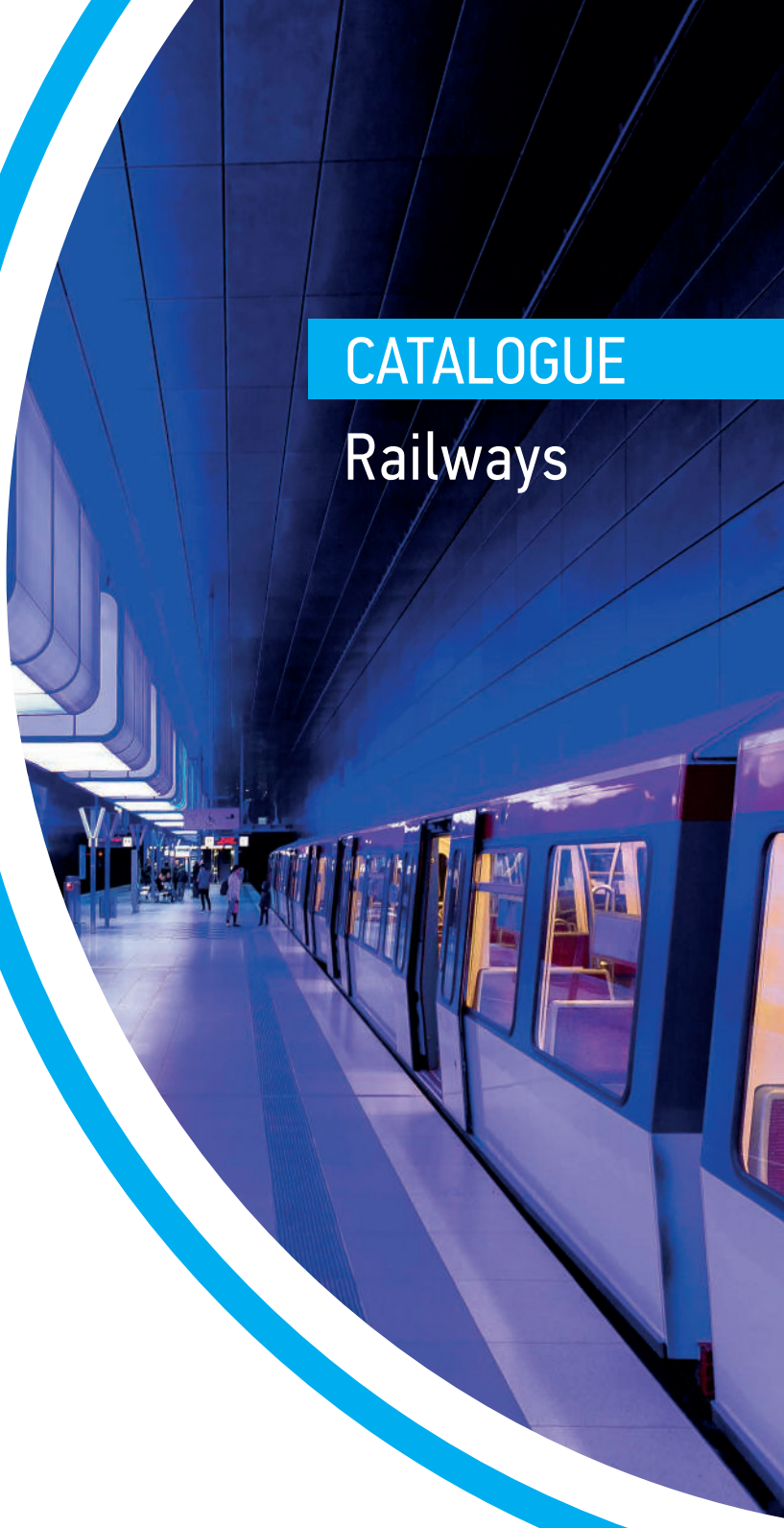
finder
RELAYING INNOVATION

CATALOGUE

Railways



- Relays
- Relay interface modules
- Timer modules
- Monitoring relays
- Relay modules with forcibly guided contacts
- Modular timers
- Modular Light dependent relays
- Modular contactors

ABOUT US

Finder was founded in Italy in 1954. Since then it has been designing and manufacturing a wide range of electromechanical and electronic components for both the residential and industrial sectors.
Today, thanks to its global vision, Finder now distributes its products around the world through a network of 29 company-owned subsidiaries and more than 80 trade partnerships.
Finder is an international family made up of more than 2000 individuals, all united by the same values and passion for our products.

14,000+ different products to satisfy a myriad of applications. From products at the heart of automation to the control of machines, power, time, temperature, liquid level and light

OUR PRODUCTS CARRY MORE CERTIFICATIONS THAN ANY OTHER RELAY MANUFACTURER

FINDER IS AN ITALIAN BRAND WITH A WORLDWIDE PRESENCE

4 PRODUCTION PLANTS IN EUROPE

29 SUBSIDIARIES

80+ OFFICIAL DISTRIBUTORS

ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG)

Finder considers social and environmental sustainability as fundamental principles of doing business, just as it believes that business growth must develop in synergy with a conscious vision of the future.
That is why Finder is committed to reducing and eliminating CO2 emissions, focusing on circularity, caring for its employees to foster a safe, fair and inclusive work environment, spreading a culture of integrity and transparency, and collaborating with stakeholders who share its values.

AUTONOMY AND INDEPENDENCE

Finder's managerial, financial and technological autonomy allows optimal control over all its business processes, the results of which include simplified customs procedures and a high reliability of commercial relations.

ISO 9001:2015
Quality management system

IECEx
Equipment for Use in Explosive Atmospheres

ISO 14001:2015
Environmental management system

ISO 27001-27701
Information Security and Privacy Management System

ISO 45001:2018
Health and safety management system

ISO 50001:2018
Energy management system

ISO 14064-1:2019
Carbon Footprint verification

AEOF
Simplified customs and enhanced supply chain security

FSC
Forest Stewardship Council

Cribis Prime Company
Recognition of highest reliability of commercial relations

Relays used for railway rolling stock are subject to increasingly higher technical demands – such as the need for wider operating ranges; higher resistance to shock and vibration; operation over a wider range of temperature and humidity; and above all, the fire resistance properties of the relay's constituent parts.

Fire and smoke characteristics of the materials

The relays and their sockets and accessories are manufactured using specific insulating materials, which satisfy the requirement **R26** of fire protection prescribed by the standard **EN 45545-2:2020** for product category **EL10.**
The requirement **R26,** for Hazardous levels **HL1** to **HL3,** is the conformity to V0 class following vertical small flame test according to **EN 60695-11-10.**

Mechanical and climatic characteristics

The resistance against random vibrations and shock of the relays and their sockets and accessories is in compliance with the prescription of **EN 61373** standard for Category 1, **Class B** products. Their resistance to temperature and humidity is in compliance with the prescription of **EN 50155** standard, **OT4/ST1**.

- Air conditioning
- Door control systems
- Train light control
- Signal control
- Control boards
- Traffic management

finder

	Features	Rated current	No. of contacts	Sockets	Page
	**46 Series - Relays** – Plug-in mounting – AC coils or DC coils with extended range – Complies with **EN 45545-2:2020** (flammability of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class) – Coil EMC suppression modules	16 A 8 A	1 CO 2 CO	97 Series 	3
	**55 Series - Relays** – Plug-in mounting – DC coils with extended range – Complies with **EN 45545-2:2020** (flammability of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class) – Coil EMC suppression modules	7 A	4 CO	94 Series 	11
	**56 Series - Relays** – Plug-in mounting – AC coils or DC coils with extended range – Complies with **EN 45545-2:2020** (flammability of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class) – Coil EMC suppression modules	12 A	2 CO 4 CO	96 Series 	19
	**39 Series - Relay interface modules** – Compliant with standards **EN 45545-2:2020** (protection against fire and fumes), **EN 61373** (resistance to shock and vibration, category 1 class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class) – DC multi-voltage coil with wide operating range – Cadmium free contacts (standard version) – Easy common connection of adjacent relay terminals A1, A2 and 11 using jumper links	6 A	1 CO		25
	**86 Series - Timer modules** – Multi-function or Bi-function – Multi-voltage – Time scale from 0.05 s to 100 h – Wide supply range in AC or DC coils – Timers for 94, 96, 97 series sockets	—	—	94 - 96 - 97 Series 	33
	**70 Series - Monitoring relays** – Universal voltage monitoring (208…480 V AC) – Phase rotation – Phase loss – 1 or 2 CO versions	6 A 8 A	1 CO 2 CO		43
	**7S Series - Relay modules with forcibly guided contacts** – Extended operating range (0.7…1.25)U_N – For safety applications, with class A forcibly guided contact relays EN 61810 (ex EN 50205) – For railway application; materials compliant with **EN 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class) – Coil status visual indication with LED	6 A	1 NO + 1 NC 2 NO + 2 NC 3 NO + 1 NC 4 NO + 1 NC		49
	**80 Series - Modular timers** – Six time scale from 0.1 s to 24 h – Multi-voltage/Multi-function/Mono-function – High input/output isolation – 1 pole – Relay output, 16 A – 17.5 mm wide	8 A 16 A	1 CO		57
	**83 Series - Modular timers** – Six time scale from 0.1s to 10 days – Multi-voltage/Multi-function/Mono-function – 1 or 2 poles – Special version: 2 timed contacts or 1 timed + 1 instantaneous contact – 22.5 mm wide	8 A 12 A 16 A	2 CO 1 CO		65

	Features	Rated current	No. of contacts	Page
	**11 Series - Modular Light dependent relay** – 1 NO contact – Sensitivity adjustment from 1 to 100 lux – 24 V AC/DC – 17.5 mm wide – 35 mm rail (EN 60715) mount	**16 A**	**1 NO**	**75**
	**22 Series - Modular contactors** – Complies with **EN 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and **OT4/ST1**) – AC/DC silent coils – 2 or 4 contacts – 17.5 or 35 mm wide – 35 mm rail (EN 60715) mount	**25 A**	**2 NO** **4 NO**	**81**

finder
RELAYING INNOVATION

46
SERIES

Relays for railway applications 8 - 16 A

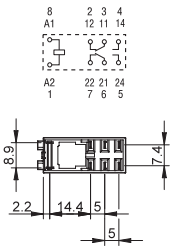
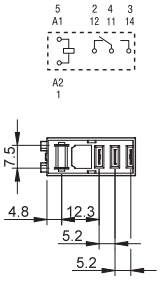
- Exterior light control
- Driver's control console
- Pantograph management
- Door control
- Doors opening/ closing
- Internal light management
- Message panels infotainment

Plug-in power relays

Type 46.52T
- 2 pole 8 A

Type 46.61T
- 1 pole 16 A

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 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

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: 24/110/220 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 UK CA	

Ordering information

A

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

								A	B	C	D			
4	6	.	5	2	.	9	.	0	2	4	.	0	0	0	0	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

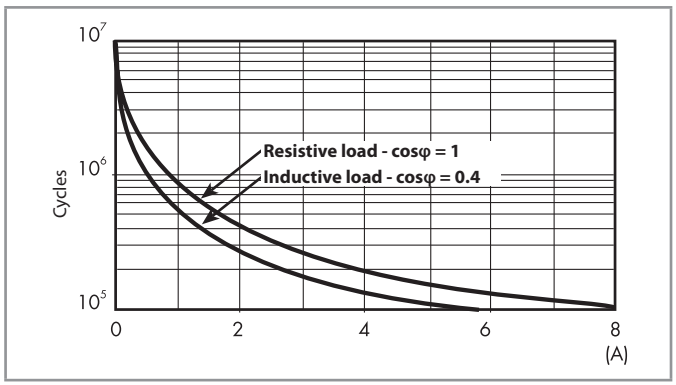
D: Special versions
0 = Standard

Technical data

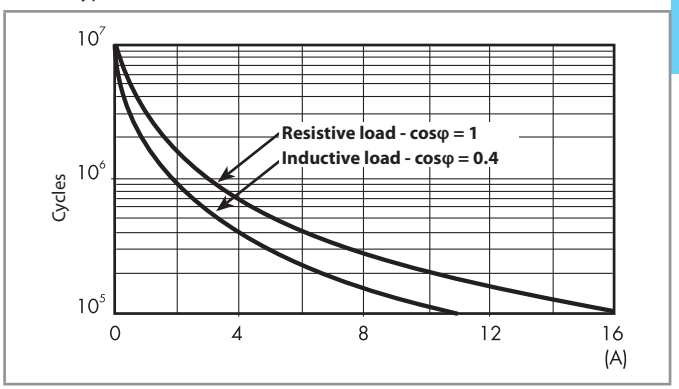
Insulation according to EN 61810-1					
		46.61T		**46.52T**	
Nominal voltage of supply system	V AC	230/400		230/400	
Rated insulation voltage	V AC	250	400	250	400
Pollution degree		3	2	3	2
Insulation between coil and contact set					
Type of Insulation		Reinforced (8 mm)		Reinforced (8 mm)	
Overvoltage 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	
	with rated current W	1.6		2	

Contact specification

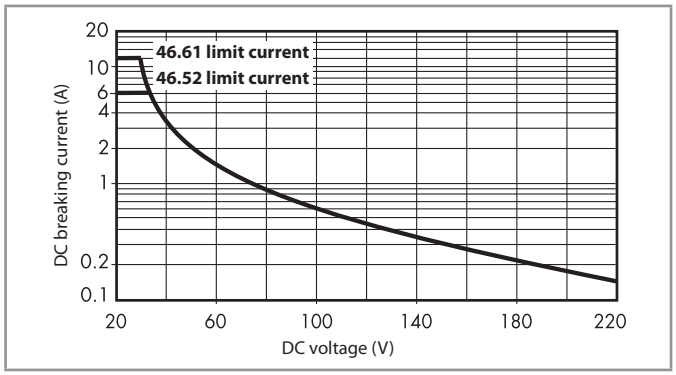
F 46 - Electrical life (AC) v contact current
Type 46.52T



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

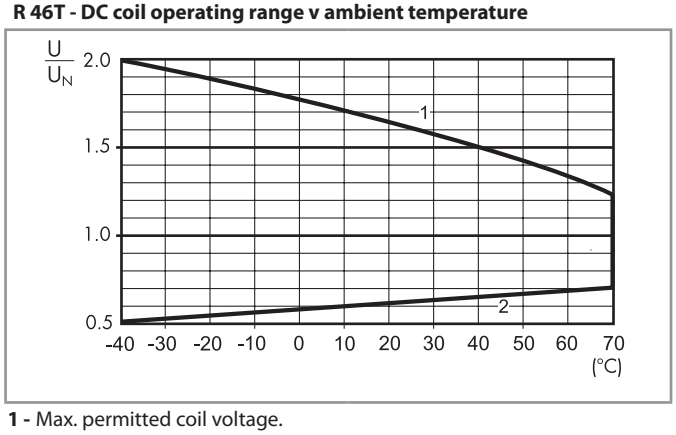
DC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption 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 U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
230	**8**.230	184	253	28000	5

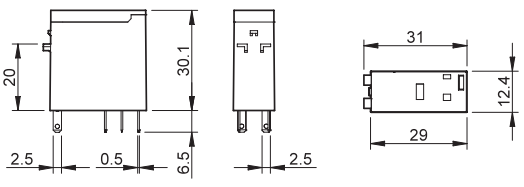
R 46T - DC coil operating range v ambient temperature



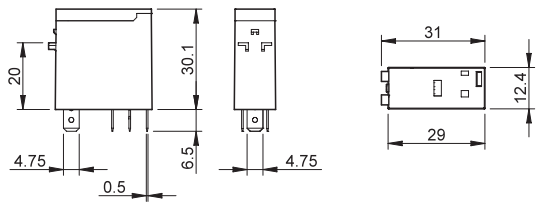
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

Outline drawings

Type 46.52T



Type 46.61T



97 SERIES
Sockets and accessories for 46 series relays

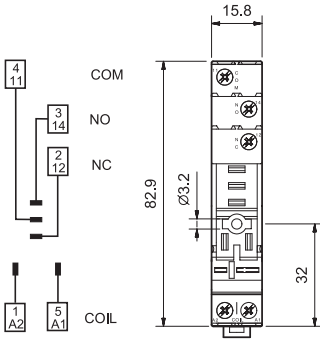
A

97.01.7

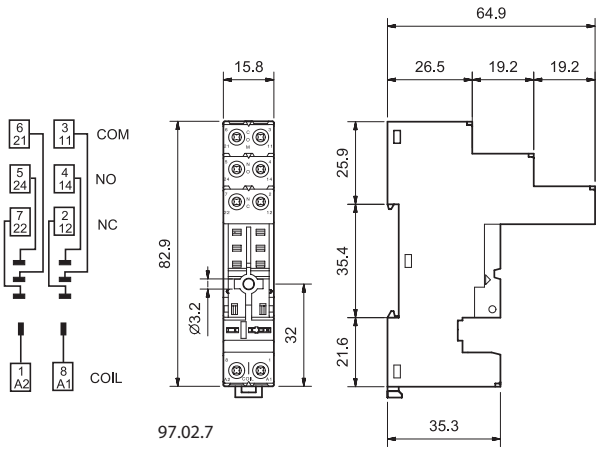
Approvals (according to type):

Box clamp 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)		097.71T	
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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)



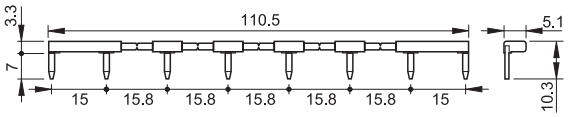
97.01.7



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):

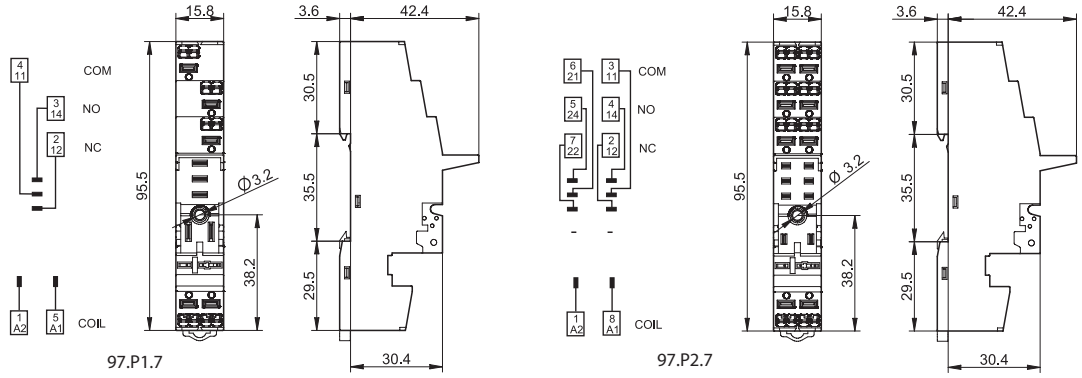
DC Modules with non-standard polarity (+A2) on request.

97.P1.7

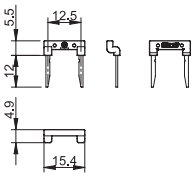
Approvals (according to type):

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)		097.71T	
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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)

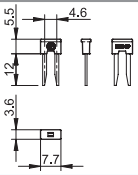


097.52



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.

A

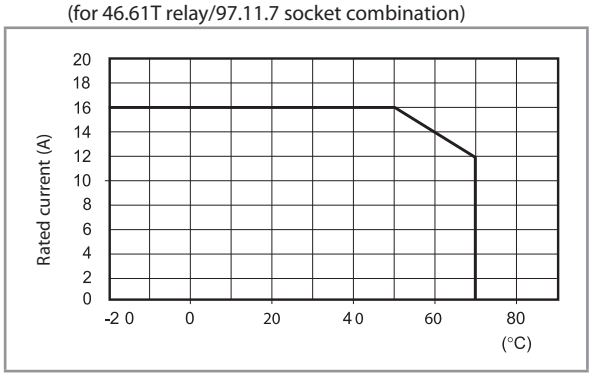
97.12.7

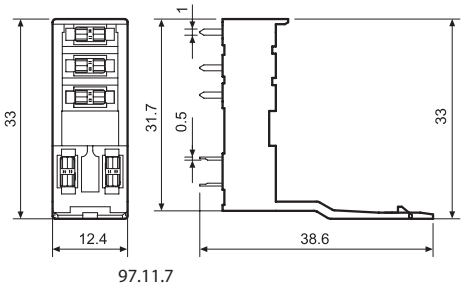
Approvals (according to type):

PCB socket	97.11.7*	97.12.7*
For relay type	46.61T	46.52T
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	

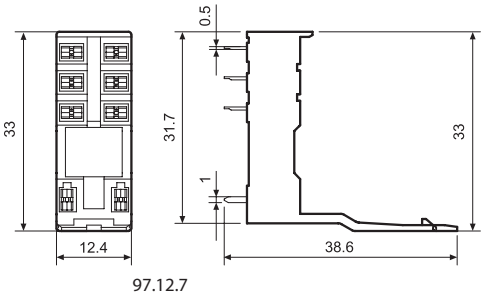
* Complies with **EN 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)

L 97 - Rated current v ambient temperature
(for 46.61T relay/97.11.7 socket combination)

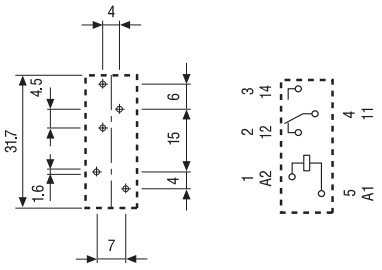




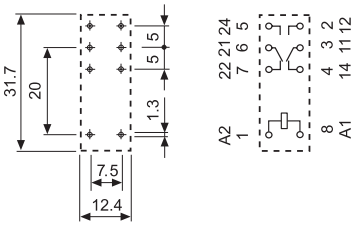
97.11.7



97.12.7



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	.	7	S M	A

A Standard packaging

SM Metal retaining clip

VI-2024, www.findernet.com

finder
RELAYING INNOVATION

55
SERIES

Relays for railway applications 7 A

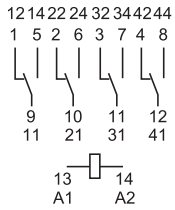
- Exterior light control
- Air conditioning
- Ancillary equipment
- Doors opening/ closing
- Internal light management
- Message panels infotainment

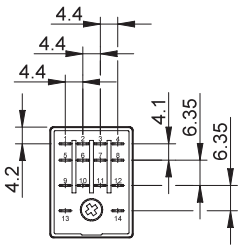
Plug-in mount, general purpose
4 Pole relays, 7 A

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- DC coils with extended range
- Cadmium Free contacts (standard version)
- 94 series sockets
- Coil EMC suppression modules
- Accessories (Sockets and Timer modules)

55.34T

- 4 pole, 7 A
- Plug-in 94 series sockets





* Short term (10 min) +85°C

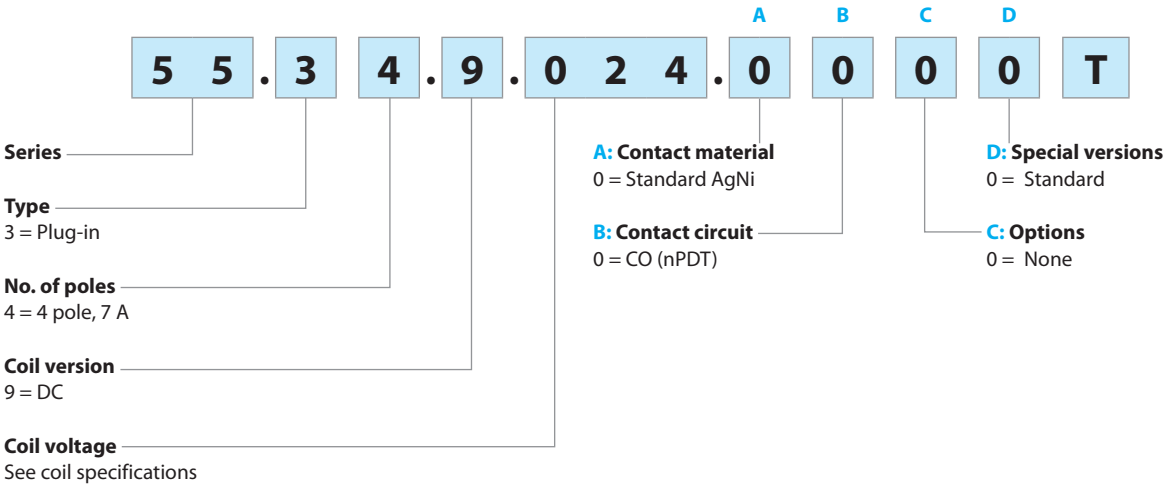
For outline drawing see page 13

Contact specification		
Contact configuration		4 CO (4PDT)
Rated current/Maximum peak current	A	7/15
Rated voltage/Maximum switching voltage	V AC	250/250
Rated load AC1	VA	1750
Rated load AC15 (230 V AC)	VA	350
Single phase motor rating (230 V AC)	kW	0.24
Breaking capacity DC1: 24/110/220 V	A	7/0.5/0.25
Minimum switching load	mW (V/mA)	300 (5/5)
Standard contact material		AgNi
Coil specification		
Nominal voltage (U_N)	V AC (50/60 Hz)	—
	V DC	24 - 72 - 110
Rated power DC	W	1
Operating range	AC	—
	DC	(0.70…1.25)U_N
Holding voltage	DC	0.5 U_N
Must drop-out voltage	DC	0.1 U_N
Technical data		
Mechanical life AC/DC	cycles	$50 \cdot 10^6$
Electrical life at rated load AC1	cycles	$150 \cdot 10^3$
Operate/release time	ms	11/3
Insulation between coil and contacts (1.2/50 µs)	kV	4
Dielectric strength between open contacts	V AC	1000
Ambient temperature range	°C	–40…+70*
Environmental protection		RT I
Approvals (according to type)		CE UK CA

B

Ordering information

Example: 55 series plug-in relay, 4 CO (4PDT), 24 V DC coil.

