

**Relays, Timers, Interface Modules,
Sockets and Accessories.**
2002 - 2003 Catalogue



Finder's 10,000 different products represent one of the most extensive product lines available on the market. They are the result of specialization across a variety of relay types: step relays, light dependent relays, miniature and sub-miniature p.c.b relays, plug-in general purpose and power relays, relay interface modules, timers relay sockets and accessories.

Our four factories produce over 150,000 relays every day, using machines which have been designed and built in-house by our own team of technicians, who are experts in their own right in production techniques and industrial automation.

Finder has always followed a product value strategy aimed at constantly increasing quality. Product line reliability has been recognized through approvals by international standards organizations such as the BBJ, BEAB, CSA, DEMKO, FIMKO, GL, GOST, IMO, IRAM, NEMKO, RINA, SEV, SEMKO, UL, UTE and VDE, and through CE certification.

As important as these quality approvals are, Finder considers it no more important than its partnerships with customers, who are able to value the quality of its products and after-sales service.



For up-to-date information regarding Finder, visit our web site at www.findernet.com

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PRICE LIST

CATALOG ON CD-ROM

SALES ENGINEER TO VISIT

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30 Series - Subminiature D.I.L. Relays 1.25 A

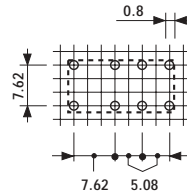
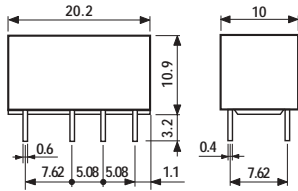
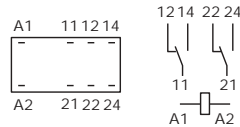
30

- Low level switching capability
- Sensitive DC coil, 200mW
- Relay technology: RT III

30.22



- Low consumption
- P.C.B. mounting



Copper side view

Contact specifications

| | | |
|--|-----------|------------|
| Contact configuration | | 2 CO |
| Rated current/Maximum peak current | A | 1.25/2 |
| Rated voltage/Maximum switching voltage V AC | | 125/250 |
| Rated load in AC1 | VA | 125 |
| Rated load in AC15 (230 VAC) | VA | 25 |
| Single phase motor rating (230 VAC) | kW | — |
| Breaking capacity in DC1: 30/110/220V | A | 2/0.3/— |
| Minimum switching load | mW (V/mA) | 10 (0.1/1) |
| Standard contact material | | AgNi+Au |

Coil specifications

| | | |
|-----------------------------------|-----------------|--------------------------|
| Nominal voltage (U _N) | V AC (50/60 Hz) | — |
| | V DC | 5 · 6 · 9 · 12 · 24 · 48 |
| Rated power AC/DC | VA (50 Hz)/W | —/0.2 |
| Operating range | AC (50 Hz) | — |
| | DC | see table page 5 |
| Holding voltage | AC/DC | —/0.35 U _N |
| Must drop-out voltage | AC/DC | —/0.05 U _N |

Technical data

| | | |
|---|--------|------------------------|
| Mechanical life AC/DC | cycles | —/10 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 15/10 |
| Insulation according to EN 61810-5 | | 1.2 kV/2 |
| Insulation between coil and contacts (1.2/50μs) | kV | 1.5 |
| Dielectric strength between open contacts | V AC | 750 |
| Ambient temperature range | °C | -40...+85 |
| Environmental protection | | RT III |

Approvals: (according to type)

—

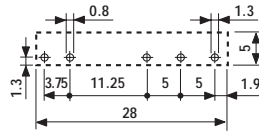
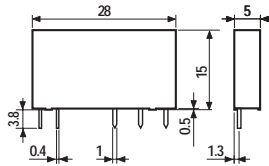
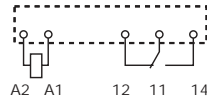
34

- Ultra-slim, 5 mm wide
- Sensitive DC coil, 170mW
- 6/8 mm distance/creepage
- 6kV (1.2/50 μs) between coil and contacts

34.51



- 5 mm wide
- P.C.B. mounting



Copper side view

* for 400 V applications, requirements for pollution degree 2 are met.

| Contact specifications | | |
|---|-----------------|---------------------------|
| Contact configuration | | 1 CO |
| Rated current/Maximum peak current | A | 6/10 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* |
| Rated load in AC1 | VA | 1,500 |
| Rated load in AC15 (230 VAC) | VA | 300 |
| Single phase motor rating (230 VAC) | kW | — |
| Breaking capacity in DC1: 30/110/220V | A | 6/0.2/0.12 |
| Minimum switching load | mW (V/mA) | 500 (12/10) |
| Standard contact material | | AgNi |
| Coil specifications | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | — |
| | V DC | 5 · 12 · 24 · 48 · 60 |
| Rated power AC/DC | VA (50 Hz)/W | —/0.17 |
| Operating range | AC (50 Hz) | — |
| | DC | (0.7...1.5)U _N |
| Holding voltage | AC/DC | —/0.4 U _N |
| Must drop-out voltage | AC/DC | —/0.05 U _N |
| Technical data | | |
| Mechanical life AC/DC | cycles | —/10 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 60 · 10 ³ |
| Operate/release time (bounce included) | ms | 7/8 |
| Insulation according to EN 61810-5 | | 4 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 (8 mm) |
| Dielectric strength between open contacts | V AC | 1,000 |
| Ambient temperature range | °C | -40...+85 |
| Environmental protection | | RT II |
| Approvals: (according to type) | | |
| | | |

- Ultra-slim, 5 mm wide
- High switching speed and endurance
- Silent switching

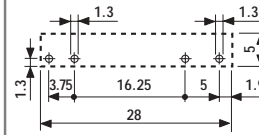
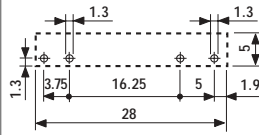
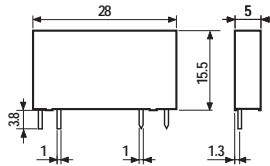
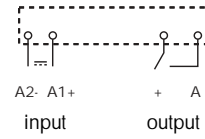
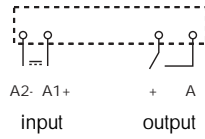
34.81....9024

34.81....7048



- Switching current 2A - 24 V DC
- P.C.B. mounting

- Switching current 100 mA - 48 V DC
- P.C.B. mounting



Copper side view

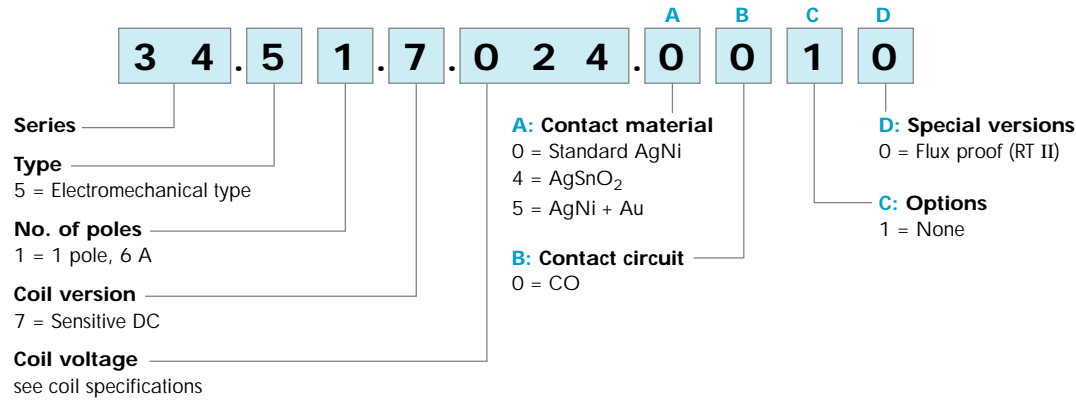
Copper side view

| Output circuit | | | | | |
|--|------|-----------|---------|-----------|---------|
| Maximum switching current | A | 2 | | 0.1 | |
| Rated voltage | V DC | 24 | | 48 | |
| Switching voltage range | V DC | 0...24 | | 0...48 | |
| Maximum blocking voltage | V DC | 33 | | 60 | |
| Input circuit | | | | | |
| Nominal voltage | V DC | 24 | 60 | 24 | 60 |
| Operating range | V DC | 16...30 | 35...72 | 16...30 | 35...72 |
| Control current | mA | 7 | 3 | 7 | 3 |
| Release voltage | V DC | 10 | 20 | 10 | 20 |
| Technical data | | | | | |
| Dielectric strength between input/output | V | 2500 | | 2500 | |
| Ambient temperature range | °C | -20...+55 | | -20...+55 | |
| Environmental protection | | RT II | | RT II | |
| Approvals: (according to type) | | — | | — | |

ORDERING INFORMATION

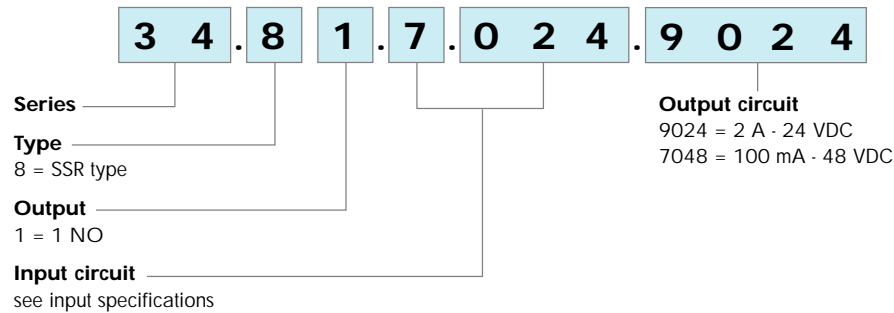
34 ELECTROMECHANICAL RELAY

Example: a 34 series slim electromechanical relay, 1 CO - 6 A, with 24 V sensitive DC coil.



SOLID STATE RELAY

Example: a 34 series SSR relay, 2 A, with 24 V DC supply.



SOLID STATE RELAY

OTHER DATA

| | | | |
|-------------------------------|-------------------------|---|------|
| POWER LOST TO THE ENVIRONMENT | without contact current | W | 0.17 |
| | with rated current | W | 0.4 |

INPUT SPECIFICATION

DC VERSION DATA

| Nominal voltage U _N | Input code | Operating range | | Release voltage | Control current I at U _N |
|-----------------------------------|------------|------------------|------------------|-----------------|--|
| | | U _{min} | U _{max} | | |
| V | | V | V | V | mA |
| 24 | 7.024 | 16 | 30 | 10 | 7 |
| 60 | 7.060 | 35 | 72 | 20 | 3 |

ELECTROMECHANICAL RELAY

TECHNICAL DATA

34

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 4 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

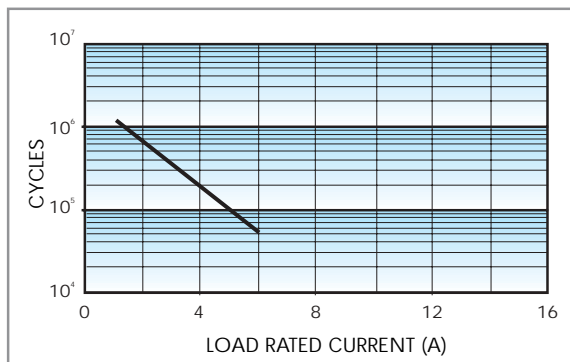
| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2 kV) |

OTHER DATA

| | | | |
|--|-------------------------|------|-----|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/5 | |
| POWER LOST TO THE ENVIRONMENT | without contact current | W | 0.2 |
| | with rated current | W | 0.5 |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | |

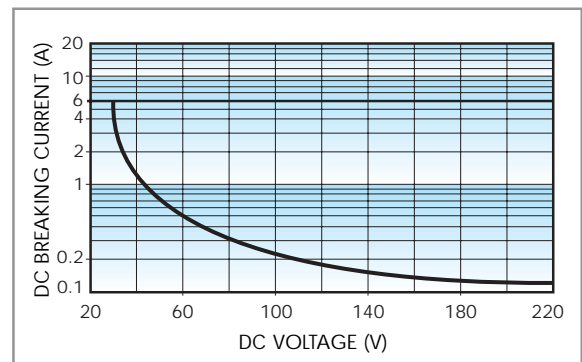
CONTACT SPECIFICATIONS

F 34



Electrical life vs AC1 load.

H 34



Breaking capacity in DC1 load.

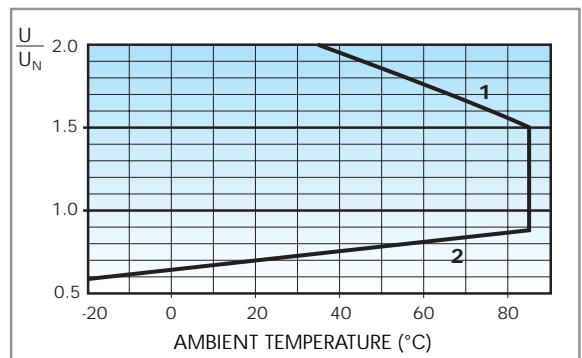
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

COIL SPECIFICATIONS

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-------------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 5 | 7.005 | 3.5 | 7.5 | 130 | 38.4 |
| 12 | 7.012 | 8.4 | 18 | 840 | 14.2 |
| 24 | 7.024 | 16.8 | 36 | 3,350 | 7.1 |
| 48 | 7.048 | 33.6 | 72 | 12,300 | 3.9 |
| 60 | 7.060 | 42 | 90 | 19,700 | 3 |

R 34 DC



Operating range vs ambient temperature.



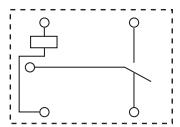
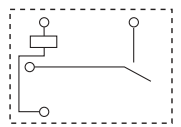
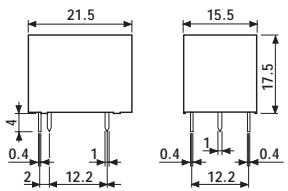
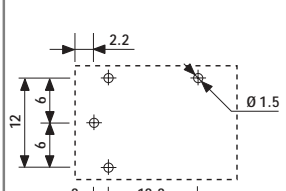


- 1 - Max coil voltage permitted.
- 2 - Min pick-up voltage with coil at ambient temperature.

- P.C.B. mount
- Sugar cube
- DC coil
- Sealed

36

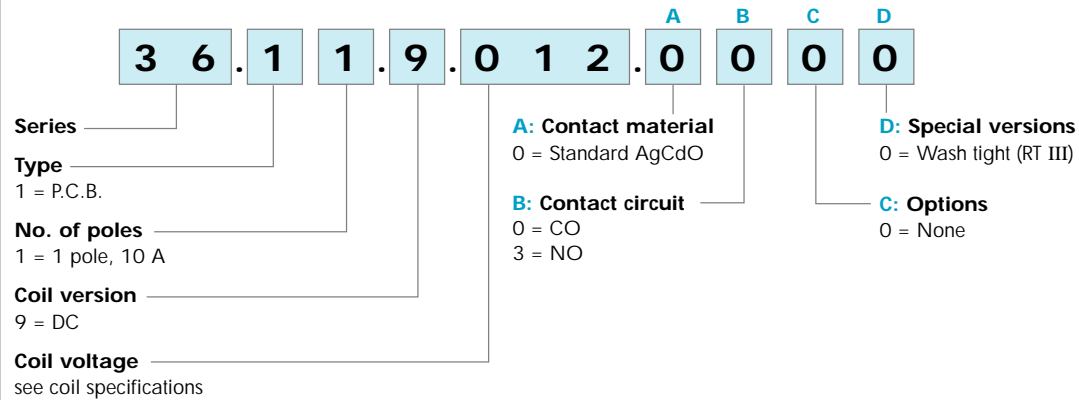
36.11

36.11...0300

| | | |
|---|---|---|
| |  |  |
| | <ul style="list-style-type: none"> - Sugar cube - 1 CO - P.C.B. mounting | <ul style="list-style-type: none"> - Sugar cube - 1 NO - P.C.B. mounting |
| |  |  |
| |  |  |
| | Copper side view | Copper side view |
| Contact specifications | | |
| Contact configuration | 1 CO | 1 NO |
| Rated current/Maximum peak current A | 10/15 | 10/15 |
| Rated voltage/Maximum switching voltage V AC | 250/250 | 250/250 |
| Rated load in AC1 VA | 2,500 | 2,500 |
| Rated load in AC15 (230 VAC) VA | 500 | 500 |
| Single phase motor rating (230 VAC) kW | 0.37 | 0.37 |
| Breaking capacity in DC1: 30/110/220V A | 10/0.2/0.12 | 10/0.2/0.12 |
| Minimum switching load mW (V/mA) | 500 (5/100) | 500 (5/100) |
| Standard contact material | AgCdO | AgCdO |
| Coil specifications | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | — |
| | V DC | 3 · 5 · 6 · 9 · 12 · 24 · 48 |
| Rated power AC/sens. DC VA (50 Hz)/W | —/0.36 | —/0.36 |
| Operating range | AC (50 Hz) | — |
| | DC | (0.75...1.5)U _N |
| Holding voltage AC/DC | —/0.4 U _N | —/0.4 U _N |
| Must drop-out voltage AC/DC | —/0.1 U _N | —/0.1 U _N |
| Technical data | | |
| Mechanical life AC/DC cycles | —/10 · 10 ⁶ | —/10 · 10 ⁶ |
| Electrical life at rated load AC1 cycles | 100 · 10 ³ | 100 · 10 ³ |
| Operate/release time (bounce included) ms | 10/5 | 10/5 |
| Insulation according to EN 61810-5 | 2.5 kV/2 | 2.5 kV/2 |
| Insulation between coil and contacts (1.2/50µs) kV | 4 | 4 |
| Dielectric strength between open contacts V AC | 1,000 | 1,000 |
| Ambient temperature range °C | -40...+85 | -40...+85 |
| Environmental protection | RT III | RT III |
| Approvals: (according to type) |  |  |

ORDERING INFORMATION

Example: a 36 series miniature P.C.B. relay, 1 CO - 10 A contacts, with 12 V DC coil.



36

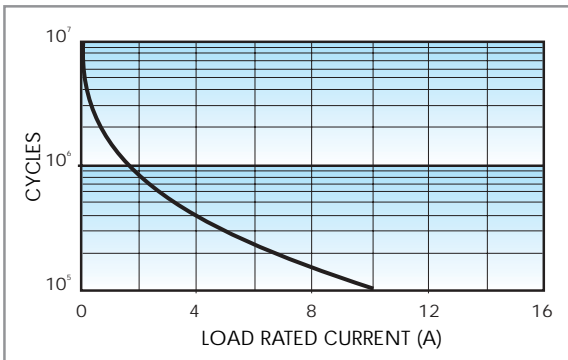
TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 2.5 |
| | pollution degree | | 2 |
| | overvoltage category | | II |

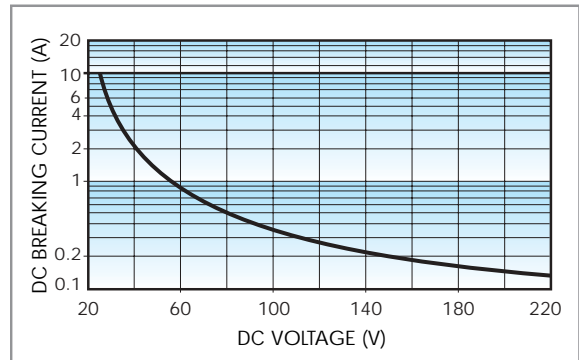
CONTACT SPECIFICATIONS

F 36



Electrical life vs AC1 load.

H 36



Breaking capacity in DC1 load.

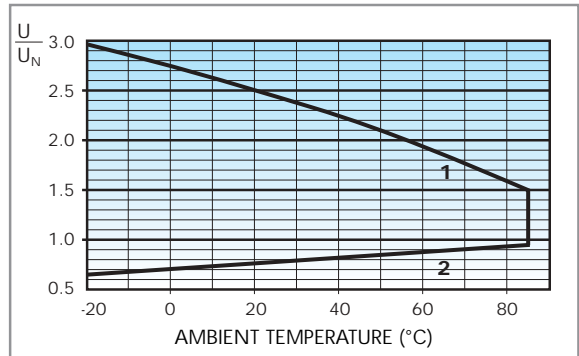
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

COIL SPECIFICATIONS

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 3 | 9.003 | 2.2 | 4.5 | 25 | 120 |
| 5 | 9.005 | 3.7 | 7.5 | 70 | 72 |
| 6 | 9.006 | 4.5 | 9 | 100 | 60 |
| 9 | 9.009 | 6.7 | 13.5 | 225 | 40 |
| 12 | 9.012 | 9 | 18 | 400 | 30 |
| 24 | 9.024 | 18 | 36 | 1,600 | 15 |
| 48 | 9.048 | 36 | 72 | 6,400 | 7.5 |

R 36

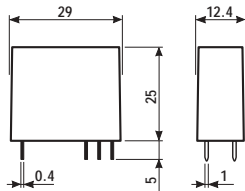


Operating range vs ambient temperature.

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

- P.C.B. or plug-in mount
- AC, DC, sensitive DC or single bistable coil versions available
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets and accessories: see 95, 99 and 86 series
- RT III (wash tight) version available

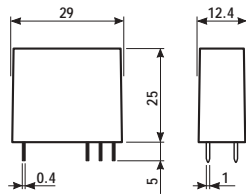
40



* for 400 V applications, requirements for pollution degree 2 are met.

| | 40.31 | 40.51 | 40.52 |
|--|---|---|--|
| | | | |
| | <ul style="list-style-type: none"> - 1 pole, 10 A - 3.5 mm pinning - P.C.B. / for use with 95 series sockets | <ul style="list-style-type: none"> - 1 pole, 10 A - 5 mm pinning - P.C.B. / for use with 95 series sockets | <ul style="list-style-type: none"> - 2 pole, 8 A - 5 mm pinning - P.C.B. / for use with 95 series sockets |
| | <p>Copper side view</p> | <p>Copper side view</p> | <p>Copper side view</p> |
| Contact specifications | | | |
| Contact configuration | 1 CO | 1 CO | 2 CO |
| Rated current/Maximum peak current A | 10/20 | 10/20 | 8/15 |
| Rated voltage/Maximum switching voltage V AC | 250/400* | 250/400* | 250/250 |
| Rated load in AC1 VA | 2,500 | 2,500 | 2,000 |
| Rated load in AC15 (230 VAC) VA | 500 | 500 | 400 |
| Single phase motor rating (230 VAC) kW | 0.37 | 0.37 | 0.3 |
| Breaking capacity in DC1: 30/110/220V A | 10/0.3/0.12 | 10/0.3/0.12 | 8/0.3/0.12 |
| Minimum switching load mW (V/mA) | 300 (5/5) | 300 (5/5) | 300 (5/5) |
| Standard contact material | AgNi | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage (U _N) V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | | |
| V DC | 5 · 6 · 7 · 9 · 12 · 14 · 18 · 21 · 24 · 28 · 36 · 48 · 60 · 90 · 110 | | |
| Rated power AC/DC/sens. DC VA (50 Hz)/W/W | 1.2/0.65/0.5 | 1.2/0.65/0.5 | 1.2/0.65/0.5 |
| Operating range AC (50 Hz) | (0.8...1.1)U _N | | |
| DC/sens. DC | (0.73...1.5)U _N /(0.73...1.75)U _N | | |
| Holding voltage AC/DC | 0.8 U _N /0.4 U _N | | |
| Must drop-out voltage AC/DC | 0.2 U _N /0.1 U _N | | |
| Technical data | | | |
| Mechanical life AC/DC cycles | 10 · 10 ⁶ /20 · 10 ⁶ | | |
| Electrical life at rated load AC1 cycles | 200 · 10 ³ | | |
| Operate/release time (bounce included) ms | 10/10 · (15/12 sens.) | | |
| Insulation according to EN 61810-5 | 3.6 kV/3 | | |
| Insulation between coil and contacts (1.2/50μs) kV | 6 (8mm) | | |
| Dielectric strength between open contacts V AC | 1,000 | | |
| Ambient temperature range °C | -40...+85 | | |
| Environmental protection | RT I | | |
| Approvals: (according to type) | | | |

- P.C.B. or plug-in mount
- AC, DC, sensitive DC or single bistable coil versions available
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets and accessories: see 95, 99 and 86 series
- RT III (wash tight) version available



* for 400 V applications, requirements for pollution degree 2 are met.
 ** with the AgSnO₂ material the maximum peak current is 100 A · 5 ms.

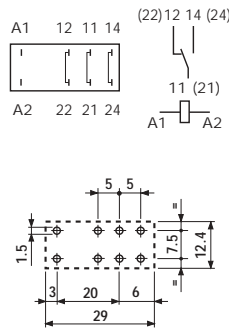
40.61

40.xx.6



- 1 pole, 16 A
- 5 mm pinning
- P.C.B. / for use with 95 series sockets

- Bistable version (1 coil)
- P.C.B. / for use with 95 series sockets



Copper side view

Bistable version (1 coil) types:

- 40.31.6...
- 40.51.6...
- 40.52.6...
- 40.61.6...

