

46 SERIES



NEW

**Fast,
Reliable and
Secure Connections**



Miniature industrial relays



finder®

The power in relays and timers since 1954

Features

1 & 2 Pole relay range

46.52 - 2 Pole 8 A

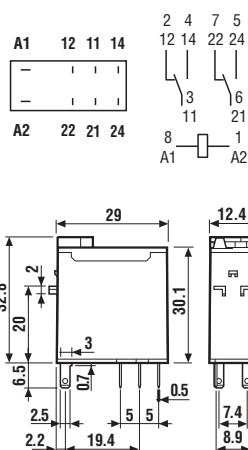
46.61 - 1 Pole 16 A

- Socket mount or direct connection via Faston connectors
- AC coils & DC coils
- Available with: lockable test button, mechanical indicator & LED indicator
- Reinforced insulation between coil and contacts according to EN 60335-1 (VDE 0700), with safe separation and 8 mm clearance and creepage distance
- Cadmium Free contacts

46.52



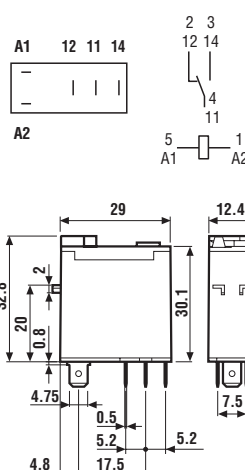
- 2 Pole changeover contacts
- Plug-in/Faston (2.5x0.5)mm



46.61



- 1 Pole changeover contact
- Plug-in/Faston 187



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	2,000	4,000
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	6/0.3/0.12	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 · 10 ⁶	10 · 10 ⁶
Electrical life at rated load AC1	cycles	100 · 10 ³	100 · 10 ³
Operate/release time	ms	10/3	15/5
Insulation between coil and contacts (1.2/50 μ s)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	-40 ... +70	-40 ... +70
Environmental protection		RT II	RT II

Approvals (according to type)



Ordering information

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

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

Type ————
 5 = Spade/blade terminal Faston (2.5x0.5)mm
 6 = Spade/blade terminal Faston 187 (4.8x0.5)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

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

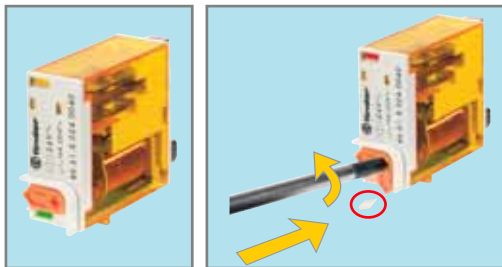
Selecting features and options: only combinations in the same row are possible.
 Preferred selections for best availability are shown in **bold**.

Type	coil version	A	B	C	D
46.52/61	AC-DC	0	0	2 - 4	0
46.52/61	AC	0	0	54	/
46.52/61	DC	0	0	74	/

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.

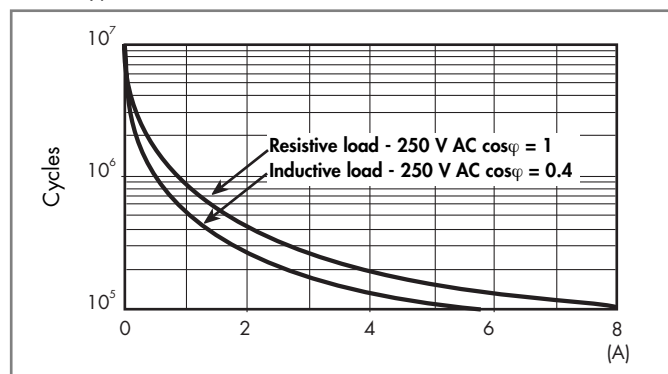
Technical data

Insulation				
Insulation according to EN 61810-1 ed. 2	insulation rated voltage	V	250	440
	rated impulse withstand voltage	kV	4	4
	pollution degree		3	2
	overvoltage category		III	III
Insulation between coil and contacts (1.2/50 µs)		kV	6 (8 mm)	
Dielectric strength between open contacts		V AC	1,000	
Dielectric strength between adjacent contacts		V AC	2,000	
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			1 changeover contact	2 changeover contacts
Bounce time: NO/NC		ms	2/6	1/4
Power lost to the environment	without contact current	W	0.6	0.6
	with rated current	W	1.6	2

