finder®
SWITCH TO THE FUTURE

46
SERIES

Relays for railway applications 8 - 16 A

- Exterior light control
- Driver's control console
- Pantograph management
- Door control
- Doors opening / closing
- Internal light management
- Message panels infotainment

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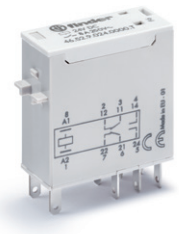
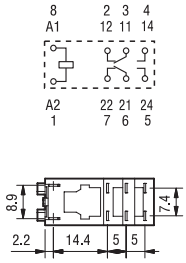
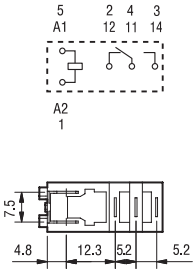
Plug-in power relays

Type 46.52T
- 2 pole 8 A

Type 46.61T
- 1 pole 16 A

- Complies with EN 45545-2 +A1:2016 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, TX class)
- AC coils or DC coils with extended range
- Cadmium Free contacts (standard version)
- Contact material options
- 97 series sockets
- Coil EMC suppression modules
- Accessories (Sockets and Timer modules)

	46.52T	46.61T
		
	• 2 Pole CO, 8 A • Plug-in	• 1 Pole CO, 16 A • Plug-in
		

* Short term (10 min) +85°C

For outline drawing see page 5

		46.52T	46.61T
Contact specification			
Contact configuration		2 CO (DPDT)	1 CO (SPDT)
Rated current/Maximum peak current	A	8/15	16/80
Rated voltage/ Maximum switching voltage	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	6/0.5/0.15	12/0.5/0.25
Minimum switching load	mW (V/mA)	300 (5/5)	300 (10/5)
Standard contact material		AgNi	$AgSnO_2$
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	230	230
	V DC	24 - 72 - 110	24 - 72 - 110
Rated power	VA/W	1.2/0.5	1.2/0.5
Operating range	AC	$(0.80…1.1)U_N$	$(0.80…1.1)U_N$
	DC	$(0.70…1.25)U_N$	$(0.70…1.25)U_N$
Holding voltage		$0.4\ U_N$	$0.4\ U_N$
Must drop-out voltage		$0.1\ U_N$	$0.1\ U_N$
Technical data			
Mechanical life 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)		CE	

A

Ordering information

Example: 46 series plug-in relay, 2 poles, 24 V DC coil, AgNi contacts.

4 6	.	5	2	.	9	.	0 2 4	.	0 (A)	0 (B)	0 (C)	0 (D)	T

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
024 = 24 V
072 = 72 V
110 = 110 V
230 = 230 V

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

B: Contact circuit
0 = CO (nPDT)

C: Options
0 = None

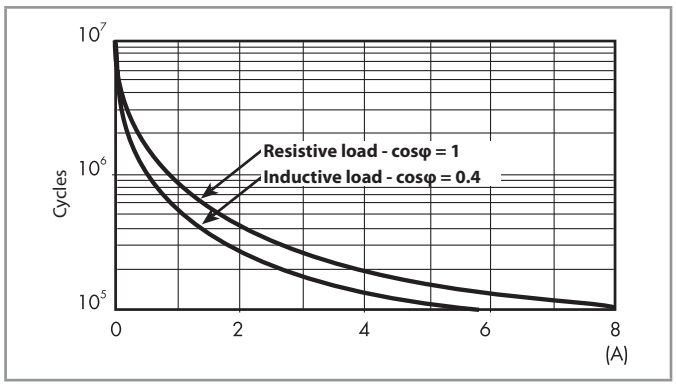
D: Special versions
0 = Standard

Technical data

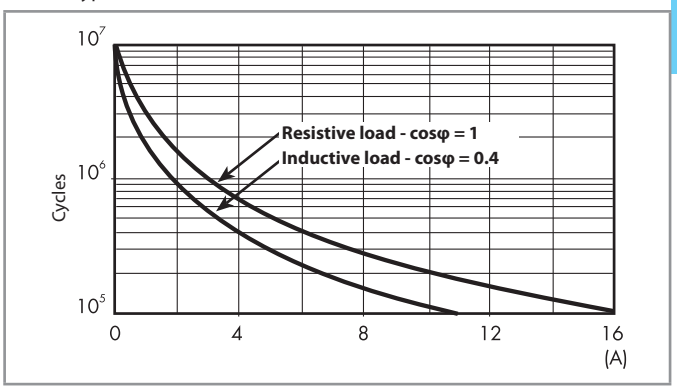
Insulation according to EN 61810-1					
		46.61T		**46.52T**	
Nominal voltage of supply system	V AC	230/400		230/400	
Rated insulation voltage	V AC	250	400	250	400
Pollution degree		3	2	3	2
Insulation between coil and contact set					
Type of Insulation		Reinforced (8 mm)		Reinforced (8 mm)	
Overvoltage 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 (surge) differential mode (according to EN 50121)	kV (1.2/50 µs)	2			
Other data					
Bounce time: NO/NC	ms	2/6		1/4	
Vibration resistance: NO/NC		According to EN 61373			
Shock resistance		According to EN 61373			
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	