For wiring diagrams see page 16

Copper side view

| Contact specifications | | | |
|---|-----------------|---|-------------------------------|
| Contact configuration | | 1 CO | |
| Rated current/Maximum peak current | A | 16/30** | |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | See relays |
| Rated load in AC1 | VA | 4,000 | 40.31 |
| Rated load in AC15 (230 VAC) | VA | 750 | 40.51 |
| Single phase motor rating (230 VAC) | kW | 0.55 | 40.52 |
| Breaking capacity in DC1: 30/110/220V | A | 16/0.3/0.12 | 40.61 |
| Minimum switching load | mW (V/mA) | 500 (10/5) | |
| Standard contact material | | AgCdO | |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | 5 · 6 · 12 · 24 · 48 · 110 |
| | V DC | ***See below | 5 · 6 · 12 · 24 · 48 · 110 |
| Rated power AC/DC/sens. DC | VA (50 Hz)/W/W | 1.2/0.65/0.5 | 1.0/1.0/— |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC/sens. DC | (0.73...1.5)U _N /(0.8...1.5)U _N | (0.8...1.1)U _N /— |
| Holding voltage | AC/DC | 0.8 U _N /0.4 U _N | — |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | — |
| Technical data | | | |
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /20 · 10 ⁶ | See relays |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ | 40.31 |
| Operate/release time (bounce included) | ms | 10/10 · (15/12 sens.) | 40.51 |
| Insulation according to EN 61810-5 | | 3.6 kV/3 | 40.52 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 (8mm) | 40.61 |
| Dielectric strength between open contacts | V AC | 1,000 | |
| Ambient temperature range | °C | -40...+85 | Min. impulse duration ≥ 20 ms |
| Environmental protection | | RT I | |
| Approvals: (according to type) | | | |
| | | | |

*** Nominal voltage (U_N):
 5 · 6 · 7 · 9 · 12 · 14 · 18 · 21 ·
 24 · 28 · 36 · 48 · 60 · 90 ·
 110 V DC

ORDERING INFORMATION

40

Example: a 40 series P.C.B. relay with 2 CO contacts, with coil rated at 230 V AC.

4 0 . 5 2 . 8 . 2 3 0 . 0 0 0 0

A
B
C
D

Series

Type

- 3 = P.C.B. - 3.5 mm pinning
- 5 = P.C.B. - 5 mm pinning
- 6 = P.C.B. - 5 mm pinning

No. of poles

- 1 = 1 pole
for: 40.31, 10 A
40.51, 10 A
40.61, 16 A
- 2 = 2 pole
for 40.52, 8 A

Coil version

- 6 = AC/DC bistable
- 7 = Sensitive DC
- 8 = AC (50/60 Hz)
- 9 = DC

Coil voltage

see coil specifications

A: Contact material

- 0 = Standard AgNi
for: 40.31/51/52
AgCdO for 40.61
- 2 = AgCdO
- 4 = AgSnO₂
- 5 = AgNi + Au (5µm)

B: Contact circuit

- 0 = CO
- 3 = NO

D: Special versions

- 0 = Standard
- 1 = Wash tight (RT III)
- 3 = High temperature (+125°C)
wash tight

C: Options

- 0 = None

Only combinations in the same row are possible

Preferred versions

| | coil version | A | B | C | D |
|----------|---------------|---|---|---|---|
| 40.31/51 | AC/DC/sens.DC | 0 | 0 | 0 | 0 |
| 40.52 | AC/DC/sens.DC | 0 | 0 | 0 | 0 |
| 40.61 | AC/DC/sens.DC | 0 | 0 | 0 | 0 |

All versions

| | coil version | A | B | C | D |
|--------------------|--------------|-----------|-------|---|-----------|
| 40.31/51 | AC/sens.DC | 0 - 2 - 5 | 0 - 3 | 0 | 0 - 1 |
| 40.31/51 | DC | 0 - 2 - 5 | 0 - 3 | 0 | 0 - 1 - 3 |
| 40.52 | AC/sens.DC | 0 - 2 - 5 | 0 - 3 | 0 | 0 - 1 |
| 40.52 | DC | 0 - 2 - 5 | 0 - 3 | 0 | 0 - 1 - 3 |
| 40.61 | AC/sens.DC | 0 - 4 | 0 - 3 | 0 | 0 - 1 |
| 40.61 | DC | 0 - 4 | 0 - 3 | 0 | 0 - 1 - 3 |
| 40.31/51/ 52/61 | bistable | 0 | 0 | 0 | 0 |

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|---------------------|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 (1 CO) 2 (2CO) |
| | overvoltage category | | III |

IMMUNITY

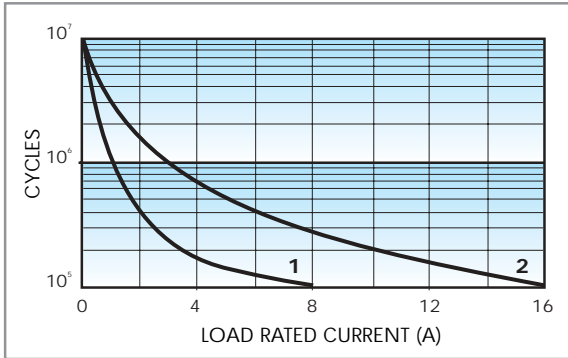
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

OTHER DATA

| | | | |
|--|-------------------------|----------------|--------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/4 (1CO) | 3/3 (2CO) |
| POWER LOST TO THE ENVIRONMENT | without contact current | W | |
| | with rated current | 1.2 (40.31/51) | 2 (40.61/52) |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | |

CONTACT SPECIFICATIONS

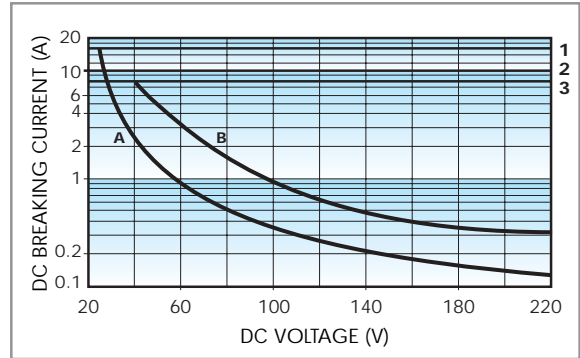
F 40



Electrical life vs AC1 load.

- 1** - Type 40.52 (8 A)
- 2** - Type 40.31 - 40.51 (10 A)
Type 40.61 (16 A)

H 40


40

Breaking capacity for DC1 load.

- 1** - Type 40.61
- 2** - Type 40.31 - 40.51
- 3** - Type 40.52
- A** - Load applied to 1 contact
- B** - Load applied to 2 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

COIL SPECIFICATIONS

DC VERSION DATA (0.65 W standard)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 5 | 9.005 | 3.65 | 7.5 | 38 | 130 |
| 6 | 9.006 | 4.4 | 9 | 55 | 109 |
| 7 | 9.007 | 5.1 | 10.5 | 75 | 94 |
| 9 | 9.009 | 6.6 | 13.5 | 125 | 72 |
| 12 | 9.012 | 8.8 | 18 | 220 | 55 |
| 14 | 9.014 | 10.2 | 21 | 300 | 47 |
| 18 | 9.018 | 13.1 | 27 | 500 | 36 |
| 21 | 9.021 | 15.3 | 31.5 | 700 | 30 |
| 24 | 9.024 | 17.5 | 36 | 900 | 27 |
| 28 | 9.028 | 20.5 | 42 | 1,200 | 23 |
| 36 | 9.036 | 26.3 | 54 | 2,000 | 18 |
| 48 | 9.048 | 35 | 72 | 3,500 | 14 |
| 60 | 9.060 | 43.8 | 90 | 5,500 | 11 |
| 90 | 9.090 | 65.7 | 135 | 12,500 | 7.2 |
| 110 | 9.110 | 80.3 | 165 | 18,000 | 6.2 |

DC VERSION DATA (0.5 W sensitive)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|------------------|---------------------|-----------------------------|--|
| | | U_{min}^* V | U_{max}^{**} V | | |
| 5 | 7.005 | 3.7 | 8.8 | 50 | 100 |
| 6 | 7.006 | 4.4 | 10.5 | 75 | 80 |
| 7 | 7.007 | 5.1 | 12.2 | 100 | 70 |
| 9 | 7.009 | 6.6 | 15.8 | 160 | 56 |
| 12 | 7.012 | 8.8 | 21 | 300 | 40 |
| 14 | 7.014 | 10.2 | 24.5 | 400 | 35 |
| 18 | 7.018 | 13.2 | 31.5 | 650 | 27.7 |
| 21 | 7.021 | 15.4 | 36.9 | 900 | 23.4 |
| 24 | 7.024 | 17.5 | 42 | 1,200 | 20 |
| 28 | 7.028 | 20.5 | 49 | 1,600 | 17.5 |
| 36 | 7.036 | 26.3 | 63 | 2,600 | 13.8 |
| 48 | 7.048 | 35 | 84 | 4,800 | 10 |
| 60 | 7.060 | 43.8 | 105 | 7,200 | 8.4 |
| 90 | 7.090 | 65.7 | 157 | 16,200 | 5.6 |
| 110 | 7.110 | 80.3 | 192 | 23,500 | 4.7 |

* $U_{min} = 0.8 U_N$ for 40.61 ** $U_{max} = 1.5 U_N$ for 40.61

AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 21 | 168 |
| 12 | 8.012 | 9.6 | 13.2 | 80 | 90 |
| 24 | 8.024 | 19.2 | 26.4 | 320 | 45 |
| 48 | 8.048 | 38.4 | 52.8 | 1,350 | 21 |
| 60 | 8.060 | 48 | 66 | 2,100 | 16.8 |
| 110 | 8.110 | 88 | 121 | 6,900 | 9.4 |
| 120 | 8.120 | 96 | 132 | 9,000 | 8.4 |
| 230 | 8.230 | 184 | 253 | 28,000 | 5 |
| 240 | 8.240 | 192 | 264 | 31,500 | 4.1 |

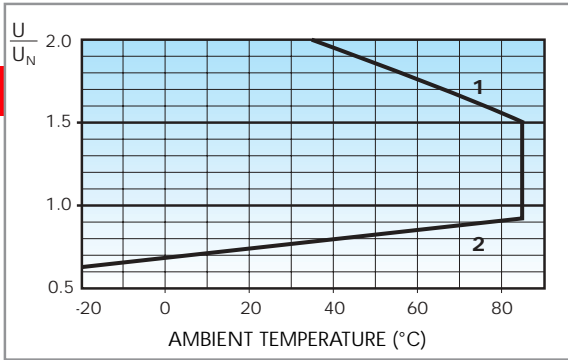
AC/DC VERSION DATA (bistable)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA | DC: Release resistance** R_{DC} Ω |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|--|
| | | U_{min} V | U_{max} V | | | |
| 5 | 6.005 | 4 | 5.5 | 23 | 215 | 37 |
| 6 | 6.006 | 4.8 | 6.6 | 33 | 165 | 62 |
| 12 | 6.012 | 9.6 | 13.2 | 130 | 83 | 220 |
| 24 | 6.024 | 19.2 | 26.4 | 520 | 40 | 910 |
| 48 | 6.048 | 38.4 | 52.8 | 2,100 | 21 | 3,600 |
| 110 | 6.110 | 88 | 121 | 11,000 | 10 | 16,500 |

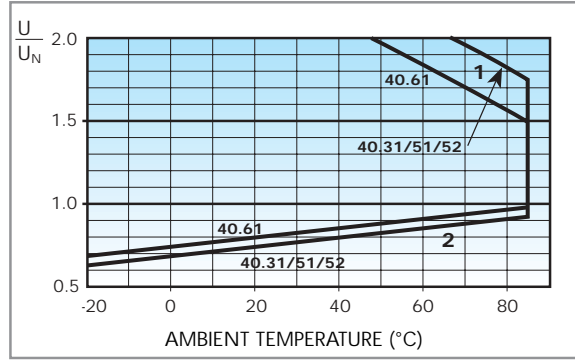
** R_{DC} = Resistance in DC, $R_{AC} = 1.3 \times R_{DC}$, 1W

COIL SPECIFICATIONS

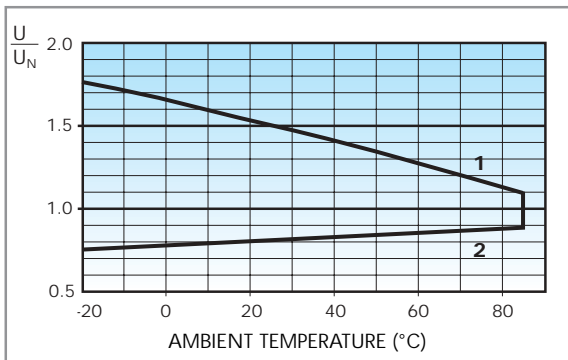
R 40 DC



R 40 sens. DC



R 40 AC

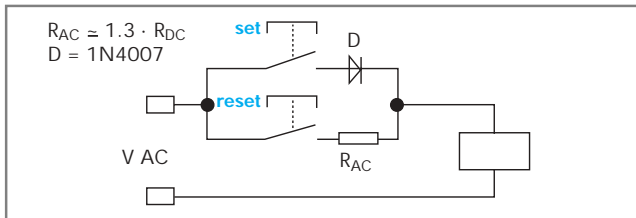


Operating range vs ambient temperature.

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

Wiring Diagram for 40 Series bistable coil version

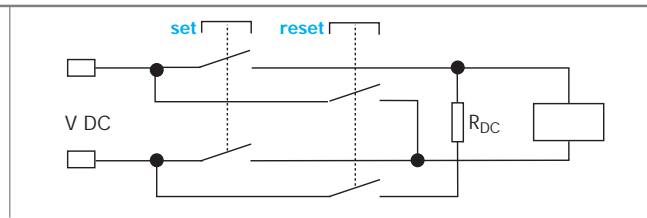
AC Operation



On momentary closure of the SET switch the relay is magnetised through the diode and the relay contacts transfer to the set position and remain in this position.

On momentary closure of the RESET switch the relay is demagnetised through limiting resistor (R_{AC}) and the contacts return to the reset position.

DC Operation



On momentary closure of the SET switch the relay is magnetised and the relay contacts transfer to the set position and remain in this position.

On momentary closure of the RESET switch the relay is demagnetised through limiting resistor (R_{DC}) and the contacts return to the reset position.

Notes: The minimum SET or RESET impulse time is 20 ms. The maximum time can be continuous. In practice, always ensure that the SET and RESET contacts cannot be operated simultaneously.



95.05

Approvals
(according to type):



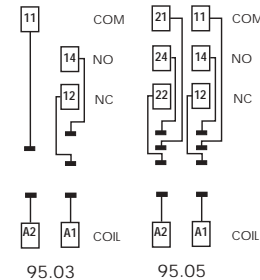
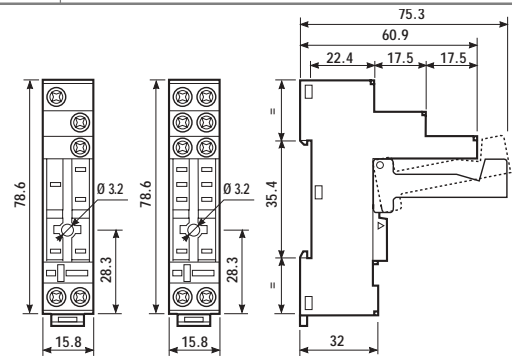
095.01

- RATED VALUES: 10 A - 250 V
with a current >10 A, the contact terminal must be connected in parallel (21 with 11, 24 with 14, 22 with 12)
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Relay type | 40.31 | | 40.51, 40.52, 40.61 | |
|--|--------------|----------|---------------------|----------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount, retaining clip 095.01 supplied with socket packaging code SPA | 95.03 | 95.03.0 | 95.05 | 95.05.0 |
| Plastic retaining and release clip | 095.01 | 095.01.0 | 095.01 | 095.01.0 |
| Metal retaining clip | 095.71 | | | |
| 8-way jumper link for 95.03 and 95.05 sockets | 095.18 | 095.18.0 | 095.18 | 095.18.0 |
| Identification tag | 095.00.4 | | | |
| Modules (see table below) | 99.02 | | | |
| Timer modules | 86.10, 86.20 | | | |

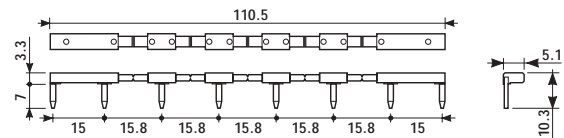
40



095.18

- RATED VALUES: 10 A - 250 V

| | |
|---|--------|
| 8-way jumper link for 95.03, and 95.05 sockets | 095.18 |
|---|--------|



99.02

| 99.02 modules for 95.03 and 95.05 sockets | | BLUE |
|---|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.02.3.000.00 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.02.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.02.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.02.9.220.99 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 |
| RC | (6...24) V DC/AC | 99.02.0.024.09 |
| RC | (28...60) V DC/AC | 99.02.0.060.09 |
| RC | (110...240) V DC/AC | 99.02.0.230.09 |
| Residual current bypass (62 k Ω /1W) | (110...240) V AC | 99.02.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request.

40



95.63



95.65



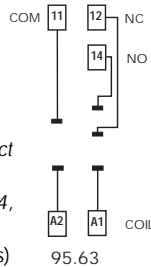
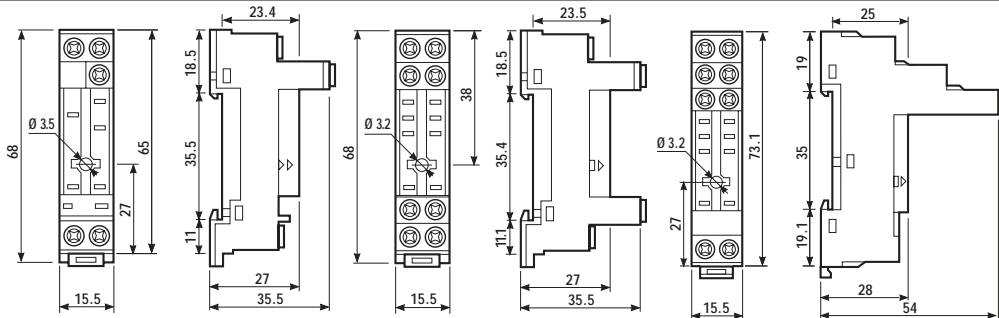
95.75

Approvals
(according to type):

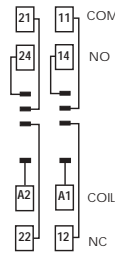


- RATED VALUES: 10 A - 250 V
with a current >10 A, the contact terminal must be connected in parallel (21 with 11, 24 with 14, 22 with 12)
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts (Types 95.63/75 only)
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 7 mm
- MAX WIRE SIZE:

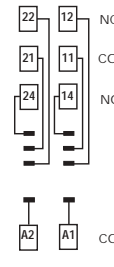
| Relay type | 40.31 | | 40.51, 40.52, 40.61 | | | |
|---|--------|----------|---------------------|----------|--------|----------|
| | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 095.71 supplied with socket packaging code SMA | 95.63 | 95.63.0 | 95.65 | 95.65.0 | 95.75 | 95.75.0 |
| Metal retaining clip | 095.71 | | | | | |
| 8-way jumper link for 95.63 and 95.75 sockets | 095.08 | 095.08.0 | 095.08 | 095.08.0 | 095.08 | 095.08.0 |
| Modules (see table below) | 99.01 | | — | | 99.01 | |



95.63



95.65



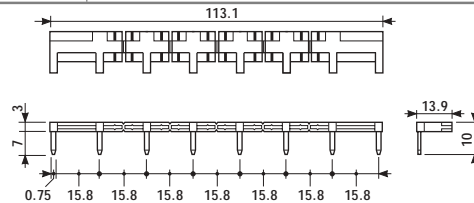
95.75

| | |
|---|--------|
| 8-way jumper link for 95.63, 95.65 and 95.75 sockets | 095.08 |
|---|--------|



095.08

- RATED VALUES: 10 A - 250 V



99.01

| 99.01 modules for 95.63 and 95.75 sockets | | BLUE |
|---|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.01.3.000.00 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.01.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.01.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.01.9.220.99 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 |
| RC | (6...24) V DC/AC | 99.01.0.024.09 |
| RC | (28...60) V DC/AC | 99.01.0.060.09 |
| RC | (110...240) V DC/AC | 99.01.0.230.09 |
| Residual current bypass (62 k Ω /1W) | (110...240) V AC | 99.01.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request. Green LED is standard. Red LED available on request.



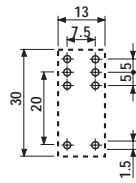
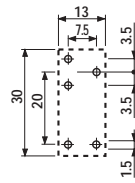
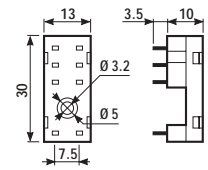
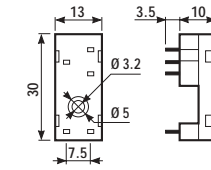
| Relay type | 40.31 | | 40.51, 40.52, 40.61 | |
|---|-------|---------|---------------------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| P.C.B. socket | 95.13 | 95.13.0 | 95.15 | 95.15.0 |
| retaining clip 095.51 supplied with socket packaging code SMA | | | | |
| Metal retaining clip | | | 095.51 | |
| Plastic retaining clip | | | 095.52 | |

40

Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C



95.13

95.15

Copper side view

PACKAGING CODES

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

Code options according to the last three letters:

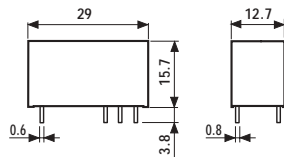
9 5 0 5 S P A

A Standard packaging

SM Metal retaining clip
SP Plastic retaining clip
SX No retaining clip

- Low-profile, only 15.7 mm high
- DC coil versions 0.4 W
- 8 mm, 6 kV(1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets and accessories: see 95 and 99 series

41



* for 400 V applications, requirements for pollution degree 2 are met.

| | 41.31 | 41.52 | 41.61 |
|---|--|---|--|
| | | | |
| | <ul style="list-style-type: none"> - 1 pole, 12 A - low profile, 3.5 mm pinning - P.C.B. / for use with 95 series sockets | <ul style="list-style-type: none"> - 2 pole, 8 A - low profile, 5 mm pinning - P.C.B. / for use with 95 series sockets | <ul style="list-style-type: none"> - 1 pole, 16 A - low profile, 5 mm pinning - P.C.B. / for use with 95 series sockets |
| | <p>Copper side view</p> | <p>Copper side view</p> | <p>Copper side view</p> |
| Contact specifications | | | |
| Contact configuration | 1 CO | 2 CO | 1 CO |
| Rated current/Maximum peak current A | 12/25 | 8/15 | 16/30 |
| Rated voltage/Maximum switching voltage V AC | 250/400* | 250/400* | 250/400* |
| Rated load in AC1 VA | 3,000 | 2,000 | 4,000 |
| Rated load in AC15 (230 VAC) VA | 600 | 400 | 750 |
| Single phase motor rating (230 VAC) kW | 0.5 | 0.3 | 0.5 |
| Breaking capacity in DC1: 30/110/220V A | 12/0.3/0.12 | 8/0.3/0.12 | 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 |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | — | — |
| | V DC | 12 · 24 · 48 · 60 · 110 | 12 · 24 · 48 · 60 · 110 |
| Rated power AC/DC VA (50 Hz)/W | —/0.4 | —/0.4 | —/0.4 |
| Operating range | AC (50 Hz) | — | — |
| | DC | (0.7...1.5)U _N | (0.7...1.5)U _N |
| Holding voltage AC/DC | —/0.4U _N | —/0.4 U _N | —/0.4 U _N |
| Must drop-out voltage AC/DC | —/0.1U _N | —/0.1 U _N | —/0.1 U _N |
| Technical data | | | |
| Mechanical life AC/DC cycles | —/30·10 ⁶ | —/30·10 ⁶ | —/30·10 ⁶ |
| Electrical life at rated load AC1 cycles | 150 · 10 ³ | 80 · 10 ³ | 70 · 10 ³ |
| Operate/release time (bounce included) ms | 7/8 | 7/8 | 7/8 |
| Insulation according to EN 61810-5 | 3.6kV/3 | 3.6kV/3 | 3.6kV/3 |
| Insulation between coil and contacts (1.2/50μs) kV | 6 (8mm) | 6 (8mm) | 6 (8mm) |
| Dielectric strength between open contacts V AC | 1,000 | 1,000 | 1,000 |
| Ambient temperature range °C | -40...+85 | -40...+85 | -40...+85 |
| Environmental protection | RT II | RT II | RT II |
| Approvals: (according to type) | GOST | C _{RU} [®] US | |

ORDERING INFORMATION

Example: a 41 series low-profile P.C.B. relay with 2 CO contacts, with coil rated 24 V DC.

| | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|
| | 4 | 1 | . | 5 | 2 | . | 9 | . | 0 | 2 | 4 | . | A | 0 | B | 0 | C | 1 | D | 0 |
| <p>Series ————</p> <p>Type ————</p> <p>3 = P.C.B. - 3.5 mm pinning 5 = P.C.B. - 5 mm pinning 6 = P.C.B. - 5 mm pinning</p> <p>No. of poles ————</p> <p>1 = 1 pole for 41.31, 12 A 41.61, 16 A</p> <p>2 = 2 pole for 41.52, 8 A</p> <p>Coil version ————</p> <p>9 = DC</p> <p>Coil voltage ————</p> <p>see coil specifications</p> | | | | | | | | | | | | | <p>A: Contact material</p> <p>0 = Standard AgNi</p> <p>B: Contact circuit</p> <p>0 = CO</p> | <p>C: Options</p> <p>1 = None</p> <p>D: Special versions</p> <p>0 = Flux proof (RT II) 1 = Wash tight (RT III)</p> | | | | | | |

41

TECHNICAL DATA

INSULATION

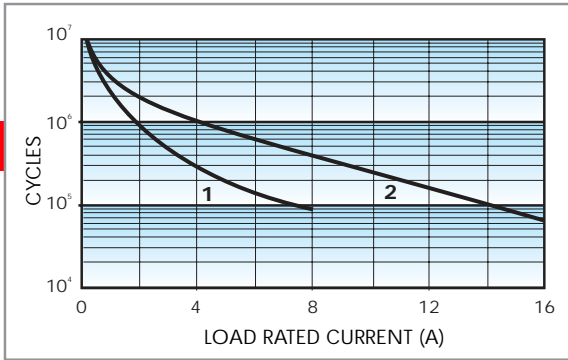
| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

OTHER DATA

| | | | | | |
|--|-------------------------|------|-------------|-------------|-------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 20/5 | | | |
| POWER LOST TO THE ENVIRONMENT | without contact current | W | 0.4 | | |
| | with rated current | W | 1.7 (41.31) | 1.2 (41.52) | 1.8 (41.61) |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | | | |

CONTACT SPECIFICATIONS

F 41

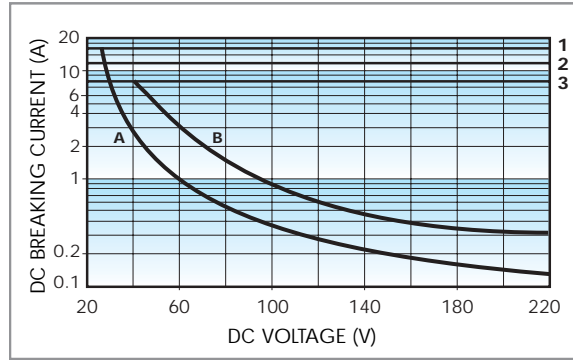


41

Contact life vs AC1 load.