Contact specification

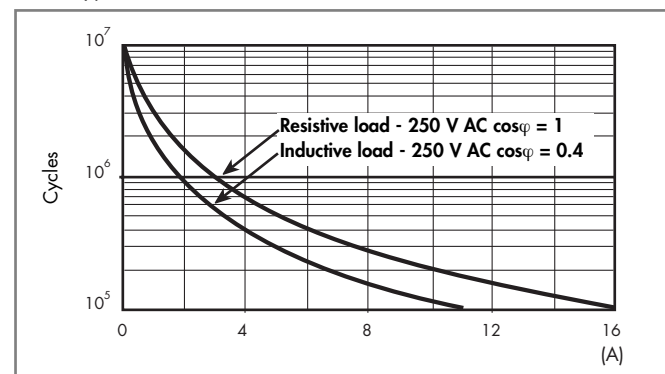
F 46 - Electrical life (AC) v contact current

Type 46.52

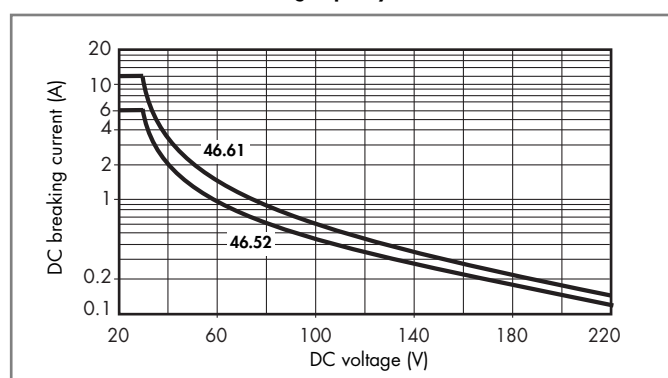


F 46 - Electrical life (AC) v contact current

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 $\geq 100 \cdot 10^3$ 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

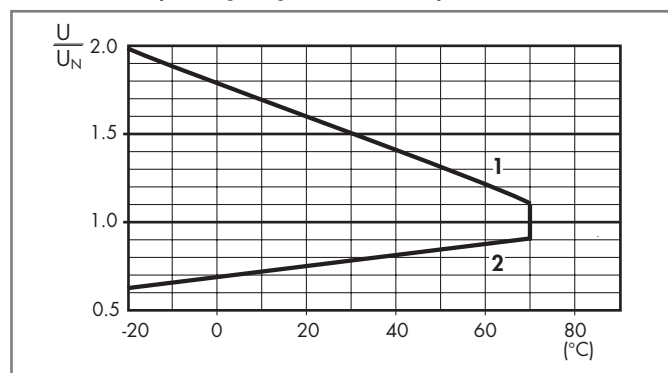
DC coil data

Nominal voltage U_N	Coil code	Operating range		Resistance	Rated coil consumption I at U_N
V		U_{min} V	U_{max} V	R Ω	mA
12	9.012	8.8	13.2	300	40
24	9.024	17.5	26.4	1,200	20
48	9.048	35	52.8	4,800	10
110	9.110	80	121	23,500	4.7
125	9.125	91.2	137.5	32,000	3.9

AC coil data

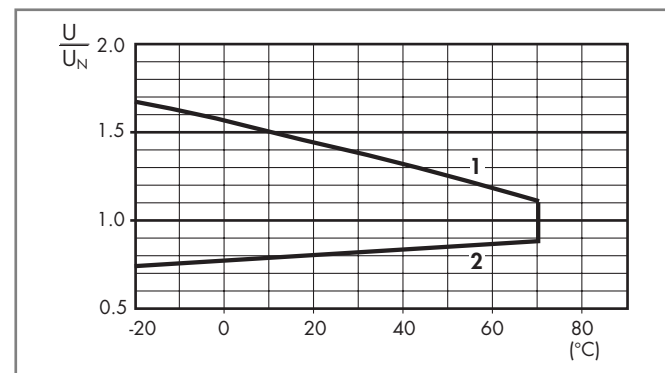
Nominal voltage U_N	Coil code	Operating range		Resistance	Rated coil consumption I at U_N
V		U_{min} V	U_{max} V	R Ω	mA
12	8.012	9.6	13.2	80	90
24	8.024	9.6	13.2	320	45
48	8.048	38.4	52.8	1,350	21
110	8.110	88	121	6,900	9.4
120	8.120	96	132	9,000	8.4
230	8.230	184	253	28,000	5
240	8.240	192	264	31,500	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.