Contact specification

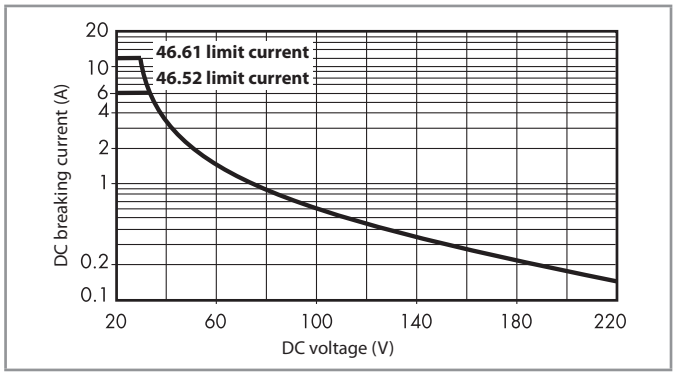
F 46 - Electrical life (AC) v contact current
Type 46.52T



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



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.

Coil specifications

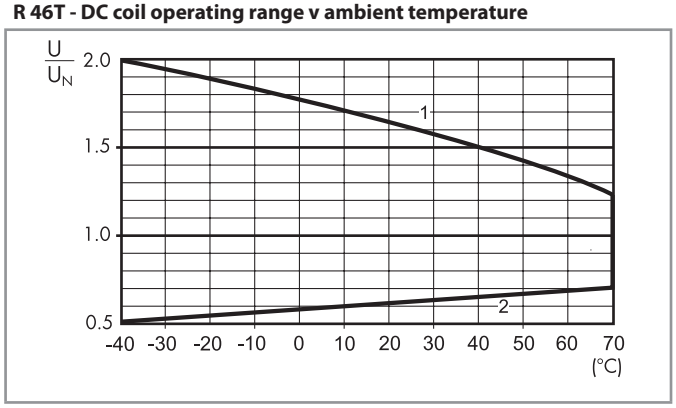
DC coil data

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
24	**9**.024	16.8	30	1200	20
72	**9**.072	50.4	90	3400	7
110	**9**.110	77	137.5	23500	4.7

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
230	**8**.230	184	253	28000	5

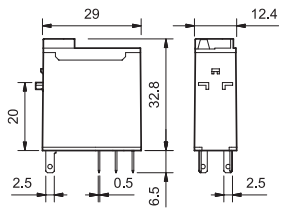
R 46T - DC coil operating range v ambient temperature



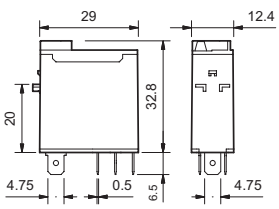
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

Outline drawings

Type 46.52T



Type 46.61T



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97 SERIES
Sockets and accessories for 46 series relays

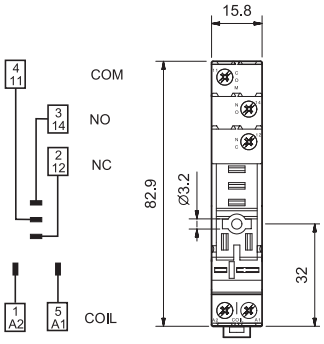
A

97.01.7

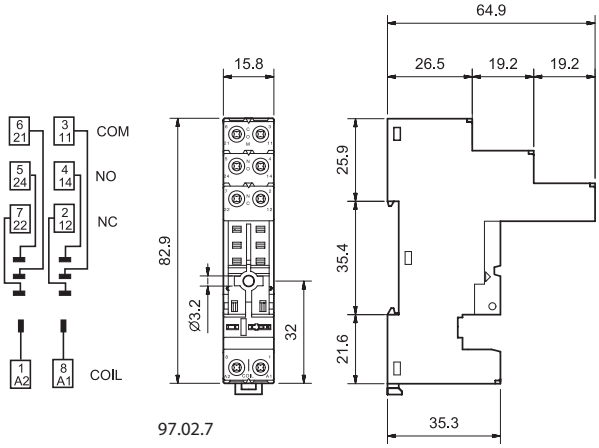
Approvals (according to type):