- 1** - Type 41.52 (8 A) at 360 cycles/h.
- 2** - Type 41.31 (12 A) at 360 cycles/h.
- Type 41.61 (16 A) at 360 cycles/h.

H 41



Breaking capacity for DC1 load.

- 1** - Type 41.61
- 2** - Type 41.31
- 3** - Type 41.52
- A** - Load applied to 1 contact
- B** - Load applied to 2 contacts in series

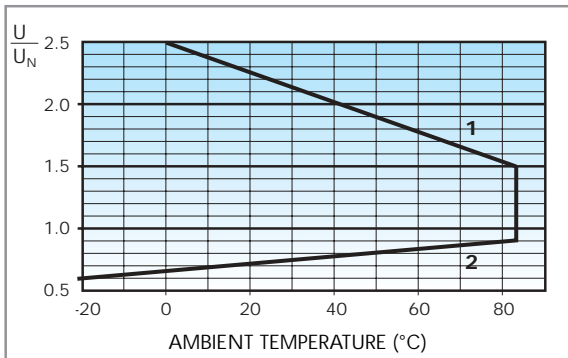
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

COIL SPECIFICATIONS

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 12 | 9.012 | 8.4 | 18 | 360 | 33.3 |
| 24 | 9.024 | 16.8 | 36 | 1,440 | 19.7 |
| 48 | 9.048 | 33.6 | 72 | 5,520 | 8.7 |
| 60 | 9.060 | 42 | 90 | 7,340 | 8.1 |
| 110 | 9.110 | 77 | 165 | 26,600 | 4.1 |

R 41 DC



Operating range vs ambient temperature.

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

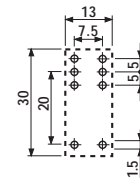
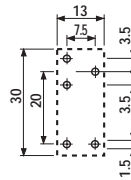
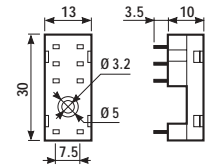
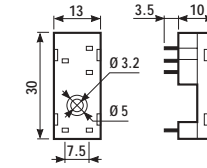


Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C

| Relay type | 41.31 | | 41.52, 41.61 | |
|---|--------|---------|--------------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| P.C.B. socket | 95.13 | 95.13.0 | 95.15 | 95.15.0 |
| retaining clip 095.41 supplied with socket packaging code SNA | | | | |
| Metal retaining clip | 095.41 | | | |
| Plastic retaining clip | 095.42 | | | |



95.13

95.15

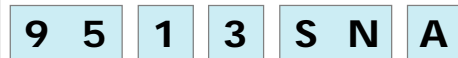
Copper side view

41

PACKAGING CODES

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

Code options according to the last three letters:



A Standard packaging

SN Low profile metal retaining clip
SL Low profile plastic retaining clip
SX No retaining clip

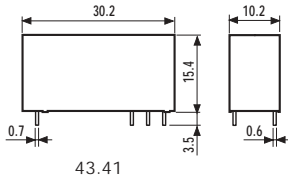
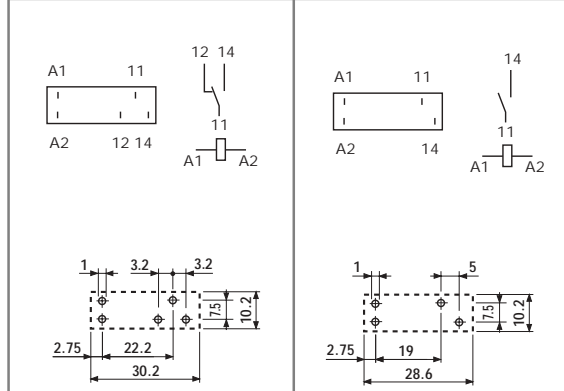
- 1 pole 10A
- 15.4 mm high
- Very low coil consumption, only 0.25 W
- 10 mm, 6 kV (1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets: see Type 95.23

43.41

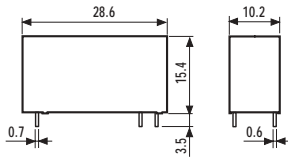
43.41...0300



- | | |
|--|---|
| <ul style="list-style-type: none"> - 1 CO - 3.2 mm pinning - P.C.B. mounting or sockets 95 series | <ul style="list-style-type: none"> - 1 NO - 5 mm pinning - P.C.B. mounting |
|--|---|



43.41



43.41-0300

* for 400 V applications, requirements for pollution degree 2 are met.

| Contact specifications | | | |
|---|--|-----------------|------------------------------------|
| Contact configuration | | 1 CO | 1 NO |
| Rated current/Maximum peak current | | A | 10/15 |
| Rated voltage/Maximum switching voltage V AC | | 250/400* | 250/400* |
| Rated load in AC1 | | VA | 2,500 |
| Rated load in AC15 (230 VAC) | | VA | 500 |
| Single phase motor rating (230 VAC) | | kW | — |
| Breaking capacity in DC1: 30/110/220V | | A | 10/0.3/0.12 |
| Minimum switching load | | mW (V/mA) | 300 (5/5) |
| Standard contact material | | AgCdO | AgCdO |
| Coil specifications | | | |
| Nominal voltage (U _N) | | V AC (50/60 Hz) | — |
| | | V DC | 3 · 6 · 9 · 12 · 18 · 24 · 36 · 48 |
| Rated power AC/DC | | VA (50 Hz)/W | —/0.25 |
| Operating range | | AC (50 Hz) | — |
| | | DC | (0.7...1.5)U _N |
| Holding voltage | | AC/DC | —/0.4 U _N |
| Must drop-out voltage | | AC/DC | —/0.05 U _N |
| Technical data | | | |
| Mechanical life AC/DC | | cycles | —/10 · 10 ⁶ |
| Electrical life at rated load AC1 | | cycles | 100 · 10 ³ |
| Operate/release time (bounce included) | | ms | 11/8 |
| Insulation according to EN 61810-5 | | kV/3 | 3.6 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | | kV | 6 (10mm) |
| Dielectric strength between open contacts | | V AC | 1,000 |
| Ambient temperature range | | °C | -40...+85 |
| Environmental protection | | RT II | RT II |
| Approvals: (according to type) | | GOST | GOST |
| | | | |
| | | | |

ORDERING INFORMATION

Example: a 43 series low-profile P.C.B. relay with 1 CO contact, with coil rated 24 V DC.

| | | | | | | | | | | | |
|-----------------------------|----------|------------------|----------|---------------------|----------|-------------------------|----------|---|----------|---|----------|
| 4 | 3 | 4 | 1 | 7 | 0 | 2 | 4 | A | B | C | D |
| Series | | Type | | No. of poles | | Coil version | | A: Contact material | | D: Special versions | |
| 43 | | 4 | | 1 | | 7 | | 2 | | 0 | |
| 4 = P.C.B. - 3.2 mm pinning | | 1 = 1 pole, 10 A | | 7 = Sensitive DC | | see coil specifications | | 2 = Standard AgCdO 4 = AgSnO ₂ 5 = AgNi + Au | | 0 = Flux proof (RT II) 1 = Wash tight (RT III) | |
| | | | | | | | | B: Contact circuit | | C: Options | |
| | | | | | | | | 0 = CO 3 = NO | | 0 = None | |

43

Only combinations in the same row are possible

Preferred versions

| | coil version | A | B | C | D |
|-------|--------------|---|---|---|---|
| 43.41 | sens. DC | 2 | 0 | 0 | 0 |

All versions

| | coil version | A | B | C | D |
|-------|--------------|-----------|-------|---|-------|
| 43.41 | sens. DC | 2 - 4 - 5 | 0 - 3 | 0 | 0 - 1 |

TECHNICAL DATA

INSULATION

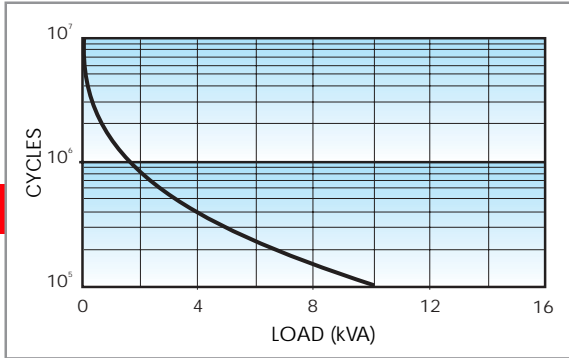
| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

OTHER DATA

| | | |
|--|-------------------------|-------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/10 |
| POWER LOST TO THE ENVIRONMENT | without contact current | W |
| | with rated current | W |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 |

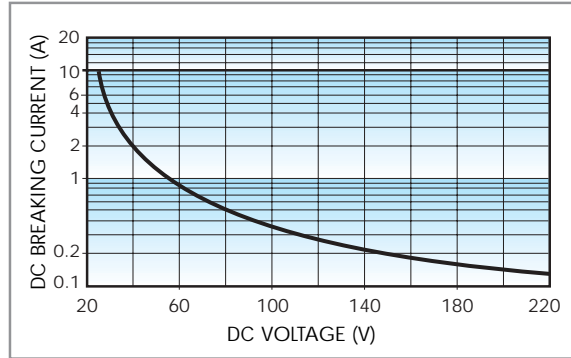
CONTACT SPECIFICATIONS

F 43



Electrical life vs AC1 load.

H 43



Breaking capacity in DC1 load.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

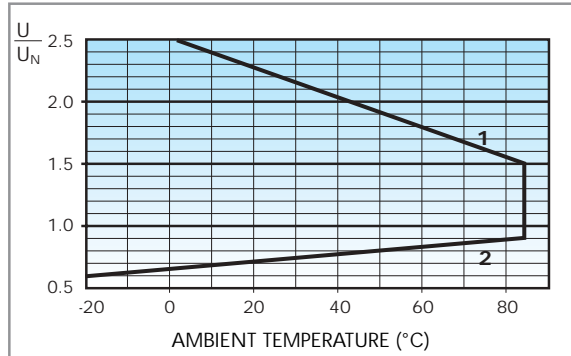
Note: the release time of load will be increase.

COIL SPECIFICATIONS

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 3 | 7.003 | 2.2 | 4.5 | 36 | 83.5 |
| 6 | 7.006 | 4.2 | 9 | 150 | 40 |
| 9 | 7.009 | 6.5 | 13.5 | 324 | 27.7 |
| 12 | 7.012 | 8.4 | 18 | 580 | 20.7 |
| 18 | 7.018 | 13 | 27 | 1,296 | 13.8 |
| 24 | 7.024 | 16.8 | 36 | 2,200 | 10.9 |
| 36 | 7.036 | 25.2 | 54 | 5,184 | 6.9 |
| 48 | 7.048 | 33.6 | 72 | 9,200 | 5.2 |

R 43 DC



Operating range vs ambient temperature.

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

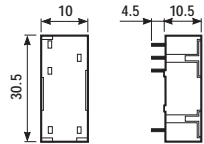


| | | |
|---|--------------|---------|
| Relay type | 43.41 | |
| Colour | BLUE | BLACK |
| P.C.B. socket (only for CO version) | 95.23 | 95.23.0 |
| retaining clip 095.43 supplied with socket packaging code SNA | | |
| Metal retaining clip | 095.43 | |

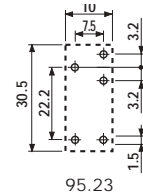
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C



43

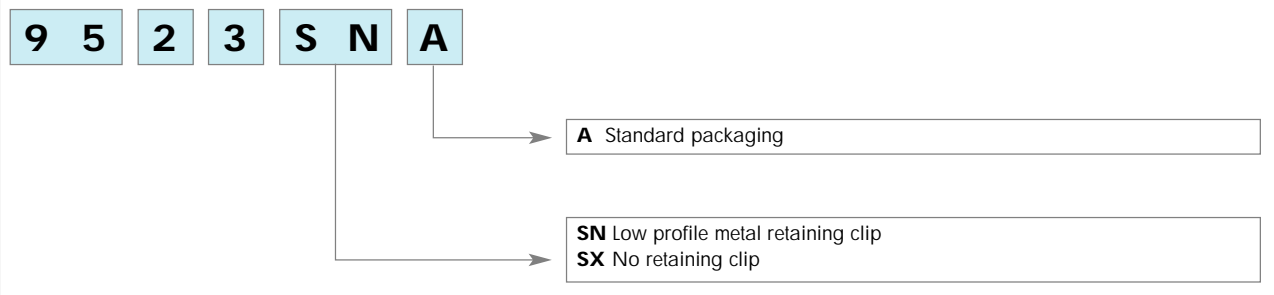


Copper side view

PACKAGING CODES

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

Code options according to the last three letters:



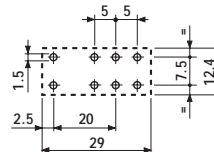
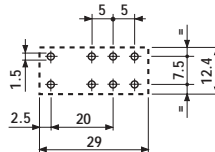
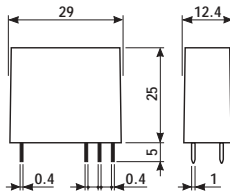
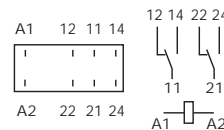
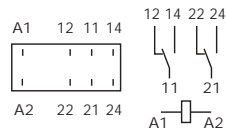
- DC and sensitive DC available
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets and accessories: see 95, 99 and 86 series

44.52

44.62



- | | |
|---|--|
| <ul style="list-style-type: none"> - 2 pole, 6 A - 5 mm pinning - P.C.B./ for use with 95 series sockets | <ul style="list-style-type: none"> - 2 pole, 10 A - 5 mm pinning - P.C.B./ for use with 95 series sockets |
|---|--|



Copper side view

Copper side view

* for 400 V applications, requirements for pollution degree 2 are met.

| Contact specifications | | | |
|---|-----------------|--|-------------|
| Contact configuration | | 2 CO | 2 CO |
| Rated current/Maximum peak current | A | 6/10 | 10/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | 250/400* |
| Rated load in AC1 | VA | 1,500 | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 250 | 500 |
| Single phase motor rating (230 VAC) | kW | 0.185 | 0.37 |
| Breaking capacity in DC1: 30/110/220V | A | 6/0.3/0.13 | 10/0.3/0.13 |
| Minimum switching load | mW (V/mA) | 300 (5/5) | 300 (5/5) |
| Standard contact material | | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | — | — |
| | V DC | 6 · 9 · 12 · 14 · 24 · 28 · 48 · 60 · 110 | |
| Rated power AC/DC/sens. DC | VA (50 Hz)/W | —/0.65/0.5 | —/0.65/0.5 |
| Operating range | AC (50 Hz) | — | — |
| | DC/sens. DC | (0.73...1.5)U _N /(0.73...1.7)U _N (0.73...1.5)U _N /(0.8...1.7)U _N | |
| Holding voltage | AC/DC | —/0.4 U _N | |
| Must drop-out voltage | AC/DC | —/0.1 U _N | |
| Technical data | | | |
| Mechanical life AC/DC | cycles | —/20 · 10 ⁶ | |
| Electrical life at rated load AC1 | cycles | 150 · 10 ³ 100 · 10 ³ | |
| Operate/release time (bounce included) | ms | 10/12 · (15/12 sens) | |
| Insulation according to EN 61810-5 | | 3.6 kV/3 | |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 (8mm) | |
| Dielectric strength between open contacts | V AC | 1,000 | |
| Ambient temperature range | °C | -40...+85 | |
| Environmental protection | | RT II | |
| Approvals: (according to type) | | | |
| | | GOST RINA | |

ORDERING INFORMATION

Example: a 44 series P.C.B. relay with 2 CO 10 A contacts, coil rated 24 V DC.

| | | | | | | | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 4 | 4 | . | 6 | . | 2 | . | 9 | . | 0 | 2 | 4 | . | 0 | A | 0 | B | 0 | C | 0 | D | 0 |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|

Series ————

Type ————
 5 = P.C.B. - 5 mm pinning
 6 = P.C.B. - 5 mm pinning

No. of poles ————
 2 = 2 pole for
 44.52, 6 A
 44.62, 10 A

Coil version ————
 7 = Sensitive DC
 9 = DC

Coil voltage ————
 see coil specifications

A: Contact material
 0 = Standard AgNi
 4 = AgSnO₂
 for 44.62 only

B: Contact circuit
 0 = CO

C: Options
 0 = None

D: Special versions
 0 = Flux proof (RT II)

44

Only combinations in the same row are possible

Preferred versions

| | coil version | A | B | C | D |
|-------|---------------|---|---|---|---|
| 44.52 | DC - sens. DC | 0 | 0 | 0 | 0 |
| 44.62 | DC - sens. DC | 0 | 0 | 0 | 0 |

All versions

| | coil version | A | B | C | D |
|-------|---------------|-------|---|---|---|
| 44.62 | DC - sens. DC | 0 - 4 | 0 | 0 | 0 |

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

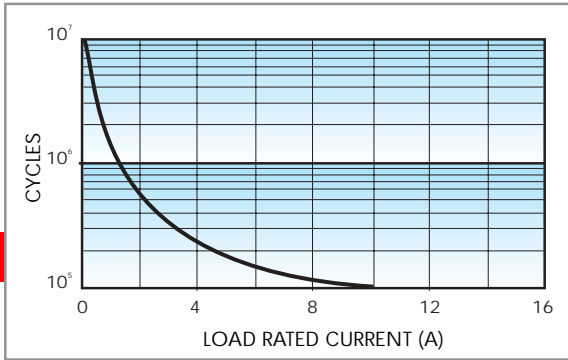
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

OTHER DATA

| | | | |
|--|-------------------------|-----|------------------------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 3/3 | |
| POWER LOST TO THE ENVIRONMENT | without contact current | W | 0.6 |
| | with rated current | W | 1.2 (44.52) 2.7 (44.62) |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | |

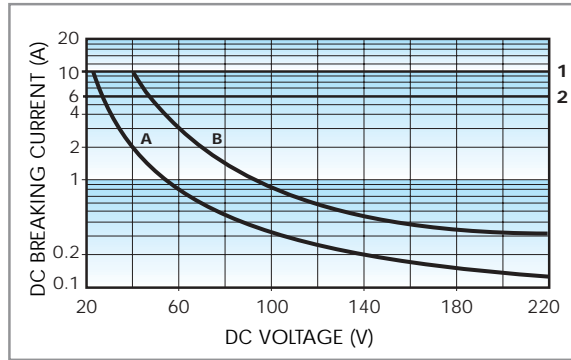
CONTACT SPECIFICATIONS

F 44



Electrical life vs AC1 load.

H 44



Breaking capacity for DC1 load.

1 - Type 44.62

2 - Type 44.52

A - Load applied to 1 contact

B - Load applied to 2 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

COIL SPECIFICATIONS

DC VERSION DATA (0.65 W standard)

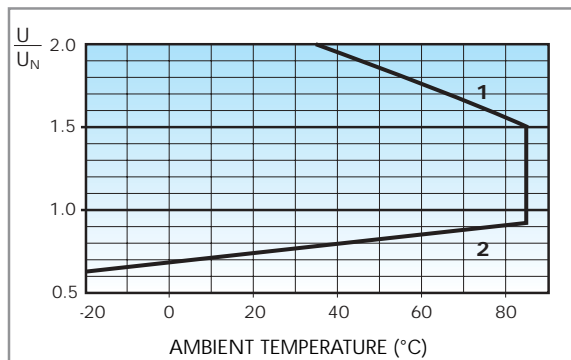
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.4 | 9 | 55 | 109 |
| 9 | 9.009 | 6.6 | 13.5 | 125 | 72 |
| 12 | 9.012 | 8.8 | 18 | 220 | 55 |
| 14 | 9.014 | 10.2 | 21 | 300 | 47 |
| 24 | 9.024 | 17.5 | 36 | 900 | 27 |
| 28 | 9.028 | 20.5 | 42 | 1,200 | 23 |
| 48 | 9.048 | 35 | 72 | 3,500 | 14 |
| 60 | 9.060 | 43.8 | 90 | 5,500 | 11 |
| 110 | 9.110 | 80.3 | 165 | 18,000 | 6.2 |

DC VERSION DATA (0.5 W sensitive)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|------------------|----------------|-----------------------------|--|
| | | U_{min}^* V | U_{max} V | | |
| 6 | 7.006 | 4.4 | 10.2 | 75 | 80 |
| 9 | 7.009 | 6.6 | 15.3 | 160 | 56 |
| 12 | 7.012 | 8.8 | 20.4 | 300 | 40 |
| 14 | 7.014 | 10.2 | 23.8 | 400 | 35 |
| 24 | 7.024 | 17.5 | 40.8 | 1,200 | 20 |
| 28 | 7.028 | 20.5 | 47.6 | 1,600 | 17.5 |
| 48 | 7.048 | 35 | 81.6 | 4,800 | 10 |
| 60 | 7.060 | 43.8 | 102 | 7,200 | 8.4 |
| 110 | 7.110 | 80.3 | 187 | 23,500 | 4.7 |

* $U_{min} = 0.8 U_N$ for 44.62

R 44 DC

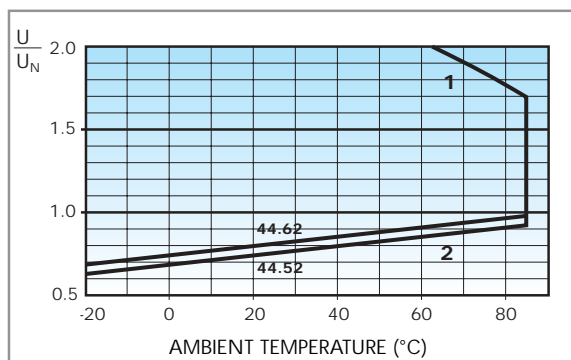


Operating range (DC version) vs ambient temperature.

1 - Max coil voltage permitted.

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

R 44 sens. DC



Operating range (sensitive DC version) vs ambient temperature.

1 - Max coil voltage permitted.