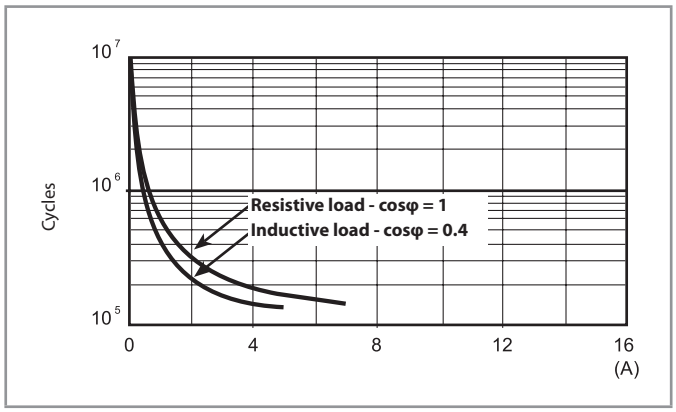


Technical data

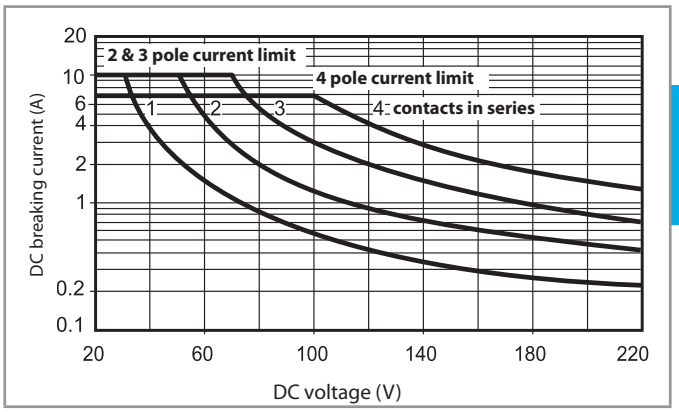
Insulation according to EN 61810-1			
Nominal voltage of supply system		V AC	230
Rated insulation voltage		V AC	250
Pollution degree			2
Insulation between coil and contact set			
Type of Insulation			Basic
Overvoltage category			III
Rated impulse voltage		kV (1.2/50 µs)	4
Dielectric strength		V AC	2000
Insulation between adjacent contacts			
Type of insulation			Basic
Overvoltage category			II
Rated impulse voltage		kV (1.2/50 µs)	2.5
Dielectric strength		V AC	2000
Insulation between open contacts			
Type of disconnection			Micro-disconnection
Dielectric strength		V AC/kV (1.2/50 µs)	1000/1.5
Insulation between coil terminals			
Rated impulse voltage (surge) differential mode (according to EN 50121)		kV (1.2/50 µs)	4
Other data			
Bounce time: NO/NC		ms	1/3
Vibration resistance: NO/NC			According to EN 61373
Shock resistance			According to EN 61373
Power lost to the environment	without contact current	W	1
	with rated current	W	3
Recommended distance between relays mounted on PCB		mm	≥ 5

Contact specification

F 55 - Electrical life (AC) v contact current



H 55 - Maximum DC1 breaking capacity



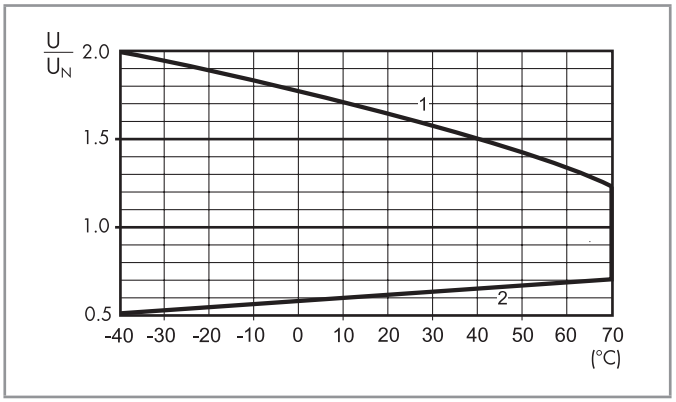
- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ 100 · 10³ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time of the load will be increased.

Coil specifications

DC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
24	**9**.024	16.8	30	600	40
72	**9**.072	50.4	90	4000	15
110	**9**.110	77	137.5	12500	8.8

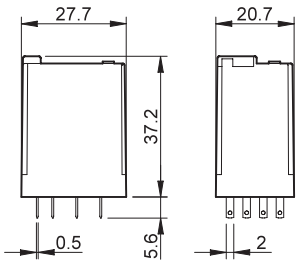
R 55 - DC coil operating range v ambient temperature



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

Outline drawing

Type 55.34T



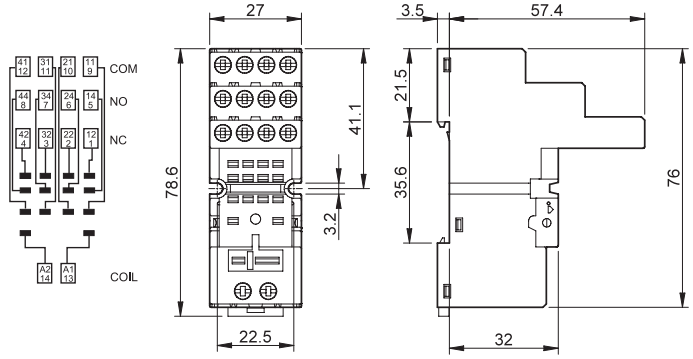
94 SERIES
Sockets and accessories for 55 series relays

94.04.7

Approvals (according to type):

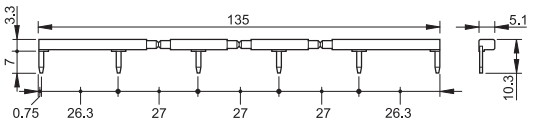
Box clamp socket panel or 35 mm (EN 60715) rail mount		**94.04.7 SMA***	
For relay type		55.34T	
Accessories			
Metal retaining clip		094.71	
6-way jumper link		094.06	
Identification tag		094.00.4	
Modules (see table below)		99.02	
Timer modules (see table below)		86.30T	
Technical data			
Rated values		10 A - 250 V	
Dielectric strength		2 kV AC	
Protection category		IP 20	
Ambient temperature	°C	–40…+70	
Screw torque	Nm	0.5	
Wire strip length	mm	8	
Max. wire size for 94.04.7 sockets		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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)



094.06

6-way jumper link for 94.04.7 socket	094.06
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

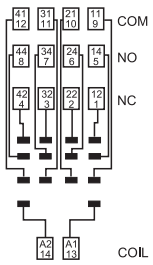
99.02 coil indication and EMC suppression modules for 94.04.7 socket		
Diode (+A1, standard polarity)	(6…220)V DC	99.02.3.000.00
LED + Diode (+A1, standard polarity)	(6…24)V DC	99.02.9.024.99
LED + Diode (+A1, standard polarity)	(28…72)V DC	99.02.9.060.99
LED + Diode (+A1, standard polarity)	(110…220)V 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.

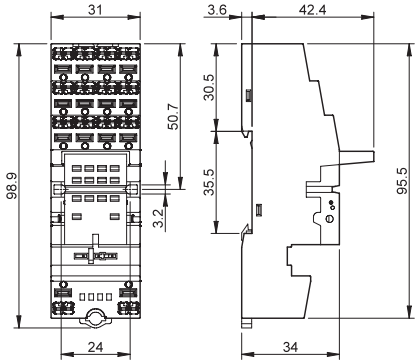
94.P4.7

Approvals (according to type):

Push-in terminal socket 35 mm rail (EN 60715) mount		**94.P4.7 SMA***	
For relay type		55.34T	
Accessories			
Metal retaining clip		094.71	
2-way jumper link		094.52.1	
2-way jumper link		097.52	
Modules (see table below)		99.02, 86.30T	
Technical data			
Rated values		10 A - 250 V	
Dielectric strength		2 kV AC	
Protection category		IP 20	
Ambient temperature	°C	–40…+70	
Wire strip length	mm	10	
Min. wire size for 94.P4.7 sockets		solid wire	stranded wire
	mm²	0.5	0.5
	AWG	21	21
Max. wire size for 94.P4.7 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

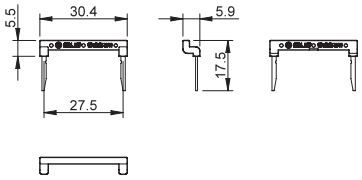
* Complies with **EN 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)





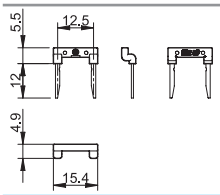
094.52.1

2-way jumper link for 94.P4.7 sockets	094.52.1
Rated values	10 A - 250 V



097.52

2-way jumper link for 94.P4.7 sockets	097.52
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 for 94.P4.7 socket		
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.

finder
RELAYING INNOVATION

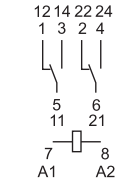
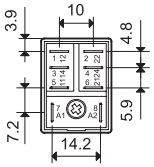
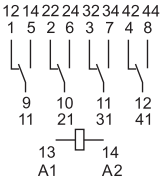
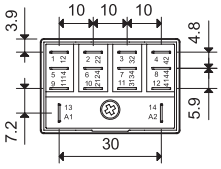
56
SERIES

Relays for railway applications 12 A

- Pantograph management
- Bogie monitoring
- Internal light management
- Mobile device charging

Plug-in power relays - 12 A, 2 and 4 pole

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- AC coils or DC coils with extended range
- Cadmium Free contacts (standard version)
- Contact material options
- 96 series sockets
- Coil EMC suppression modules
- Accessories (Sockets and Timer modules)

	56.32T	56.34T
		
	• 2 Pole CO, 12 A • Plug-in/Faston 187	• 4 Pole CO, 12 A • Plug-in/Faston 187
	 	 

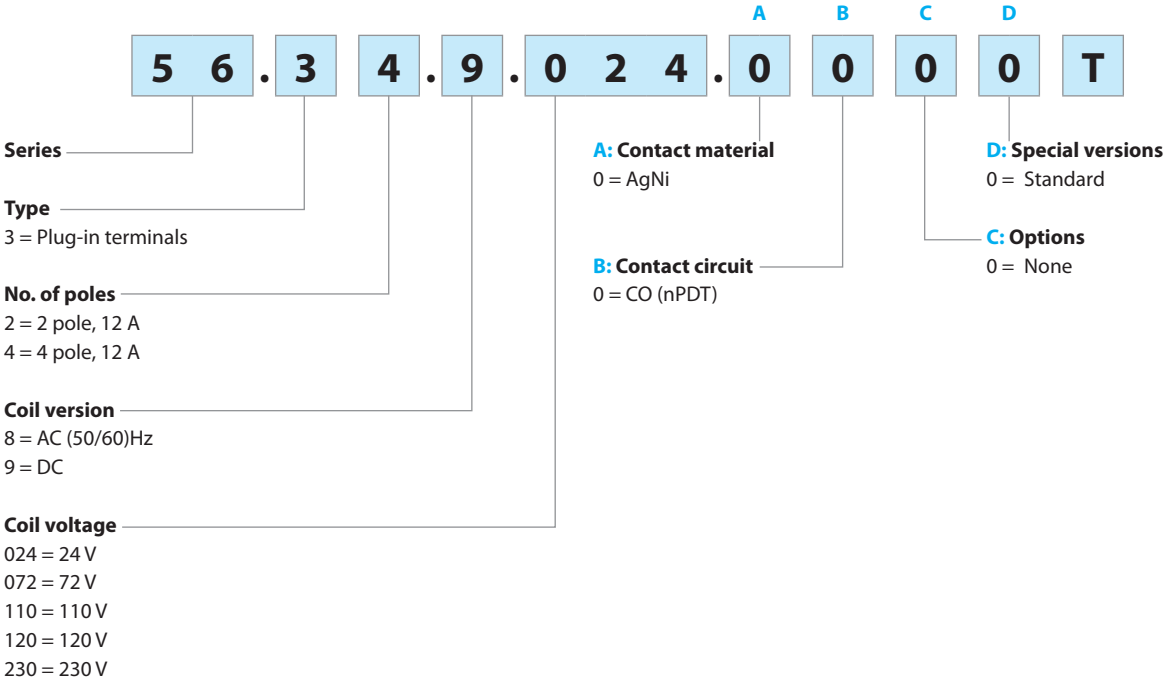
* Short term (10 min) +85°C

For outline drawing see page 21

Contact specification			
Contact configuration		2 CO (DPDT)	4 CO (4PDT)
Rated current/Maximum peak current	A	12/20	12/20
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	3000	3000
Rated load AC15 (230 V AC)	VA	700	700
Single phase motor rating (230 V AC)	kW	0.55	0.55
Breaking capacity DC1: 24/110/220 V	A	12/0.5/0.25	12/0.5/0.25
Minimum switching load	mW (V/mA)	500 (10/5)	500 (10/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	120 - 230	120 - 230
	V DC	24 - 72 - 110	24 - 72 - 110
Rated power	VA (50 Hz)/W	1.5/1	2/1.3
Operating range	AC	$(0.8…1.1)U_N$	$(0.8…1.1)U_N$
	DC	$(0.70…1.25)U_N$	$(0.70…1.25)U_N$
Holding voltage		0.6 U_N	0.6 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	8/8	8/8
Insulation between coil and contacts (1.2/50 µs)	kV	4	4
Dielectric strength between open contacts	V AC	1000	1000
Ambient temperature range	°C	–40…+70*	–40…+70*
Environmental protection		RT I	RT I
Approvals (according to type)		CE UK CA	

Ordering information

Example: 56 series plug-in relay, 4 poles, 24 V DC coil, AgNi contacts.



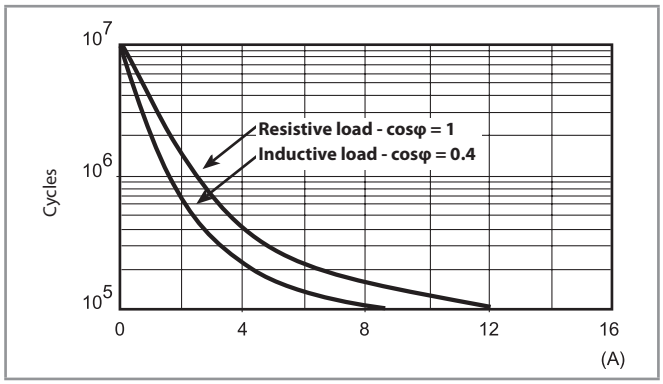
C

Technical data

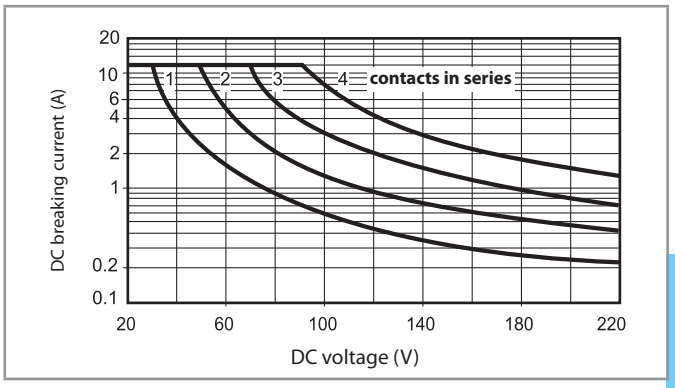
Insulation according to EN 61810-1				
Nominal voltage of supply system		V AC	230/400	
Rated insulation voltage		V AC	250	400
Pollution degree			3	2
Insulation between coil and contact set				
Type of Insulation			Basic	
Overvoltage category			III	
Rated impulse voltage		kV (1.2/50 µs)	4	
Dielectric strength		V AC	2500	
Insulation between adjacent contacts				
Type of insulation			Basic	
Overvoltage category			III	
Rated impulse voltage		kV (1.2/50 µs)	4	
Dielectric strength		V AC	2500	
Insulation between open contacts				
Type of disconnection			Micro-disconnection	
Dielectric strength		V AC/kV (1.2/50 µs)	1000/1.5	
Insulation between coil terminals				
Rated impulse voltage (surge) differential mode (according to EN 50121)		kV (1.2/50 µs)	4	
Other data				
Bounce time: NO/NC		ms	1/3	
Vibration resistance: NO/NC			According to EN 61373	
Shock resistance			According to EN 61373	
Power lost to the environment	without contact current	W	1 (56.32T)/1.3 (56.34T)	
	with rated current	W	3.8 (56.32T)/6.9 (56.34T)	

Contact specification

F 56 - Electrical life (AC) v contact current



H 56 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ 100 · 10³ 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 of the load will be increased.

Coil specifications

DC coil data, 2 CO - Type 56.32T

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
24	**9**.024	16.8	30	600	40
72	**9**.072	50.4	90	5100	14
110	**9**.110	77	137.5	12500	8.8

AC coil data, 2 CO - Type 56.32T

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
120	**8**.120	96	132	4700	12
230	**8**.230	184	253	17000	6

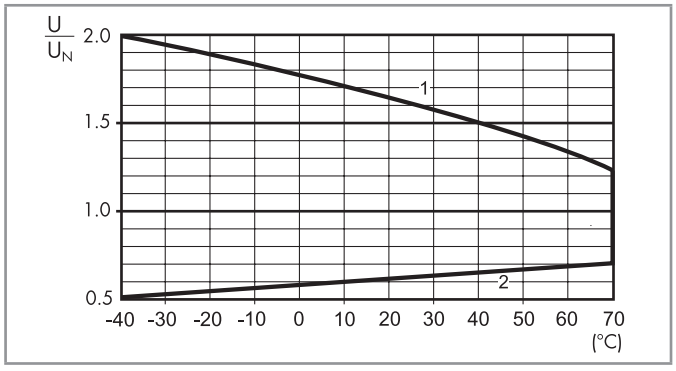
DC coil data, 4 CO - Type 56.34T

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
24	**9**.024	16.8	30	490	49
72	**9**.072	50.4	90	4000	18
110	**9**.110	77	137.5	10400	10.5

AC coil data, 4 CO - Type 56.34T

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
120	**8**.120	96	132	2560	13.4
230	**8**.230	184	253	7700	9

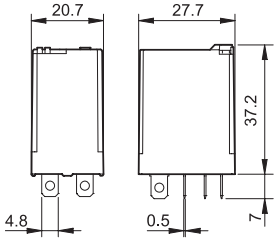
R 56 - DC coil operating range v ambient temperature



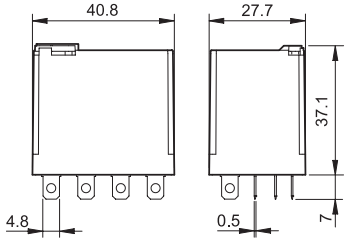
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

Outline drawings

Type 56.32T



Type 56.34T



96 SERIES
Sockets and accessories for 56 series relays

96.02.7

Approvals (according to type):

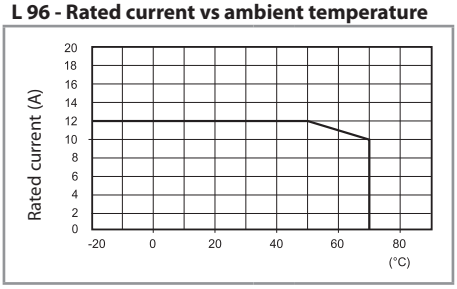
96.04.7

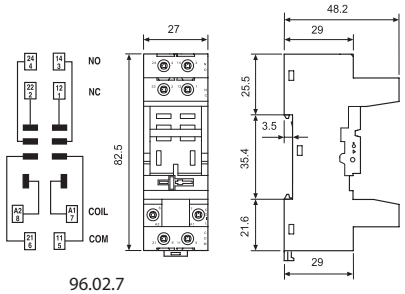
Approvals (according to type):