Screw terminal socket panel or 35 mm rail (EN 60715) mount		**97.01.7 SMA***	**97.02.7 SMA***
For relay type		46.61T	46.52T
Accessories			
Metal retaining clip (supplied with socket - packaging code SMA)		097.71	
Identification tag		095.00.4	
8-way jumper link		095.18	
Modules (see table below)		99.02	
Timer modules (see table below)		86.30T	
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	
Screw torque	Nm	0.8	
Wire strip length	mm	8	
Max. wire size for 97.01.7 and 97.02.7 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

* Complies with **EN 45545-2 +A1:2016** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, TX class)



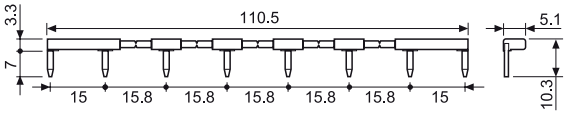
97.01.7



97.02.7

095.18

8-way jumper link	095.18
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)	86.30.0.024.0000T

Approvals (according to type):

AI: ON-delay
DI: Interval

99.02

99.02 coil indication and EMC suppression modules		
Diode (+A1, standard polarity)	(6…220)V DC	99.02.3.000.00
LED + Diode (+A1, standard polarity)	(6…24)V DC	99.02.9.024.99
LED + Diode (+A1, standard polarity)	(28…72)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…72)V DC/AC	99.02.0.060.98
LED + Varistor	(110…240)V DC/AC	99.02.0.230.98

Approvals (according to type):

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

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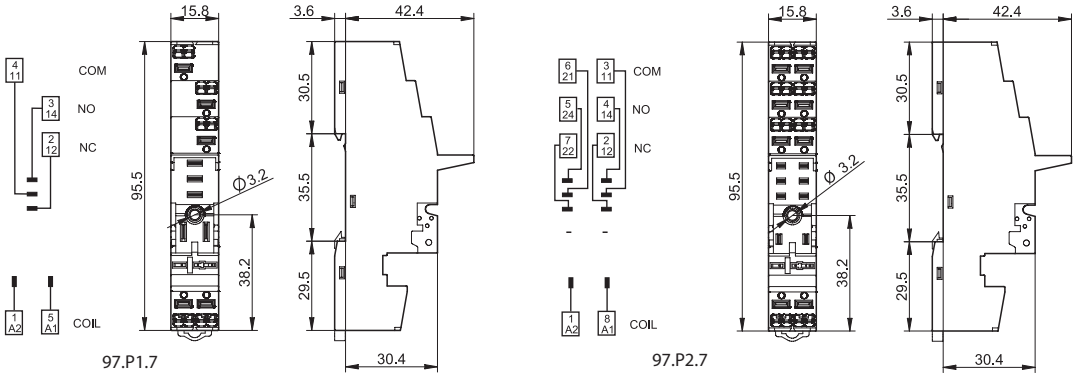
97.P1.7

Approvals (according to type):

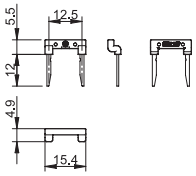
Push-in terminal socket panel or 35 mm rail (EN 60715) mount		**97.P1.7 SMA***	**97.P2.7 SMA***
For relay type		46.61T	46.52T
Accessories			
Metal retaining clip (supplied with socket - packaging code SMA)		097.71	
2-way jumper link		097.52	
2-way jumper link		097.42	
Modules (see table below)		99.02	
Timer modules (see table below)		86.30T	
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.P1.7 and 97.P2.7 socket		solid wire	stranded wire
	mm²	0.5	0.5
	AWG	21	21
Max. wire size for 97.P1.7 and 97.P2.7 sockets		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

* Complies with **EN 45545-2 +A1:2016** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, TX class)



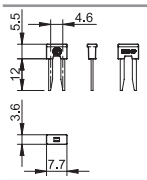
097.52

2-way jumper link for 97.P1.7 and 97.P2.7 sockets	097.52
Rated values	10 A - 250 V



097.42

2-way jumper link for 97.P1.7 and 97.P2.7 sockets	097.42
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)	86.30.0.024.0000T
Approvals (according to type):	AI: ON-delay DI: Interval

99.02

99.02 coil indication and EMC suppression modules		
Diode (+A1, standard polarity)	(6…220)V DC	99.02.3.000.00
LED + Diode (+A1, standard polarity)	(6…24)V DC	99.02.9.024.99
LED + Diode (+A1, standard polarity)	(28…72)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…72)V DC/AC	99.02.0.060.98
LED + Varistor	(110…240)V DC/AC	99.02.0.230.98
Approvals (according to type):		DC Modules with non-standard polarity (+A2) on request.