaging code SPA)		097.01			
Metal retaining clip		097.71			
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's thermal transfer printers		060.48			
Sheet of marker tags for marker tag holder 097.00, 72 tags, 6 x 12 mm, for plotter printing		060.72			
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	

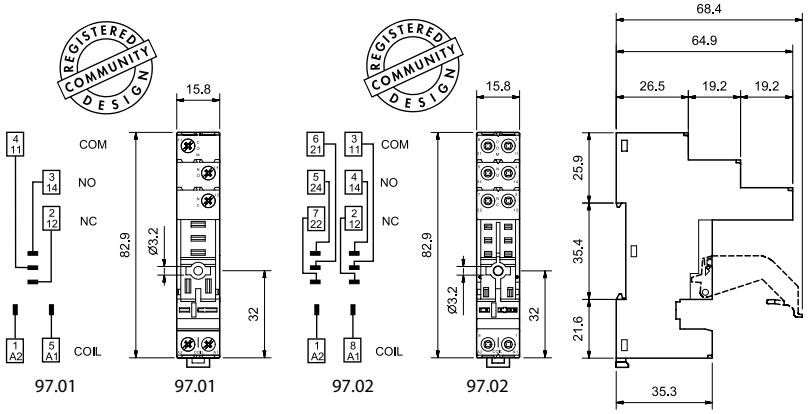


097.01

060.48

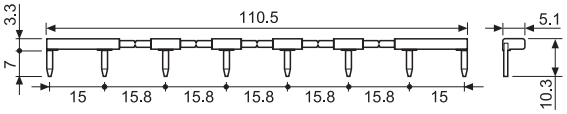
L 97 - Rated current vs ambient temperature
(for 46.61 relay/97.01 socket combination)





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

095.18



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):

86.30

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

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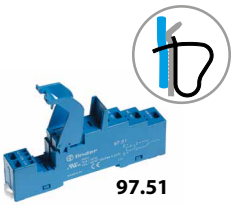
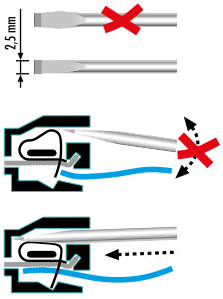


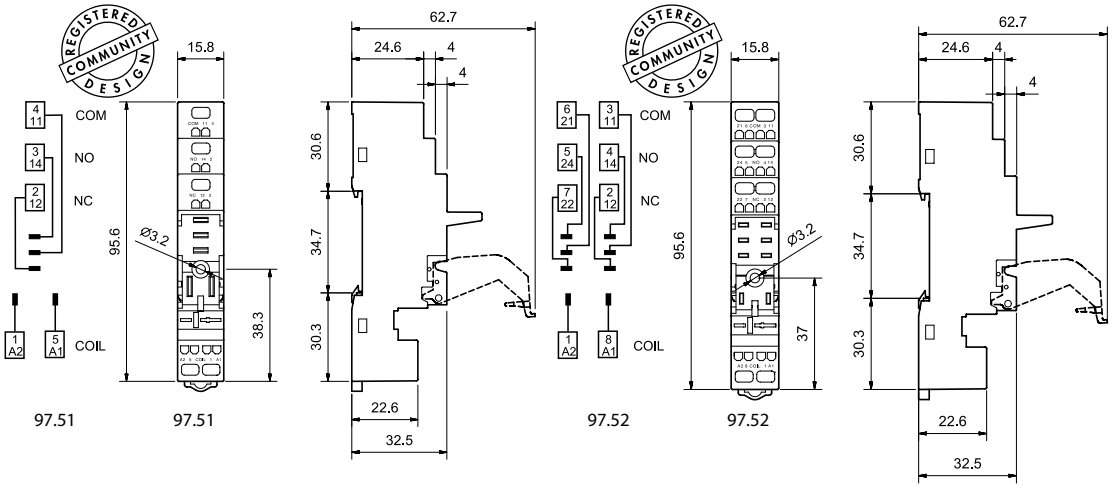
97.51

Approvals (according to type):

097.01



Screwless terminal socket panel or 35 mm rail (EN 60715) mount		**97.51 (blue)**	**97.51.0 (black)**	**97.52 (blue)**	**97.52.0 (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			
Modules (see table below)		99.02			
Timer modules (see table below)		86.30			
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	–25…+70			
Wire strip length	mm	8			
Max. wire size for 97.51 and 97.52 sockets		solid wire		stranded wire	
	mm²	2 x (0.2…1.5)		2 x (0.2…1.5)	
	AWG	2 x (24…18)		2 x (24…18)	



86.30

99.02

Approvals (according to type):

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

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 coil indication and EMC suppression modules for 97.51 and 97.52 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

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97.11

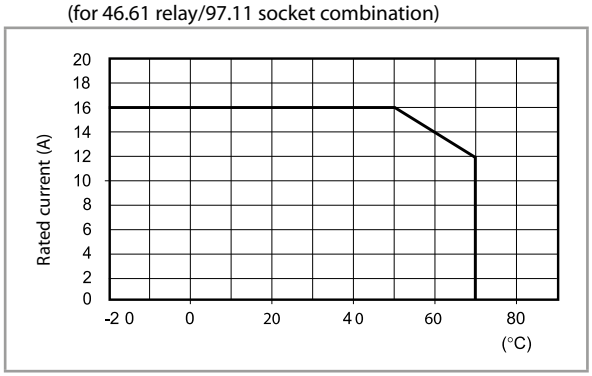
Approvals
(according to type):

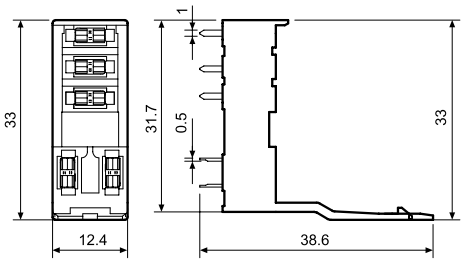
97.12

Approvals
(according to type):

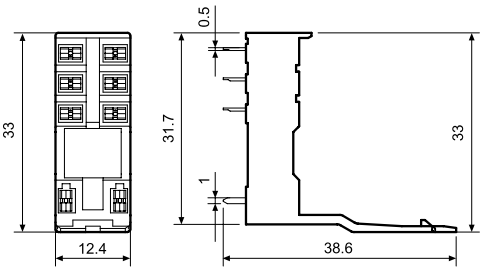
PCB socket	97.11 (blue)	97.12 (blue)
For relay type	46.61	46.52
Technical data		
Rated values	2 A - 250 V (see diagram L97)	8 A - 250 V
Dielectric strength	6 kV (1.2/50 µs) between coil and contacts	
Protection category	IP 20	
Ambient temperature °C	–40…+70	

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

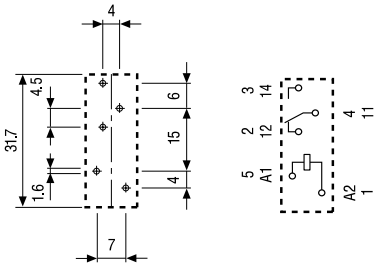




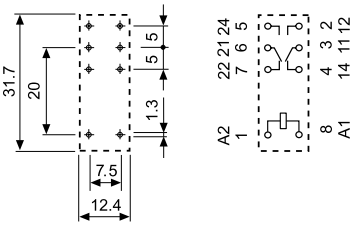
97.11



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
SL	Plastic retaining clip