Accessories



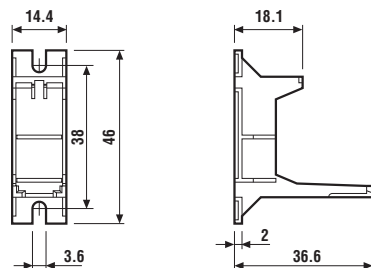
046.05



046.05 with relay

Flange mount adaptor for relays types 46.52 and 46.61

046.05



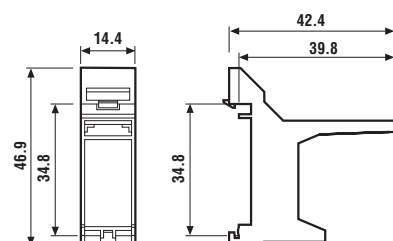
046.07



046.07 with relay

35 mm rail adaptor for relays types 46.52 and 46.61

046.07



060.72

Sheet of marker tags for relays types 46.52 and 46.61 (72 tags), 6x12mm

060.72



97.01

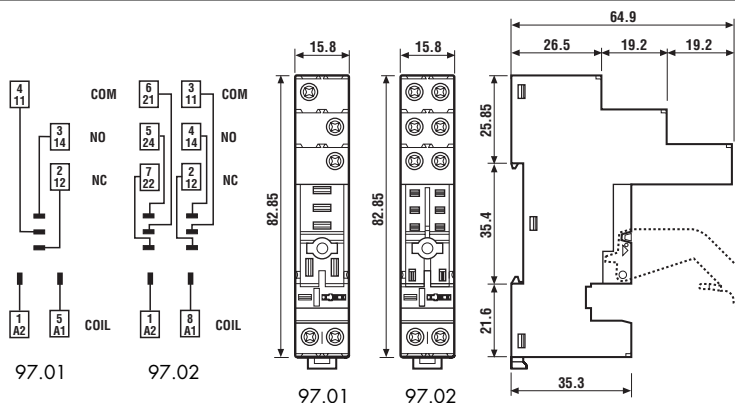
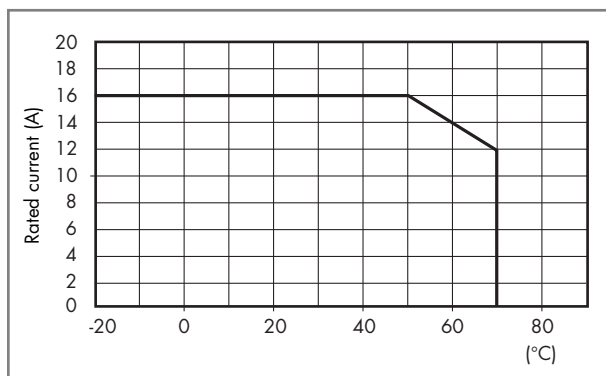
Approvals
(according to type):



97.02

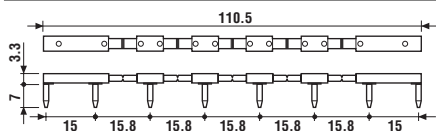
Screw terminal socket panel or 35 mm rail (EN 50022) mount	97.01 (blue)	97.02 (blue)
For relay type	46.61	46.52
Accessories		
Plastic retain and eject clip (supplied with socket - packaging code SPA)		097.01
Identification tag		095.00.4
8-way jumper link		095.18
Modules (see table below)		99.02
Timer modules (see table below)		86.10, 86.20
Technical data		
Rated current	16 A - 250 V AC	8 A - 250 V AC
Dielectric strength	$\geq 6 \text{ kV}$ (1.2/50 μs) between coil and contacts	
Protection category	IP 20	
Ambient temperature	$^{\circ}\text{C}$ -40...+70 (see diagram L97)	
Screw torque	Nm 0.8	
Wire strip length	mm 8	
Max. wire size for 97.01 and 97.02 sockets	solid wire	stranded wire
	mm ² 1x6 / 2x2.5	1x4 / 2x2.5
	AWG 1x10 / 2x14	1x12 / 2x14