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



95.05

Approvals
(according to type):

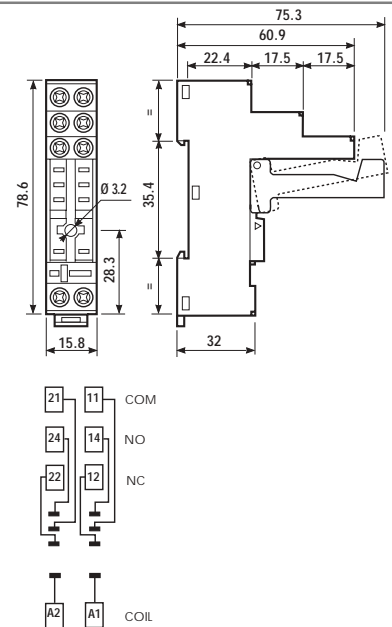


095.01

- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Relay type | 44.52, 44.62 | |
|--|--------------|----------|
| Colour | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 095.01 supplied with socket packaging code SPA | 95.05 | 95.05.0 |
| Retaining and release clip | 095.01 | 095.01.0 |
| Metal retaining clip | 095.71 | |
| 8-way jumper link for 95.03 and 95.05 sockets | 095.18 | 095.18.0 |
| Identification tag | 095.00.4 | |
| Modules (see table below) | 99.02 | |
| Timer modules | 86.10, 86.20 | |



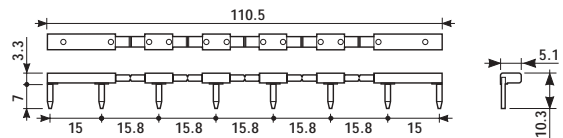
44



095.18

- RATED VALUES: 10 A - 250 V

| | |
|---|--------|
| 8-way jumper link for 95.03, and 95.05 sockets | 095.18 |
|---|--------|



99.02

| 99.02 modules for 95.03 and 95.05 sockets | | BLUE |
|---|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.02.3.000.00 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.02.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.02.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.02.9.220.99 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 |
| RC | (6...24) V DC/AC | 99.02.0.024.09 |
| RC | (28...60) V DC/AC | 99.02.0.060.09 |
| RC | (110...240) V DC/AC | 99.02.0.230.09 |
| No - remanence (62 k Ω /1W) | (110...240) V AC | 99.02.8.230.07 |

**For DC supply, apply the positive to terminal A1.
Modules in Black housing are available on request.



44

Approvals

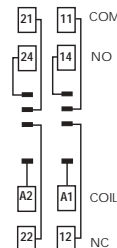
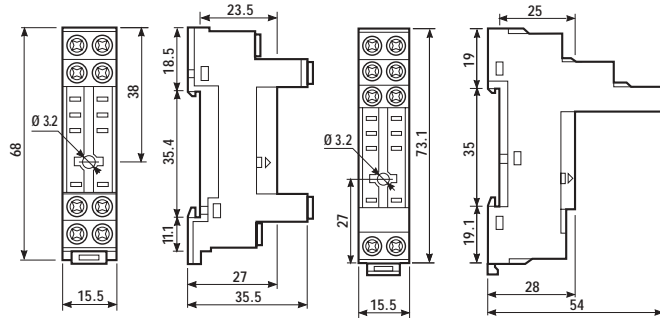
(according to type):



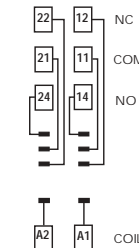
- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s)
between coil and contacts
(Type 95.75 only)
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 7 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Relay type | 44.52, 44.62 | | | |
|--|--------------|----------|--------|----------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 095.71 supplied with socket packaging code SMA | 95.65 | 95.65.0 | 95.75 | 95.75.0 |
| Metal retaining clip | 095.71 | | | |
| 8-way jumper link for 95.65 and 95.75 sockets | 095.08 | 095.08.0 | 095.08 | 095.08.0 |
| Modules (see table below) | — | | 99.01 | |



95.65

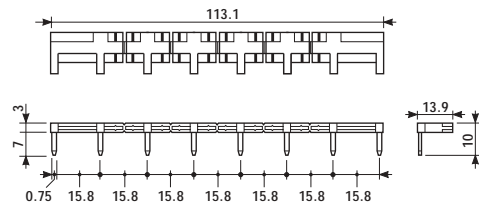


95.75



- RATED VALUES: 10 A - 250 V

| | |
|--|--------|
| 8-way jumper link for 95.65 and 95.75 sockets | 095.08 |
|--|--------|



| 99.01 modules for 95.63 and 95.75 sockets | | BLUE |
|---|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.01.3.000.00 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.01.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.01.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.01.9.220.99 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 |
| RC | (6...24) V DC/AC | 99.01.0.024.09 |
| RC | (28...60) V DC/AC | 99.01.0.060.09 |
| RC | (110...240) V DC/AC | 99.01.0.230.09 |
| No - remanence (62 k Ω /1W) | (110...240) V AC | 99.01.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request. Green LED is standard. Red LED available on request.

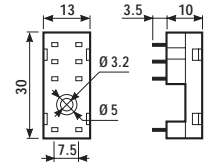


Approvals
(according to type):

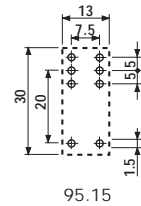


- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C

| | | |
|--|---------------------|---------|
| Relay type | 44.52, 44.62 | |
| Colour | BLUE | BLACK |
| P.C.B. socket | 95.15 | 95.15.0 |
| retaining clip 095.51 supplied with socket with packaging code SMA | | |
| Retaining clip | | 095.51 |
| Plastic retaining clip | | 095.52 |



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Copper side view

PACKAGING CODES

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

Code options according to the last three letters:



A Standard packaging

SM Metal retaining clip
SP Plastic retaining clip
SX No retaining clip

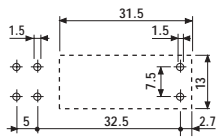
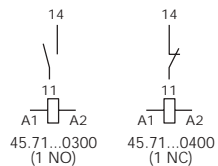
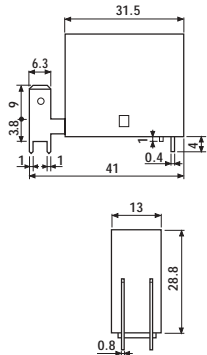
45.71

- Miniature P.C.B. Faston 250 connect relay
- Sensitive DC coil
- 8 mm, 6 kV (1.2/50 μ s) between coil and contacts
- Ambient temperature +125°C
- NO contact or NC contact version



- 1 NO or 1 NC
- Max ambient temperature +125°C
- P.C.B. mounting + Faston 250

45



Copper side view

* for 400 V applications, requirements for pollution degree 2 are met.

| Contact specifications | | |
|---|-----------------|---------------------------|
| Contact configuration | | 1 NO /1 NC |
| Rated current/Maximum peak current | A | 16/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* |
| Rated load in AC1 | VA | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 |
| Single phase motor rating (230 VAC) | kW | 0.55 |
| Breaking capacity in DC1: 30/110/220V | A | 16/0.3/0.13 |
| Minimum switching load | mW (V/mA) | 500 (10/5) |
| Standard contact material | | AgCdO |
| Coil specifications | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | — |
| | V DC | 6 · 12 · 24 · 48 · 60 |
| Rated power AC/DC | VA (50 Hz)/W | —/0.36 |
| Operating range | AC (50 Hz) | — |
| | DC | (0.7...1.2)U _N |
| Holding voltage | AC/DC | —/0.4 U _N |
| Must drop-out voltage | AC/DC | —/0.1 U _N |
| Technical data | | |
| Mechanical life AC/DC | cycles | —/30 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 8/3 |
| Insulation according to EN 61810-5 | | 3.6 kV/3 |
| Insulation between coil and contacts (1.2/50 μ s) | kV | 6 (8mm) |
| Dielectric strength between open contacts | V AC | 1,000 |
| Ambient temperature range | °C | -40...+125 |
| Environmental protection | | RT II |
| Approvals: (according to type) | | |
| | GOST | |

ORDERING INFORMATION

Example: a 45 series for P.C.B. relay + Faston 250, 1 NO contact, coil rated 12 V DC.

| | | | | | | | | | | | | | | | | | | | | |
|---------------------|----------|----------|-------------------------|----------|------------------|----------|------------------|----------|--------------------|----------|----------|----------|--------|----------|------------------------|---|----------|----------|-------------------------|--|
| | 4 | 5 | . | 7 | . | 1 | . | 7 | . | 0 | 1 | 2 | . | 0 | 3 | . | 0 | 0 | | |
| | | | | | | | | | | | | | | | | | | | | |
| Series | 4 5 | | | 7 | | 1 | | 7 | | 0 1 2 | | 0 | | 3 | | 0 | | 0 | | |
| Type | | | 7 | | 1 | | 7 | | 0 1 2 | | 0 | | 3 | | 0 | | 0 | | | |
| | | | 7 = P.C.B. - Faston 250 | | 1 = 1 pole, 16 A | | 7 = Sensitive DC | | 0 = Standard AgCdO | | 3 = NO | | 4 = NC | | 0 = Flux proof (RT II) | | 0 = None | | | |
| No. of poles | | | | | 1 = 1 pole, 16 A | | | | | | | | | | | | | | | |
| Coil version | | | | | | | 7 = Sensitive DC | | | | | | | | | | | | | |
| Coil voltage | | | | | | | | | 0 = Standard AgCdO | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | see coil specifications | |

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TECHNICAL DATA

INSULATION

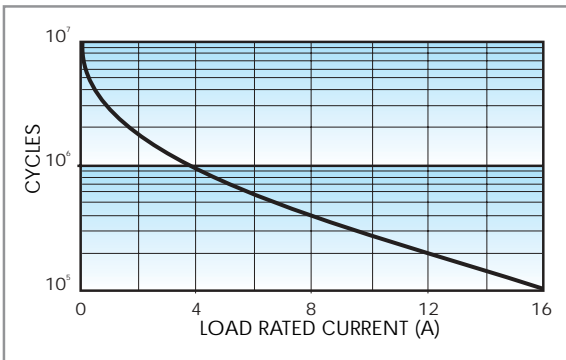
| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

OTHER DATA

| | | |
|--|-------------------------|-------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/10 |
| POWER LOST TO THE ENVIRONMENT | without contact current | W |
| | with rated current | W |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 |

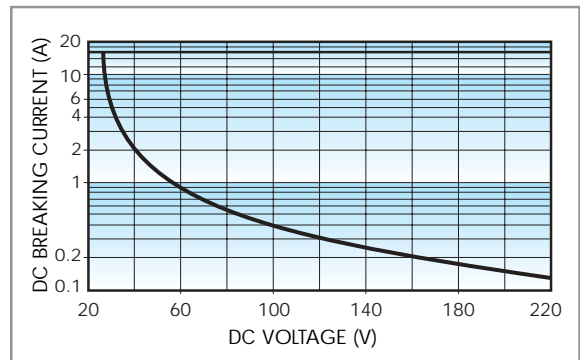
CONTACT SPECIFICATIONS

F 45



Electrical life AC1 load (+85°C).

H 45



Breaking capacity for DC1 load.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

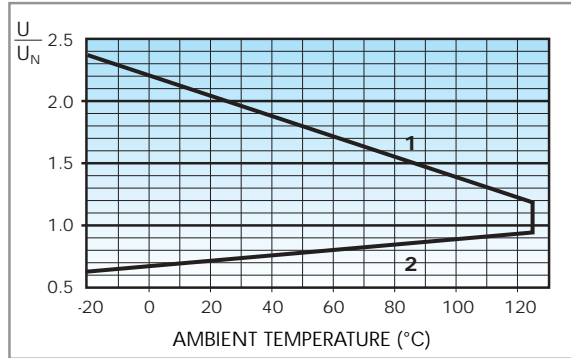
COIL SPECIFICATIONS

DC VERSION DATA (0.36 W sensitive)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 7.006 | 4.2 | 7.2 | 100 | 60 |
| 12 | 7.012 | 8.4 | 14.4 | 400 | 30 |
| 24 | 7.024 | 16.8 | 28.8 | 1,600 | 15 |
| 48 | 7.048 | 33.6 | 57.6 | 6,400 | 7.5 |
| 60 | 7.060 | 42 | 72 | 10,000 | 6 |

45




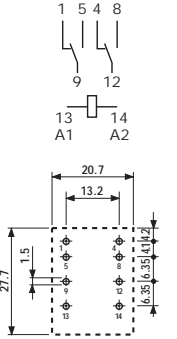
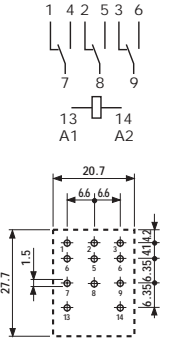
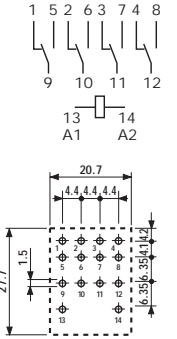

R 45 DC



Operating range vs ambient temperature.




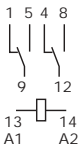
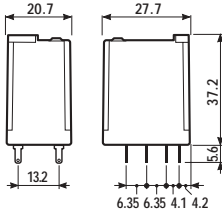
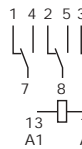
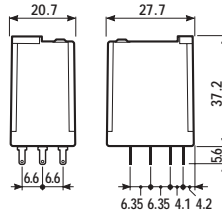
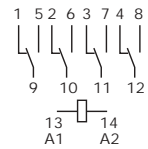
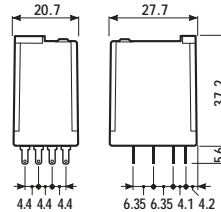














- 1** - Max coil voltage permitted.
- 2** - Min pick-up voltage with coil at ambient temperature.

- Plug-in or P.C.B. versions
- AC or DC coils
- Lockable test button and mechanical flag indicator as standard on 2 and 4 CO relays types
- Sockets and accessories: see 94, 99 and 86 series
- RT III (wash tight) version available

| | 55.12 | 55.13 | 55.14 |
|--|--|---|--|
| |  |  |  |
| | - 2 pole - P.C.B. mounting | - 3 pole - P.C.B. mounting | - 4 pole - P.C.B. mounting |
| |  Copper side view h = 35.8 mm |  Copper side view h = 35.8 mm |  Copper side view h = 35.8 mm |
| Contact specifications | | | |
| Contact configuration | 2 CO | 3 CO | 4 CO |
| Rated current/Maximum peak current A | 10/20 | 10/20 | 5/10 |
| Rated voltage/Maximum switching voltage V AC | 250/400 | 250/400 | 250/250 |
| Rated load in AC1 VA | 2,500 | 2,500 | 1,250 |
| Rated load in AC15 (230 VAC) VA | 500 | 500 | 250 |
| Single phase motor rating (230 VAC) kW | 0.37 | 0.37 | 0.125 |
| Breaking capacity in DC1: 30/110/220V A | 10/0.25/0.12 | 10/0.25/0.12 | 5/0.25/0.12 |
| Minimum switching load mW (V/mA) | 300 (5/5) | 300 (5/5) | 300 (5/5) |
| Standard contact material | AgNi | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | |
| Rated power AC/DC VA (50 Hz)/W | 1.5/1 | 1.5/1 | 1.5/1 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.8...1.1)U _N | (0.8...1.1)U _N |
| Holding voltage AC/DC | 0.8 U _N /0.5 U _N | 0.8 U _N /0.5 U _N | 0.8 U _N /0.5 U _N |
| Must drop-out voltage AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | | |
| Mechanical life AC/DC cycles | 20 · 10 ⁶ /50 · 10 ⁶ | 20 · 10 ⁶ /50 · 10 ⁶ | 20 · 10 ⁶ /50 · 10 ⁶ |
| Electrical life at rated load AC1 cycles | 200 · 10 ³ | 200 · 10 ³ | 150 · 10 ³ |
| Operate/release time (bounce included) ms | 10/15 | 10/15 | 10/15 |
| Insulation according to EN 61810-5 | 3.6 kV/2 | 3.6 kV/2 | 3.6 kV/2 |
| Insulation between coil and contacts (1.2/50μs) kV | 3.6 | 3.6 | 3.6 |
| Dielectric strength between open contacts V AC | 1,000 | 1,000 | 1,000 |
| Ambient temperature range °C | -40...+70 | -40...+70 | -40...+70 |
| Environmental protection | RT I | RT I | RT I |
| Approvals: (according to type) |  | | |

- Plug-in or P.C.B. versions
- AC or DC coils
- Lockable test button and mechanical flag indicator as standard on 2 and 4 CO relays types
- Sockets and accessories: see 94, 99 and 86 series

55

| | 55.32 | 55.33 | 55.34 |
|---|--|--|--|
| |  |  |  |
| | - 2 pole - Plug-in for use with 94 Series sockets | - 3 pole - Plug-in for use with 94 Series sockets | - 4 pole - Plug-in for use with 94 Series sockets |
| |   |   |   |
| Contact specifications | | | |
| Contact configuration | 2 CO | 3 CO | 4 CO |
| Rated current/Maximum peak current | A 10/20 | A 10/20 | A 5/10 |
| Rated voltage/Maximum switching voltage | V AC 250/400 | V AC 250/400 | V AC 250/250 |
| Rated load in AC1 | VA 2,500 | VA 2,500 | VA 1,250 |
| Rated load in AC15 (230 VAC) | VA 500 | VA 500 | VA 250 |
| Single phase motor rating (230 VAC) | kW 0.37 | kW 0.37 | kW 0.125 |
| Breaking capacity in DC1: 30/110/220V | A 10/0.25/0.12 | A 10/0.25/0.12 | A 5/0.25/0.12 |
| Minimum switching load | mW (V/mA) 300 (5/5) | mW (V/mA) 300 (5/5) | mW (V/mA) 300 (5/5) |
| Standard contact material | AgNi | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | |
| Rated power AC/DC | VA (50 Hz)/W | 1.5/1 | 1.5/1 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.8...1.1)U _N | (0.8...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.5 U _N | 0.8 U _N /0.5 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | | |
| Mechanical life AC/DC | cycles | 20 · 10 ⁶ /50 · 10 ⁶ | 20 · 10 ⁶ /50 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 200 · 10 ³ | 150 · 10 ³ |
| Operate/release time (bounce included) | ms | 10/15 | 10/15 |
| Insulation according to EN 61810-5 | | 3.6 kV/2 | 3.6 kV/2 |
| Insulation between coil and contacts (1.2/50µs) | kV | 3.6 | 3.6 |
| Dielectric strength between open contacts | V AC | 1,000 | 1,000 |
| Ambient temperature range | °C | -40...+70 | -40...+70 |
| Environmental protection | | RT I | RT I |
| Approvals: (according to type) | |       GOST   RINA       | |

ORDERING INFORMATION

Example: a 55 series plug-in relay, 4 CO contacts, coil rated 12 V DC with a lockable test button and mechanical indicator.

5 5 . 3 4 . 9 . 0 1 2 . 0 0 4 0

A B C D

Series

Type
1 = P.C.B.
3 = Plug-in

No. of poles
2 = 2 pole, 10 A
3 = 3 pole, 10 A
4 = 4 pole, 5 A

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

Coil voltage
see coil specifications

A: Contact material
0 = Standard AgNi
2 = AgCdO
5 = AgNi + 5µm Au

B: Contact circuit
0 = CO

D: Special versions
0 = Standard
1 = Wash tight (RT III)
for 55.12, 55.13 and 55.14 only
6 = Rear flange mount

C: Options
0 = None
1 = Lockable test button
2 = Mechanical indicator
3 = LED (AC)
4 = Lockable test button + mechanical indicator
5 = Lockable test button + LED (AC)
54 = Lockable test button + LED (AC)
+ mechanical indicator
6 = LED + diode (positive to pin A2/14,
DC non standard polarity)
7 = Lockable test button + LED + diode (positive
to pin A2/14, DC non standard polarity)
74 = Lockable test button + LED + diode (positive
to pin A2/14, DC non standard polarity)
+ mechanical indicator
8 = LED + diode (positive to pin A1/13,
DC standard polarity)
9 = Lockable test button + LED + diode (positive
to pin A1/13, DC standard polarity)
94 = Lockable test button + LED + diode (positive
to pin A1/13, DC standard polarity)
+ mechanical indicator

Only combinations in the same row are possible

Preferred versions

| | coil version | A | B | C | D |
|-------------|--------------|---|---|---|---|
| 55.32/34 | AC/DC | 0 | 0 | 4 | 0 |
| 55.12/13/14 | AC/DC | 0 | 0 | 0 | 0 |
| 55.33 | AC/DC | 0 | 0 | 0 | 0 |

All versions

| | coil version | A | B | C | D |
|-------------|--------------|-----------|---|-----------------------|-------|
| 55.32/34 | AC/DC | 0 - 2 - 5 | 0 | 0 | 0 - 6 |
| | AC | 0 - 2 - 5 | 0 | 2 - 3 - 4 - 5 | 0 - 6 |
| | AC | 0 - 2 - 5 | 0 | 54 | / |
| | DC | 0 - 2 - 5 | 0 | 2 - 4 - 6 - 7 - 8 - 9 | 0 - 6 |
| | DC | 0 - 2 - 5 | 0 | 74 - 94 | / |
| 55.33 | AC/DC | 0 - 2 - 5 | 0 | 0 | 0 - 6 |
| | AC | 0 - 2 - 5 | 0 | 1 - 3 - 5 | 0 - 6 |
| | DC | 0 - 2 - 5 | 0 | 1 - 6 - 7 - 8 - 9 | 0 - 6 |
| 55.12/13/14 | AC/DC | 0 - 2 - 5 | 0 | 0 | 0 - 1 |

55

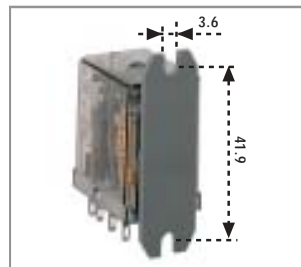
POSSIBLE OPTIONS

AC
DC - Non standard polarity
DC - Standard polarity

Option = 0030
0050
0054

Option = 0060
0070
0074

Option = 0080
0090
0094



Option = 0006
REAR FLANGE MOUNT



LOCKABLE TEST BUTTON AND MECHANICAL FLAG INDICATOR (0040)

The dual-purpose Finder test button can be used in two ways:

Case 1) The plastic pip (located directly above the test button) remains intact. In this case, when the test button is pushed, the contacts operate. When the test button is released the contacts return to their former state.

Case 2) The plastic pip is broken-off (using an appropriate cutting tool). In this case, (in addition to the above function), when the test button is pushed and rotated, the contacts are latched in the operating state, and remain so until the test button is rotated back to its former position.

In both cases ensure that the test button actuation is swift and decisive.

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 2 |
| | overvoltage category | | III |

IMMUNITY

| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4 kV) |

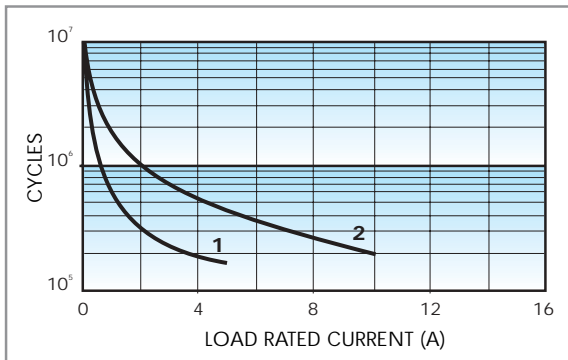
OTHER DATA

| | | | | |
|--|---------------------------|-------------|-------------|-------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 6/6 | | |
| POWER LOST TO THE ENVIRONMENT | | 2 CO | 3 CO | 4 CO |
| | without contact current W | 1 | 1 | 1 |
| | with rated current W | 3 | 4 | 2.6 |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | | |

55

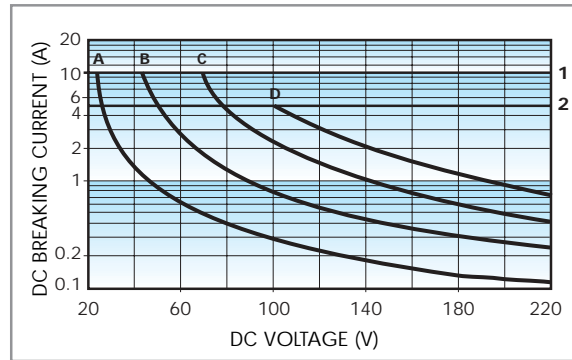
CONTACT SPECIFICATIONS

F 55



Electrical life vs AC1 load.
1 = 4 CO relay type (5 A).
2 = 2 - 3 CO relay type (10 A).

H 55



Breaking capacity for DC1 load.
1 = 2 - 3 CO type.
2 = 4 CO type.
A = Load applied to 1 contact
B = Load applied to 2 contacts in series
C = Load applied to 3 contacts in series
D = Load applied to 4 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

COIL SPECIFICATIONS

AC VERSION DATA

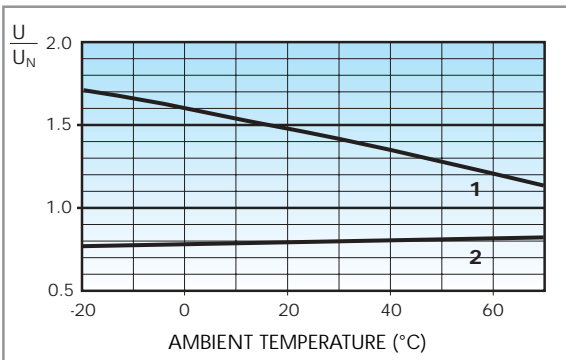
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 12 | 200 |
| 12 | 8.012 | 9.6 | 13.2 | 50 | 97 |
| 24 | 8.024 | 19.2 | 26.4 | 190 | 53 |
| 48 | 8.048 | 38.4 | 52.8 | 770 | 25 |
| 60 | 8.060 | 48 | 66 | 1,200 | 21 |
| 110 | 8.110 | 88 | 121 | 4,000 | 12.5 |
| 120 | 8.120 | 96 | 132 | 4,700 | 12 |
| 230 | 8.230 | 184 | 253 | 17,000 | 6 |
| 240 | 8.240 | 192 | 264 | 19,100 | 5.3 |

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.8 | 6.6 | 40 | 150 |
| 12 | 9.012 | 9.6 | 13.2 | 140 | 86 |
| 24 | 9.024 | 19.2 | 26.4 | 600 | 40 |
| 48 | 9.048 | 38.4 | 52.8 | 2,400 | 20 |
| 60 | 9.060 | 48 | 66 | 4,000 | 15 |
| 110 | 9.110 | 88 | 121 | 12,500 | 8.8 |

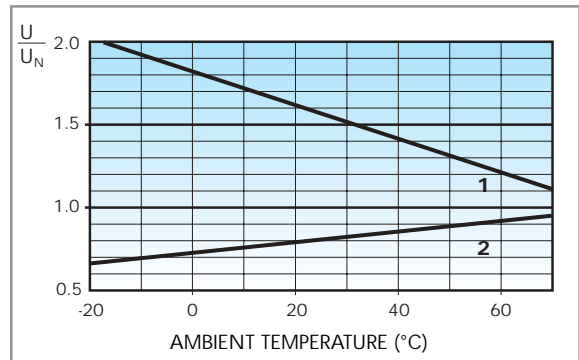
55

R 55 AC



Operating range (AC type) vs ambient temperature.
1 - Max coil voltage permitted.
2 - Min pick-up voltage with coil at ambient temperature.