Box clamp socket panel or 35 mm rail mount (EN 60715)		**96.02.7 SMA***	**96.04.7 SMA***
For relay type		56.32T	56.34T
Accessories			
Metal retaining clip (supplied with socket - packaging code SMA)		094.71	096.71
6-way jumper link		094.06	—
Identification tag		095.00.4	090.00.2
Modules (see table below)		99.02	99.02
Timer modules (see table below)		86.30T	86.00T, 86.30T
Technical data			
Rated values		12 A - 250 V	
Dielectric strength		2 kV AC	
Protection category		IP 20	
Ambient temperature	°C	–40…+70 (see diagram L96)	
Screw torque	Nm	0.8	
Wire strip length	mm	8	
Max. wire size for 96.02.7 and 96.04.7 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

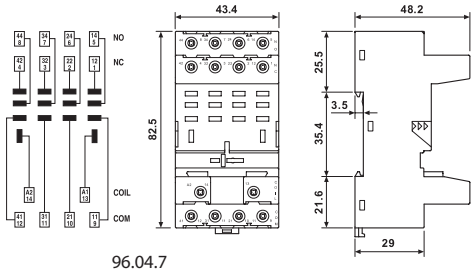
* Complies with **EN 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against randomvibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)

L 96 - Rated current vs ambient temperature





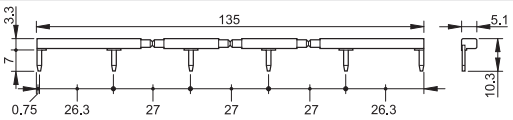
96.02.7



96.04.7

094.06

6-way jumper link for 96.02.7 socket	094.06
Rated values	10 A - 250 V



86.00

86.30

99.02

86 series timer modules	
Multi-voltage: (12…240)V AC/DC; Multi-functions: AI, DI, SW, BE, CE, DE, EE, FE; (0.05 s…100 h)	86.00.0.240.0000T
(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
SW: Symmetrical flasher (starting pulse on)
BE: Off-delay with control signal
CE: On- and off-delay with control signal
DE: Interval with control signal on
EE: Interval with control signal off
FE: Interval with control signal on and off

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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finder
RELAYING INNOVATION

MasterPLUS - RAILWAY
Relay interface modules for railway applications

39
SERIES

- Exterior light control
- Driver's control console
- Door control
- Internal light management
- Message panels infotainment

MasterPLUS - RAILWAY

1 Pole interface module, 6.2 mm wide, for railway applications.

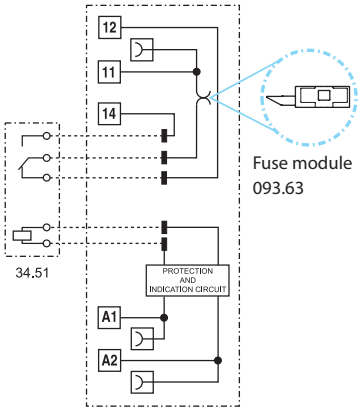
- Compliant with standards EN 45545-2:2020 (protection against fire and fumes), EN 61373 (resistance to shock and vibration, category 1 class B), EN 50155 (resistance to temperature and humidity, class OT4/ST1)
- DC multi-voltage coil with wide operating range
- Cadmium free contacts (standard version)
- Contact material options
- Accepts output fuse module 093.63 (for 5 x 20 mm fuses) - space saving protection for the output circuit
- Easy common connection of adjacent relay terminals A1, A2 and 11 using jumper links

39.31/39.61

- 6 A electromechanical relay
- 24 - 132 V DC supply
- Box clamp and push-in terminal
- 35 mm rail (EN 60715) mounting

39.31T
Box clamp

39.61T
Push-in terminal



* +70°C short term rated (10 minutes or less).
For Temperature output specification see page 27
For outline drawing see page 28

Contact specification		
Contact configuration		1 CO (SPDT)
Rated current/ Maximum peak current	A	6/10
Rated voltage/ Maximum switching voltage	V AC	250/400
Rated load AC1	VA	1500
Rated load AC15 (230 V AC)	VA	300
Single phase motor rating (230 V AC)	kW	0.185
Breaking capacity DC1: 24/110/220 V	A	6/0.2/0.12
Minimum switching load	mW (V/mA)	500 (12/10)
Standard contact material		AgNi
Supply specification		
Nominal voltage (U_N)	V DC	24…132
Rated power	W	0.25
Operating range	V DC	16.8…165
Release voltage	V DC	6
General characteristics		
Mechanical life AC/DC	cycles	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$
Operate/release time	ms	5/6
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)
Dielectric strength between open contacts	V AC	1000
Ambient temperature range	°C	–20…+55*
Protection category		IP 20
Approvals relay (according to type)		CE UK CA

Ordering information

Example: *Master**PLUS*** 39 series box clamp interface module, electromechanical relay output, 1 CO (SPDT), 24…132 V DC, Railway.

								A	B	C	D		
3	9	.	3	1	.	9	.	1	2	5	.	0	0	6	0	T

Series

Type

3 = *Master**PLUS***, Box clamp, with the facility for output fuse protection

6 = *Master**PLUS***, push-in terminal, with the facility for output fuse protection

No. of poles

1 = 1 CO

Coil version

9 = DC

Coil voltage

See page 27

A: Contact material

0 = AgNi Standard

4 = $AgSnO_2$

5 = AgNi + Au

B: Contact circuit

0 = CO

C: Options

6 = Standard

D: Special Version

0 = Standard

D

Selecting features and options

Preferred selections for best availability are shown in **bold**.

Type	Coil version	A	B	C	D
39.31/61	**9.125**	**0** - 4 - 5	**0**	**6**	**0**

Technical data

Insulation according to EN 61810-1			
Nominal voltage of supply system	V AC	230/400	
Rated insulation voltage	V AC	250	400
Pollution degree		3	2
Insulation between coil and contact set			
Type of Insulation		Reinforced	
Overvoltage category		III	
Rated impulse voltage	kV (1.2/50 µs)	6	
Dielectric strength	V AC	4000	
Insulation between open contacts			
Type of disconnection		Micro-disconnection	
Dielectric strength	V AC/kV (1.2/50 µs)	1000/1.5	

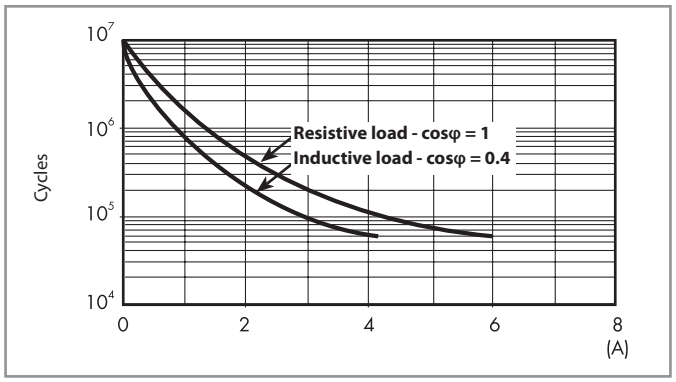
Conducted disturbance immunity			
Voltage pulses (surge 1.2/50 µs) according to EN 61000-4-5 at supply terminals (differential mode)	kV	0.8	

Other data			
Bounce time: NO/NC	ms	1/6	
Vibration resistance (10…55 Hz): NO/NC	g	10/15	
Power lost to the environment	without contact current W	0.2 (24 V)	
	with rated current W	0.6 (24 V)	

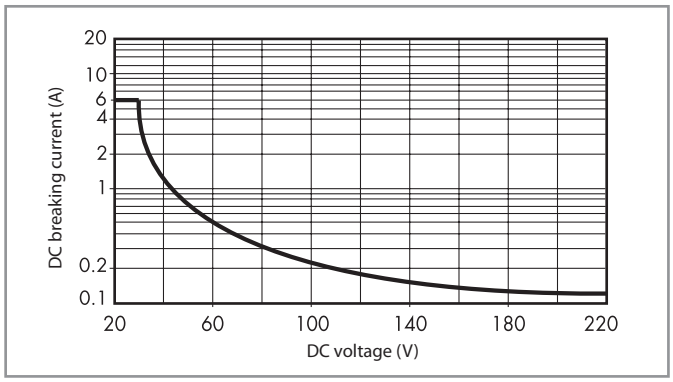
Terminals			
		Box clamp	**Push-in terminal**
Wire strip length	mm	10	8
Screw torque	Nm	0.5	—
		Solid and stranded cable	**Solid and stranded cable**
Min. wire size	mm^2	1 x 0.5	1 x 0.5
	AWG	1 x 21	1 x 21
Max. wire size	mm^2	1 x 2.5	1 x 2.5
	AWG	1 x 14	1 x 14

Contact specification

F 39 - Electrical life (AC) v contact current



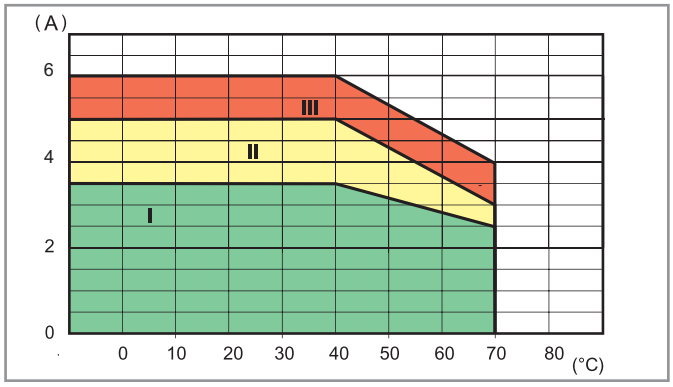
H 39 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $60 \cdot 10^3$ 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.

Output specification

F 39 - Output current V ambient temperature



I: 39T Series installed as a group with fuse module inserted
II: 39T Series installed as a group without fuse module inserted
III: 39T Series installed individually with or without fuse module inserted

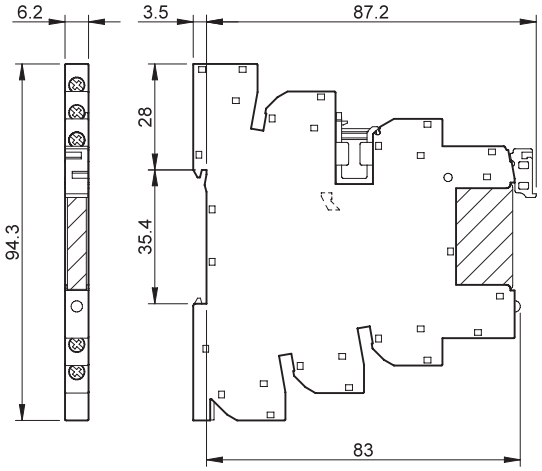
Coil specifications

Coil data DC

Nominal voltage	Coil code	Operating range		Must drop-out voltage	Rated input current @24 V	Rated power
U_N		U_{min}	U_{max}	U_r	I_N	@24 V
V		V	V	V	mA	W
24…132	9.125	16.8	165	6	9	0.25

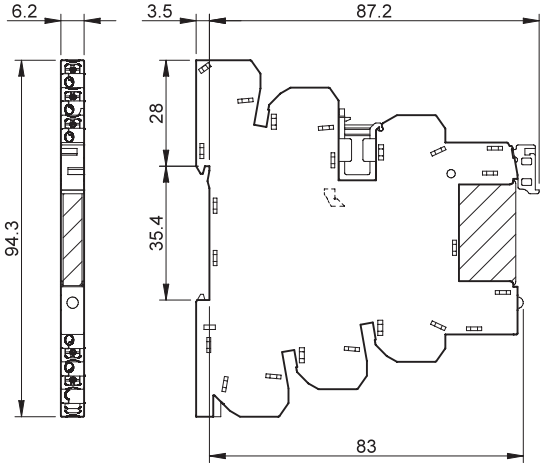
Outline drawings
Box clamp sockets

Type 39.31
Box clamp



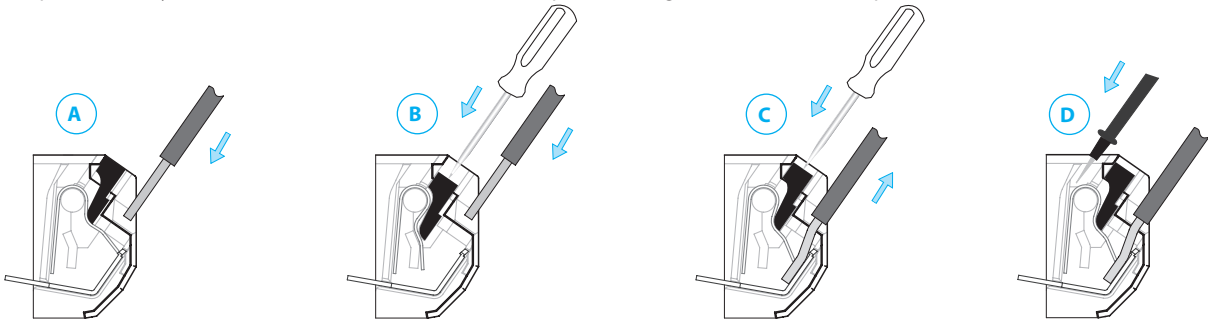
Push-in terminal sockets

Type 39.61
Push-in terminal



Main features-Push-in terminals

The push-in terminals permit the quick connection of solid wires or ferrules by their simple insertion into the terminal (A).
It is possible to open the terminal to extract the wire by first pushing down on the push-button using a screwdriver (C).
For stranded cable it is necessary first to open the terminal using the push button, both for the extraction (C) and insertion (B).
It is possible at any time to check the connection via the test aperture, using a 2 mm diameter test probe (D).



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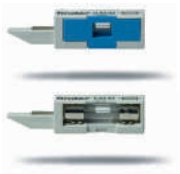
Accessories



093.63

Approvals (according to type):

093.63.0.024
093.63.8.230

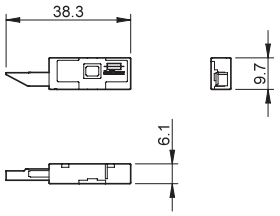
Output fuse module for 39.31/30/81/80/61/60/91/90 types	093.63	093.63.0.024	093.63.8.230

- For 5 x 20 mm fuses up to 6 A, 250 V
- Type 093.63 - Easy visibility of the fuse condition through the window
- Type 093.63.0.024 - (6…24)V AC/DC with LED fuse status indicator
- Type 093.63.8.230 - (110…240)V AC with LED fuse status indicator
- Quick connection to socket

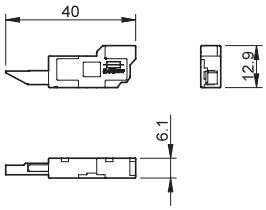
Notes

Safety: Because the output circuit can be reinstated (point 3 below), even with the fuse removed, it is important not to consider the removal of the fuse as a "safety disconnect". Always isolate elsewhere before working on the circuit.
UL: According to UL508A, the fuse module cannot be installed in power circuits (in which it is mandatory that a fuse certified according to UL category JDDZ be fitted). However, where the MasterInterface is connected as an output interface to a PLC no such restrictions apply, and the fuse module can be usefully employed.

Type 093.63



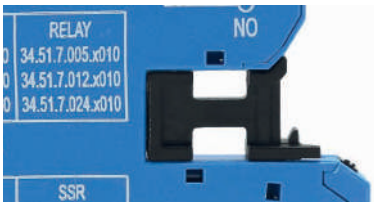
Type 093.63.0.24 / 093.63.8.230



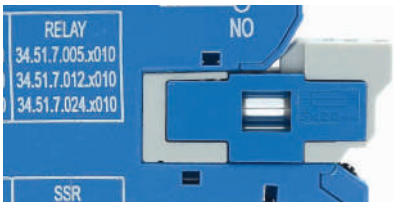
D

Multi-state fuse module

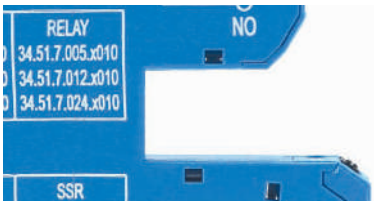
0. As delivered, the socket comes without a fuse module. However, a "bridging" module guarantee the output electrical connections.



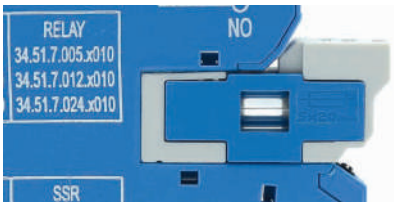
1. In order to use a fuse module, it is enough to remove the "bridging" module and replace it by the fuse module. The fuse is positioned electrically in series with the common output terminal of the interface module (11 for EMR versions, 13+ for SSR versions, 15 for EMR timer, 15+ for SSR timer). .

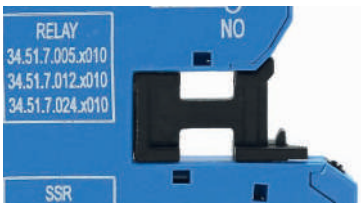


2. If the fuse module is extracted (for example; because the fuse element has blown) the output circuit will be locked open, as this will generally be the "safe option".



3. In order to reinstate the output circuit it is necessary to either re-insert the fuse module (complete with functional fuse), or, alternatively, the "bridging" module.





Accessories

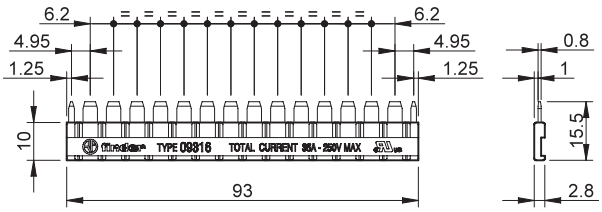
093.16

093.16.0

093.16.1

Approvals
(according to type):

16-way jumper link	093.16 (blue)	093.16.0 (black)	093.16.1 (red)
Rated values	6 A - 250 V		
Possibility of multiple connection, side by side			

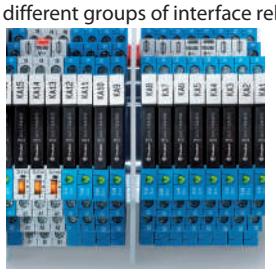


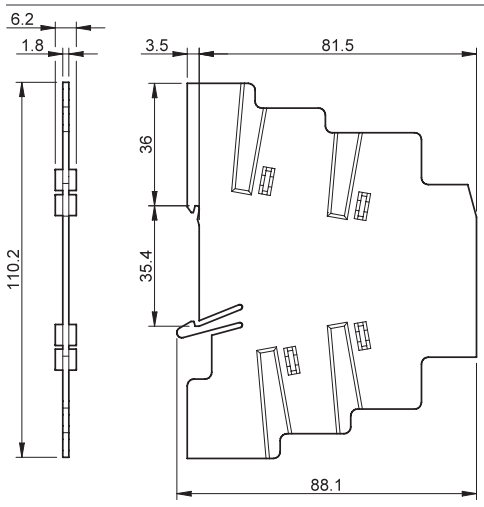
093.60

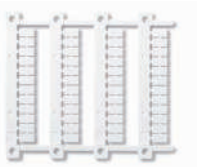
Dual-purpose plastic separator (1.8 mm or 6.2 mm separation)	093.60

1. By breaking off the protruding ribs (by hand), the separator becomes only 1.8 mm thick; useful for the visual separation of different groups of interfaces, or necessary for the protective separation of different voltages of neighbouring interfaces, or for the protection of cut ends of jumper links.

2. Leaving the ribs in place provides 6.2 mm separation. Simply cutting (with scissors) the relevant segment(s) permits the interconnection across the separator of 2 different groups of interface relays, using the standard jumper link.

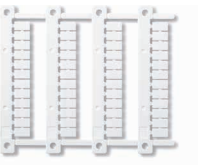






093.48

Sheet of marker tags, plastic, 48 tags, 6 x 10 mm	093.48



060.48

Sheet of marker tags (CEMBRE Thermal transfer printers),48 tags, 6 x 12 mm	060.48

finder
RELAYING INNOVATION

Timer modules

86
SERIES

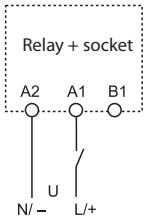
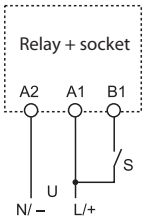
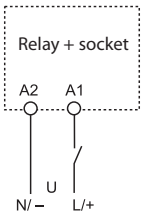
- Door control
- Ancillary equipment
- Driver's control console
- Message panels infotainment

Timer modules for use in conjunction with relay & socket.

86.00T - Multi-function & multi-voltage timer module

86.30T - Bi-function & multi-voltage timer module

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- Timer module: type 86.00T for 96 series sockets type 86.30T for 94, 96, 97 series sockets
- Wide supply voltage range: type 86.00T: 12…240 V AC/DC type 86.30T: 12…24 V AC/DC
- LED indicator

	86.00T	86.30T
		
	• Time scale: from 0.05 s to 100 h • Multi-function • Plug-in for use with 96 series sockets	• Time scale: from 0.05 s to 100 h • Bi-function • Plug-in for use with 94, 96 and 97 series sockets
	AI: On-delay **DI:** Interval **SW:** Symmetrical flasher (starting pulse on) **BE:** Off-delay with control signal **CE:** On- and off-delay with control signal **DE:** Interval with control signal on **EE:** Interval with control signal off **FE:** Interval with control signal on and off	**AI:** On-delay **DI:** Interval
	 Wiring diagram (without control signal)	 Wiring diagram (with control signal)
		 Wiring diagram
* Short term (10 min) +70°C		
For outline drawing see page 34		

Contact specification				
Contact configuration			See 56T series relays	See 46T, 55T, 56T series relays
Rated current/Maximum peak current		A		
Rated voltage/ Maximum switching voltage		V AC		
Rated load AC1		VA		
Rated load AC15 (230 V AC)		VA		
Single phase motor rating (230 V AC)		kW		
Breaking capacity DC1: 24/110/220 V		A		
Minimum switching load		mW (V/mA)		
Standard contact material				
Supply specification				
Nominal voltage (U_N)		V AC (50/60 Hz)	12…240	12…24
		V DC	12…240	12…24
Rated power AC/DC		W	1.2	0.15
Operating range		V AC (50/60 Hz)	10.2…265	9.6…33.6
		DC	10.2…265	9.6…33.6
Technical data				
Specified time range			(0.05…1)s, (0.5…10)s, (5…100)s, (0.5…10)min, (5…100)min, (0.5…10)h, (5…100)h	
Repeatability		%	± 1	± 1
Recovery time		ms	≤ 50	≤ 50
Minimun control impulse		ms	50	—
Setting accuracy full range		%	± 5	± 5
Electrical life at rated load in AC1		cycles	See 56T series relays	See 46T, 55T and 56T series relays
Ambient temperature range		°C	–25…+55*	–25…+55*
Protection category			IP 20	IP 20
Approvals (according to type)			CE UKCA EAC cULus	

Ordering information

Example: 86 series multi-function timer module, (12…240)V AC/DC supply voltage.