L 97 - Rated current vs 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
Rated values	10 A - 250 V



86.10

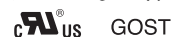
86 series timer modules	Blue
Mono-function: (12...24)V AC/DC; function AI; (1.5s...60min)	86.10.0.024.0000
Mono-function: (12...24)V AC/DC; function DI; (1.5s...60min)	86.20.0.024.0000

Approvals
(according to type): GOST



99.02

Approvals
(according to type):



99.02 coil indication and EMC suppression modules for 97.01 and 97.02 sockets		
		Blue*
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 (62 k Ω /1W)	(110...240)V AC	99.02.8.230.07

* Modules in Black housing are available on request.

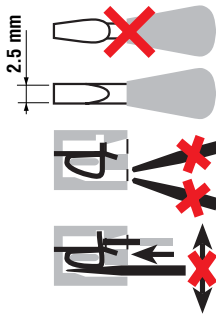


97.51

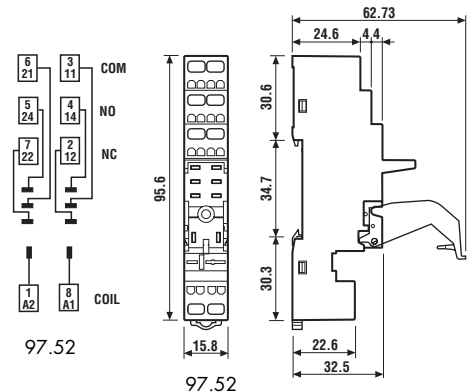
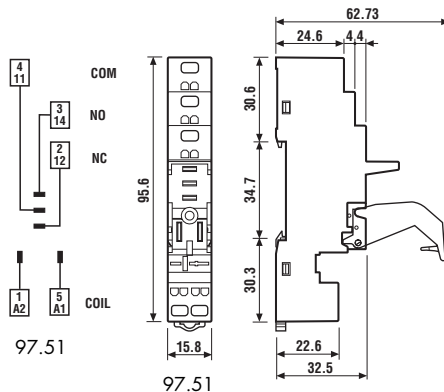
Approvals
(according to type):



097.01



Screwless terminal socket panel or 35 mm rail (EN 50022) mount	97.51 (blue)	97.52 (blue)
For relay type	46.61	46.52
Accessories		
Plastic retain and eject clip (supplied with socket - packaging code SPA)		097.01
Modules (see table below)		99.02
Timer modules (see table below)		86.10, 86.20
Technical data		
Rated current	12 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
	mm ² 2x(0.2...1.5)	2x(0.2...1.5)
	AWG 2x(24...18)	2x(24...18)



86.10

86 series timer modules	Blue
Mono-function: (12...24)V AC/DC; function AI; (1.5s...60min)	86.10.0.024.0000
Mono-function: (12...24)V AC/DC; function DI; (1.5s...60min)	86.20.0.024.0000

Approvals
(according to type):



99.02

Approvals
(according to type):



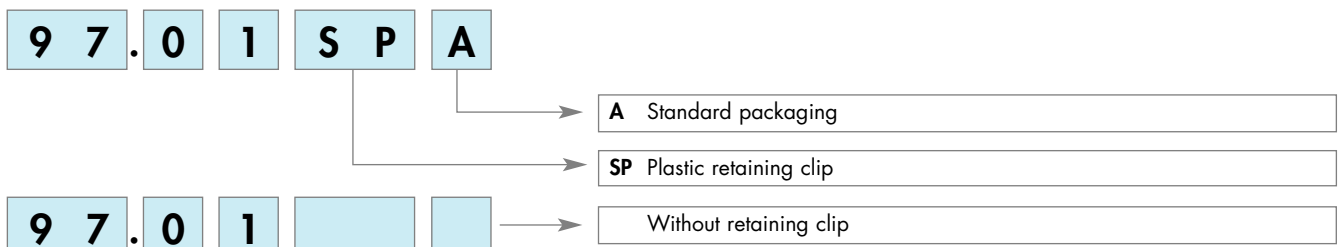
* Modules in Black housing are available on request.

99.02 coil indication and EMC suppression modules for 97.51 and 97.52 sockets		
		Blue*
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 (62 kΩ/1W)	(110...240)V AC	99.02.8.230.07

Packaging codes

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

Code options according to the last three letters:





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