R 55 DC



Operating range (DC type) vs ambient temperature.
1 - Max coil voltage permitted.
2 - Min pick-up voltage with coil at ambient temperature.



94.04

Approvals
(according to type):

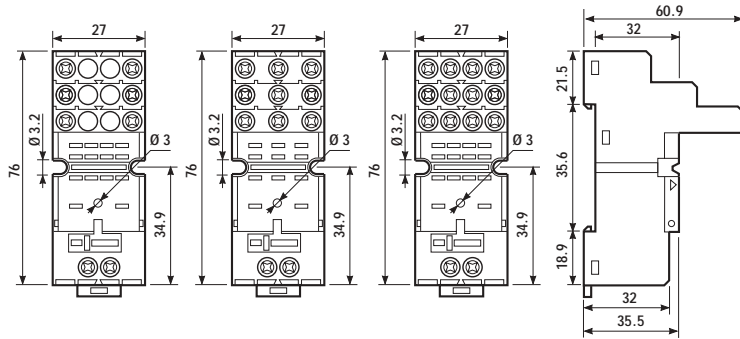


| Relay type | 55.32 | | 55.33 | | 55.32, 55.34 | |
|---|--------------|----------|--------|----------|--------------|----------|
| | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 094.71 supplied with socket packaging code SMA | 94.02 | 94.02.0 | 94.03 | 94.03.0 | 94.04 | 94.04.0 |
| Metal retaining clip | 094.71 | | | | | |
| Plastic retaining and release clip | 094.01 | | | | | |
| 6-way jumper link for 94.02, 94.03 and 94.04 sockets | 094.06 | 094.06.0 | 094.06 | 094.06.0 | 094.06 | 094.06.0 |
| Identification tag | 094.00.4 | | | | | |
| Modules (see table below) | 99.02 | | | | | |
| Timer modules | 86.10, 86.20 | | | | | |
| Sheet of marker tags for retaining and release clip 094.01 | 060.72 | | | | | |

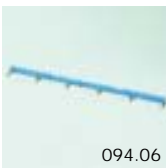
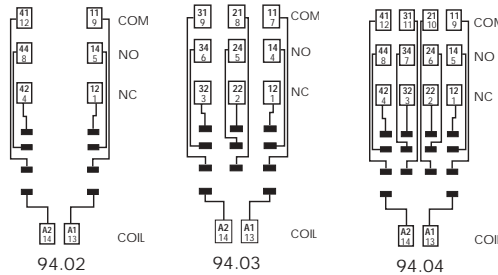
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

55

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

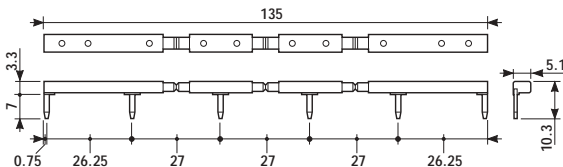


094.01



094.06

| | |
|---|--------|
| 6-way jumper link for 94.02, 94.03 and 94.04 sockets | 094.06 |
|---|--------|



- RATED VALUES: 10 A - 250 V



99.02

| 99.02 modules for 94.02, 94.03 and 94.04 sockets | | BLUE |
|--|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.02.3.000.00 |
| Diode (inverted polarity) | (6...220) V DC | 99.02.2.000.00 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.02.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.02.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.02.9.220.99 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.02.9.024.79 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.02.9.060.79 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.02.9.220.79 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 |
| RC circuit | (6...24) V DC/AC | 99.02.0.024.09 |
| RC circuit | (28...60) V DC/AC | 99.02.0.060.09 |
| RC circuit | (110...240) V DC/AC | 99.02.0.230.09 |
| No - remanence (62 kΩ/1W) | (110...240) V AC | 99.02.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request.



94.74

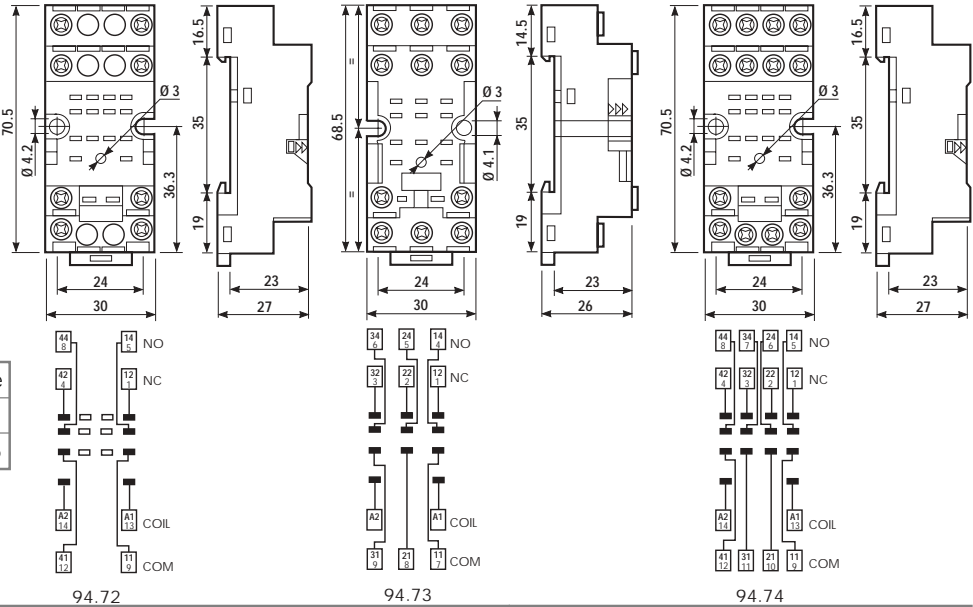
Approvals
(according to type):



GOST

- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|---------------|---------------|
| mm ² | 1x2.5 / 2x1.5 | 1x2.5 / 2x1.5 |
| AWG | 1x14 / 2x16 | 1x14 / 2x16 |



55



94.82

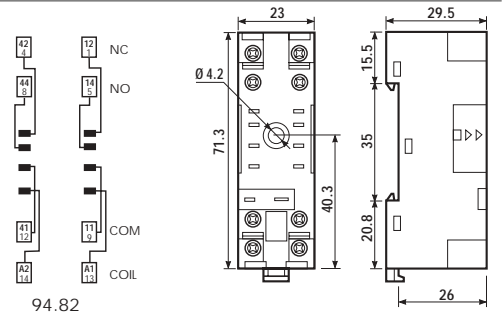
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 9 mm

- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|---------------|---------------|
| mm ² | 1x2.5 / 2x1.5 | 1x2.5 / 2x1.5 |
| AWG | 1x14 / 2x16 | 1x14 / 2x16 |



99.01

| 99.01 modules for 94.72, 94.73, 94.74 and 94.82 sockets | BLUE |
|---|------------------------------------|
| Diode** (+A1) | (6...220) V DC 99.01.3.000.00 |
| Diode (inverted polarity) | (6...220) V DC 99.01.2.000.00 |
| LED | (6...24) V DC/AC 99.01.0.024.59 |
| LED | (28...60) V DC/AC 99.01.0.060.59 |
| LED | (110...240) V DC/AC 99.01.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC 99.01.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC 99.01.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC 99.01.9.220.99 |
| LED + Diode (inverted polarity) | (6...24) V DC 99.01.9.024.79 |
| LED + Diode (inverted polarity) | (28...60) V DC 99.01.9.060.79 |
| LED + Diode (inverted polarity) | (110...220) V DC 99.01.9.220.79 |
| LED + Varistor | (6...24) V DC/AC 99.01.0.024.98 |
| LED + Varistor | (28...60) V DC/AC 99.01.0.060.98 |
| LED + Varistor | (110...240) V DC/AC 99.01.0.230.98 |
| RC circuit | (6...24) V DC/AC 99.01.0.024.09 |
| RC circuit | (28...60) V DC/AC 99.01.0.060.09 |
| RC circuit | (110...240) V DC/AC 99.01.0.230.09 |
| No - remanence (62 kΩ/1W) | (110...240) V AC 99.01.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request. Green LED is standard. Red LED available on request.



94.84.1

Approvals
(according to type):

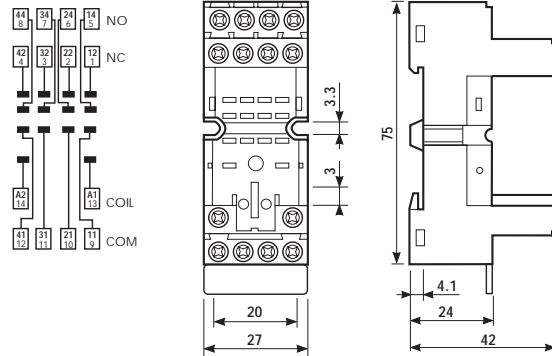


- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- ⊕ SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 7 mm
- MAX WIRE SIZE:

55

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Relay type | 55.32, 55.34 | |
|--|--------------|----------|
| Colour | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 094.71 supplied with socket packaging code SMA | 94.84.1 | 94.84.10 |
| Retaining clip | 094.71 | |
| Plastic retaining and release clip | 094.91 | |
| Identification tag | 094.80.2 | |
| Modules (see table below) | 99.80 | |



99.80

| 99.80 modules for 94.84.1 sockets | | BLUE |
|-----------------------------------|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.80.3.000.00 |
| LED | (6...24) V DC/AC | 99.80.0.024.59 |
| LED | (28...60) V DC/AC | 99.80.0.060.59 |
| LED | (110...240) V DC/AC | 99.80.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.80.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.80.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.80.9.220.99 |
| LED + Varistor | (6...24) V DC/AC | 99.80.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.80.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.80.0.230.98 |
| RC circuit | (6...24) V DC/AC | 99.80.0.024.09 |
| RC circuit | (28...60) V DC/AC | 99.80.0.060.09 |
| RC circuit | (110...240) V DC/AC | 99.80.0.230.09 |
| No - remanence (62 kΩ/1W) | (110...240) V AC | 99.80.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request.
Green LED is standard. Red LED available on request.



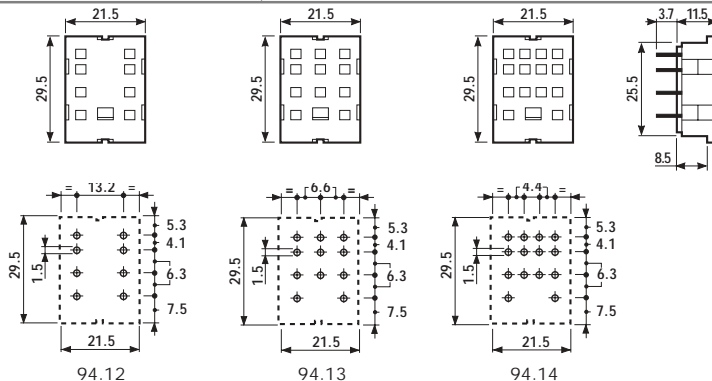
94.14

Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C

| Relay type | 55.32 | | 55.33 | | 55.32, 55.34 | |
|---|--------|---------|-------|---------|--------------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| P.C.B. socket | 94.12 | 94.12.0 | 94.13 | 94.13.0 | 94.14 | 94.14.0 |
| retaining clip 094.51 supplied with socket packaging code SMA | | | | | | |
| Metal retaining clip | 094.51 | | | | | |



Copper side view

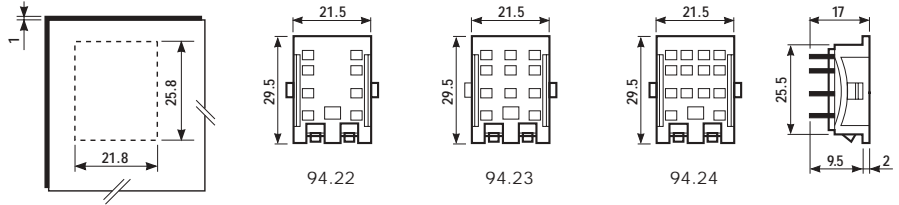


| Relay type | 55.32 | | 55.33 | | 55.32, 55.34 | |
|---|--------|---------|-------|---------|--------------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Panel mount solder socket: 1 mm thick panel retaining clip 094.51 supplied with socket packaging code SMA | 94.22 | 94.22.0 | 94.23 | 94.23.0 | 94.24 | 94.24.0 |
| Metal retaining clip | 094.51 | | | | | |

Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C

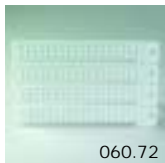
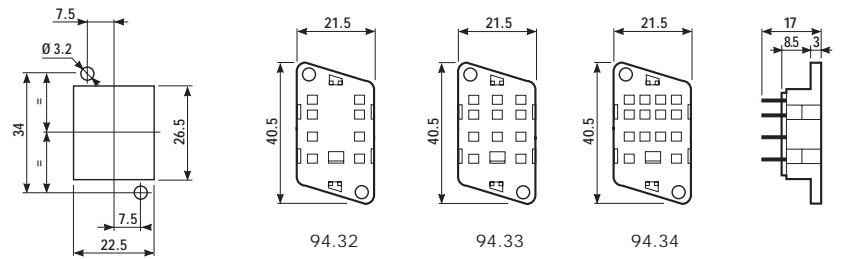


| Relay type | 55.32 | | 55.33 | | 55.32, 55.34 | |
|---|--------|---------|-------|---------|--------------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Panel mount socket: M3 screw mount - solder connections retaining clip 094.51 supplied with socket packaging code SMA | 94.32 | 94.32.0 | 94.33 | 94.33.0 | 94.34 | 94.34.0 |
| Metal retaining clip | 094.51 | | | | | |

Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C



| | |
|--|--------|
| Sheet of marker tags for retaining clip 094.01 (72 tags) | 060.72 |
|--|--------|

PACKAGING CODES

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

Code options according to the last three letters:



A Standard packaging

SM Metal retaining clip
SP Plastic retaining clip
SX No retaining clip

- Plug-in or P.C.B. versions
- AC or DC coils
- Lockable test button and mechanical flag indicator as standard on 2 CO relay type
- Sockets and accessories: see 96, and 99 series

56.32

56.32 - 0300

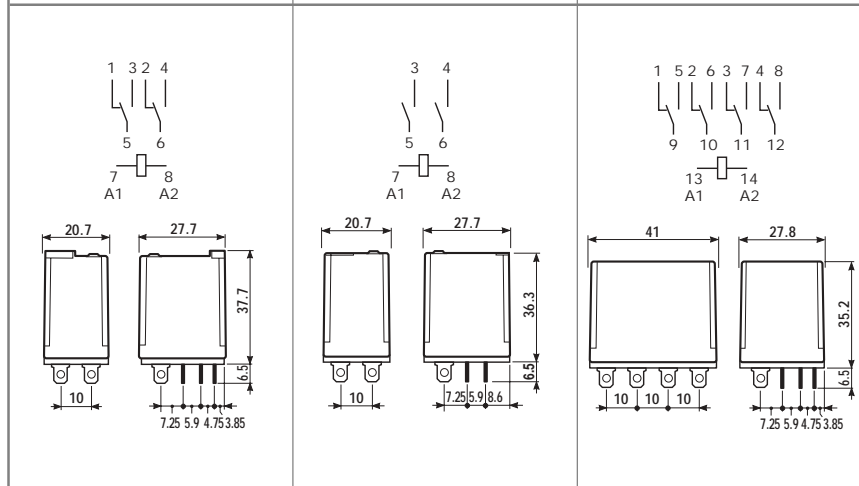
56.34



- 2 pole
 - Plug-in for use with 96 Series sockets (Faston 187 - 4.8x0.5mm)

- 2 NO (1.5 mm gap)
 - Plug-in for use with 96 Series sockets (Faston 187 - 4.8x0.5mm)

- 4 pole
 - Plug-in for use with 96 Series sockets (Faston 187 - 4.8x0.5mm)



56

* for 400 V applications, requirements for pollution degree 2 are met.

| | | 56.32 | 56.32 - 0300 | 56.34 |
|---|-----------------|---|---------------------------|--|
| Contact specifications | | | | |
| Contact configuration | | 2 CO | 2 NO 1.5 mm | 4 CO |
| Rated current/Maximum peak current | A | 12/20 | 12/20 | 12/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | 250/400* | 250/400* |
| Rated load in AC1 | VA | 3,000 | 3,000 | 3,000 |
| Rated load in AC15 (230 VAC) | VA | 500 | 500 | 500 |
| Single phase motor rating (230 VAC) | kW | 0.55 | 0.55 | 0.55 |
| Breaking capacity in DC1: 30/110/220V | A | 12/0.25/0.12 | 12/0.6/0.3 | 12/0.25/0.12 |
| Minimum switching load | mW (V/mA) | 500 (10/5) | 500 (10/5) | 500 (10/5) |
| Standard contact material | | AgNi | AgNi | AgNi |
| Coil specifications | | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | — | 6 · 12 · 24 · 48 · 60 · 110 |
| Rated power AC/DC | VA (50 Hz)/W | 1.5/1 | 1.5/— | 2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.85...1.1)U _N | — | (0.85...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | 0.8 U _N /— | 0.8 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /— | 0.2 U _N /0.1 U _N |
| Technical data | | | | |
| Mechanical life AC/DC | cycles | 20 · 10 ⁶ /50 · 10 ⁶ | 20 · 10 ⁶ /— | 20 · 10 ⁶ /50 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 200 · 10 ³ | 200 · 10 ³ | 150 · 10 ³ |
| Operate/release time (bounce included) | ms | 10/15 | 20/— | 15/15 |
| Insulation according to EN 61810-5 | | 4 kV/3 | 4 kV/3 | 4 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 4 | 4 | 4 |
| Dielectric strength between open contacts | V AC | 1,000 | 2,000 | 1,000 |
| Ambient temperature range | °C | -40...+70 | -40...+70 | -40...+70 |
| Environmental protection | | RT I | RT I | RT I |
| Approvals: (according to type) | | | | |

- Plug-in or P.C.B. versions
- AC or DC coils
- Lockable test button and mechanical flag indicator as standard on 2 CO relay type
- Sockets and accessories: see 96, and 99 series

| | 56.42 | 56.42 - 0300 | 56.44 |
|--|---|---|--|
| | | | |
| | - 2 pole - P.C.B. mounting | - 2 NO (1.5 mm gap) - P.C.B. mounting | - 4 pole - P.C.B. mounting |
| | Copper side view h = 37.7 mm | Copper side view h = 36.3 mm | Copper side view h = 35.2 mm |
| * for 400 V applications, requirements for pollution degree 2 are met. | | | |
| Contact specifications | | | |
| Contact configuration | 2 CO | 2 NO 1.5 mm | 4 CO |
| Rated current/Maximum peak current A | 12/20 | 12/2 | 12/20 |
| Rated voltage/Maximum switching voltage V AC | 250/400* | 250/400* | 250/400* |
| Rated load in AC1 VA | 3,000 | 3,000 | 3,000 |
| Rated load in AC15 (230 VAC) VA | 500 | 500 | 500 |
| Single phase motor rating (230 VAC) kW | 0.55 | 0.55 | 0.55 |
| Breaking capacity in DC1: 30/110/220V A | 12/0.25/0.12 | 12/0.6/0.3 | 12/0.25/0.12 |
| Minimum switching load mW (V/mA) | 500 (10/5) | 500 (10/5) | 500 (10/5) |
| Standard contact material | AgNi | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | 6 · 12 · 24 · 48 · 60 · 110 |
| Rated power AC/DC | VA (50 Hz)/W | 1.5/1 | 2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /— | 0.8 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | | |
| Mechanical life AC/DC | cycles | 20 · 10 ⁶ /50 · 10 ⁶ | 20 · 10 ⁶ /50 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 200 · 10 ³ | 150 · 10 ³ |
| Operate/release time (bounce included) | ms | 10/15 | 15/15 |
| Insulation according to EN 61810-5 | | 4 kV/3 | 4 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 4 | 4 |
| Dielectric strength between open contacts | V AC | 1,000 | 1,000 |
| Ambient temperature range | °C | -40...+70 | -40...+70 |
| Environmental protection | | RT I | RT I |
| Approvals: (according to type) | | GOST | |

ORDERING INFORMATION

Example: a 56 series plug-in relay with 2 CO contacts, coil rated 12 V DC with a lockable test button and mechanical indicator.

5 6 . 3 2 . 9 . 0 1 2 . 0 0 4 0

Series

Type

3 = Plug-in
4 = P.C.B.

No. of poles

2 = 2 pole, 12 A
4 = 4 pole, 12 A

Coil version

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

Coil voltage

see coil specifications

A: Contact material

0 = Standard AgNi
2 = AgCdO
4 = AgSnO₂

B: Contact circuit

0 = CO
3 = NO (1.5 mm gap)

D: Special versions

0 = Standard
5 = Top flange mount (56.34 only)
6 = Rear flange mount
7 = Top 35mm rail mount (56.34 only)
8 = Rear 35mm rail mount (56.34 only)

C: Options

0 = None
1 = Test button
2 = Mechanical indicator
3 = LED (AC only)
4 = Lockable test button + mechanical indicator
5 = Lockable test button + LED (AC only)
54 = Lockable test button + LED (AC only) + mechanical indicator
6 = LED (AC only) + diode (polarity positive to pin A2/8, DC non standard)
7 = Lockable test button + LED + diode (polarity positive to pin A2/8, DC non standard)
74 = Lockable test button + LED + diode (polarity positive to pin A2/8, DC non standard) + mechanical indicator
8 = LED + diode (polarity positive to pin 7, DC)
9 = Lockable test button + LED + diode (polarity positive to pin 7, DC)
94 = Lockable test button + LED + diode + mechanical indicator (polarity positive to pin 7, DC)

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Only combinations in the same row are possible

Preferred versions

| | coil version | A | B | C | D |
|-------|--------------|---|---|---|---|
| 56.32 | AC/DC | 0 | 0 | 4 | 0 |
| 56.34 | AC/DC | 0 | 0 | 0 | 0 |
| 56.42 | AC/DC | 0 | 0 | 0 | 0 |
| 56.44 | AC/DC | 0 | 0 | 0 | 0 |

All versions

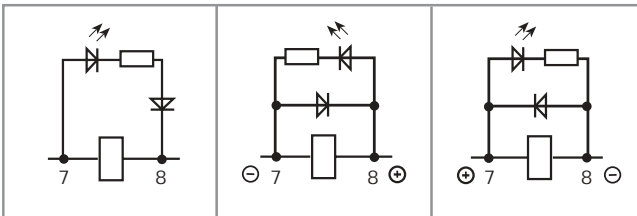
| | coil version | A | B | C | D |
|-------|--------------|-----------|---|---------------------------|-------------------|
| 56.32 | AC | 0 - 2 - 4 | 0 | 0 - 2 - 3 - 4 - 5 | 0 - 6 |
| | AC | 0 - 2 - 4 | 0 | 54 | / |
| | AC | 0 - 2 - 4 | 3 | 0 - 3 - 5 | 0 - 6 |
| | DC | 0 - 2 - 4 | 0 | 0 - 2 - 4 - 6 - 7 - 8 - 9 | 0 - 6 |
| | DC | 0 - 2 - 4 | 0 | 74 - 94 | / |
| 56.34 | AC/DC | 0 - 2 - 4 | 0 | 0 - 1 | 0 - 5 - 6 - 7 - 8 |
| 56.42 | AC/DC | 0 - 2 - 4 | 0 | 0 | 0 |
| | AC | 0 - 2 - 4 | 3 | 0 | 0 |
| 56.44 | AC/DC | 0 - 2 - 4 | 0 | 0 | 0 |

POSSIBLE OPTIONS

AC

DC - Non standard polarity

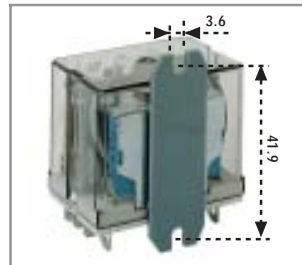
DC - Standard polarity



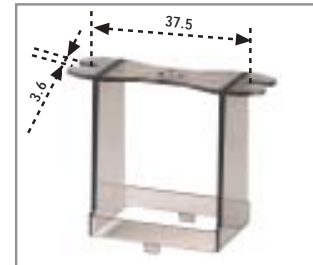
Option = 0030
0050

Option = 0060
0070
0074

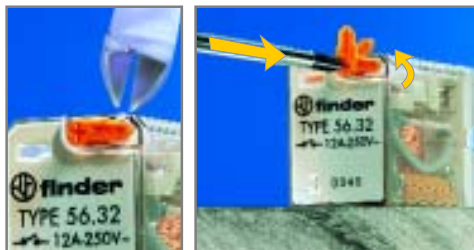
Option = 0080
0090
0094



Option = 0006
REAR FLANGE MOUNT



Type 056.05 - ADAPTOR WITH TOP FLANGE MOUNT (for 56.32...XX00)



LOCKABLE TEST BUTTON AND MECHANICAL FLAG INDICATOR (0040)

The dual-purpose Finder test button can be used in two ways:

Case 1) The plastic pip (located directly above the test button) remains intact. In this case, when the test button is pushed, the contacts operate. When the test button is released the contacts return to their former state.

Case 2) The plastic pip is broken-off (using an appropriate cutting tool). In this case, (in addition to the above function), when the test button is pushed and rotated, the contacts are latched in the operating state, and remain so until the test button is rotated back to its former position.

In both cases ensure that the test button actuation is swift and decisive.