8 6	.	0	0	.	0	.	2 4 0	.	0	0	0	0	T

Series

Type
0 = Multi-function timer (AI, DI, SW, BE, CE, DE, EE, FE)
3 = Bi-function timer (AI, DI)

No. of poles
See 46T, 55T, 56T series relays
Poles for chosen relay/socket combination - according to chart below

Supply voltage
024 = (12…24)V AC/DC (86.30T only)
240 = (12…240)V AC/DC (86.00T only)

Supply version
0 = AC (50/60 Hz)/DC

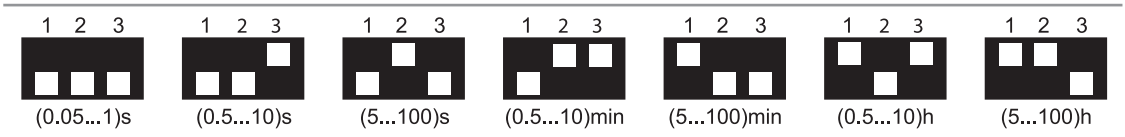
Combinations

Number of poles	Relay type	Socket type	Timer module
1	46.61T	97.01.7/97.P1.7	86.30T
2	46.52T	97.02.7/97.P2.7	86.30T
4	55.34T	94.04.7/94.P4.7	86.30T
2	56.32T	96.02.7	86.30T
4	56.34T	96.04.7	86.00T/86.30T

Technical data

EMC specifications				
Type of test		**Reference standard**	**86.00T**	**86.30T**
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV	n.a.
	air discharge	EN 61000-4-2	8 kV	8 kV
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)		EN 61000-4-3	10 V/m	10 V/m
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals		EN 61000-4-4	4 kV	2 kV
Surges (1.2/50 µs) on Supply terminals	common mode	EN 61000-4-5	4 kV	2 kV
	differential mode	EN 61000-4-5	4 kV	1 kV
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals		EN 61000-4-6	10 V	10 V
Radiated and conducted emission		EN 55022	class B	class B
Other data		**86.00T**	**86.30T**	
Current absorption on signal control (B1)	mA	1	—	
Power lost to the environment	without contact current W	0.1 (12 V) - 1 (230 V)	0.2	
	with rated current	See 56T series relays	See 46T, 55T, 56T series relays	

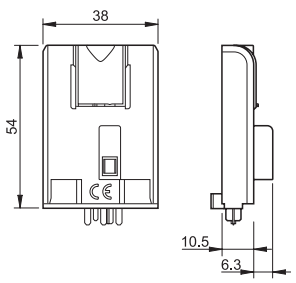
Times scales



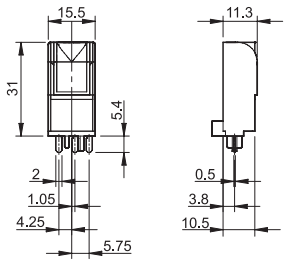
NOTE: Time scales and functions must be set before energising the timer.
To achieve the minimum time setting of 0.05 seconds it is necessary to use one of the functions with control signal.
When setting very short times it may be necessary to take into account the operate time of the relay used.

Outline drawings

Type 86.00T



Type 86.30T



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Functions

U = Supply voltage

S = Control signal

= Output contact

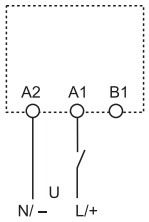
LED Type 86.00T	LED Type 86.30T	Supply voltage	NO output contact
		OFF	Open
		ON	Open
		ON	Open (Timing in Progress)
		ON	Closed

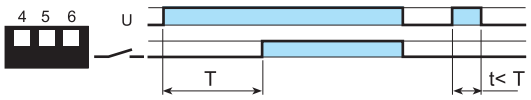
Without control signal = Start via contact in supply line (A1).
With control signal = Start via contact into control terminal (B1).

Wiring diagram

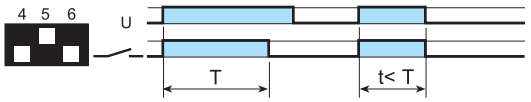
Type 86.00T

Without control signal

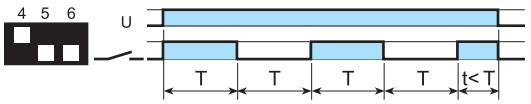




(AI) On-delay.
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.

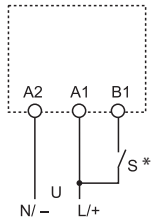


(DI) Interval.
Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.

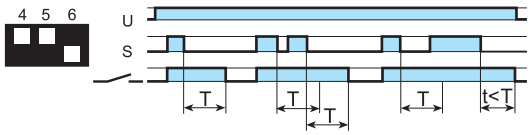


(SW) Symmetrical flasher (starting pulse on).
Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).

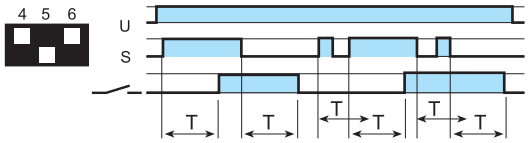
With control signal



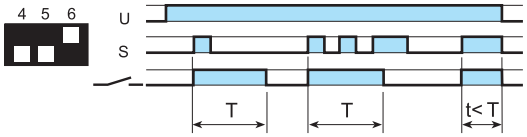
* With DC supply, positive polarity has to be conneted to B1 terminal (according to EN 60204-1).
Switch S should be exclusively used to provide the control signal to terminal B1. (Do not connect any other load at this point).



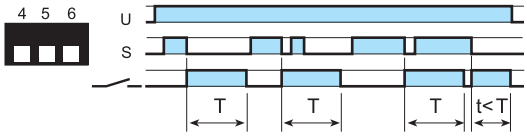
(BE) Off-delay with control signal.
Power is permenently applied to the timer.
The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.



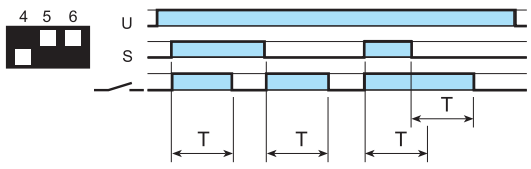
(CE) On- and off-delay with control signal.
Power is permenently applied to the timer.
Closing the Signal Switch (S) initiates the preset delay, after which time the output contacts transfer. Opening the Signal switch initiates the same preset delay, after which time the output contacts reset.



(DE) Interval with control signal on.
Power is permenently applied to the timer.
On momentary or maintained closure of Signal Switch (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.



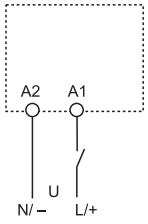
(EE) Interval with control signal off.
Power is permenently applied to the timer.
On opening of the Signal Switch (S) the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.

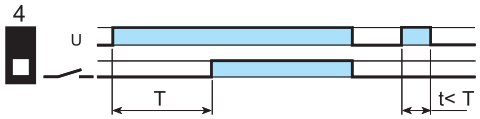


(FE) Interval with control signal on and off.
Power is permenently applied to the timer.
Both the opening and closing of the Signal Switch (S) initiates the transfer of the output contacts. In both instances the contacts reset after the delay period has elapsed.

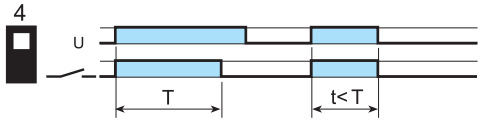
Wiring diagram

Type 86.30T





(AI) On-delay.
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.



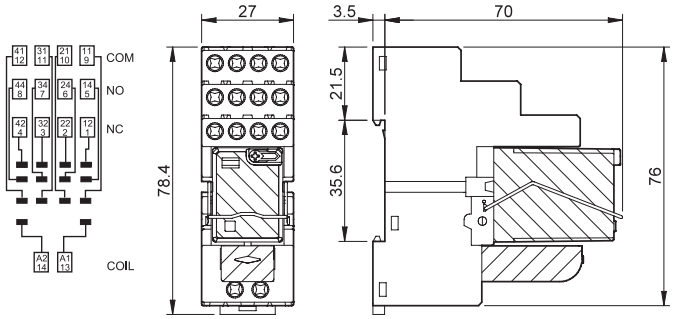
(DI) Interval.
Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.

94.04.7

Approvals
(according to type):

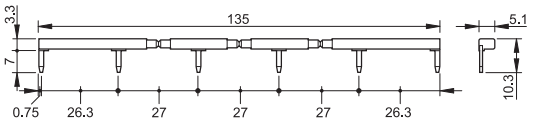
Box clamp socket panel or 35 mm (EN 60715) rail mount		**94.04.7 SMA***	
For relay type		55.34T	
Accessories			
Metal retaining clip		094.71	
6-way jumper link		094.06	
Identification tag		094.00.4	
Timer modules		86.30T	
Technical data			
Rated values		10 A - 250 V	
Dielectric strength		2 kV AC	
Protection category		IP 20	
Ambient temperature	°C	–40…+70	
Screw torque	Nm	0.5	
Wire strip length	mm	8	
Max. wire size for 94.04.7 sockets		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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)



094.06

6-way jumper link for 94.04.7 socket	094.06
Rated values	10 A - 250 V



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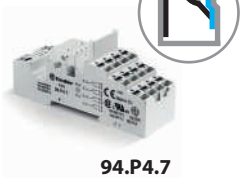
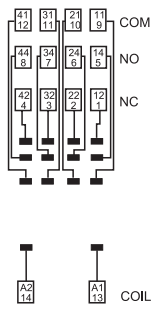


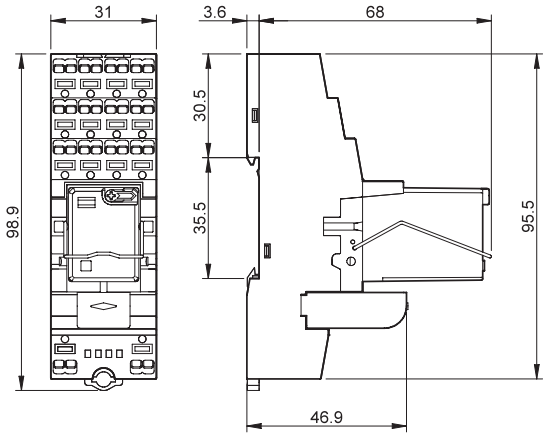
94.P4.7

Approvals
(according to type):

Push-in terminal socket 35 mm rail (EN 60715) mount		**94.P4.7 SMA***	
For relay type		55.34T	
Accessories			
Metal retaining clip		094.71	
2-way jumper link		094.52.1	
2-way jumper link		097.52	
Timer modules		86.30T	
Technical data			
Rated values		10 A - 250 V	
Dielectric strength		2 kV AC	
Protection category		IP 20	
Ambient temperature	°C	–40…+70	
Wire strip length	mm	10	
Min. wire size for 94.P4.7 sockets		solid wire	stranded wire
	mm²	0.5	0.5
	AWG	21	21
Max. wire size for 94.P4.7 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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)





E

96.02.7

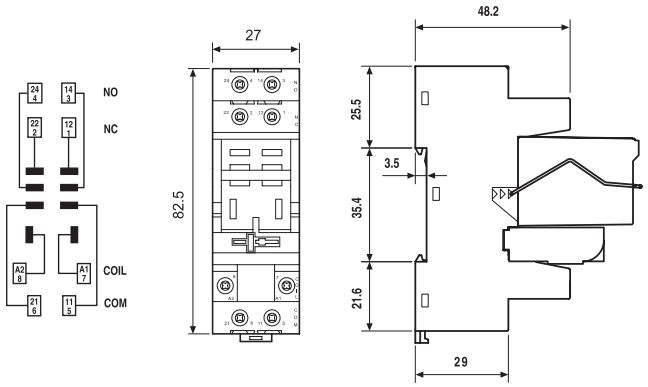
Approvals
(according to type):

96.04.7

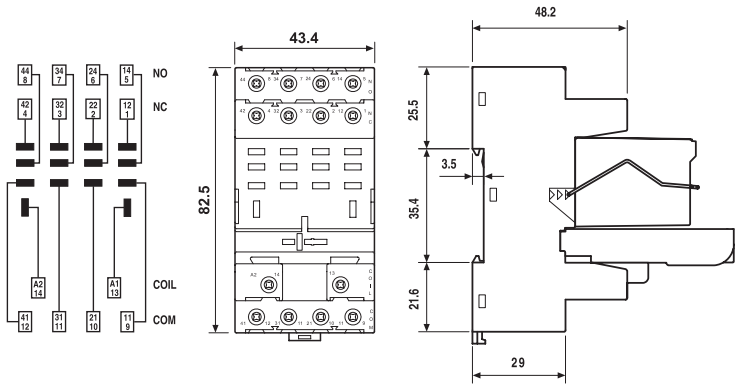
Approvals
(according to type):

Box clamp socket panel or 35 mm rail (EN 60715) mount		**96.02.7 SMA***	**96.04.7 SMA***
For relay type		56.32T	56.34T
Accessories			
Metal retaining clip (supplied with socket - packaging code SMA)		094.71	096.71
6-way jumper link		094.06	—
Identification tag		095.00.4	090.00.2
Timer modules		86.30T	86.00T, 86.30T
Technical data			
Rated values		12 A - 250 V	
Dielectric strength		2 kV AC	
Protection category		IP 20	
Ambient temperature	°C	–40…+70	
Screw torque	Nm	0.8	
Wire strip length	mm	8	
Max. wire size for 96.02.7 and 96.04.7 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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)



96.02.7 + 56.32T + 094.71 + 86.30T



96.04.7 + 56.34T + 096.71 + 86.00T / 86.30T

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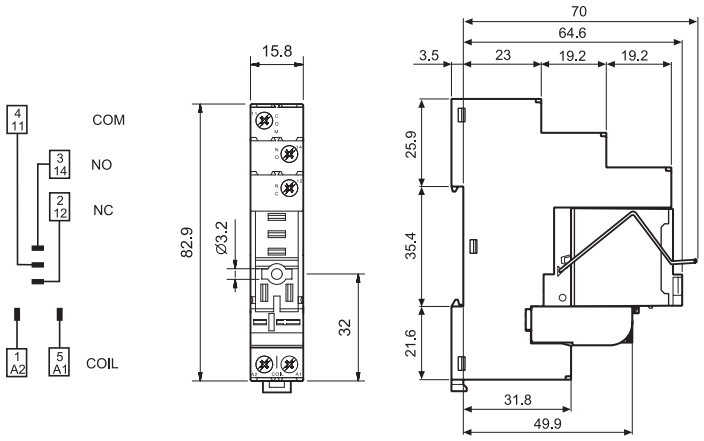
97.01.7

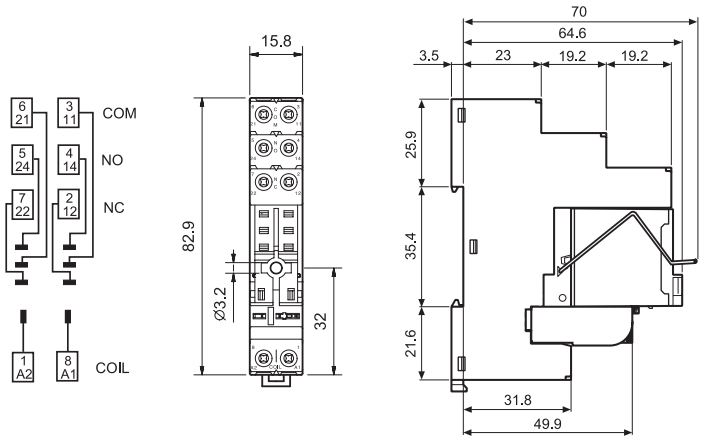
Approvals
(according to type):

Box clamp 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	
8-way jumper link		095.18	
Identification tag		095.00.4	
Timer modules		86.30T	
Technical data			
Rated current		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 sockets		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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)



97.01.7 + 46.61T + 097.71 + 86.30T



97.02.7 + 46.52T + 097.71 + 86.30T

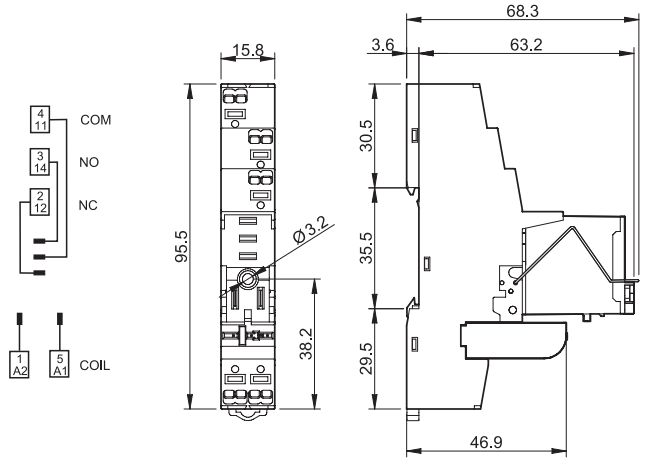
E

97.P1.7

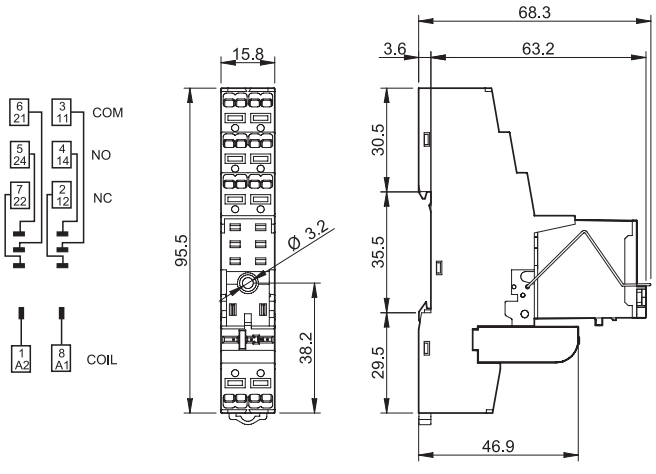
Approvals
(according to type):

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	
Timer modules		86.30T	
Technical data			
Rated current		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 45545-2:2020** (protection against fire of materials), **EN 61373** (resistance against random vibrations and shock, Category 1, Class B), **EN 50155** (resistance to temperature and humidity, **OT4/ST1** class)



97.P1.7 + 46.61T + 097.71 + 86.30T



97.P2.7 + 46.52T + 097.71 + 86.30T

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finder
RELAYING INNOVATION

Monitoring relays 6 - 8 A

70
SERIES

Air conditioning

Couplers

Ancillary equipment

3 Phase - Rotation and phase loss monitoring relay

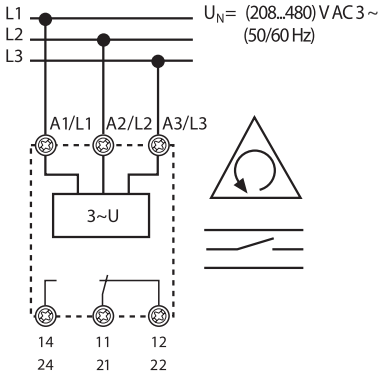
- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- Universal voltage monitoring (U_N from 208 V to 480 V, 50/60 Hz)
- Phase loss monitoring, under phase regeneration
- Positive safety logic - make contact opens if the relay detects an error
- 2 versions:
  - 1 CO, 6 A (width 17.5 mm)
  - 2 CO, 8 A (width 22.5 mm)
- 35 mm rail (EN 60715) mount
- European patent pending for the innovative principle at the root of the 3 phase monitoring and error survey system

70.61T/70.62T
Box clamp

* Short term (10 min) +70°C

For outline drawing see page 45

	70.61T	70.62T
		
	Three-phase (208…480)V voltage monitoring: • Phase loss • Phase rotation	Three-phase (208…480)V voltage monitoring: • Phase loss • Phase rotation



Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	6/15	8/15
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	1500	2000
Rated load AC15 (230 V AC)	VA	250	400
Single phase motor rating (230 V AC)	kW	0.185	0.3
Breaking capacity DC1: 24/110/220 V	A	3/0.35/0.2	8/0.3/0.12
Minimum switching load	mW (V/mA)	500 (10/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Supply specification			
Nominal system voltage (U_N)	V AC	208…480	208…480
Frequency	Hz	50/60	50/60
Rated power	VA (50 Hz)/W	8/1	11/0.8
Operating range	V AC	170…500	170…520
Technical data			
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$60 \cdot 10^3$
Switch-off/reaction time	s	< 0.5/< 0.5	< 0.5/< 0.5
Ambient temperature	°C	–25…+55*	–25…+55*
Protection category		IP 20	IP 20
Approvals (according to type)		CE UKCA EAC cULus	CE UKCA EAC

F

Ordering information

Example: 70 series, three-phase voltage monitoring relay, 1 output, supply voltage 208…480 V AC.

7 0	.	6	1	.	8	.	4 0 0	.	A 0	.	B 0	.	C 0	.	D 0	T

Series

Type
6 = 3 phase loss and rotation monitoring

No. of poles
1 = 1 pole
2 = 2 pole

Supply version
8 = AC (50/60 Hz)

Supply voltage
400 = 208…480 V AC

A: Detection values
0 = Non-adjustable detection values

B: Contact circuit
0 = CO

C: Time delay setting
0 = Fixed switch-off delay

D: Fault memory option
0 = No fault memory

Technical data

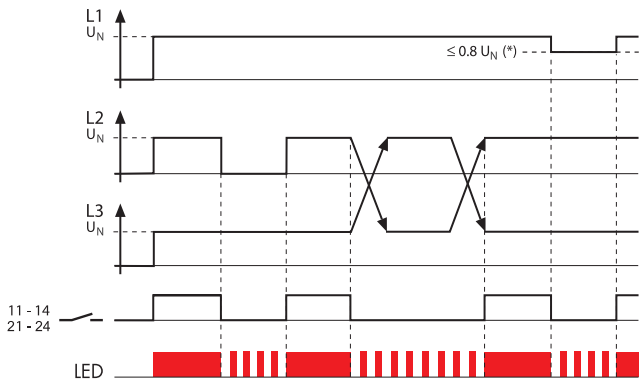
Insulation				
Insulation			Dielectric strength	Impulse (1.2/50 µs)
	between supply and contacts		3000 V	5 kV
	between open contacts		1000 V	1.5 kV
EMC specifications				
Type of test			**Reference standard**	
Electrostatic discharge	contact discharge		EN 61000-4-2	4 kV
	air discharge		EN 61000-4-2	8 kV
Fast transients (burst) (5-50 ns, 5 kHz)	on A1, A2, A3		EN 61000-4-4	2 kV
Surge (1.2/50 µs)	differential mode		EN 61000-4-5	4 kV
Other data				
Start up time (NO contact closure after energising)		s	< 2	
Regeneration level (Maximum)			≤ 80% of average of other 2 phase	
Power lost to the environment	without contact current	W	1	
	with rated current	W	1.4	
Screw torque		Nm	0.8	
Max. wire size			solid cable	stranded cable
		mm²	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5
		AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14

Functions

Output relay On (NO closed) when all OK: positive logic.

Type
70.61T
70.62T

Phase loss and phase rotation

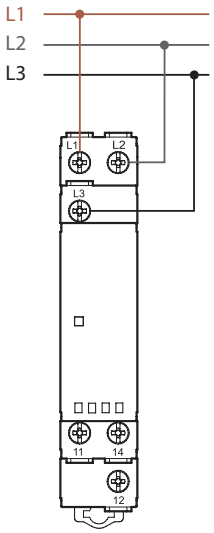


If the sequence (L1, L2, L3) is incorrect at power-on, the output relay will not turn-on.

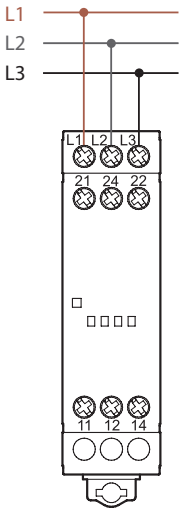
If a phase is lost, the output relay turns off immediately. When the phase is again active, the output relay turns on immediately.

Phase loss monitoring possible even under regeneration up to 80% of the average of the other 2 phases.

Wiring diagrams



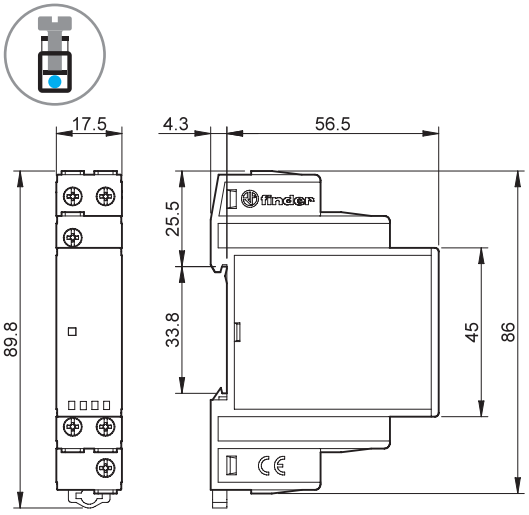
Type 70.61T



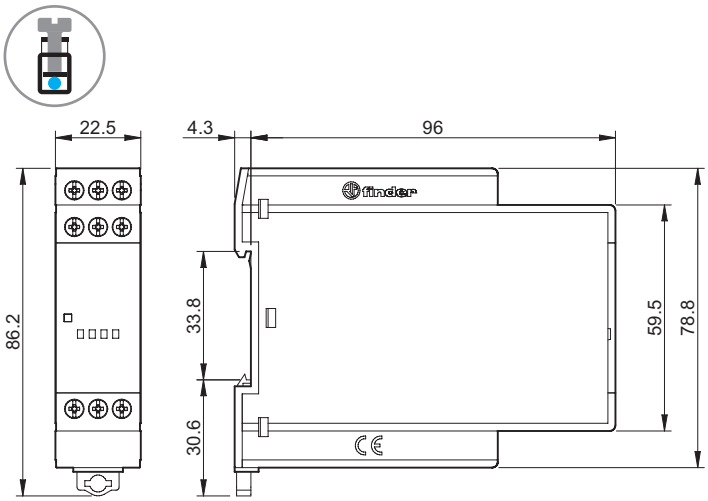
Type 70.62T

Outline drawings

Type 70.61T
Box clamp



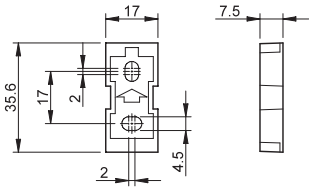
Type 70.62T
Box clamp

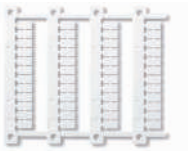


Accessories

020.01

Adaptor for panel mounting, plastic, 17.5 mm wide	020.01





060.48

Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE's thermal transfer printers for type 70.62	060.48

finder
RELAYING INNOVATION

Relay modules with forcibly guided contacts 6 A

7S
SERIES

Door control

Signalling

Doors opening/closing

Relay module with forcibly guided contacts

Type 7S.12T
- 2 pole 6 A (1 NO + 1 NC)

Type 7S.14T
- 4 pole 6 A (2 NO + 2 NC and 3 NO + 1 NC)

Type 7S.16T
- 6 pole 6 A (4 NO + 2 NC)

- For railway application; materials compliant with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- For safety applications, with class A forcibly guided contact relays EN 61810-3 (ex EN 50205)
- For functional reliability in machinery and plant engineering according to EN 13849-1
- DC and AC supply versions
- 24 and 110 V DC versions with extended operating range (0.7…1.25)U_N
- Coil status visual indication with LED
- 35 mm rail (EN 60715) mount

7S.xx
Screwless terminal

* Short term (10 min) +85°C

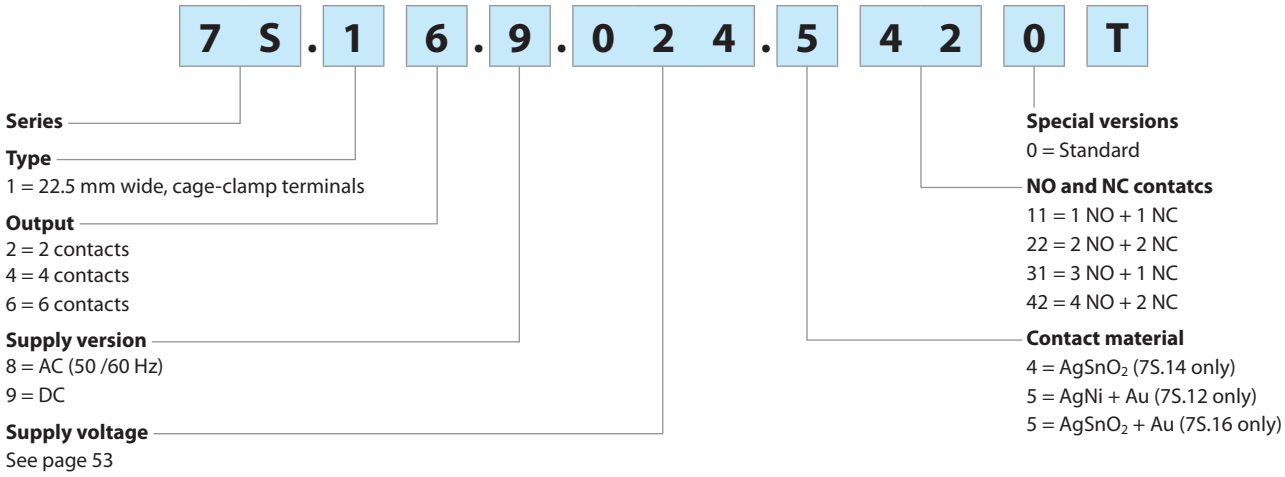
For outline drawing see page 54

	7S.12…5110T	7S.14…4220/4310T	7S.16…5420T
			
	• 2 pole (1 NO + 1 NC)	• 4 pole (2 NO + 2 NC and 3 NO + 1 NC)	• 6 pole (4 NO + 2 NC)

Contact specification				
Contact configuration		1 NO + 1 NC	2 NO + 2 NC, 3 NO + 1 NC	4 NO + 2 NC
Rated current/Max. peak current	A	6/15	6/15	6/15
Rated switching voltage	V AC (50/60 Hz)	250	250	250
Rated load AC1	VA	1500	1500	1500
Rated load AC15 (230 V AC)	VA	700	700	700
Breaking capacity DC1: 24/110/220 V	A	6/0.6/0.2	6/0.9/0.3	6/0.9/0.3
Breaking capacity DC13: 24 V	A	1	3	5
Minimum switching load	mW (V/mA)	60 (5/5)	60 (5/5)	60 (5/5)
Standard contact material		AgNi + Au	$AgSnO_2$	$AgSnO_2$+Au
Coil specification				
Nominal voltage (U_N)	V AC (50/60 Hz)	110…125 - 230…240	110…125 - 230…240	110…125 - 230…240
	V DC	24	24 - 110	24 - 110
Rated power	VA (50 Hz)/W	2.3/1	2.3/1	2.3/1
Operating range	AC	(0.85…1.1)U_N	(0.85…1.1)U_N	(0.85…1.1)U_N
	DC	—	—	—
DC extended range (24 and 110 V only)		(0.7…1.25)U_N	(0.7…1.25)U_N	(0.7…1.25)U_N
Holding voltage	AC/DC	0.45 U_N / 0.45 U_N	0.55 U_N / 0.55 U_N	0.55 U_N / 0.55 U_N
Must drop-out voltage	AC/DC	0.1 U_N / 0.1 U_N	0.1 U_N / 0.1 U_N	0.1 U_N / 0.1 U_N
Technical data				
Mechanical life	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	7/11	12/10	12/10
Insulation between coil and contacts (1.2/50 µs)	kV	6	6	6
Dielectric strength between open contacts	V AC	1500	1500	1500
Ambient temperature	°C	–40…+70*	–40…+70*	–40…+70*
Protection category		IP 20	IP 20	IP 20
Approvals (according to type)				

Ordering information

Example: 7S series Relay module with forcibly guided contacts, 6 contact (4 NO + 2 NC) 6 A, supply voltage 24 V DC.



G

Technical data

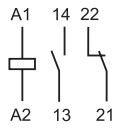
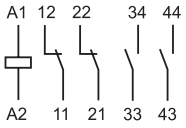
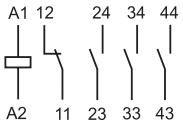
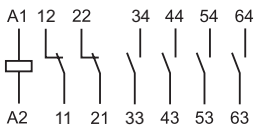
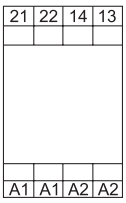
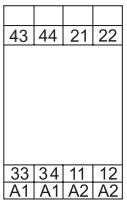
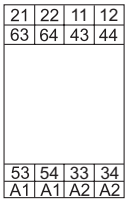
Insulation according to EN 61810-1		
Nominal voltage of supply system	V AC	230/400
Rated insulation voltage	V AC	250
Pollution degree		2
Insulation between coil and contact set		
Type of Insulation		Reinforced
Overvoltage category		III
Rated impulse voltage	kV (1.2/50 µs)	6
Dielectric strength	V AC	4000
Insulation between adjacent contacts		
Type of Insulation		Basic
Overvoltage category		III
Rated impulse voltage	kV (1.2/50 µs)	4
Dielectric strength	V AC	2500
Insulation between open contacts		
Type of disconnection		Micro-disconnection
Dielectric strength	V AC/kV (1.2/50 µs)	1500/2.5

Insulation between coil terminals					
Rated impulse voltage (surge) differential mode (according to EN 50121)		kV (1.2/50 µs)	1.5		
Terminals			**solid cable**		**stranded cable**
Max. wire size		mm^2	1 x 1.5		1 x 1.5
		AWG	1 x 14		1 x 16
Wire strip length		mm	9		
Other data			**7S.12**	**7S.14**	**7S.16**
Bounce time: NO/NC		ms	2/8	1/20	1/20
Vibration resistance: NO/NC			According to EN 61373		
Shock resistance			According to EN 61373		
Power lost to the environment	without contact current	W	0.8	0.8	0.8
	with rated current	W	1.4	2.3	2.8

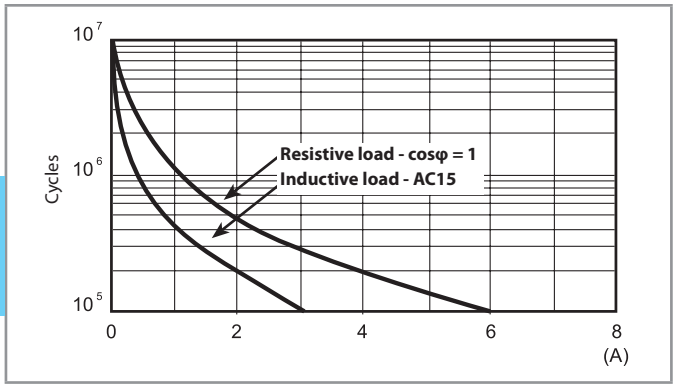
G

Contact specifications

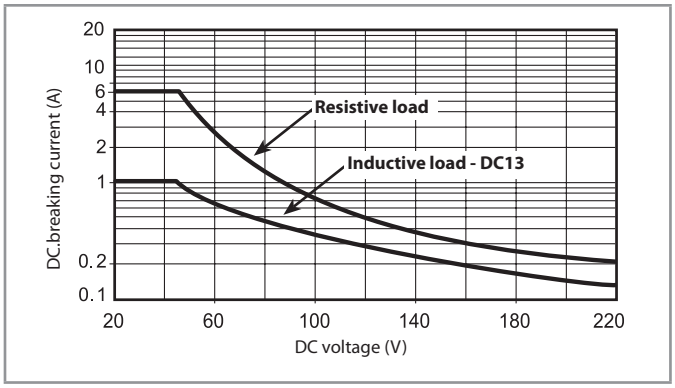
Contact diagrams

7S.12	7S.14...4220	7S.14...4310	7S.16
			
			

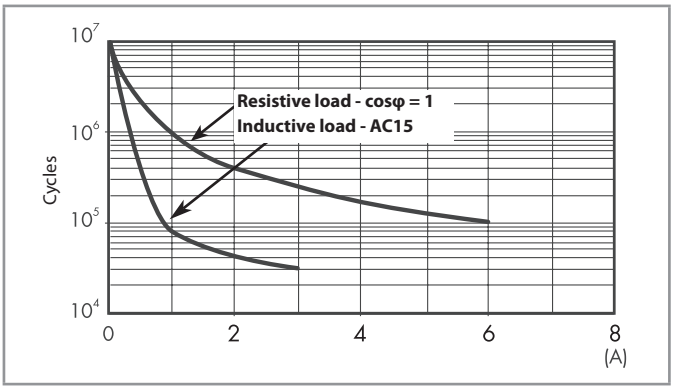
F 7S12 - Electrical life (AC) v contact current - 7S.12



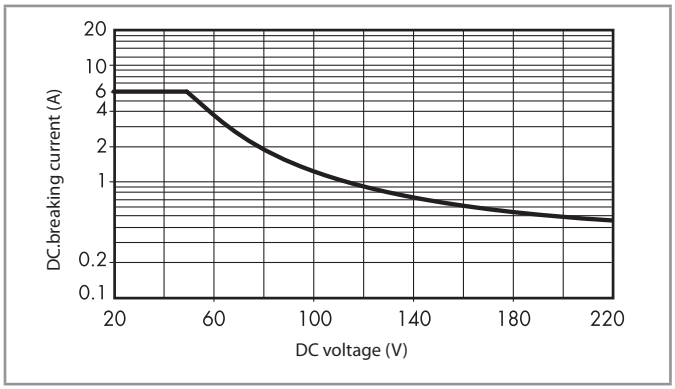
H 7S12* - Maximum DC breaking capacity - 7S.12



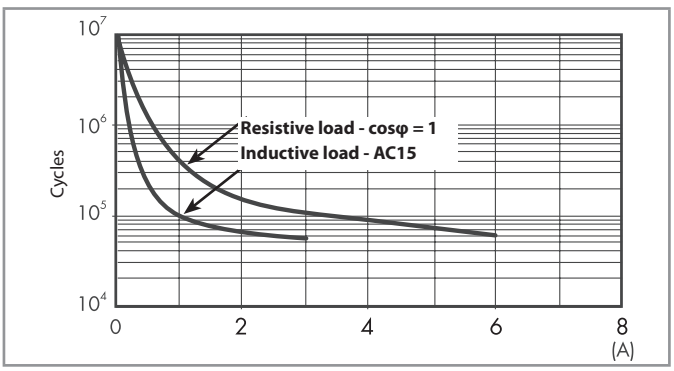
F 7S14 - Electrical life (AC) v contact current - 7S.14



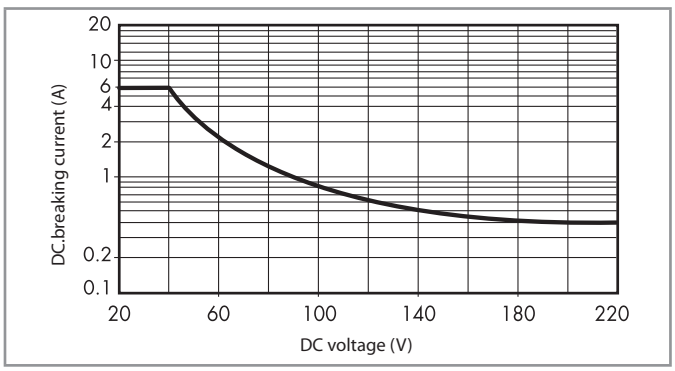
H 7S14* - Maximum DC breaking capacity - 7S.14



F 7S16 - Electrical life (AC) v contact current - 7S.16



H 7S16* - Maximum DC breaking capacity - 7S.16



* When switching a load having voltage and current values under the curve, an electrical life of ≥ $100 \cdot 10^3$ can be expected.

Coil specifications

DC coil data - type 7S.12

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated input current at U_N I_N	Rated power at U_N
V		V	V	mA	W
24	**9**.024	16.8	30	38.2	0.9

AC coil data - type 7S.12

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated input current at U_N I_N	Rated power at U_N
V		V	V	mA	VA/W
110…125	**8**.120	93	138	9.8	1.2/1.1
230…240	**8**.230	195	264	11.8	2.8/1.2

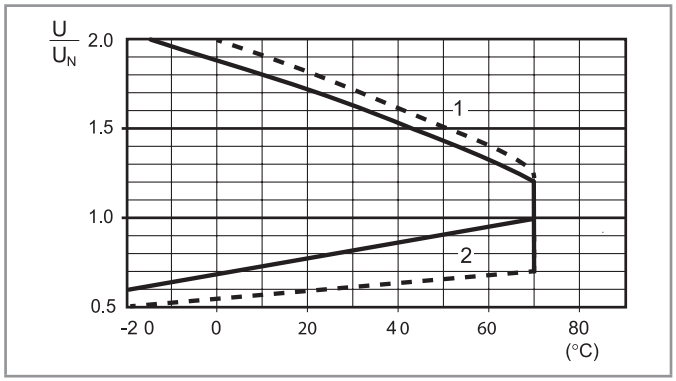
DC coil data - type 7S.14/7S.16

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated input current at U_N I_N	Rated power at U_N
V		V	V	mA	W
24	**9**.024	16.8	30	42.2	1
110	**9**.110	77	138	11.6	1.4

AC coil data - type 7S.14/7S.16

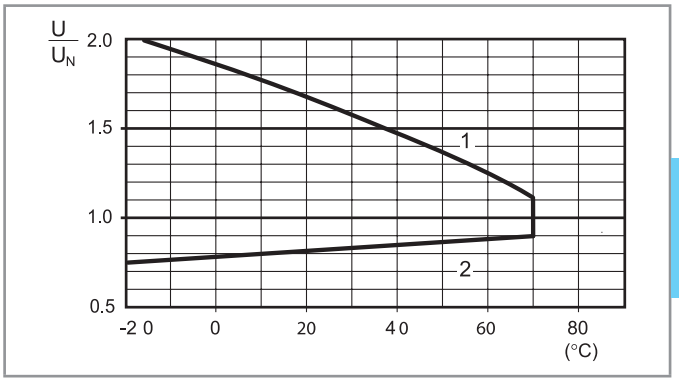
Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated input current at U_N I_N	Rated power at U_N
V		V	V	mA	VA/W
110…125	**8**.120	93	138	10.2	1.3/1.1
230…240	**8**.230	195	264	11.8	2.9/1.2

R 7S - DC coil operating range v ambient temperature - 7S.12/7S.14/7S.16



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.
- - - - - 24 and 110 V DC coils only (extended range)

R 7S - AC coil operating range v ambient temperature - 7S.12/7S.14/7S.16

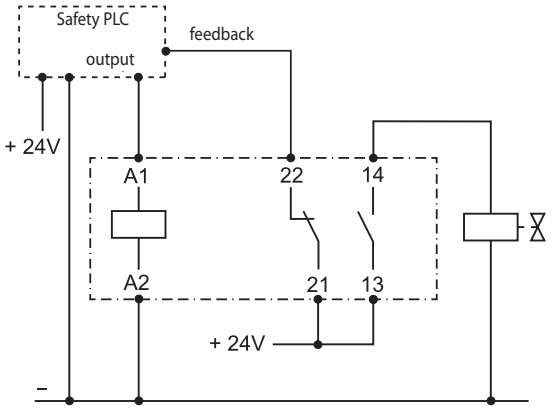


1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

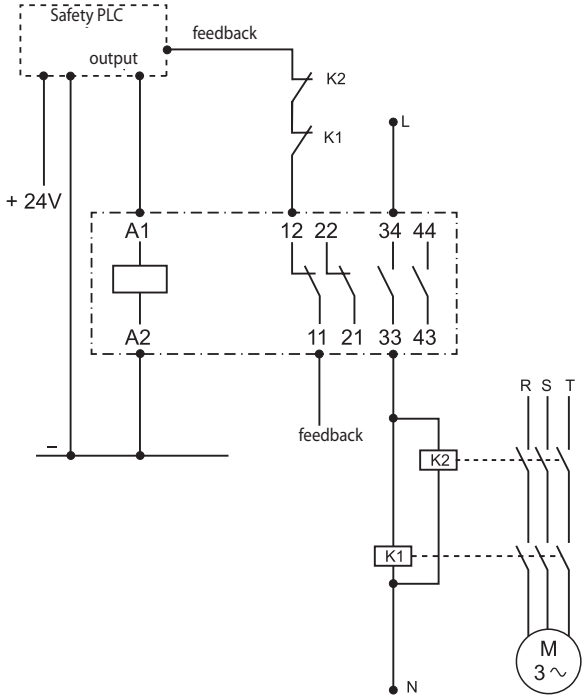
G

Wiring diagrams

Type 7S.x2

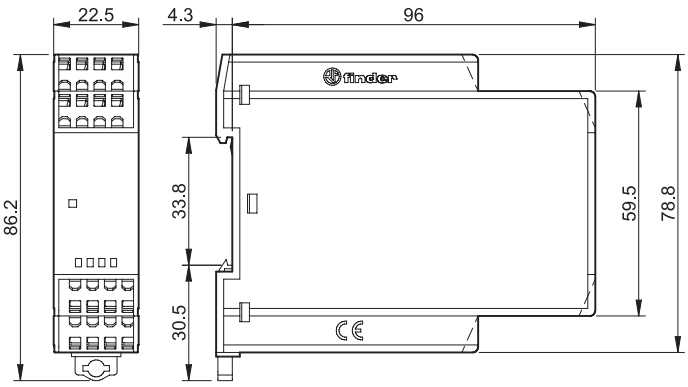


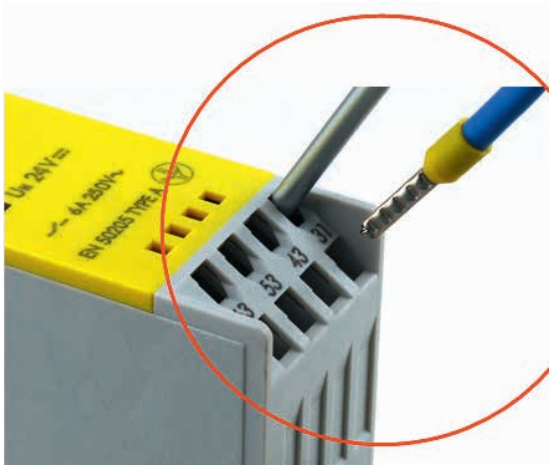
Type 7S.x4...4220



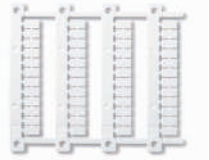
Outline drawings

Type 7S.xx
Screwless terminal





Accessories



060.48

Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE thermal transfer printers	060.48

finder
RELAYING INNOVATION

Modular timers 8 - 16 A

Door control

Message panels infotainment

Driver's control console

80
SERIES

Multi-function and mono-function timer range

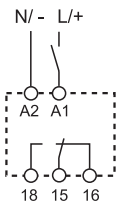
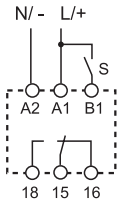
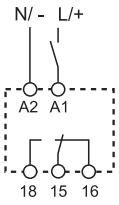
80.01T - Multi-function & multi-voltage
80.11T - On-delay, multi-voltage