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 4 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4 kV) |

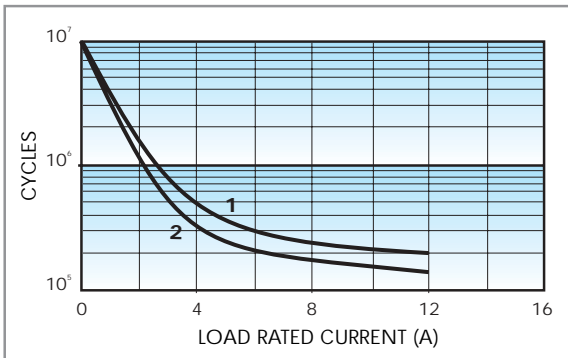
OTHER DATA

| | | | |
|--|-------------------------|--------------------|-------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 8/8 | |
| POWER LOST TO THE ENVIRONMENT | | 2 CO / 2 NO | 4 CO |
| | without contact current | W | 1 |
| | with rated current | W | 3.8 |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | |

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CONTACT SPECIFICATIONS

F 56

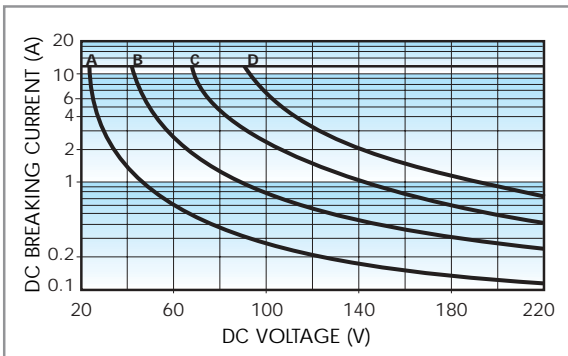


Electrical life vs AC1 load.

1 = Types 56.32/42

2 = Types 56.34/44

H 56 (CO)



Breaking capacity for DC1 load.

A = Load applied to 1 contact.

B = Load applied to 2 contacts in series.

C = Load applied to 3 contacts in series.

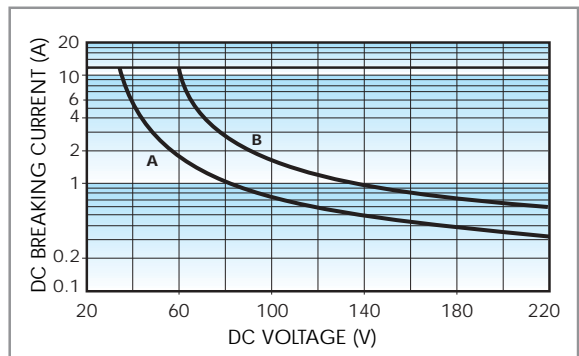
D = Load applied to 4 contacts in series.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

H 56 (NO)



Breaking capacity for DC1 load.

A = Load applied to 1 contact.

B = Load applied to 2 contacts in series.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

COIL SPECIFICATIONS

AC VERSION DATA (2 CO, 2 NO)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 12 | 200 |
| 12 | 8.012 | 9.6 | 13.2 | 50 | 97 |
| 24 | 8.024 | 19.2 | 26.4 | 190 | 53 |
| 48 | 8.048 | 38.4 | 52.8 | 770 | 25 |
| 60 | 8.060 | 48 | 66 | 1,200 | 21 |
| 110 | 8.110 | 88 | 121 | 3,940 | 12.5 |
| 120 | 8.120 | 96 | 132 | 4,700 | 12 |
| 230 | 8.230 | 184 | 253 | 17,000 | 6 |
| 240 | 8.240 | 192 | 264 | 19,100 | 5.3 |

DC VERSION DATA (2 CO)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 5.1 | 6.6 | 40 | 150 |
| 12 | 9.012 | 10.2 | 13.2 | 140 | 86 |
| 24 | 9.024 | 20.4 | 26.4 | 600 | 40 |
| 48 | 9.048 | 40.8 | 52.8 | 2,400 | 20 |
| 60 | 9.060 | 51 | 66 | 4,000 | 15 |
| 110 | 9.110 | 93.5 | 121 | 12,500 | 8.8 |

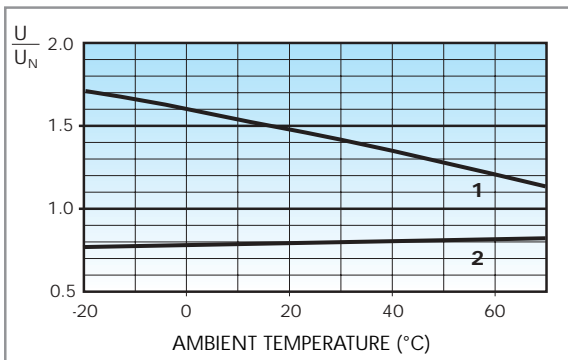
56 AC VERSION DATA (4 CO)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 5.7 | 300 |
| 12 | 8.012 | 9.6 | 13.2 | 22 | 150 |
| 24 | 8.024 | 19.2 | 26.4 | 81 | 90 |
| 48 | 8.048 | 38.4 | 52.8 | 380 | 37 |
| 60 | 8.060 | 48 | 66 | 600 | 30 |
| 110 | 8.110 | 88 | 121 | 1,900 | 16.5 |
| 120 | 8.120 | 96 | 132 | 2,560 | 13.4 |
| 230 | 8.230 | 184 | 253 | 7,700 | 9 |
| 240 | 8.240 | 192 | 264 | 10,000 | 7.5 |

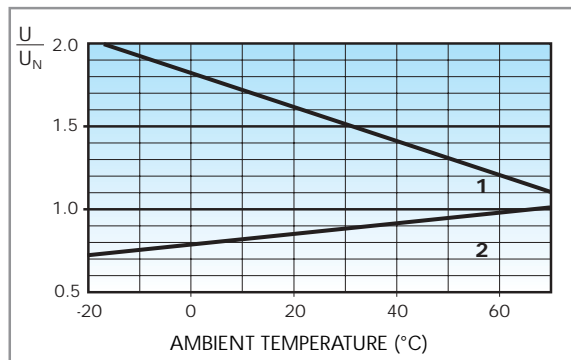
DC VERSION DATA (4 CO)

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 5.1 | 6.6 | 32.5 | 185 |
| 12 | 9.012 | 10.2 | 13.2 | 123 | 97 |
| 24 | 9.024 | 20.4 | 26.4 | 490 | 49 |
| 48 | 9.048 | 40.8 | 52.8 | 1,800 | 27 |
| 60 | 9.060 | 51 | 66 | 3,000 | 20 |
| 110 | 9.110 | 93.5 | 121 | 10,400 | 10.5 |

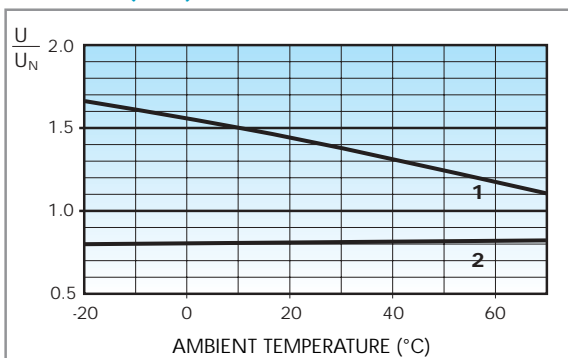
R 56 AC (2 CO, 2 NO)



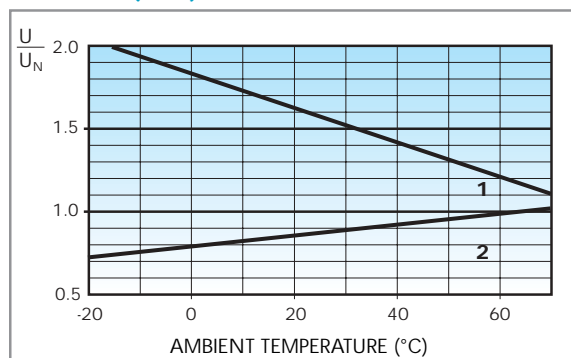
R 56 DC (2 CO)



R 56 AC (4 CO)



R 56 DC (4 CO)



Operating range (AC type) vs ambient temperature.

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

Operating range (DC type) vs ambient temperature.

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

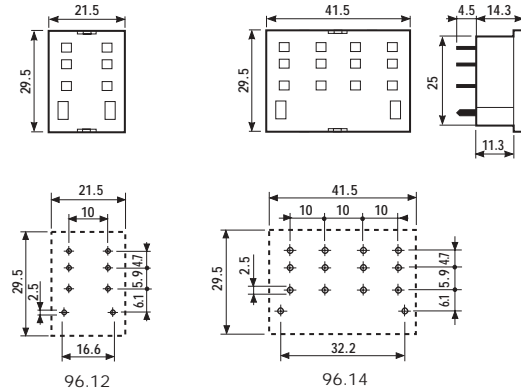


| Relay type | 56.32 | | 56.34 | |
|---|--------|---------|-------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| P.C.B. socket | 96.12 | 96.12.0 | 96.14 | 96.14.0 |
| retaining clip 094.51 supplied with socket packaging code SMA | | | | |
| Retaining clip | 094.51 | | | |

Approvals
(according to type):



- RATED VALUES: 12 A · 250 V (10 A max for each contact circuit)
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C

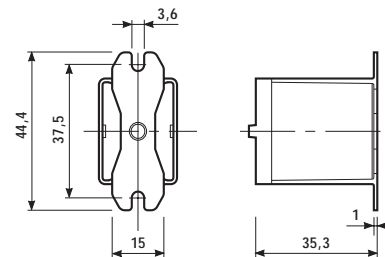


56

ACCESSORIES



| | |
|---|--------|
| Adaptor with top mount flange (for 56.32.x.xxx.xx00) | 056.05 |
|---|--------|



PACKAGING CODES

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

Code options according to the last three letters:



A Standard packaging

SM Metal retaining clip
SX No retaining clip

- 8 - 11 pin plug-in
- AC or DC coils
- Lockable test button with mechanical flag indicator
- Bifurcated contact option
- Sockets and accessories: see 90, 99 and 86 series

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* for 400 V applications, requirements for pollution degree 2 are met.

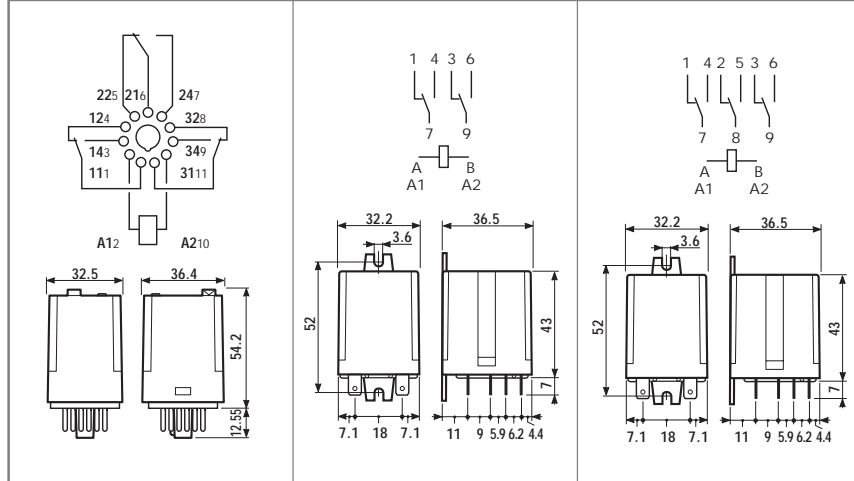
60.13 - 0200

60.62

60.63



| | | |
|---|--|--|
| - 3 bifurcated contacts - 11 pin - Plug-In for use with 90 series sockets | - 2 pole - Faston 187 (4.8x0.8)mm with flange mount | - 3 pole - Faston 187 (4.8x0.8)mm with flange mount |
|---|--|--|



| Contact specifications | | | | |
|---|-----------------|---|--|--|
| Contact configuration | | 3 CO | 2 CO | 3 CO |
| Rated current/Maximum peak current | A | 6/10 | 10/20 | 10/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | 250/400* | 250/400* |
| Rated load in AC1 | VA | 1,500 | 2,500 | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 250 | 500 | 500 |
| Single phase motor rating (230 VAC) | kW | 0.185 | 0.37 | 0.37 |
| Breaking capacity in DC1: 30/110/220V | A | 6/0.3/0.12 | 10/0.4/0.15 | 10/0.4/0.15 |
| Minimum switching load | mW (V/mA) | 50 (5/5) | 500 (10/5) | 500 (10/5) |
| Standard contact material | | AgNi bifurcated contacts | AgNi | AgNi |
| Coil specifications | | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | | |
| Rated power AC/DC | VA (50 Hz)/W | 2.2/1.3 | 2.2/1.3 | 2.2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.8...1.1)U _N | (0.8...1.1)U _N | (0.8...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.5 U _N | 0.8 U _N /0.5 U _N | 0.8 U _N /0.5 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | | | |
| Mechanical life AC/DC | cycles | 20 · 10 ⁶ /50 · 10 ⁶ | 20·10 ⁶ /50·10 ⁶ | 20·10 ⁶ /50·10 ⁶ |
| Electrical life at rated load AC1 | cycles | 250 · 10 ³ | 200·10 ³ | 200·10 ³ |
| Operate/release time (bounce included) | ms | 15/15 | 15/15 | 15/15 |
| Insulation according to EN 61810-5 | | 3.6 kV/3 | 3.6 kV/3 | 3.6 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 3.6 | 3.6 | 3.6 |
| Dielectric strength between open contacts | V AC | 1,000 | 1,000 | 1,000 |
| Ambient temperature range | °C | -40...+70 | -40...+70 | -40...+70 |
| Environmental protection | | RT I | RT I | RT I |

Approvals: (according to type) CE ABS B BEAB SE D FI GOST N RINA S RU US VDE

ORDERING INFORMATION

Example: a 60 series plug-in relay, 3 CO (3PDT) with coil rated 12 V DC, test button and mechanical indicator.

| | | | | | | | | | | | | |
|---|---|---|---|---|-----------------------------------|---|---|---|---|---|---|----------------------------|
| 6 | 0 | 1 | 3 | 9 | 0 | 1 | 2 | 0 | 0 | 4 | 0 | |
| Series | | | | | A: Contact material | | | B: Contact circuit | | C: Options | | D: Special versions |
| Type | | | | | 0 = Standard 5 = AgNi + 5µm Au | | | 0 = CO 2 = Bifurcated contacts 60.12/13 - 6A only | | 0 = None 1 = Test button 2 = Mechanical indicator 3 = LED (AC) 4 = Lockable test button + mechanical indicator 5 = Lockable test button + LED (AC) 54 = Lockable test button + LED (AC) + mechanical indicator 6 = LED + diode (positive to pin 2, DC) 7 = Lockable test button + LED + diode (positive to pin 2) 74 = Lockable test button + LED + diode (positive to pin 2) + mechanical indicator | | 0 = Standard |
| 1 = 8/11 pin plug-in 6 = Faston 187 (mm 4.8x0.8) with flange mount | | | | | | | | | | | | |
| No. of poles | | | | | | | | | | | | |
| 2 = 2 pole 3 = 3 pole | | | | | | | | | | | | |
| Coil version | | | | | | | | | | | | |
| 4 = Current sensing 8 = AC (50/60 Hz) 9 = DC | | | | | | | | | | | | |
| Coil voltage | | | | | | | | | | | | |
| see coil specifications | | | | | | | | | | | | |

60

Only combinations in the same row are possible

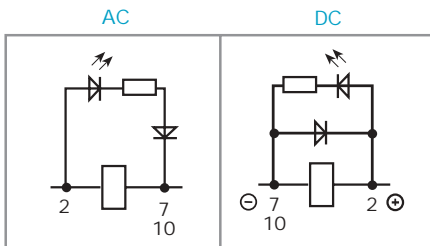
Preferred versions

| | coil version | A | B | C | D |
|----------|--------------|---|---|---|---|
| 60.12/13 | AC/DC | 0 | 0 | 4 | 0 |
| 60.62/63 | AC/DC | 0 | 0 | 0 | 0 |

All versions

| | coil version | A | B | C | D |
|----------|-----------------|-------|-------|-----------------------|---|
| 60.12/13 | AC | 0 | 0 | 0 - 1 - 2 - 3 - 4 - 5 | 0 |
| | AC | 0 | 0 | 54 | / |
| | AC | 5 | 0 - 2 | 0 - 1 - 2 - 3 - 4 - 5 | 0 |
| | AC | 5 | 0 - 2 | 54 | / |
| | DC | 0 | 0 | 0 - 1 - 2 - 4 - 6 - 7 | 0 |
| | DC | 0 | 0 | 74 | / |
| | DC | 5 | 0 - 2 | 0 - 1 - 2 - 4 - 6 - 7 | 0 |
| | DC | 5 | 0 - 2 | 74 | / |
| | current sensing | 0 | 0 | 4 | 0 |
| 60.62/63 | AC/DC | 0 - 5 | 0 | 0 | 0 |

POSSIBLE OPTIONS



Option = 0030
0050
0054

Option = 0060
0070
0074

ACCESSORIES

060.72: Sheet of marker tags see page 60.



LOCKABLE TEST BUTTON AND MECHANICAL FLAG INDICATOR (0040)

The dual-purpose Finder test button can be used in two ways:

Case 1) The plastic pip (located directly above the test button) remains intact. In this case, when the test button is pushed, the contacts operate. When the test button is released the contacts return to their former state.

Case 2) The plastic pip is broken-off (using an appropriate cutting tool). In this case, (in addition to the above function), when the test button is pushed and rotated, the contacts are latched in the operating state, and remain so until the test button is rotated back to its former position.

In both cases ensure that the test button actuation is swift and decisive.

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

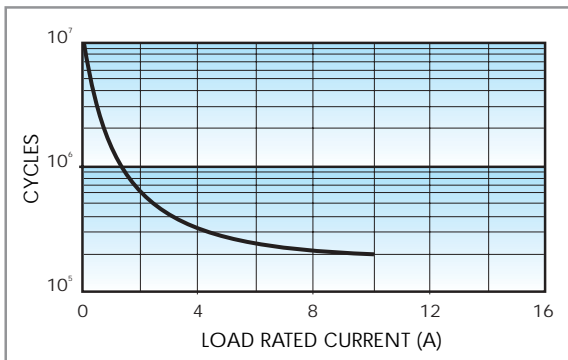
OTHER DATA

| | | | |
|---|---------------------------|-------------|-------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 5/3 | |
| POWER LOST TO THE ENVIRONMENT | | 2 CO | 3 CO |
| | without contact current W | 1.3 | 1.3 |
| | with rated current W | 2.7 | 3.4 |

60

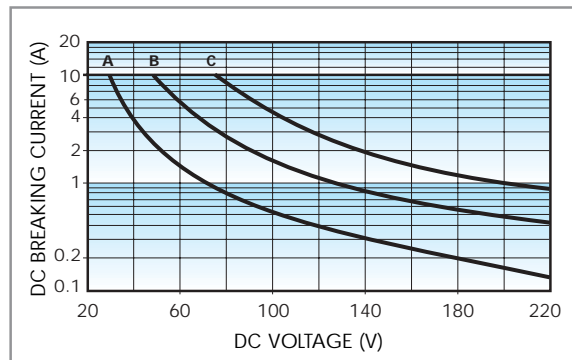
CONTACT SPECIFICATIONS

F 60



Electrical life vs AC1 load.

H 60



Breaking capacity for DC1 load.

A = Load applied to 1 contact

B = Load applied to 2 contacts in series

C = Load applied to 3 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

COIL SPECIFICATIONS

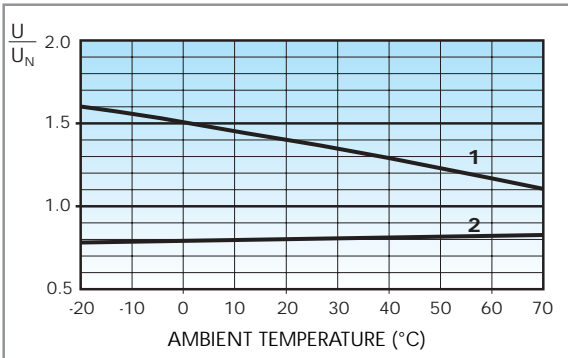
AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 4.6 | 367 |
| 12 | 8.012 | 9.6 | 13.2 | 19 | 183 |
| 24 | 8.024 | 19.2 | 26.4 | 74 | 90 |
| 48 | 8.048 | 38.4 | 52.8 | 290 | 47 |
| 60 | 8.060 | 48 | 66 | 450 | 37 |
| 110 | 8.110 | 88 | 121 | 1,600 | 20 |
| 120 | 8.120 | 96 | 132 | 1,940 | 18.6 |
| 230 | 8.230 | 184 | 253 | 7,250 | 10.5 |
| 240 | 8.240 | 192 | 264 | 8,500 | 9.2 |

DC VERSION DATA

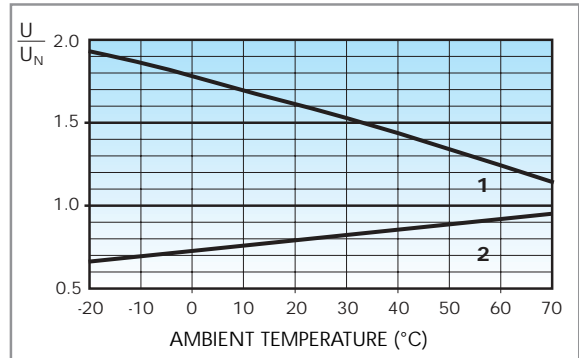
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.8 | 6.6 | 28 | 214 |
| 12 | 9.012 | 9.6 | 13.2 | 110 | 109 |
| 24 | 9.024 | 19.2 | 26.4 | 445 | 53.9 |
| 48 | 9.048 | 38.4 | 52.8 | 1,770 | 27.1 |
| 60 | 9.060 | 48 | 66 | 2,760 | 21.7 |
| 110 | 9.110 | 88 | 121 | 9,420 | 11.7 |

R 60 AC



Operating range (AC version) vs ambient temperature.
1 - Max coil voltage permitted.
2 - Min pick-up voltage with coil at ambient temperature.

R 60 DC

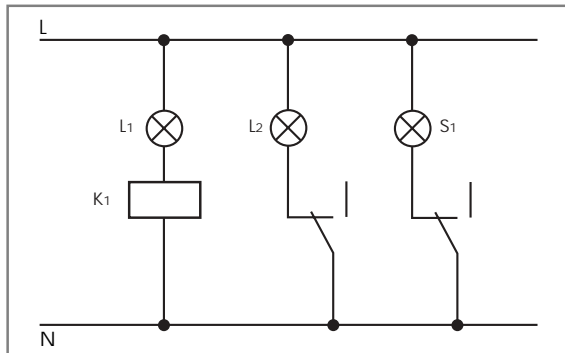


Operating range (DC version) vs ambient temperature.
1 - Max coil voltage permitted.
2 - Min pick-up voltage with coil at ambient temperature.

60

CURRENT SENSING VERSION

Wiring Diagram



Typical application with current sensing relays.
 An open circuit filament of lamp L1 is detected by the current sensing relay coil (K1) which causes the back-up safety lamp L2 to be energised, and indication of failure at the control panel via lamp S1.
 Example: navigation light.
 L1 = Light
 L2 = Safety light
 S1 = Control light
 K1 = Relay

60 Series - CURRENT SENSING AC

| Coil code | I_{min} (A) | I_N (A) | I_{max} (A) | R (Ω) |
|-----------|---------------|-----------|---------------|----------------|
| 4251 | 2.1 | 2.5 | 3.0 | 0.05 |
| 4181 | 1.5 | 1.8 | 2.2 | 0.10 |
| 4161 | 1.4 | 1.6 | 1.9 | 0.12 |
| 4121 | 1.0 | 1.2 | 1.4 | 0.22 |
| 4101 | 0.85 | 1.0 | 1.2 | 0.32 |
| 4051 | 0.42 | 0.5 | 0.6 | 1.28 |
| 4041 | 0.34 | 0.4 | 0.5 | 2.00 |
| 4031 | 0.25 | 0.3 | 0.4 | 3.57 |
| 4021 | 0.17 | 0.2 | 0.25 | 8.0 |
| 4011 | 0.085 | 0.1 | 0.15 | 32.1 |

60 Series - CURRENT SENSING DC

| Coil code | I_{min} (A) | I_N (A) | I_{max} (A) | R (Ω) |
|-----------|---------------|-----------|---------------|----------------|
| 4202 | 1.7 | 2.0 | 2.4 | 0.15 |
| 4182 | 1.5 | 1.8 | 2.2 | 0.19 |
| 4162 | 1.4 | 1.6 | 1.9 | 0.24 |
| 4142 | 1.2 | 1.4 | 1.7 | 0.31 |
| 4122 | 1.0 | 1.2 | 1.4 | 0.42 |
| 4102 | 0.85 | 1.0 | 1.2 | 0.61 |
| 4092 | 0.8 | 0.9 | 1.1 | 0.75 |
| 4062 | 0.5 | 0.6 | 0.7 | 1.70 |
| 4032 | 0.25 | 0.3 | 0.4 | 6.70 |
| 4012 | 0.085 | 0.1 | 0.15 | 61 |

Other types of current sensing relays are available on request.



90.21

Approvals
(according to type):



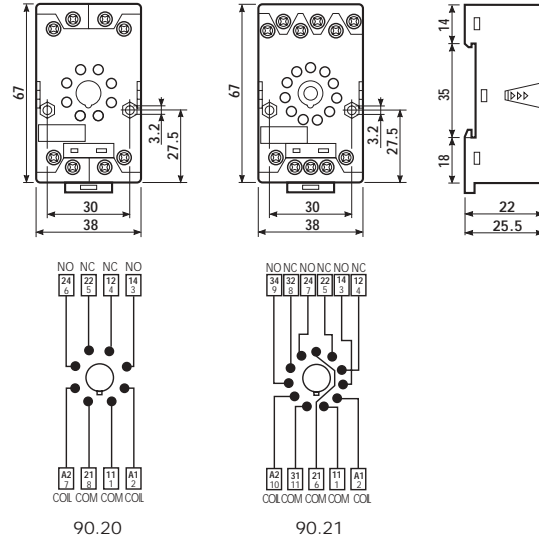
GOST

- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 10 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x6 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x10 / 2x14 |

60

| Relay type | 60.12 | | 60.13 | |
|---|--------|---------|-------|---------|
| | BLUE | BLACK | BLUE | BLACK |
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 090.33 supplied with socket packaging code SMA | 90.20 | 90.20.0 | 90.21 | 90.21.0 |
| Retaining clip | 090.33 | | | |
| Modules (see table below) | 99.01 | | | |



99.01

| 99.01 modules for 90.20 and 90.21 sockets | | BLUE |
|---|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.01.3.000.00 |
| Diode (inverted polarity) | (6...220) V DC | 99.01.2.000.00 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.01.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.01.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.01.9.220.99 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.01.0.024.79 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.01.9.060.79 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.01.9.220.79 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 |
| RC | (6...24) V DC/AC | 99.01.0.024.09 |
| RC | (28...60) V DC/AC | 99.01.0.060.09 |
| RC | (110...240) V DC/AC | 99.01.0.230.09 |
| No - remanence (62 k Ω /1W) | (110...240) V AC | 99.01.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request. Green LED is standard. Red LED available on request.



90.73

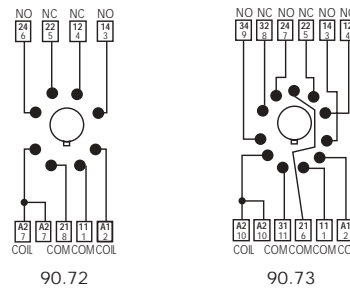
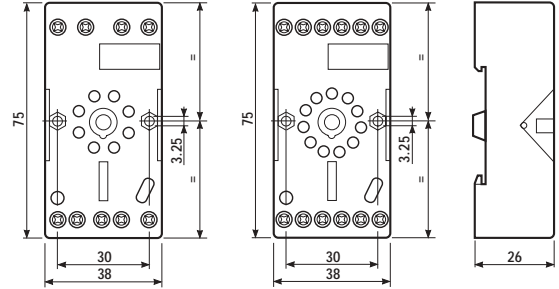
| Relay type | 60.12 | | 60.13 | |
|---|--------|---------|-------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | 90.72 | 90.72.0 | 90.73 | 90.73.0 |
| Retaining clip | 090.33 | | | |
| Timer module | 86.60 | | | |

Approvals
(according to type):



- Double ground terminal (A2).
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- SCREW TORQUE: 0.8 Nm
- WIRE STRIP LENGTH: 7 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x4 | 1x6 / 2x4 |
| AWG | 1x10 / 2x12 | 1x10 / 2x12 |



60



90.23

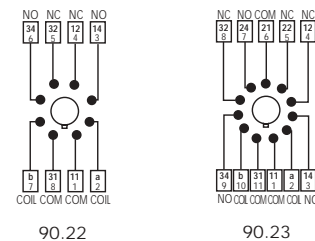
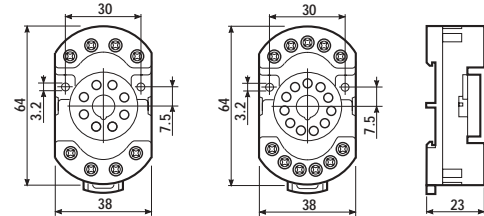
| Relay type | 60.12 | | 60.13 | |
|---|--------|---------|-------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | 90.22 | 90.22.0 | 90.23 | 90.23.0 |
| retaining clip 090.33 supplied with socket packaging code SMA | | | | |
| Retaining clip | 090.33 | | | |

Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- SCREW TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 7 mm
- MAX WIRE SIZE:

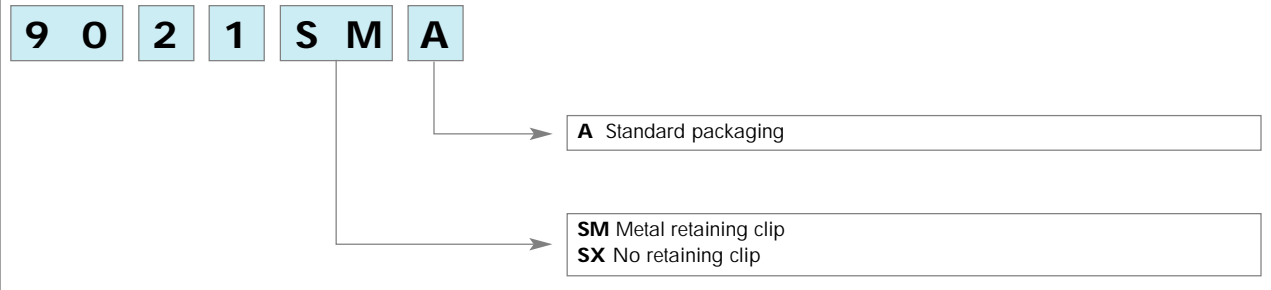
| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x6 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x10 / 2x14 |



PACKAGING CODES

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

Code options according to the last three letters:

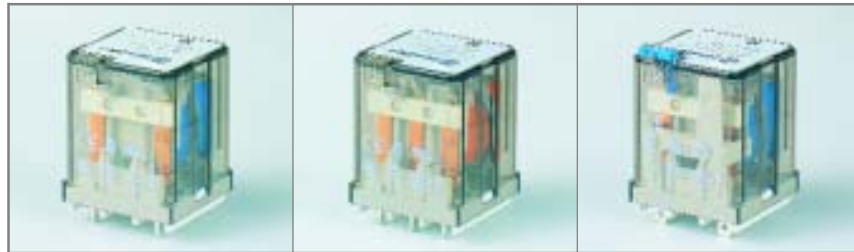


- Plug-in or P.C.B. versions
- AC or DC coils
- 3 mm gap between open contacts on NO option
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts (internal distance)

62.22

62.23

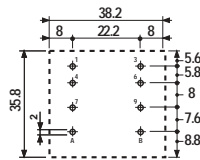
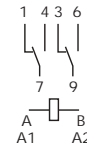
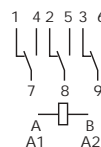
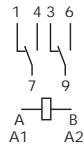
62.32



- 2 pole
- P.C.B. mounting

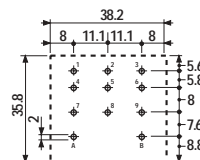
- 3 pole
- P.C.B. mounting

- 2 pole
- Faston 187 (4.8x0.5)mm
- Plug-in use 92 Series socket



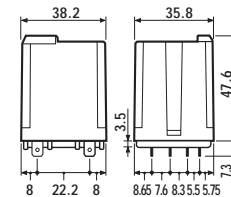
Copper side view

h = 49.1 mm



Copper side view

h = 49.1 mm



| Contact specifications | | | | |
|---|-----------------|---|--|--|
| Contact configuration | | 2 CO | 3 CO | 2 CO |
| 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 in AC1 | VA | 4,000 | 4,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 | 750 |
| Single phase motor rating (230 VAC) | kW | 0.8 | 0.8 | 0.8 |
| Breaking capacity in DC1: 30/110/220V | A | 16/0.6/0.4 | 16/0.6/0.4 | 16/0.6/0.4 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgCdO | AgCdO | AgCdO |
| Coil specifications | | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | | |
| Rated power AC/DC | VA (50 Hz)/W | 2.2/1.3 | 2.2/1.3 | 2.2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.8...1.1)U _N | (0.8...1.1)U _N | (0.8...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | | | |
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 20/20 | 20/20 | 20/20 |
| Insulation according to EN 61810-5 | | 4kV/3 | 4kV/3 | 4kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 | 6 | 6 |
| Dielectric strength between open contacts | V AC | 1,500 | 1,500 | 1,500 |
| Ambient temperature range | °C | -40...+70 | -40...+70 | -40...+70 |
| Environmental protection | | RT I | RT I | RT I |
| Approvals: (according to type) | | | | |

- Plug-in or P.C.B. versions
- AC or DC coils
- 3 mm gap between open contacts on NO option
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts (internal distance)

| | 62.33 | 62.82 | 62.83 |
|---|--|--|--|
| | | | |
| | - 3 pole - Faston 187 (4.8x0.5)mm - Plug-in use 92 Series socket | - 2 pole - Faston 250 (6.3x0.8)mm with flange mount | - 3 pole - Faston 250 (6.3x0.8)mm with flange mount |
| | | | |
| Contact specifications | | | |
| Contact configuration | 3 CO | 2 CO | 3 CO |
| Rated current/Maximum peak current | A 16/30 | A 16/30 | A 16/30 |
| Rated voltage/Maximum switching voltage V AC | 250/400 | 250/400 | 250/400 |
| Rated load in AC1 | VA 4,000 | VA 4,000 | VA 4,000 |
| Rated load in AC15 (230 VAC) | VA 750 | VA 750 | VA 750 |
| Single phase motor rating (230 VAC) | kW 0.8 | kW 0.8 | kW 0.8 |
| Breaking capacity in DC1: 30/110/220V | A 16/0.6/0.4 | A 16/0.6/0.4 | A 16/0.6/0.4 |
| Minimum switching load | mW (V/mA) 1,000 (10/10) | mW (V/mA) 1,000 (10/10) | mW (V/mA) 1,000 (10/10) |
| Standard contact material | AgCdO | AgCdO | AgCdO |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240 | |
| | V DC | 6 - 12 - 24 - 48 - 60 - 110 | |
| Rated power AC/DC | VA (50 Hz)/W | 2.2/1.3 | 2.2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | (0.8...1.1)U _N | (0.8...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | | |
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 20/20 | 20/20 |
| Insulation according to EN 61810-5 | | 4 kV/3 | 4 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 | 6 |
| Dielectric strength between open contacts | V AC | 1,500 | 1,500 |
| Ambient temperature range | °C | -40...+70 | -40...+70 |
| Environmental protection | | RT I | RT I |
| Approvals: (according to type) | | | |

- Plug-in or P.C.B. versions
- AC or DC coils
- 3 mm gap between open contacts on NO option
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts (internal distance)

62.22 - 0300

62.23 - 0300

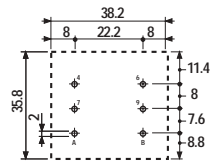
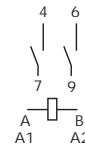
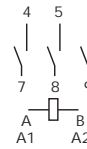
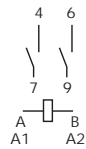
62.32 - 0300



- 2 NO (3mm contact gap)
- P.C.B. mounting

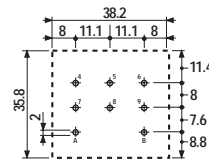
- 3 NO (3mm contact gap)
- P.C.B. mounting

- 2 NO (3mm contact gap)
- Faston 187 (4.8x0.5)mm
- Plug-in use 92 Series socket



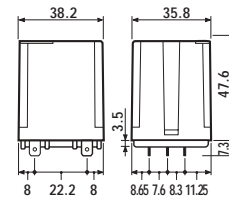
Copper side view

h = 51.1 mm



Copper side view

h = 51.1 mm



* Distance between contacts >3mm (EN 60335-1)

Contact specifications

| | | | | |
|---|-----------|---------------|---------------|---------------|
| Contact configuration | | 2 NO 3 mm* | 3 NO 3 mm* | 2 NO 3 mm* |
| 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 in AC1 | VA | 4,000 | 4,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 | 750 |
| Single phase motor rating (230 VAC) | kW | 0.8 | 0.8 | 0.8 |
| Breaking capacity in DC1: 30/110/220V | A | 16/1.1/0.7 | 16/1.1/0.7 | 16/1.1/0.7 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgCdO | AgCdO | AgCdO |

Coil specifications

| | | | | |
|-----------------------------------|-----------------|---|--|--|
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | | |
| Rated power AC/DC | VA (50 Hz)/W | 3/3 | 3/3 | 3/3 |
| Operating range | AC (50 Hz) | (0.85...1.1)U _N | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.1)U _N | (0.85...1.1)U _N | (0.85...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |

Technical data

| | | | | |
|---|--------|--|--|--|
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 30/— | 30/— | 30/— |
| Insulation according to EN 61810-5 | | 4kV/3 | 4kV/3 | 4kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 | 6 | 6 |
| Dielectric strength between open contacts | V AC | 2,500 | 2,500 | 2,500 |
| Ambient temperature range | °C | -40...+50 | -40...+50 | -40...+50 |
| Environmental protection | | RT I | RT I | RT I |

Approvals: (according to type)



- Plug-in or P.C.B. versions
- AC or DC coils
- 3 mm gap between open contacts on NO option
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts (internal distance)

62.33 - 0300

62.82 - 0300

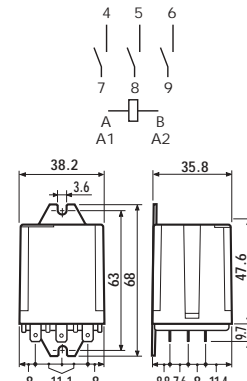
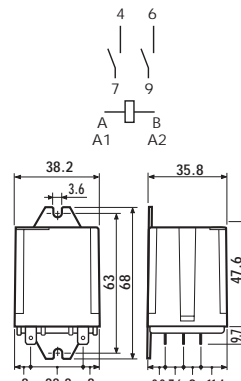
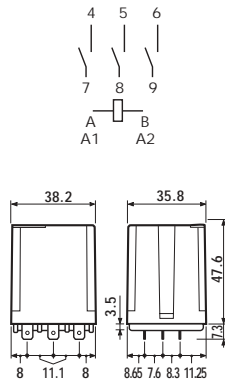
62.83 - 0300



- 3 NO (3mm contact gap)
- Faston 187 (4.8x0.5)mm
- Plug-in use 92 Series socket

- 2 NO (3mm contact gap)
- Faston 250 (6.3x0.8)mm with flange mount

- 3 NO (3mm contact gap)
- Faston 250 (6.3x0.8)mm with flange mount



* Distance between contacts >3mm (EN 60335-1)

| Contact specifications | | 62.33 - 0300 | 62.82 - 0300 | 62.83 - 0300 |
|---|-----------------|---|--|--|
| Contact configuration | | 3 NO 3 mm* | 2 NO 3 mm* | 3 NO 3 mm* |
| 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 in AC1 | VA | 4,000 | 4,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 | 750 |
| Single phase motor rating (230 VAC) | kW | 0.8 | 0.8 | 0.8 |
| Breaking capacity in DC1: 30/110/220V | A | 16/1.1/0.7 | 16/1.1/0.7 | 16/1.1/0.7 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgCdO | AgCdO | AgCdO |
| Coil specifications | | 6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240 | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240 | | |
| | V DC | 6 - 12 - 24 - 48 - 60 - 110 | | |
| Rated power AC/DC | VA (50 Hz)/W | 3/3 | 3/3 | 3/3 |
| Operating range | AC (50 Hz) | (0.85...1.1)U _N | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.1)U _N | (0.85...1.1)U _N | (0.85...1.1)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N | 0.8 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |
| Technical data | | 10 · 10 ⁶ /30 · 10 ⁶ | | |
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ | 10 · 10 ⁶ /30 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 30/— | 30/— | 30/— |
| Insulation according to EN 61810-5 | | 4 kV/3 | | |
| Insulation between coil and contacts (1.2/50μs) | | 6 kV | | |
| Dielectric strength between open contacts | | 2,500 V AC | | |
| Ambient temperature range | | -40...+50 °C | | |
| Environmental protection | | RT I | | |
| Approvals: (according to type) | | | | |

ORDERING INFORMATION

Example: a 62 series power relay + FASTON 250 rear flange mount (6.3 x 0.8 mm) with 2 NO contacts, coil rated at 12 V DC.

6 2 . 8 2 . 9 . 0 1 2 . 0 3 0 0

A B C D

Series

Type

- 2 = P.C.B.
- 3 = Plug-in
- 8 = Faston 250 (6.3x0.8 mm) with rear flange mount

No. of poles

- 2 = 2 pole
- 3 = 3 pole

Coil version

- 8 = AC (50/60 Hz)
- 9 = DC

Coil voltage

see coil specifications

A: Contact material

- 0 = Standard AgCdO
- 4 = AgSnO₂

B: Contact circuit

- 0 = CO
- 3 = NO (≥ 3 mm contact gap)
- 5 = CO version with coil to contacts SELV insulation
- 6 = NO (≥ 3 mm contact gap) version with coil to contacts SELV insulation

D: Special versions

- 0 = Standard
- 5 = Top flange mount
- 6 = Rear flange mount
- 7 = Top 35 mm rail mount
- 8 = Rear 35 mm rail mount
- 9 = Type 62.82/83 without rear flange mount

C: Options

- 0 = None
- 2 = Mechanical indicator
- 3 = LED (AC)
- 4 = Lockable test button + mechanical indicator
- 5 = Lockable test button + LED (AC)
- 54 = Lockable test button + LED (AC) + mechanical indicator
- 6 = LED + diode (DC polarity positive to pin A/A1)
- 7 = Lockable test button + LED + diode (DC polarity positive to pin A/A1)
- 74 = Lockable test button + LED + diode (DC polarity positive to pin A/A1) + mechanical indicator

62

Only combinations in the same row are possible

Preferred versions

| | coil version | A | B | C | D |
|----------|--------------|---|---|---|---|
| 62.22/23 | AC-DC | 0 | 0 | 0 | 0 |
| 62.32/33 | AC-DC | 0 | 0 | 4 | 0 |
| 62.82/83 | AC-DC | 0 | 0 | 0 | 0 |

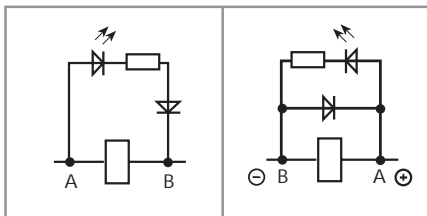
All versions

| | coil version | A | B | C | D |
|----------|--------------|-------|---------------|---------------|-------------------|
| 62.22/23 | AC-DC | 0 - 4 | 0 - 3 - 5 - 6 | 0 | 0 |
| 62.32/33 | AC-DC | 0 - 4 | 0 - 3 - 5 - 6 | 0 | 0-5-6-7-8 |
| | AC-DC | 0 - 4 | 5 | 2 - 4 | 0 - 6 - 8 |
| | AC | 0 - 4 | 0 | 2 - 3 - 4 - 5 | 0 - 6 - 8 |
| | AC | 0 - 4 | 3 | 3 | 0 - 6 - 8 |
| | AC | 0 - 4 | 0 | 54 | / |
| | DC | 0 - 4 | 0 | 4 - 6 - 7 | 0 - 6 - 8 |
| | DC | 0 - 4 | 3 | 6 | 0 - 6 - 8 |
| | DC | 0 - 4 | 0 | 74 | / |
| 62.82/83 | AC-DC | 0 - 4 | 0 - 3 - 5 - 6 | 0 | 0 - 5 - 7 - 8 - 9 |
| | AC-DC | 0 - 4 | 5 | 2 - 4 | 0 - 8 |
| | AC | 0 - 4 | 0 | 2 - 3 - 4 - 5 | 0 - 8 |
| | AC | 0 - 4 | 3 | 3 | 0 - 8 |
| | DC | 0 - 4 | 0 | 4 - 6 - 7 | 0 - 8 |
| | DC | 0 - 4 | 3 | 6 | 0 - 8 |

POSSIBLE OPTIONS

AC

DC



Option = 0030
0050

Option = 0060
0070



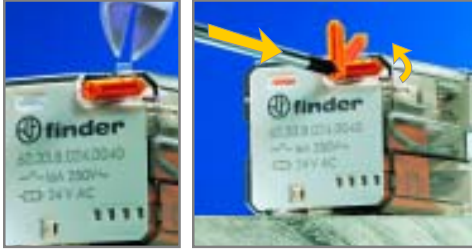
Option = 0005
TOP MOUNT FLANGE



Option = 0500 and 0600
COIL TO CONTACTS PHYSICAL
SEPARATOR FOR SELV APPLICATIONS

ACCESSORIES

060.72: Sheet of marker tags see page 70.



LOCKABLE TEST BUTTON AND MECHANICAL FLAG INDICATOR (0040)

The dual-purpose Finder test button can be used in two ways:

Case 1) The plastic pip (located directly above the test button) remains intact. In this case, when the test button is pushed, the contacts operate. When the test button is released the contacts return to their former state.

Case 2) The plastic pip is broken-off (using an appropriate cutting tool). In this case, (in addition to the above function), when the test button is pushed and rotated, the contacts are latched in the operating state, and remain so until the test button is rotated back to its former position.

In both cases ensure that the test button actuation is swift and decisive.

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 400 |
| | rated impulse withstand voltage | kV | 4 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

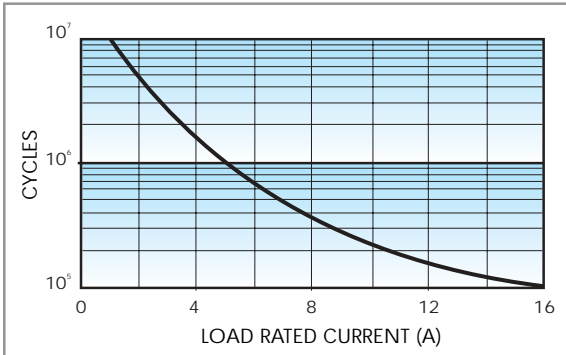
| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

| | | | | | | |
|--|-------------------------|-------------|-------------|-------------|-------------|---|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 5/3 | | | | |
| POWER LOST TO THE ENVIRONMENT | | 2 CO | 3 CO | 2 NO | 3 NO | |
| | without contact current | W | 1.3 | 1.3 | 3 | 3 |
| | with rated current | W | 3.3 | 4.3 | 5 | 6 |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥5 | | | | |

62

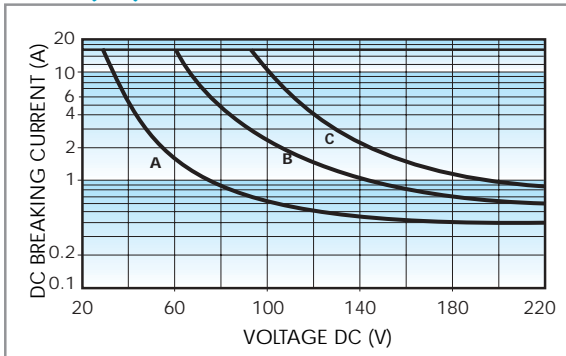
CONTACT SPECIFICATIONS



Electrical life vs AC1 load.

F 62

H 62 (CO)

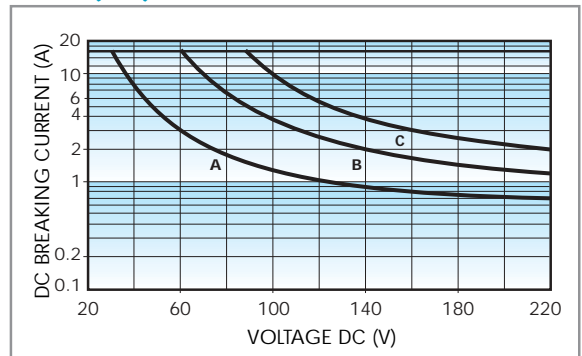


Breaking capacity for DC1 load.

- A** = Load applied to 1 contact.
- B** = Load applied to 2 contacts in series.
- C** = Load applied to 3 contacts in series.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

H 62 (NO)



Breaking capacity for DC1 load.