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- 17.5 mm wide
- Six time scales from 0.1 s to 24 h
- High input/output isolation
- "Blade + cross" - both flat blade and cross head screw drivers can be used to adjust the range and function selectors, the timing trimmer, and to disengage the rail mounting clip
- New multi-voltage versions with "PWM clever" technology
- 35 mm rail (EN 60715) mount

80.01T/80.11T
Box clamp

* Short term (10 min) +70°C

For outline drawing see page 62

	80.01T	80.11T
		
	• Multi-voltage • Multi-function	• Multi-voltage • Mono-function
	AI: On-delay **DI:** Interval **SW:** Symmetrical flasher (starting pulse on) **BE:** Off-delay with control signal **CE:** On- and off-delay with control signal **DE:** Interval with control signal on	**AI:** On-delay
			
	Wiring diagram (without control signal)	Wiring diagram (with control signal)	Wiring diagram (without control signal)
Contact specification			
Contact configuration		1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current	A	16/30	16/30
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	4000	4000
Rated load AC15 (230 V AC)	VA	750	750
Single phase motor rating (230 V AC)	kW	0.55	0.55
Breaking capacity DC1: 24/110/220 V	A	16/0.3/0.12	16/0.3/0.12
Minimum switching load	mW (V/mA)	500 (10/5)	500 (10/5)
Standard contact material		AgNi	AgNi
Supply specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12…240	24…240
	V DC	12…240	24…240
Rated power AC/DC	VA (50 Hz)/W	< 1.8/< 1	< 1.8/< 1
Operating range	V AC	10.8…265	16.8…265
	V DC	10.8…265	16.8…265
Technical data			
Specified time range		(0.1…2)s, (1…20)s, (0.1…2)min, (1…20)min, (0.1…2)h, (1…24)h	
Repeatability	%	± 1	± 1
Recovery time	ms	≤ 50	≤ 50
Minimum control impulse	ms	50	—
Setting accuracy-full range	%	± 5	± 5
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Ambient temperature range	°C	–25…+55*	–25…+55*
Protection category		IP 20	IP 20
Approvals (according to type)			

H

Mono-function timer range

80.41T - Off-delay with control signal, multi-voltage

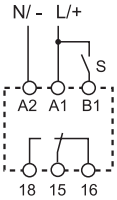
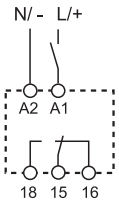
80.61T - Power off-delay (True off-delay), multi-voltage

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- 17.5 mm wide
- Type 80.41T: six time scales from 0.1 s to 24 h
- Type 80.61T: four time scales from 0.05 s to 3 min
- High input/output isolation
- "Blade + cross" - both flat blade and cross head screw drivers can be used to adjust the range and function selectors, the timing trimmer, and to disengage the rail mounting clip
- New multi-voltage versions with "PWM clever" technology
- 35 mm rail (EN 60715) mount

80.41T/80.61T
Box clamp

* Short term (10 min) +70°C

For outline drawing see page 62

	80.41T	80.61T
		
	• Multi-voltage • Mono-function	• Multi-voltage • Mono-function
	BE: Off-delay with control signal	**BI:** Power off-delay (True off-delay)
	 Wiring diagram (with control signal)	 Wiring diagram (without control signal)
Contact specification		
Contact configuration	1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current A	16/30	8/15
Rated voltage/ Maximum switching voltage V AC	250/400	250/400
Rated load AC1 VA	4000	2000
Rated load AC15 (230 V AC) VA	750	400
Single phase motor rating (230 V AC) kW	0.55	0.3
Breaking capacity DC1: 24/110/220 V A	16/0.3/0.12	8/0.3/0.12
Minimum switching load mW (V/mA)	500 (10/5)	300 (5/5)
Standard contact material	AgNi	AgNi
Supply specification		
Nominal voltage (U_N) V AC (50/60 Hz)	24…240	24…240
V DC	24…240	24…220
Rated power AC/DC VA (50 Hz)/W	< 1.8/< 1	< 0.6/<0.6
Operating range V AC	16.8…265	16.8…265
V DC	16.8…265	16.8…242
Technical data		
Specified time range	(0.1…2)s, (1…20)s, (0.1…2)min, (1…20)min, (0.1…2)h, (1…24)h	(0.05…2)s, (1…16)s, (8…70)s, (50…180)s
Repeatability %	± 1	± 1
Recovery time ms	≤ 50	—
Minimum control impulse ms	50	500 (A1-A2)
Setting accuracy-full range %	± 5	± 5
Electrical life at rated load in AC1 cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Ambient temperature range °C	–25…+55*	–25…+55*
Protection category	IP 20	IP 20
Approvals (according to type)	CE UKCA cULus EAC	

Ordering information

Example: 80 series, modular timers, 1 CO (SPDT) - 16 A, supply rated at (12…240)V AC/DC.

8 0	.	0	1	.	0	.	2 4 0	.	0	0	0	0	T

Series

Type
0 = Multi-function timer (AI, DI, SW, BE, CE, DE);
1 CO 16 A - 250 V AC
1 = Monofunction timer (AI);
1 CO 16 A - 250 V AC
4 = Monofunction timer (BE);
1 CO 16 A - 250 V AC
6 = Monofunction timer (BI);
1 CO 8 A - 250 V AC

No. of poles
1 = 1 CO (SPDT)

Supply version
0 = AC (50/60 Hz)/DC

Supply voltage
240 = (12…240)V AC/DC (80.01T)
240 = (24…240)V AC/DC (80.11T, 80.41T)
240 = (24…220)V DC (80.61T)

Versions
0 = Standard

Technical data

Insulation				
Dielectric strength			**80.01T/11T/41T**	**80.61T**
	between input and output circuit	V AC	4000	2500
	between open contacts	V AC	1000	1000
Insulation (1.2/50 µs) between input and output		kV	6	4
EMC specifications				
Type of test			**Reference standard**	
Electrostatic discharge	contact discharge		EN 61000-4-2	4 kV
	air discharge		EN 61000-4-2	8 kV
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)			EN 61000-4-3	10 V/m
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals			EN 61000-4-4	4 kV
Surges (1.2/50 µs) on Supply terminals	common mode		EN 61000-4-5	4 kV
	differential mode		EN 61000-4-5	4 kV
on start terminal (B1)	common mode		EN 61000-4-5	4 kV
	differential mode		EN 61000-4-5	4 kV
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals			EN 61000-4-6	10 V
Radiated and conducted emission			EN 55022	class B
Other data				
Current absorption on signal control (B1)			< 1 mA	
Power lost to the environment	without contact current	W	1.4	
	with rated current	W	3.2	
Screw torque		Nm	0.8	
Max. wire size			solid cable	stranded cable
		mm^2	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5
		AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14

H

Functions

U = Supply voltage

S = Signal switch

= Output contact

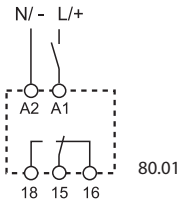
LED*	Supply voltage	NO output contact	Contacts	
			Open	Closed
	OFF	Open	15 - 18	15 - 16
	ON	Open	15 - 18	15 - 16
	ON	Open (Timing in Progress)	15 - 18	15 - 16
	ON	Closed	15 - 16	15 - 18

* The LED on type 80.61T is illuminated only when the supply voltage is applied to the timer; during the timing period the LED is not illuminated.

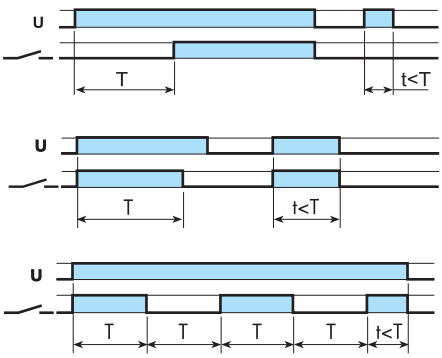
Wiring diagram

Without control signal = Start via contact in supply line (A1).
With control signal = Start via contact into control terminal (B1).

Without control signal



Type 80.01T

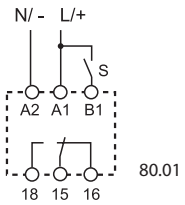


(AI) On-delay.
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.

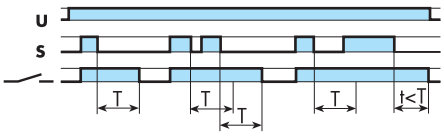
(DI) Interval.
Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.

(SW) Symmetrical flasher (starting pulse on).
Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).

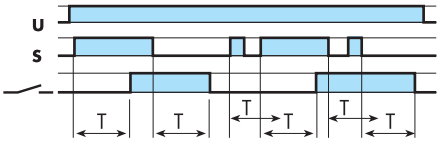
With control signal



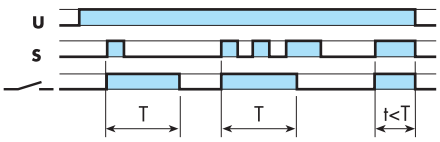
80.01T



(BE) Off-delay with control signal.
Power is permenently applied to the timer. The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.



(CE) On- and off-delay with control signal.
Power is permenently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which time the output contacts transfer. Opening the Signal switch initiates the same preset delay, after which time the output contacts reset.



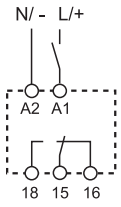
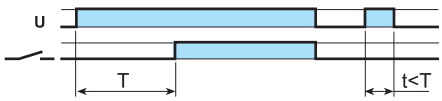
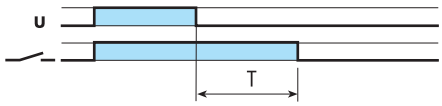
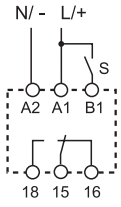
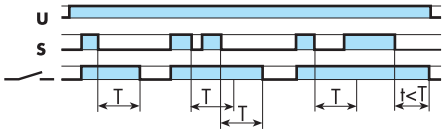
(DE) Interval with control signal on.
Power is permenently applied to the timer.
On momentary or maintained closure of Signal Switch (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.

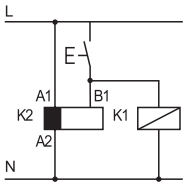
NOTE: The function must be set before energising the timer.

H

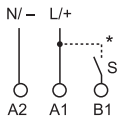
Functions

Wiring diagram

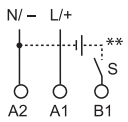
	Type		
Without control signal  80.11/21/61	**80.11T**	 	**(AI) On-delay.** Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.
	80.61T	 	**(BI) Power off-delay (True off-delay).** Apply power to timer (minimum 500 ms). Output contacts transfer immediately. Removal of power initiates the preset delay, after which time the output contacts reset.
With control signal  80.41	**80.41T**	 	**(BE) Off-delay with control signal.** Power is permenently applied to the timer. The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.



• Possible to control an external load, such as another relay coil or timer, connected to the control signal terminal B1.



* With DC supply, positive polarity has to be connected to B1 terminal (according to EN 60204-1).



** A voltage other than the supply voltage can be applied to the command Start (B1), example:
A1 - A2 = 230 V AC
B1 - A2 = 12 V DC

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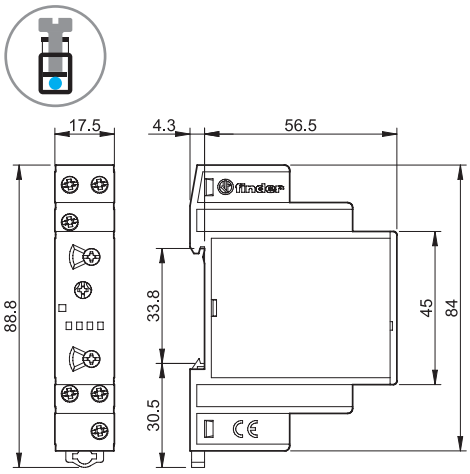
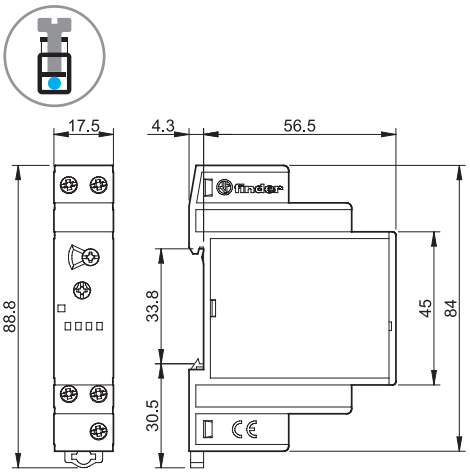
Outline drawings

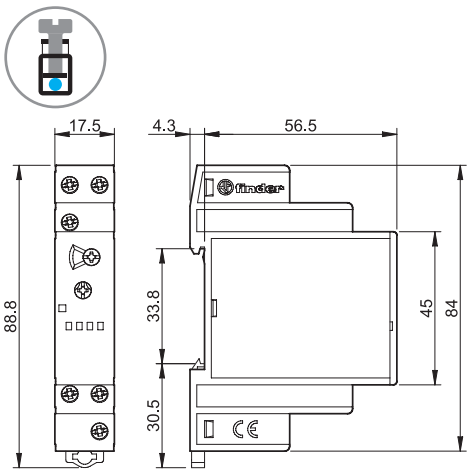
Type 80.01T
Box clamp



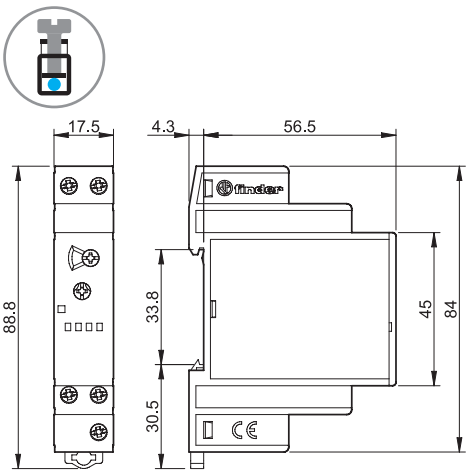
Type 80.11T
Box clamp



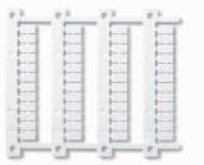
Type 80.41T
Box clamp



Type 80.61T
Box clamp



Accessories



060.48

Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE's thermal transfer printers	060.48

H

VI-2024, www.findernet.com

finder
RELAYING INNOVATION

Modular timers
8 - 12 - 16 A

Door control

Couplers

Driver's control console

83
SERIES

Multi-function and Mono-function timer range

Type 83.02T
- Multi-function & multi-voltage
- 2 Pole (timed + instantaneous options), external time setting potentiometer option

Type 83.62T
- Power off-delay, multi-voltage, 2 Pole

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- 22.5 mm wide
- 83.02: eight time scales from 0.05 s to 10 days
- 83.62: four time scales from 0.05 s to 3 minutes
- High input/output isolation
- Wide supply range (24…240)V AC/DC
- "Blade + cross" - both flat blade and cross head screw drivers can be used to adjust the range and function selectors, the timing trimmer, and to disengage the rail mounting clip
- Multi-voltage versions with "PWM clever" technology
- 35 mm rail (EN 60715) mount

83.02/83.62
Box clamp

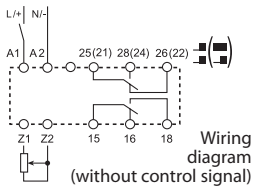
* (0.05…1)s, (0.5…10)s, (0.05…1)min, (0.5…10)min, (0.05…1)h, (0.5…10)h, (0.05…1)d, (0.5…10)d
** Short term (10 min) +70°C (EN 50155)

For outline drawing see page 68

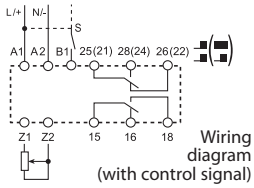
83.02T

- Multi-voltage
- Multi-function
- Timing can be regulated using ext. Potentiometer
- 2 timed contacts or 1 timed + 1 instantaneous contact

AI: On-delay
DI: Interval
GI: Pulse delayed
SW: Symmetrical flasher (starting pulse on)
BE: Off-delay with control signal
CE: On- and off-delay with control signal
DE: Interval with control signal on
WD: Watchdog (Retriggerable interval with control signal on)



Wiring diagram (without control signal)

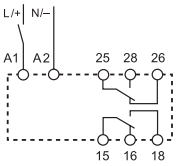


Wiring diagram (with control signal)

83.62T

- Multi-voltage
- Mono-function
- 2 pole

BI: Power off-delay (True off-delay)



Wiring diagram (without control signal)

Contact specification			
Contact configuration		2 CO (DPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	12/30	8/15
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	3000	2000
Rated load AC15 (230 V AC)	VA	750	400
Single phase motor rating (230 V AC)	kW	0.5	0.3
Breaking capacity DC1: 24/110/220 V	A	12/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Supply specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	24…240	24…240
	V DC	24…240	24…240
Rated power AC/DC	VA (50 Hz)/W	< 2/< 2	< 1.5/< 2
Operating range	V AC	16.8…265	16.8…265
	V DC	16.8…265	16.8…242
Technical data			
Specified time range		*	(0.05…2)s, (1…16)s, (8…70)s, (50…180)s
Repeatability	%	± 1	± 1
Recovery time	ms	200	—
Minimum control impulse	ms	50	500 ms (A1 - A2)
Setting accuracy-full range	%	± 5	± 5
Electrical life at rated load in AC1	cycles	$60 \cdot 10^3$	$100 \cdot 10^3$
Ambient temperature range	°C	–25…+55**	–25…+55**
Protection category		IP 20	IP 20
Approvals (according to type)			

83 SERIES
Modular timers 16 A

Mono-function timer range

Type 83.11T
- ON-delay, multi-voltage

Type 83.41T
- Off-delay with control signal, multi-voltage

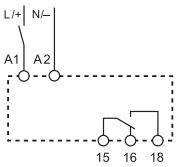
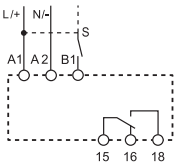
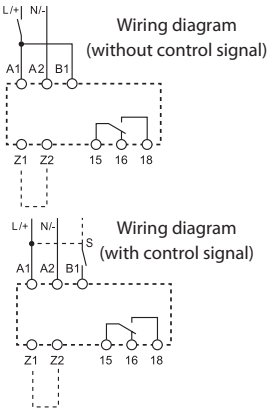
Type 83.91T
- Asymmetrical flasher, multi-voltage, 1 Pole

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- 22.5 mm wide
- Eight time scales from 0.05 s to 10 days
- High input/output isolation
- Wide supply range (24…240)V AC/DC
- "Blade + cross" - both flat blade and cross head screw drivers can be used to adjust the range and function selectors, the timing trimmer, and to disengage the rail mounting clip
- Multi-voltage versions with "PWM clever" technology
- 35 mm rail (EN 60715) mount

83.11/83.41/83.91
Box clamp

* Short term (10 min) +70°C (EN 50155)

For outline drawing see page 68

	83.11T	83.41T	83.91T
			
	• Multi-voltage • Mono-function • 1 Pole	• Multi-voltage • Mono-function • 1 Pole	• Multi-voltage • Multi-function
	AI: On-delay	**BE:** Off-delay with control signal	**LI:** Asymmetrical flasher (starting pulse on) **LE:** Asymmetrical flasher (starting pulse on) with control signal **PI:** Asymmetrical flasher (starting pulse off) **PE:** Asymmetrical flasher (starting pulse off) with control signal
	 Wiring diagram (without control signal)	 Wiring diagram (with control signal)	 Wiring diagram (without control signal) Wiring diagram (with control signal)
Contact specification			
Contact configuration	1 CO (SPDT)	1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current A	16/30	16/30	16/30
Rated voltage/ Maximum switching voltage V AC	250/400	250/400	250/400
Rated load AC1 VA	4000	4000	4000
Rated load AC15 (230 V AC) VA	750	750	750
Single phase motor rating (230 V AC) kW	0.5	0.5	0.5
Breaking capacity DC1: 24/110/220 V A	16/0.3/0.12	16/0.3/0.12	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
Supply specification			
Nominal voltage (U_N) V AC (50/60 Hz)	24…240	24…240	24…240
V DC	24…240	24…240	24…240
Rated power AC/DC VA (50 Hz)/W	< 1.5/< 2	< 1.5/< 2	< 1.5/< 2
Operating range V AC	16.8…265	16.8…265	16.8…265
V DC	16.8…265	16.8…265	16.8…265
Technical data			
Specified time range	(0.05…1)s, (0.5…10)s, (0.05…1)min, (0.5…10)min, (0.05…1)h, (0.5…10)h, (0.05…1)d, (0.5…10)d		
Repeatability %	± 1	± 1	± 1
Recovery time ms	200	200	200
Minimum control impulse ms	—	50	50
Setting accuracy-full range %	± 5	± 5	± 5
Electrical life at rated load in AC1 cycles	$50 \cdot 10^3$	$50 \cdot 10^3$	$50 \cdot 10^3$
Ambient temperature range °C	–25…+55*	–25…+55*	–25…+55*
Protection category	IP 20	IP 20	IP 20
Approvals (according to type)			

Ordering information

Example: 83 series, modular timers, 2 CO (DPDT) - 12 A, supply rated at (24…240)V AC/DC.

8 3	.	0	2	.	0	.	2 4 0	.	0 0 0 0	T

Series

Type
0 = Multi-function
(AI, DI, GI, SW, BE, CE, DE, WD)
1 = On-delay (AI)
4 = Off-delay with control signal (BE)
6 = Power off-delay (True off-delay) (BI)
9 = Asymmetrical flasher (LI, LE, PI, PE)

No. of poles
1 = 1 CO (SPDT)
2 = 2 CO (DPDT) for 83.02 and 83.62

Supply version
0 = AC (50/60 Hz)/DC

Supply voltage
240 = (24…240)V AC/DC

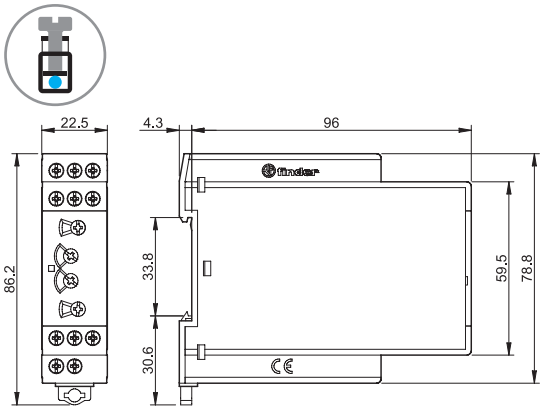
Versions
0000 = Standard

Technical data

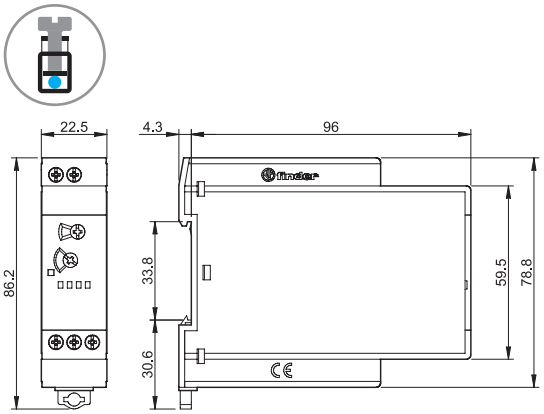
Insulation					
Dielectric strength	between input and output circuit	V AC	4000		
	between open contacts	V AC	1000		
Insulation (1.2/50 µs) between input and output		kV	6		
EMC specifications					
Type of test			**Reference standard**	**83.02/11/41/91**	**83.62**
Electrostatic discharge	contact discharge		EN 61000-4-2	4 kV	4 kV
	air discharge		EN 61000-4-2	8 kV	8 kV
Radio-frequency electromagnetic field	(80 ÷ 1000 MHz)		EN 61000-4-3	10 V/m	10 V/m
	(1000 ÷ 2700 MHz)		EN 61000-4-3	3 V/m	3 V/m
Fast transients (burst) (5-50 ns, 5 and 100 kHz)	on Supply terminals		EN 61000-4-4	7 kV	6 kV
	on control signal terminal (B1)		EN 61000-4-4	7 kV	6 kV
Surges (1.2/50 µs) on Supply terminals	common mode		EN 61000-4-5	6 kV	6 kV
	differential mode		EN 61000-4-5	6 kV	4 kV
on control signal terminal (B1)	common mode		EN 61000-4-5	6 kV	6 kV
	differential mode		EN 61000-4-5	4 kV	4 kV
Radio-frequency common mode	(0.15 ÷ 80 MHz)		EN 61000-4-6	10 V	10 V
on Supply terminals	(80 ÷ 230 MHz)		EN 61000-4-6	10 V	10 V
Radiated and conducted emission			EN 55022	class A	class A
Other data					
Current absorption on control signal (B1)			< 1 mA		
- max cable length (capacity of ≤ 10 nF/100 m)			150 m		
- when applying a control signal to B1, which is different from the supply voltage at A1/A2			B1 is isolated from A1 and A2 by an opto-coupler, and can therefore be operated at a voltage other than the supply voltage. If using a control signal of between (24…48)V DC and a supply voltage of (24…240)V AC, ensure that the signal - is connected to A2 and the + is applied to B1, and that L is applied to B1 and N to A2.		
External potentiometer for 83.02			Use a 10 kΩ / ≥ 0.25 W linear potentiometer. Maximum cable length 10 m. When using an external potentiometer, the timer automatically use its setting in place of the internal setting. Consider the voltage potential at the potentiometer to be the same as the timer supply voltage.		
Power lost to the environment	without contact current	W	1.4		
	with rated current	W	3.2		
Screw torque		Nm	0.8		
Max. wire size			solid cable	stranded cable	
		mm²	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5	
		AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14	

Outline drawings

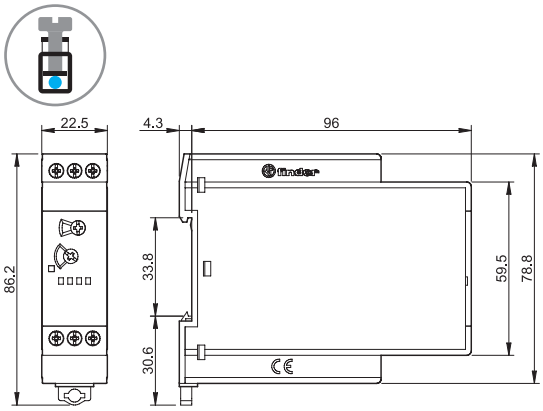
Type 83.02
Box clamp



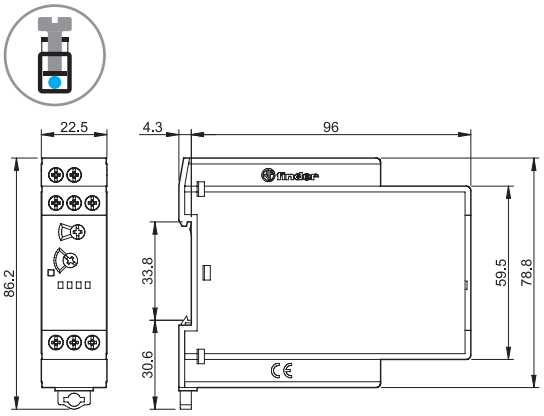
Type 83.11
Box clamp



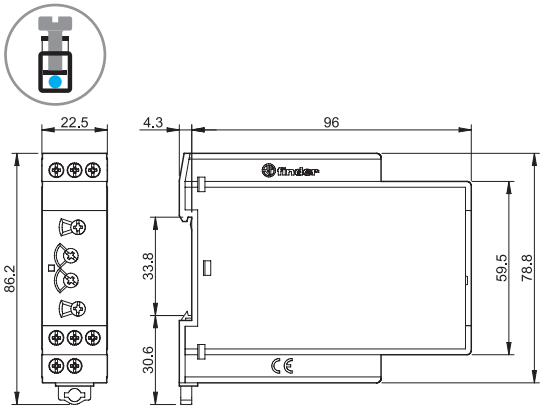
Type 83.41
Box clamp



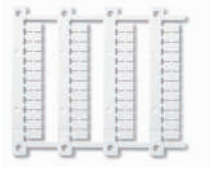
Type 83.62
Box clamp



Type 83.91
Box clamp



Accessories

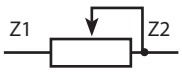


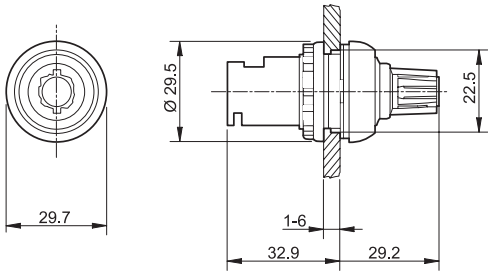
060.48

Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE's thermal transfer printers	060.48

087.02.2

Potentiometer usable as external potentiometer for type 83.02, 10 kΩ / 0.25 W linear, IP 66	087.02.2

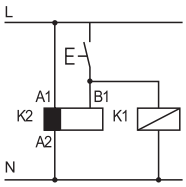




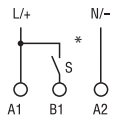
Functions

LED*	Supply voltage	NO output contact	Contacts	
			Open	Closed
	OFF	Open	15 - 18 25 - 28	15 - 16 25 - 26
	ON	Open	15 - 18 25 - 28	15 - 16 25 - 26
	ON	Open (Timing in Progress)	15 - 18 25 - 28	15 - 16 25 - 26
	ON	Closed	15 - 16 25 - 26	15 - 18 25 - 28

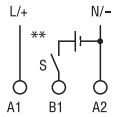
* The LED on type 83.62 is illuminated when supply voltage is supplied to timer.



- Possible to control an external load, such as another relay coil or timer, connected to the control signal terminal B1.



* With DC supply, positive polarity has to be connected to B1 terminal (according to EN 60204-1).

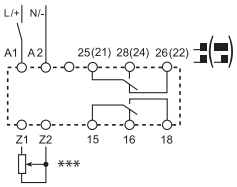


** A voltage other than the supply voltage can be applied to the control signal (B1), example:
A1 - A2 = 230 V AC
B1 - A2 = 12 V DC

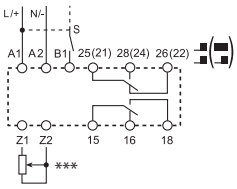
Functions

Wiring diagram | **U** = Supply voltage | **S** = Signal switch | = Output contact

Multi-function
without control signal

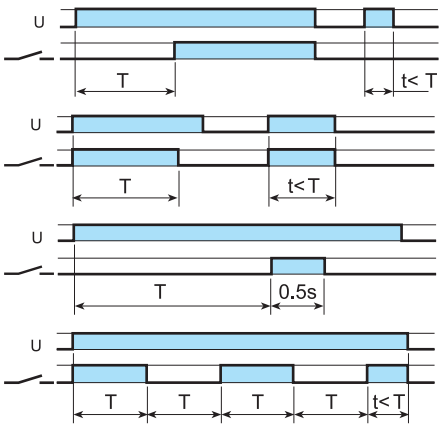


with control signal



*** Type 83.02: regulated using an external potentiometer (10 kΩ - 0.25 W).

Type 83.02

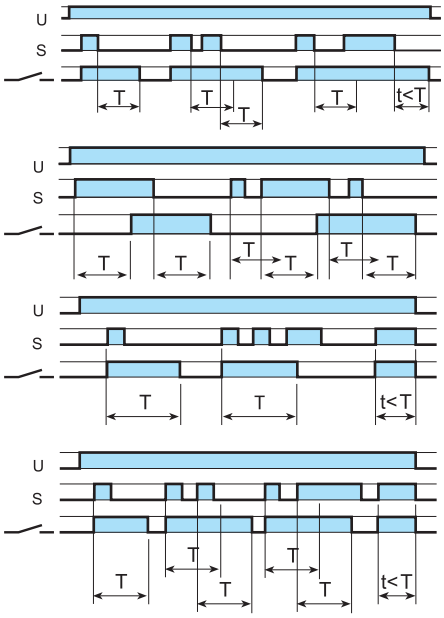


(AI) On-delay.
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.

(DI) Interval.
Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.

(GI) Pulse delayed.
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs after a fixed time of 0.5s.

(SW) Symmetrical flasher (starting pulse on).
Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).



(BE) Off-delay with control signal.
Power is permenently applied to the timer. The output contacts transfer immediately on closure of the control signal (S). Opening the control signal initiates the preset delay, after which time the output contacts reset.

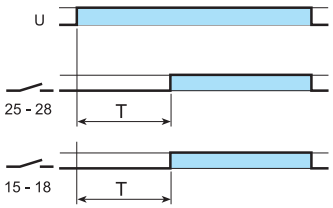
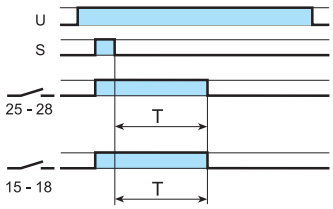
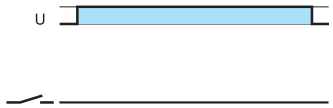
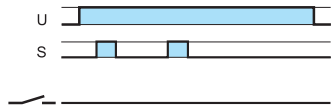
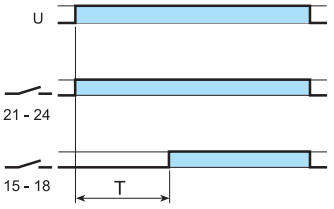
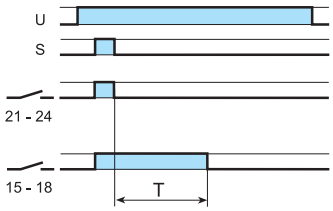
(CE) On- and off-delay with control signal.
Power is permenently applied to the timer.
Closing the control signal (S) initiates the preset delay, after which time the output contacts transfer. Opening the control signal initiates the same preset delay, after which time the output contacts reset.

(DE) Interval with control signal on.
Power is permenently applied to the timer.
On momentary or maintained closure of control signal (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.

(WD) Watchdog (Retriggerable interval with control signal on).
Power is permanently applied to the timer.
On momentary or maintained closure of control signal (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset; subsequent closures of control signal during the delay will extend the time. If the closure of the control signal (S) is longer than the preset time (T) then the output contacts reset.

NOTE: The timing function must be set when the timer is de-energised. Or for the 83.02, when the contact mode selector is in the OFF position.

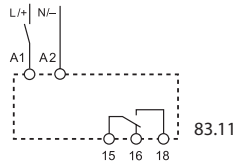
83.02 type

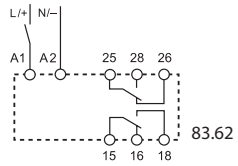
Contact mode selector	Functions without control signal (example: AI)	Functions with control signal (example: BE)
2 timed contacts 	 Both output contacts (15-18 and 25-28) follow the timing function	 Both output contacts (15-18 and 25-28) follow the timing function
OFF 	 Both output contacts [15-18 and 25(21)-28(24)] stay permanently open	 Both output contacts [15-18 and 25(21)-28(24)] stay permanently open
1 timed + 1 instantaneous contact 	 The output contact 15-18 follows the timing function The output contact 21-24 follows the power supply (U)	 The output contact 15-18 follows the timing function The output contact 21-24 follows the control signal (S)

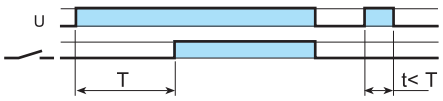
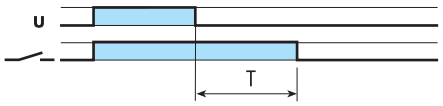
Functions

Wiring diagram | **U** = Supply voltage | **S** = Signal switch | = Output contact

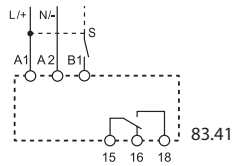
Mono-function
without control signal

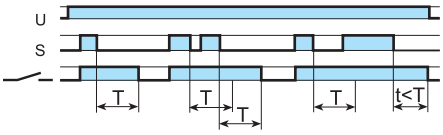




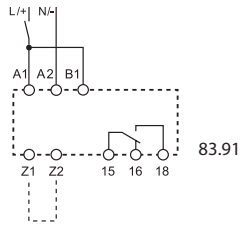
Type		
83.11		**(AI) On-delay.** Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.
83.62		**(BI) Power off-delay (True off-delay).** Apply power to timer (minimum 500 ms). Output contacts transfer immediately. Removal of power initiates the preset delay, after which time the output contacts reset.

with control signal (S)



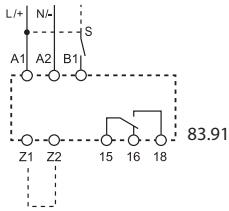
83.41		**(BE) Off-delay with control signal.** Power is permenently applied to the timer. The output contacts transfer immediately on closure of the control signal (S). Opening the control signal initiates the preset delay, after which time the output contacts reset.

Asymmetrical recycler
without control signal

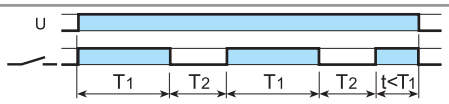
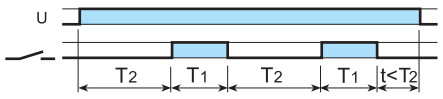
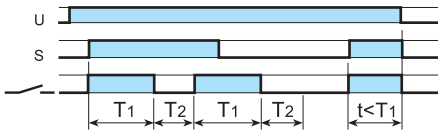
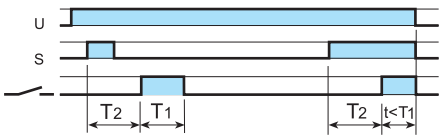


Z1-Z2 open: **(LI)** function
Z1-Z2 linked: **(PI)** function

with control signal



Z1-Z2 open: **(LE)** function
Z1-Z2 linked: **(PE)** function

83.91		**(LI) Asymmetrical flasher (starting pulse on) - (Z1-Z2 open).** Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ON and OFF times are independently adjustable.
		**(PI) Asymmetrical flasher (starting pulse off) - (Z1-Z2 linked).** Apply power to timer. Output contacts transfer after time T1 has elapsed and cycle between OFF and ON for as long as power is applied. The ON and OFF times are independently adjustable.
		**(LE) Asymmetrical flasher (starting pulse on) with control signal - (Z1-Z2 open).** Power is permanently applied to the timer. Closing control signal (S) causes the output contacts to transfer immediately and cycle between ON and OFF, until opened.
		**(PE) Asymmetrical flasher (starting pulse off) with control signal - (Z1-Z2 linked).** Power is permanently applied to the timer. Closing the control signal (S) initiates delay T1 after which the output contacts transfer and continue to cycle between OFF and ON, until the control signal is opened.

finder
RELAYING INNOVATION

Light dependent relays 16 A

Exterior light control

Driver's control console

Internal light management

11 SERIES

Relays for automatic control of lighting according to ambient light level - with separate light sensor

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- Sensitivity adjustment from 1 to 100 lux
- One module, 17.5 mm wide
- Low energy consumption
- 24 V DC/AC version
- For the first 3 working cycles the delay time (On and Off) is reduced to zero in order to aid installation
- LED status indication
- SELV separation between contact and supply circuit
- Double insulation between supply and light sensor
- Delay Time: 1 sec ON
  6 sec OFF
- 35 mm rail (EN 60715) mount
- Cadmium free contact material
- Cadmium free light sensor (IC photo diode)

11.31

- 1 pole
- 17.5 mm wide

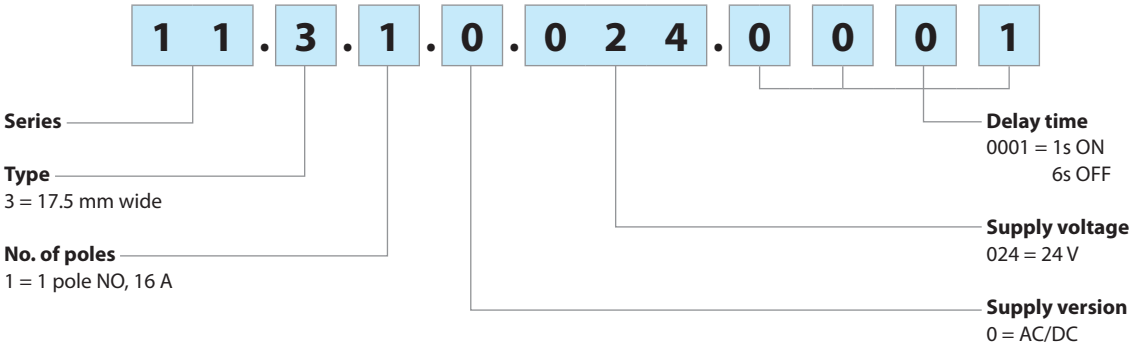
* Short term (10 min) +70°C

For outline drawing see page 77

Contact specification		
Contact configuration		1 NO (SPST-NO)
Rated current/Maximum peak current	A	16/30 (120 - 5 ms)
Rated voltage/ Maximum switching voltage	V AC	250/400
Rated load AC1	VA	4000
Rated load AC15 (230 V AC)	VA	750
Nominal lamp rating:		
230 V incandescent/halogen	W	2000
fluorescent tubes with electronic ballast	W	1000
fluorescent tubes with electromagnetic ballast	W	750
CFL	W	400
230 V LED	W	400
LV halogen or LED with electronic ballast	W	400
LV halogen or LED with electromagnetic ballast	W	800
Minimum switching load	mW (V/mA)	1000 (10/10)
Standard contact material		$AgSnO_2$
Supply specification		
Nominal voltage (U_N)	V AC (50/60 Hz)	24
	DC	24
Rated power	VA (50 Hz)/W	2.5/0.9
Operating range	V AC (50 Hz)	16.8…28.8
	DC	16.8…32
Technical data		
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$
Threshold setting:	Standard range lx	1…100
	High range lx	—
Hysteresis (switching Off/On ratio)		1.25
Delay time: switching On/Off	s	1/6
Ambient temperature range	°C	–25…+55*
Protection category: light dependent relay/light sensor		IP 20/IP 54
Approvals (according to type)		CE UKCA EAC

Ordering information

Example: 11 Series light dependent relay, 1 NO (SPST-NO) 16 A contact, 24 V AC/DC supply.



Technical data

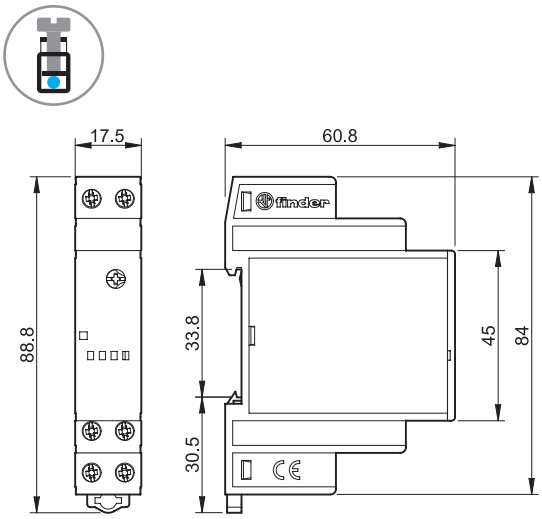
Insulation		Dielectric strength	Impulse (1.2/50 µs)
	between supply and contacts	4000 V AC	6 kV
	between supply and light sensor	2000 V AC	4 kV
	between open contacts	1000 V AC	1.5 kV
EMC specifications			
Type of test		**Reference standard**	
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV
	air discharge	EN 61000-4-2	8 kV
Radiated electromagnetic field (80…1000 MHz)		EN 61000-4-3	10 V/m
Fast transients	on supply terminals	EN 61000-4-4	3 kV
(burst 5/50 ns, 5 and 100 kHz)	on light sensor connection	EN 61000-4-4	3 kV
Voltage pulses on supply terminals	common mode	EN 61000-4-5	4 kV
(surge 1.2/50 µs)	differential mode	EN 61000-4-5	3 kV
Radiofrequency common mode voltage	on supply terminals	EN 61000-4-6	10 V
(0.15…80 MHz)	on light sensor	EN 61000-4-6	3 V
Voltage dips	70% U_N, 40% U_N	EN 61000-4-11	10 cycles
Short interruptions		EN 61000-4-11	10 cycles
Radio frequency conducted emissions	0.15…30 MHz	EN 55014	class B
Radiated emissions	30…1000 MHz	EN 55014	class B
Terminals			
Screw torque	Nm	0.8	
Max. wire size	solid cable	1 x 6 / 2 x 4 mm²	1 x 10 / 2 x 12 AWG
	stranded cable	1 x 4 / 2 x 2.5 mm²	1 x 12 / 2 x 14 AWG
Wire strip length	mm	9	
Other data			
Cable grip of light sensor	mm	7.5…9	
Maximum cable length relay to light sensor	m	50 (2 x 1.5 mm²)	
Preset threshold	lx	10	
Power lost to the environment			
	in stand-by W	0.3	
	without contact current W	0.9	
	with rated current W	1.7	

LED functions

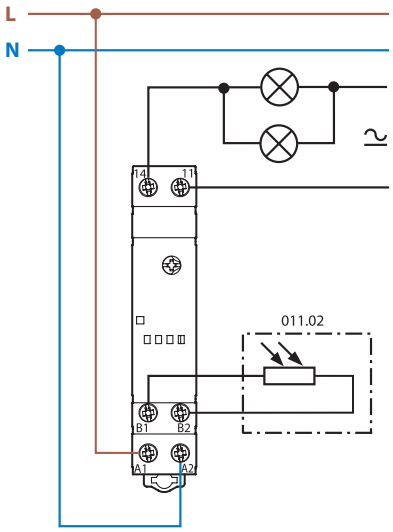
LED	Supply voltage	NO output contact 11.31
	OFF	Open
	ON	Open
	ON	Closed

Outline drawings

Type 11.31
Box clamp



Wiring diagrams



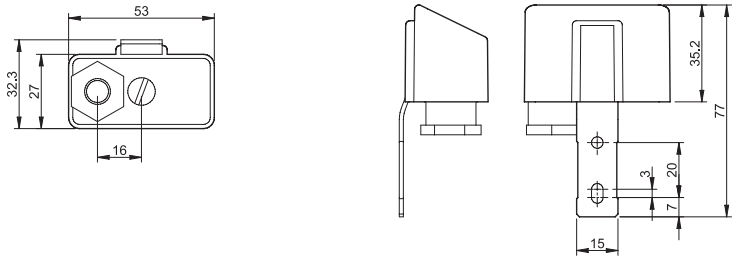
J

Accessories

011.02

Light sensor (supplied with light dependent relay)	011.02

- Ambient temperature range: –40…+70 °C
- Cadmium free
- Non polarized
- Double insulated with respect to light dependent relay supply
- Not compatible with type 11.71.0.024.1001

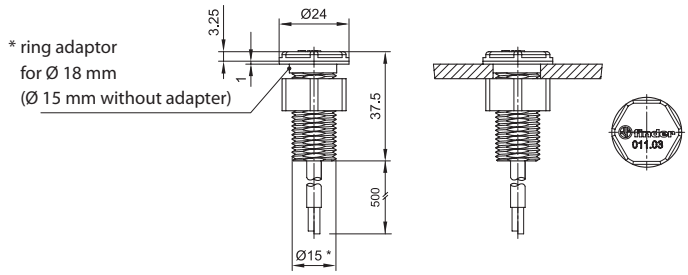


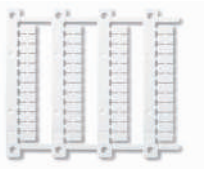
011.03

Flush-mounted light sensor (protection category: IP 66/67)	011.03

- Ambient temperature range: –40…+70 °C
- Cadmium free
- Non polarized
- Double insulated with respect to light dependent relay supply
- Not compatible with type 11.71.0.024.1001
- Supplied with light dependent relay (packaging code POA)

Connection cable		
Material		PVC, flame retardant
Conductor size	mm^2	0.5
Cable length	mm	500
Cable diameter	mm	5.0
Working voltage	V	300/500
Test voltage, cable	kV	2.5
Max. temperature	°C	+90





060.48

Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE's thermal transfer printers	060.48

J

finder
RELAYING INNOVATION

Modular contactors 25 A

Internal light management

Ancillary equipment

Mobile device charging

22
SERIES

25 A modular contactor - 2 pole or 4 pole

- Complies with EN 45545-2:2020 (protection against fire of materials), EN 61373 (resistance against random vibrations and shock, Category 1, Class B), EN 50155 (resistance to temperature and humidity, OT4/ST1 class)
- 17.5 or 35 mm wide
- NO contact gap ≥ 3 mm, double break
- Continuous duty for the coil and contacts
- AC/DC silent coil (with varistor protection)
- Protective separation (reinforced insulation) between coil and contacts
- Mechanical and LED indicators
- Compliant with EN 61095: 2009
- Auxiliary contact module available, quick-assembly with the main contactor (1 NO + 1 NC and 2 NO versions)
- 35 mm rail (EN 60715) mount

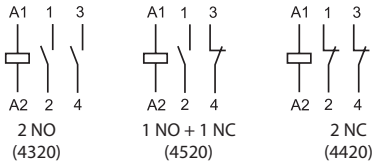
22.32…4x20/22.34…4x20
Box clamp

* Contact gap ≥ 3 mm for NO contacts only; NC contacts ≥ 1.5 mm

For outline drawings see page 85

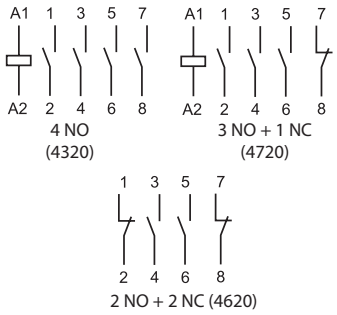
22.32.0.xxx.4x20

- $AgSnO_2$ contacts, specifically intended for lamp loads and for high inrush current loads



22.34.0.xxx.4x20

- $AgSnO_2$ contacts, specifically intended for lamp loads and for high inrush current loads



Contact specification			
Contact configuration		2 NO, 3 mm* (or 1 NO + 1 NC or 2 NC)	4 NO, 3 mm* (or 3 NO + 1 NC or 2 NO + 2 NC)
Rated current/Maximum peak current	A	25/120	25/120
Rated voltage	V AC	250/440	250/440
Rated load AC1 / AC-7a (per pole @ 250 V)	VA	6250	6250
Rated current AC3 / AC-7b	A	10	10
Rated load AC15 (per pole @ 230 V)	VA	1800	1800
Single-phase motor rating (230 V AC)	kW	1	4
Three-phase motor rating (400 - 440 V AC)	A	15	15
Rated current AC-7c	A	10	10
Nominal lamp rating:			
230 V incandescent/halogen	W	2000	2000
fluorescent tubes with electronic ballast	W	800	800
fluorescent tubes with electromechanical ballast	W	500	500
CFL	W	200	200
230 V LED	W	200	200
LV halogen or LED with electronic ballast	W	200	200
LV halogen or LED with electromechanical ballast	W	800	800
Breaking capacity DC1: 24/110/220 V	A	25/5/1	25/5/1
Minimum switching load	mW (V/mA)	1000 (10/10)	1000 (10/10)
Contact material		$AgSnO_2$	$AgSnO_2$
Coil specification			
Nominal voltage (U_N)	V DC/AC (50/60 Hz)	12 - 24 - 48 - 60 - 120 - 230	12 - 24 - 48 - 60 - 120 - 230
Rated power AC/DC	VA (50 Hz)/W	2/2.2	2/2.2
Operating range	DC/AC (50/60 Hz)	(0.8…1.1)U_N	(0.8…1.1)U_N
Holding voltage	DC/AC (50/60 Hz)	0.4 U_N	0.4 U_N
Must drop-out voltage	DC/AC (50/60 Hz)	0.1 U_N	0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$2 \cdot 10^6$	$2 \cdot 10^6$
Electrical life at rated load AC-7a	cycles	$30 \cdot 10^3$	$30 \cdot 10^3$
Operate/release time	ms	30/20	18/40
Insulation between coil and contacts (1.2/50 µs)	kV	6	6
Ambient temperature range	°C	–20…+50	–20…+50
Protection category		IP 20	IP 20
Approvals (according to type)			

Ordering information

Exemple: 22 series, modular contactor 25 A, 4 NO contacts, coil 24 V AC/DC, $AgSnO_2$ contacts, mechanical indicator + LED.

										A	B	C	D
2	2	.	3	4	.	0	.	0	2	4	.	4	3	2	0

Series

Type
3 = 25 A modular contactor range

Number of contacts
2 = 2 pole
4 = 4 pole

Coil version
0 = AC (50/60 Hz)/DC

Coil rated voltage
See coil specifications

D: Special versions
0 = Standard

C: Options
2 = Mechanical indicator + LED

B: Contact circuit
3 = All NO contacts
4 = All NC contacts (22.32 only)
5 = 1 NO + 1 NC
6 = 2 NO + 2 NC
7 = 3 NO + 1 NC

A: Contact material
4 = $AgSnO_2$

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
22.32	AC/DC	**4**	**3** - 4 - 5	**2**	0
22.34	AC/DC	**4**	**3** - 6 - 7	**2**	0

Technical data

Insulation			**22.32/22.34**	
Rated insulation voltage		V AC	250	440
Pollution degree			3	2
Insulation between coil and contact set				
Type of insulation			Reinforced	
Overvoltage category			III	
Rated impulse voltage		kV (1.2/50 µs)	6	
Dielectric strength		V AC	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	2500	
Insulation between open contacts			**NO contact**	**NC contact**
Contact gap		mm	3	1.5
Overvoltage category			III	II
Rated impulse voltage		kV (1.2/50 µs)	4	2.5
Dielectric strength		V AC/kV (1.2/50 µs)	2500/4	2000/3
Insulation between coil terminals				
Rated impulse voltage (surge) differential mode (according to EN 50121)		kV (1.2/50 µs)	4	
Short circuit protection				
Rated conditional short circuit current		kA	3	
Back-up fuse		A	32 (gL/gG type)	
Terminals			**Solid and stranded cable**	
Max. wire size – contact terminals		mm^2	1 x 6 / 2 x 4	
		AWG	1 x 10 / 2 x 12	
Max. wire size – coil terminals		mm^2	1 x 4 / 2 x 2.5	
		AWG	1 x 12 / 2 x 14	
Min. wire size – contact and coil terminals		mm^2	1 x 0.2	
		AWG	1 x 24	
Screw torque		Nm	0.8	
Wire strip length		mm	9	
Other data			**22.32**	**22.34**
Vibration resistance			According to EN 61373	
Shock resistance			According to EN 61373	
Power lost to the environment	without contact current	W	2	2
	with rated current	W	4.8	6.3

NOTE: It is suggested an air gap of 9 mm between adjacent relays for installations and working conditions close to the limit (that is, ambient temperature > 40 °C, coil operated for a prolonged period of time, all contacts loaded with current > 20 A).

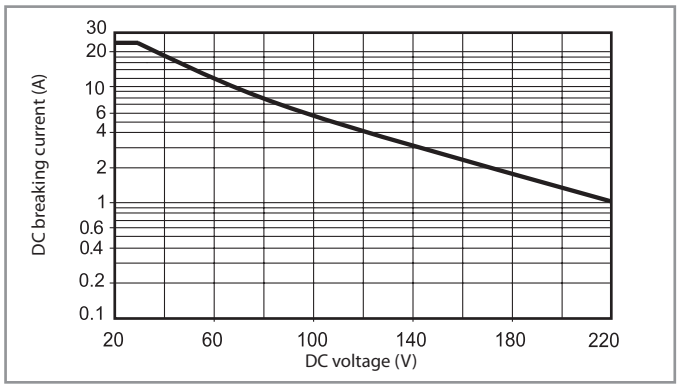
Contact specification

Ratings and utilization categories according to EN 61095: 2009

Type	Utilization category					
	AC-7a		AC-7b		AC-7c	
	Rated current (A)	Rated electrical life (Cycles)	Rated current (A)	Rated electrical life (Cycles)	Rated current (A)	Rated electrical life (Cycles)
22.32…4xx0 ($AgSnO_2$ contacts)	25	$30 \cdot 10^3$	10	$30 \cdot 10^3$	10	$30 \cdot 10^3$
22.34…4xx0 ($AgSnO_2$ contacts)	25	$30 \cdot 10^3$	10	$30 \cdot 10^3$	10	$30 \cdot 10^3$

Utilization category: **AC-7a** = Slightly inductive loads ($\cos\varphi = 0.8$)
AC-7b = Motor loads; ($\cos\varphi = 0.45$, $I_{making} = 6x\ I_{breaking}$)
AC-7c = Compensated electric discharge lamps ($\cos\varphi = 0.9$, C = 10 mF/A)

H 22 - Maximum DC1 breaking capacity - Type 22.32/22.34



- 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.

Coil specifications

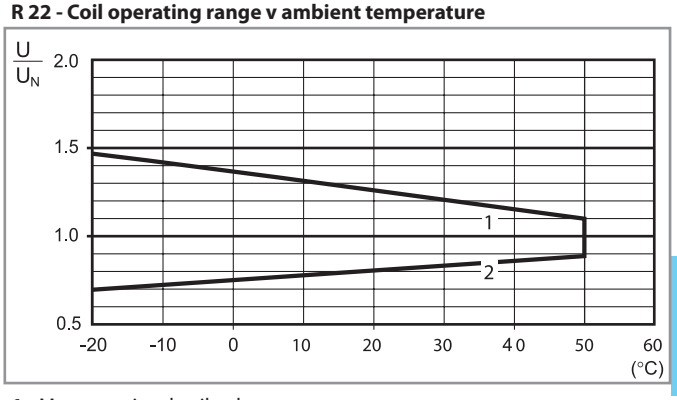
AC/DC version data (type 22.32)

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I_N at U_N (AC)
V		V	V	mA
12	**0**.012	9.6	13.2	165
24	**0**.024	19.2	26.4	83
48	**0**.048	38.4	52.8	42
60	**0**.060	48	66	33
120 (110…125)	**0**.120	88	138	16.5
230 (230…240 AC) (220 DC)	**0**.230	184 (AC) 176 (DC)	264 (AC) 242 (DC)	8.7

AC/DC version data (type 22.34)

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I_N at U_N (AC)
V		V	V	mA
12	**0**.012	9.6	13.2	165
24	**0**.024	19.2	26.4	83
48	**0**.048	38.4	52.8	42
60	**0**.060	48	66	33
120 (110…125)	**0**.120	88	138	16.5
230 (230…240 AC) (220 DC)	**0**.230	184 (AC) 176 (DC)	264 (AC) 242 (DC)	8.7

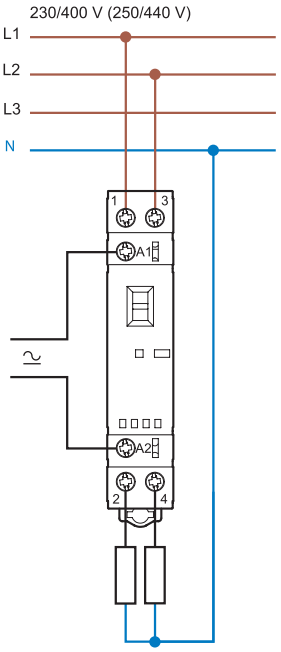
R 22 - Coil operating range v ambient temperature



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

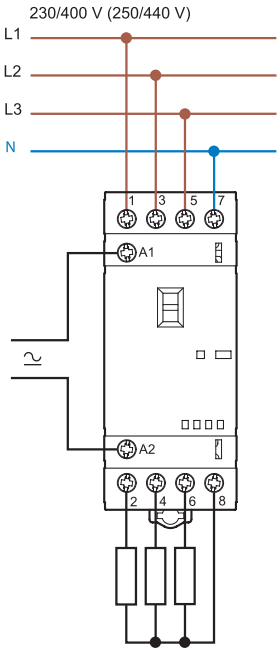
K

Wiring diagrams



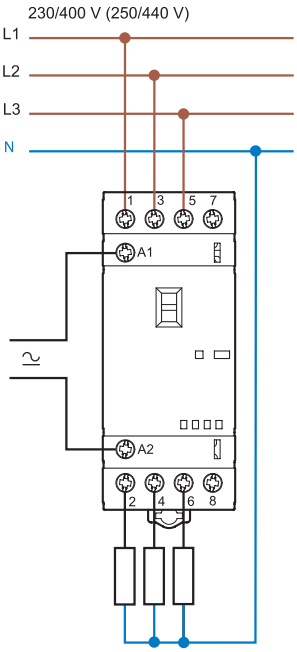
Type 22.32

Line and neutral switched



Type 22.34

Line only switched



Type 22.34

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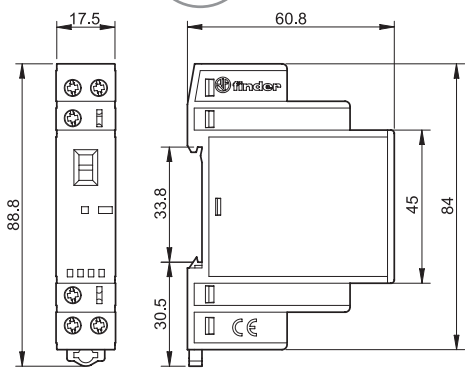
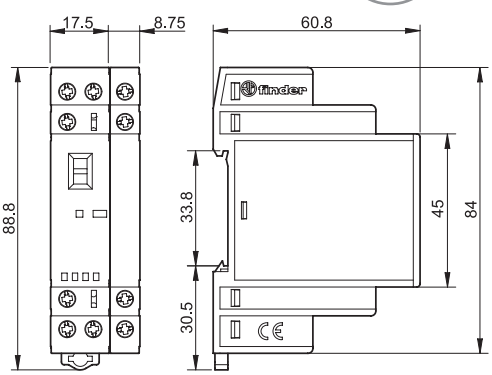
Outline drawings

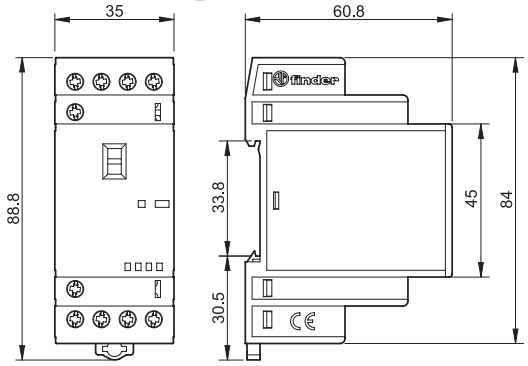
Type 22.32
Box clamp



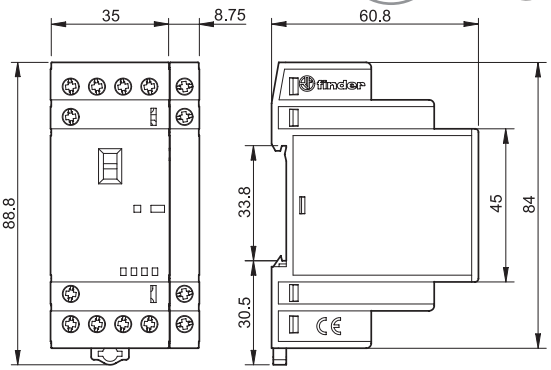
Type 22.32 + 022.33/022.35
Box clamp



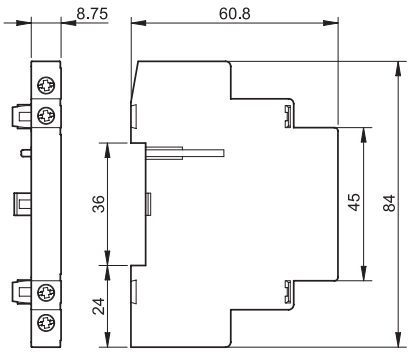
Type 22.34
Box clamp



Type 22.34 + 022.33/022.35
Box clamp



Type 022.33/022.35
Box clamp



Auxiliary modules

		022.33	022.35
			
			
Type of contactor		Type 22.32 Type 22.34	Type 22.32 Type 22.34
Contact specification			
Contact configuration		2 NO	1 NO + 1 NC
Conventional free air thermal current I_{th}	A	6	6
Rated power AC15 (230 V)	VA	700	700
Electrical life at rated load	cycles	$30 \cdot 10^3$	$30 \cdot 10^3$
Contact material		AgNi	AgNi
Short circuit protection			
Rated conditional short circuit current	kA	1	1
Back-up fuse	A	6 (gL/gG type)	6 (gL/gG type)
Terminals		**Solid and stranded cable**	
Max. wire size	mm^2	1 x 4 / 2 x 2.5	1 x 4 / 2 x 2.5
	AWG	1 x 12 / 2 x 14	1 x 12 / 2 x 14
Min. wire size	mm^2	1 x 0.2	1 x 0.2
	AWG	1 x 24	1 x 24
Screw torque	Nm	0.8	0.8
Wire strip length	mm	9	9
Power lost to the environment			
without contact current	W	—	—
with rated current	W	0.5	0.5
Approvals (according to type)			

NOTE: It is not possible to assembly the auxiliary module on 22.32.0.xxx.x4x0 (2 NC versions).

22.32 + 022.33/022.35

22.34 + 022.33/022.35

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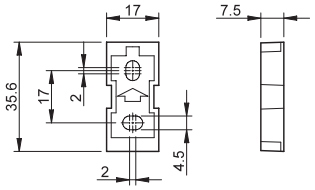
Accessories

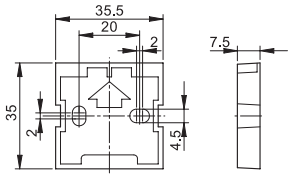
020.01

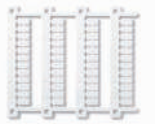
Adaptor for panel mounting (for 22.32 type), plastic, 17.5 mm wide | 020.01



011.01

Adaptor for panel mounting (for 22.34 type), plastic, 35 mm wide | 011.01





060.48

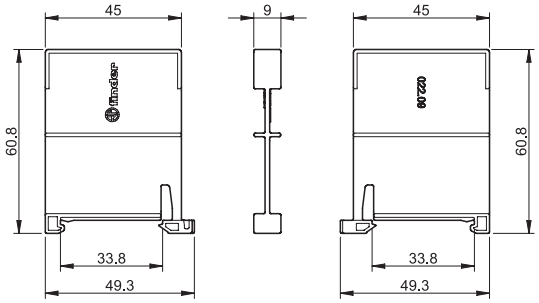
Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE's thermal transfer printers | 060.48

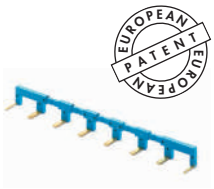
019.01

Identification tag, plastic, 1 tag, 17 x 25.5 mm | 019.01

022.09

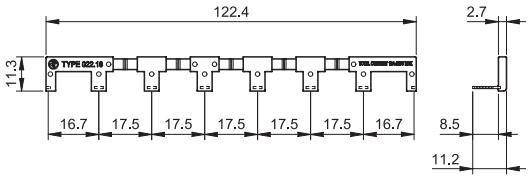
Separator for rail mounting, plastic, 9 mm wide | 022.09

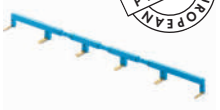




022.18

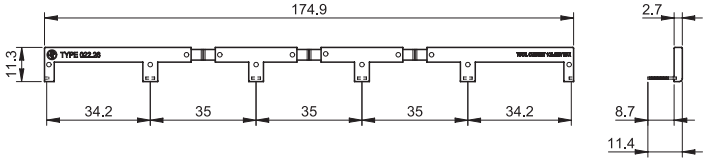
8-way jumper link for type 22.32, 17.5 mm wide | 022.18 (blue)
Rated values | 10 A - 250 V





022.26

6-way jumper link for type 22.34, 35 mm wide | 022.26 (blue)
Rated values | 10 A - 250 V



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