- A** = Load applied to 1 contact.
- B** = Load applied to 2 contacts in series.
- C** = Load applied to 3 contacts in series.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

COIL SPECIFICATIONS

AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 4.6 | 367 |
| 12 | 8.012 | 9.6 | 13.2 | 19 | 183 |
| 24 | 8.024 | 19.2 | 26.4 | 74 | 90 |
| 48 | 8.048 | 38.4 | 52.8 | 290 | 47 |
| 60 | 8.060 | 48 | 66 | 450 | 37 |
| 110 | 8.110 | 88 | 121 | 1,600 | 20 |
| 120 | 8.120 | 96 | 132 | 1,940 | 18.6 |
| 230 | 8.230 | 184 | 253 | 7,250 | 10.5 |
| 240 | 8.240 | 192 | 264 | 8,500 | 9.2 |

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.8 | 6.6 | 28 | 214 |
| 12 | 9.012 | 9.6 | 13.2 | 110 | 109 |
| 24 | 9.024 | 19.2 | 26.4 | 445 | 54 |
| 48 | 9.048 | 38.4 | 52.8 | 1,770 | 27 |
| 60 | 9.060 | 48 | 66 | 2,760 | 21.7 |
| 110 | 9.110 | 88 | 121 | 9,420 | 11.7 |

AC (NO) VERSION DATA (≥ 3 mm)

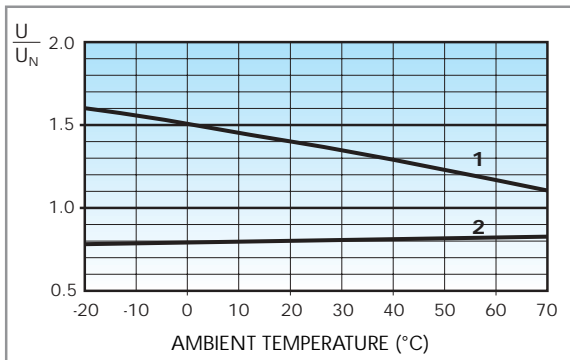
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 5.1 | 6.6 | 4 | 540 |
| 12 | 8.012 | 10.2 | 13.2 | 14 | 275 |
| 24 | 8.024 | 20.4 | 26.4 | 62 | 130 |
| 48 | 8.048 | 40.8 | 52.8 | 220 | 70 |
| 60 | 8.060 | 51 | 66 | 348 | 55 |
| 110 | 8.110 | 93.5 | 121 | 1,200 | 30 |
| 120 | 8.120 | 106 | 137 | 1,350 | 24 |
| 230 | 8.230 | 196 | 253 | 5,000 | 14 |
| 240 | 8.240 | 204 | 264 | 6,300 | 12.5 |

DC (NO) VERSION DATA (≥ 3 mm)

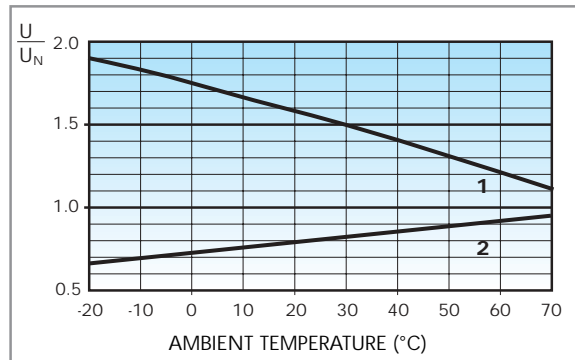
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 5.1 | 6.6 | 12 | 500 |
| 12 | 9.012 | 10.2 | 13.2 | 48 | 250 |
| 24 | 9.024 | 20.4 | 26.4 | 192 | 125 |
| 48 | 9.048 | 40.8 | 52.8 | 770 | 63 |
| 60 | 9.060 | 51 | 66 | 1,200 | 50 |
| 110 | 9.110 | 93.5 | 121 | 4,200 | 26 |

62

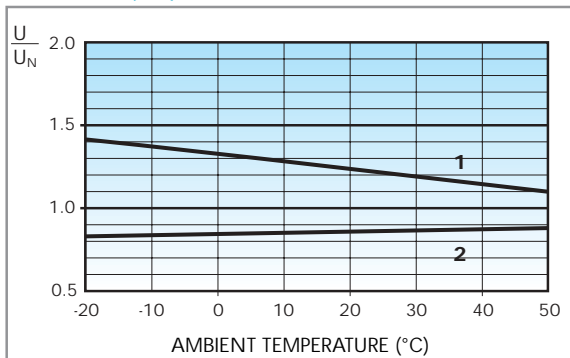
R 62 AC



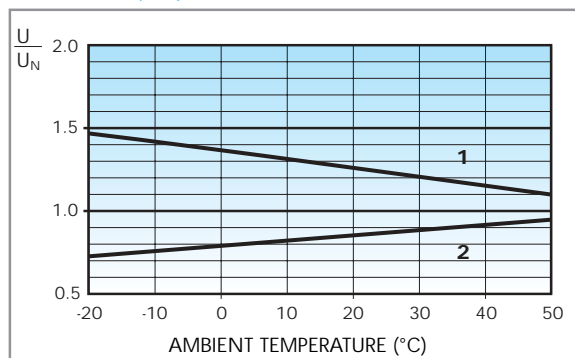
R 62 DC



R 62 AC (NO)



R 62 DC (NO)



Operating range (AC type) vs ambient temperature.

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

Operating range (DC type) vs ambient temperature.

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



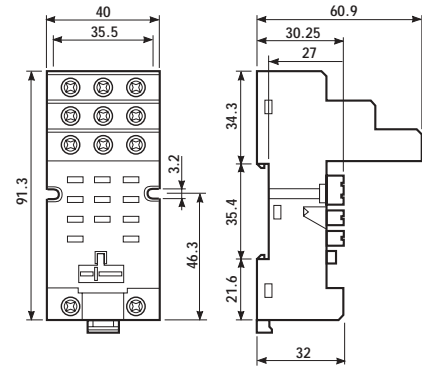
Approvals
(according to type):



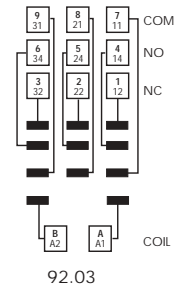
- RATED VALUES: 16 A · 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C
- SCREW TORQUE: 0.8 Nm
- WIRE STRIP LENGTH: 10 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|------------|---------------|
| mm ² | 1x10 / 2x4 | 1x6 / 2x4 |
| AWG | 1x8 / 2x12 | 1x10 / 2x12 |

| Relay type | 62.32 | |
|---|--------------|---------|
| Colour | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 092.71 supplied with socket packaging code SMA | 92.03 | 92.03.0 |
| Retaining clip | 092.71 | |
| Modules (see table below) | 99.02 | |
| Timer modules | 86.10, 86.20 | |



62



| 99.02 modules for 92.03 socket | | BLUE |
|------------------------------------|---------------------|----------------|
| Diode** (+A1) | (6...220) V DC | 99.02.3.000.00 |
| Diode (inverted polarity) | (6...220) V DC | 99.02.2.000.00 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 |
| LED + Diode** (+A1) | (6...24) V DC | 99.02.9.024.99 |
| LED + Diode** (+A1) | (28...60) V DC | 99.02.9.060.99 |
| LED + Diode** (+A1) | (110...220) V DC | 99.02.9.220.99 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.02.9.024.79 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.02.9.060.79 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.02.9.220.79 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 |
| RC circuit | (6...24) V DC/AC | 99.02.0.024.09 |
| RC circuit | (28...60) V DC/AC | 99.02.0.060.09 |
| RC circuit | (110...240) V DC/AC | 99.02.0.230.09 |
| No - remanence (62 k Ω /1W) | (110...240) V AC | 99.02.8.230.07 |

**For DC supply, apply the positive to terminal A1. Modules in Black housing are available on request. Green LED is standard. Red LED available on request.



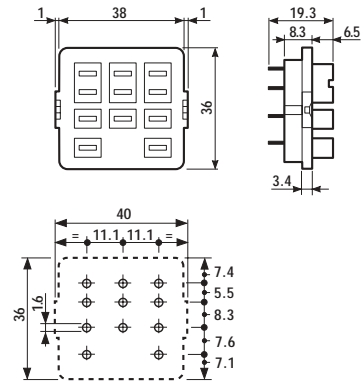
| | | |
|---|--------------|---------|
| Relay type | 62.32 | |
| Colour | BLUE | BLACK |
| P.C.B. socket | 92.13 | 92.13.0 |
| retaining clip 092.54 supplied with socket packaging code SMA | | |
| Retaining clip | 092.54 | |

Approvals
(according to type):



- RATED VALUES: 32 A · 250 V
(10 A max for each contact circuit)
- DIELECTRIC STRENGTH: ≥ 2.5 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C

- 62.3X plug on 92.13 is 63.3 mm high



62

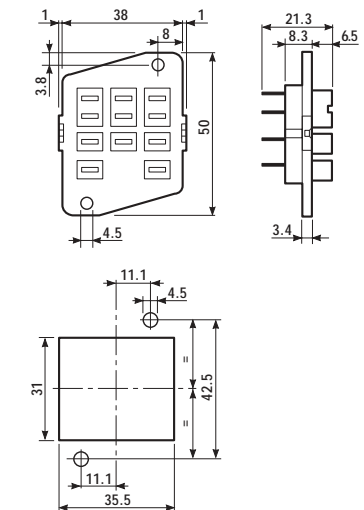


| | | |
|---|--------------|--------------|
| Relay type | 62.32 | 62.33 |
| Colour | BLUE | BLUE |
| Panel mount solder socket: mounted with M3 screw | 92.33 | 92.33 |
| retaining clip 092.54 supplied with socket packaging code SMA | | |
| Retaining clip | 092.54 | |

Approvals
(according to type):



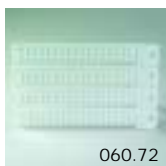
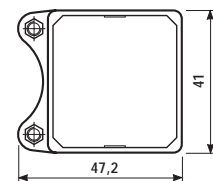
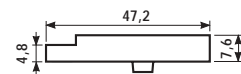
- RATED VALUES: 32 A · 250 V (10 A max for each contact circuit)
- DIELECTRIC STRENGTH: ≥ 2.5 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C



ACCESSORIES



| | |
|--|--------|
| Mounting adaptor for types 62.3x and 62.8x (M4) | 062.10 |
|--|--------|

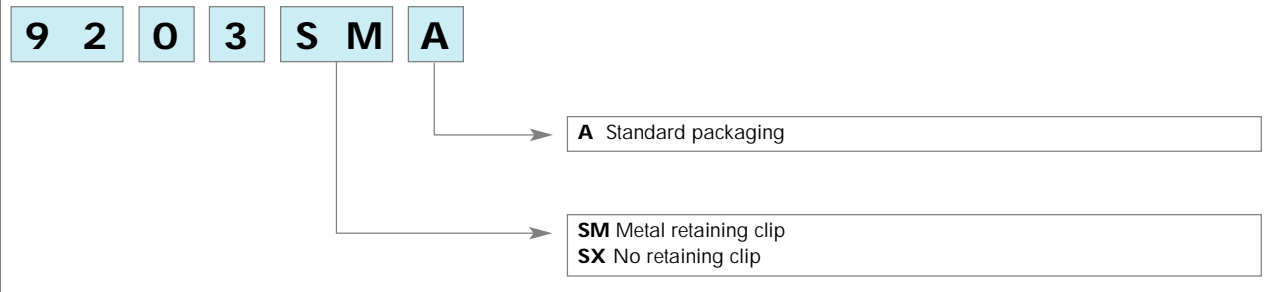


| | |
|--|--------|
| Sheet of marker tags for 62 series relays (72 tags) | 060.72 |
|--|--------|

PACKAGING CODES

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

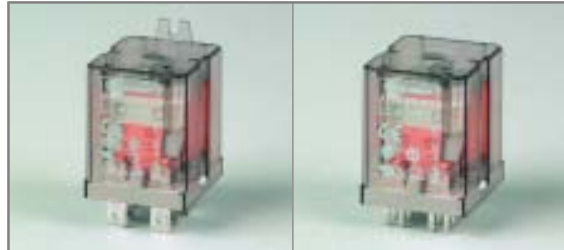
Code options according to the last three letters:



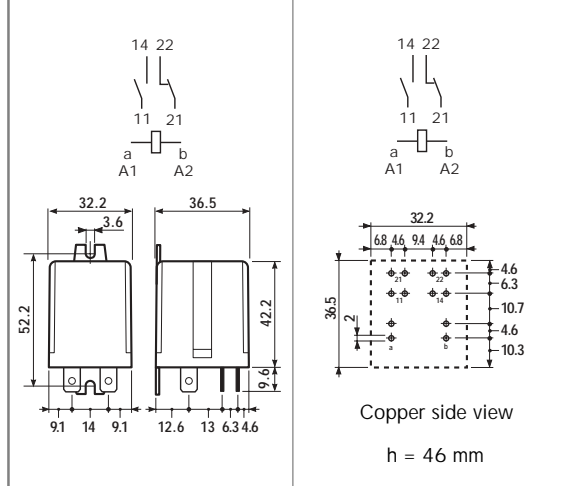
- P.C.B. or Faston 250 versions
- AC or DC coils
- 3 mm gap between open contacts on NO version

65.31

65.61



| | |
|--|------------------------------------|
| - 1 NO + 1 NC - Flange mount - Faston 250 (6.3 x 0.8 mm) | - 1 NO + 1 NC - P.C.B. mounting |
|--|------------------------------------|



65

* for 400 V applications, requirements for pollution degree 2 are met.

| Contact specifications | | | |
|---|-----------------|---|---------------|
| Contact configuration | | 1 NO + 1 NC | 1 NO + 1 NC |
| Rated current/Maximum peak current | A | 20/40 | 20/40 |
| Rated voltage/Maximum switching voltage V AC | | 250/400* | 250/400* |
| Rated load in AC1 | VA | 5,000 | 5,000 |
| Rated load in AC15 (230 VAC) | VA | 1,000 | 1,000 |
| Single phase motor rating (230 VAC) | kW | 1.1 | 1.1 |
| Breaking capacity in DC1: 30/110/220V | A | 20/0.8/0.5 | 20/0.8/0.5 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgCdO | AgCdO |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | |
| Rated power AC/DC | VA (50 Hz)/W | 2.2/1.3 | 2.2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | |
| | DC | (0.85...1.1)U _N | |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | |
| Technical data | | | |
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /30 · 10 ⁶ | |
| Electrical life at rated load AC1 | cycles | 80 · 10 ³ | |
| Operate/release time (bounce included) | ms | 20/20 | |
| Insulation according to EN 61810-5 | | 4 kV/3 | |
| Insulation between coil and contacts (1.2/50μs) | kV | 4 | |
| Dielectric strength between open contacts | V AC | 1,500 | |
| Ambient temperature range | °C | -40...+50 | |
| Environmental protection | | RT I | |
| Approvals: (according to type) | | | |
| | | | |

- P.C.B. or Faston 250 versions
- AC or DC coils
- 3 mm gap between open contacts on NO version

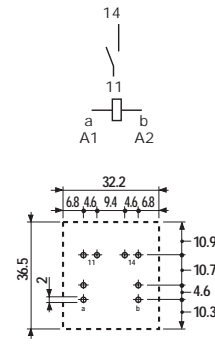
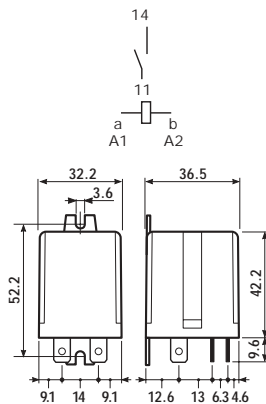
65.31 - 0300

65.61 - 0300



- 1 NO
- Flange mount
- Faston 250 (6.3 x 0.8 mm)

- 1 NO
- P.C.B. mounting



Copper side view
h = 42 mm

* for 400 V applications, requirements for pollution degree 2 are met.

** Distance between contacts >3mm (EN 60335-1)

| Contact specifications | | | |
|---|-----------------|---|---------------|
| Contact configuration | | 1 NO 3 mm** | 1 NO 3 mm** |
| Rated current/Maximum peak current | A | 30/50 | 30/50 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | 250/400* |
| Rated load in AC1 | VA | 7,500 | 7,500 |
| Rated load in AC15 (230 VAC) | VA | 1,250 | 1,250 |
| Single phase motor rating (230 VAC) | kW | 1.5 | 1.5 |
| Breaking capacity in DC1: 30/110/220V | A | 30/1.1/0.7 | 30/1.1/0.7 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgCdO | AgCdO |
| Coil specifications | | | |
| Nominal voltage (U _N) | V AC (50/60 Hz) | 6 · 12 · 24 · 48 · 60 · 110 · 120 · 230 · 240 | |
| | V DC | 6 · 12 · 24 · 48 · 60 · 110 | |
| Rated power AC/DC | VA (50 Hz)/W | 2.2/1.3 | 2.2/1.3 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | |
| | DC | (0.85...1.1)U _N | |
| Holding voltage | AC/DC | 0.8 U _N /0.6 U _N | |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | |
| Technical data | | | |
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /30 · 10 ⁶ | |
| Electrical life at rated load AC1 | cycles | 50 · 10 ³ | |
| Operate/release time (bounce included) | ms | 25/— | |
| Insulation according to EN 61810-5 | | 4 kV/3 | |
| Insulation between coil and contacts (1.2/50μs) | | 4 kV | |
| Dielectric strength between open contacts | | 2,500 V AC | |
| Ambient temperature range | | -40...+50 °C | |
| Environmental protection | | RT I | |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

Example: a 65 series power relay, for P.C.B. with bifurcated terminals, 1 NC + 1 NO contact with a 12 V DC coil.

6 5 . 6 1 . 9 . 0 1 2 . 0 0 0 0

A B C D

Series

Type

3 = Faston 250 (6.3x0.8 mm) with rear flange mount
6 = P.C.B. with bifurcated terminals

No. of poles

1 = 1 NC + 1 NO

Coil version

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

Coil voltage

see coil specifications

A: Contact material

0 = Standard AgCdO

B: Contact circuit

0 = 1 NO + 1 NC
3 = NO (≥ 3 mm contact gap)

D: Special versions

0 = Standard
5 = Top flange mount
7 = Top 35 mm rail (EN 50022) mount
8 = Rear 35 mm rail (EN 50022) mount

C: Options

0 = None

Only combinations in the same row are possible

Preferred versions

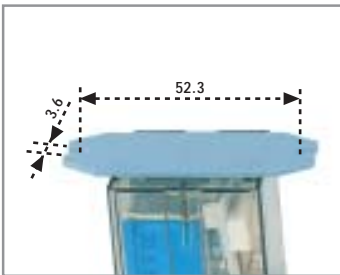
| | coil version | A | B | C | D |
|-------|--------------|---|---|---|---|
| 65.31 | AC-DC | 0 | 0 | 0 | 0 |
| 65.61 | AC-DC | 0 | 0 | 0 | 0 |

All versions

| | coil version | A | B | C | D |
|-------|--------------|---|-------|---|---------|
| 65.31 | AC-DC | 0 | 0 - 3 | 0 | 0-5-7-8 |
| 65.61 | AC-DC | 0 | 0 - 3 | 0 | 0 |

65

POSSIBLE OPTIONS



Option = 0005
TOP FLANGE MOUNT



Option = 0008
REAR 35 mm RAIL MOUNT

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 4 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

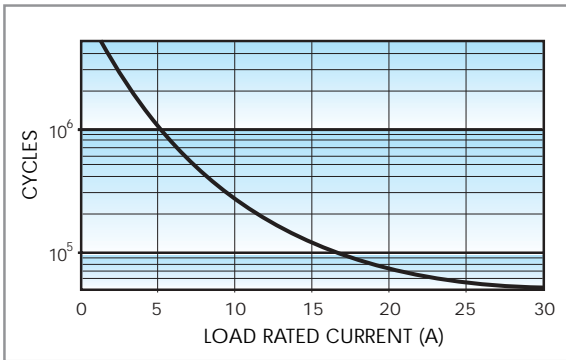
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

| | | |
|--|---------------------------|----------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/4 |
| POWER LOST TO THE ENVIRONMENT | 1 NO + 1 NC | |
| | without contact current W | 1.3 |
| | with rated current W | 2.1 |
| RECOMMENDED DISTANCE between RELAYS mounted on P.C.B.s | mm | ≥ 5 |

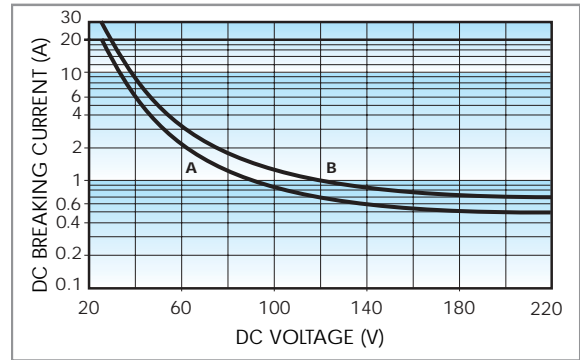
CONTACT SPECIFICATIONS

F 65



Electrical life vs AC1 load.

H 65



Breaking capacity for DC1 load.

Load applied to 1 contact

A - 1 NO + 1 NC type

B - 1 NO type

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

65

COIL SPECIFICATIONS

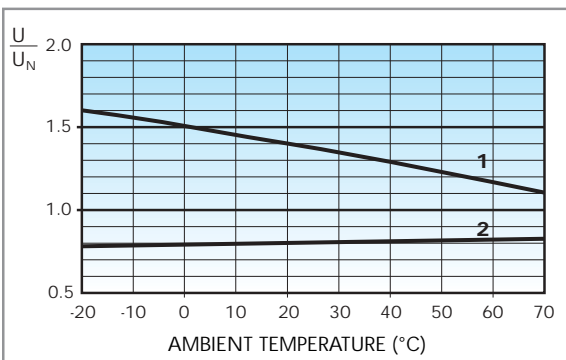
AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 4.6 | 367 |
| 12 | 8.012 | 9.6 | 13.2 | 19 | 183 |
| 24 | 8.024 | 19.2 | 26.4 | 74 | 90 |
| 48 | 8.048 | 38.4 | 52.8 | 290 | 47 |
| 60 | 8.060 | 48 | 66 | 450 | 37 |
| 110 | 8.110 | 88 | 121 | 1,600 | 20 |
| 120 | 8.120 | 96 | 132 | 1,940 | 18.6 |
| 230 | 8.230 | 184 | 253 | 7,250 | 10.5 |
| 240 | 8.240 | 192 | 264 | 8,500 | 9.2 |

DC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil consumption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 5.1 | 6.6 | 28 | 214 |
| 12 | 9.012 | 10.2 | 13.2 | 110 | 109 |
| 24 | 9.024 | 8.8 | 26.4 | 445 | 54 |
| 48 | 9.048 | 40.8 | 52.8 | 1,770 | 27.1 |
| 60 | 9.060 | 51 | 66 | 2,760 | 21.7 |
| 110 | 9.110 | 93.5 | 121 | 9,420 | 11.7 |

R 65 AC

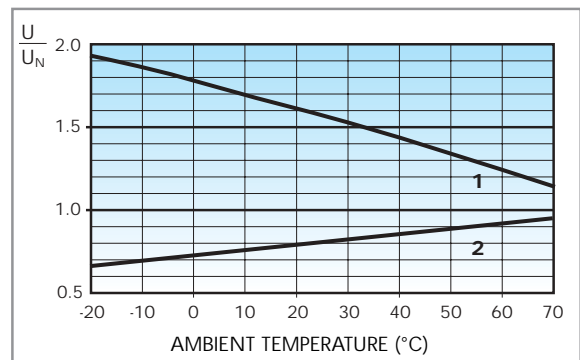


Operating range (AC type) vs ambient temperature.

1 - Max coil voltage permitted.

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

R 65 DC



Operating range (DC type) vs ambient temperature.

1 - Max coil voltage permitted.

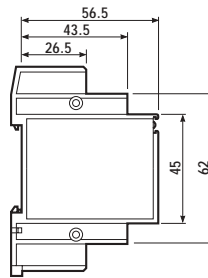
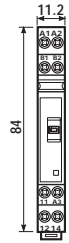
2 - Min pick-up voltage with coil at ambient temperature.

- 3 functions selector switch:
 - Auto (works as a monostable relay)
 - Off (relay permanently OFF)
 - On (relay permanently ON)
- LED indicator
- 35 mm rail (EN 50022) mount

19.21



- One module (11.2 mm) wide
- 1 pole
- 35 mm rail mount



19

Contact specifications

| | | |
|---------------------------------------|-----------|---------------|
| Contact configuration | | 1 CO |
| Rated current/Max. peak current | A | 10/15 |
| Rated voltage/Max. switching voltage | V AC | 250/400 |
| Rated load in AC1 | VA | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 500 |
| Single phase motor rating (230 VAC) | kW | 0.44 |
| Breaking capacity in DC1: 30/110/220V | A | 10/0.3/0.12 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) |
| Standard contact material | | AgCdO |

Supply specifications

| | | |
|-------------------|----------------|---------------------------|
| Nominal voltage | V AC (50/60Hz) | 24 |
| | V DC | 24 |
| Rated power AC/DC | VA (50Hz)/W | 0.6/0.4 |
| Operating range | V AC (50Hz)/W | (0.8...1.1)U _N |
| | V DC | (0.8...1.1)U _N |

Technical data

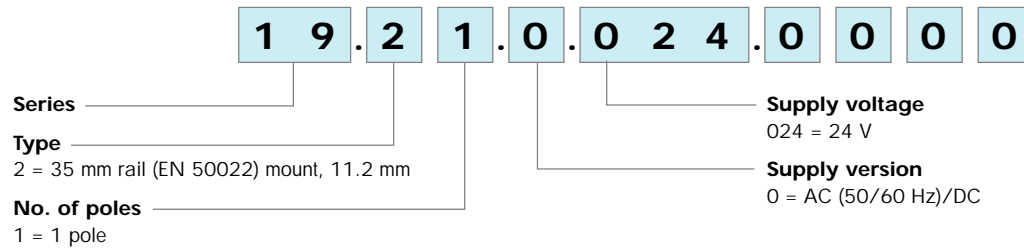
| | | |
|---|--------|-----------------------|
| Mechanical life | cycles | 10 · 10 ⁶ |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ |
| Insulation between coil and contacts (1.2/50μs) | kV | 4 |
| Dielectric strength between open contacts | V AC | 1,000 |
| Ambient temperature range | °C | -10...+50 |
| Protection category | | IP 20 |

Approvals: (according to type)



ORDERING INFORMATION

Example: a 19 series relay modular Auto-Off-On with 1 CO - 10 A contact, rated at 24 V AC/DC supply.



TECHNICAL DATA

CONTACT SPECIFICATIONS

| NOMINAL RATE LAMPS | | | |
|------------------------------------|---|--|-------|
| - incandescence (230V) | W | | 1,000 |
| - compensated fluorescent (230V) | W | | 350 |
| - uncompensated fluorescent (230V) | W | | 500 |
| - halogens (230V) | W | | 1,000 |

INSULATION

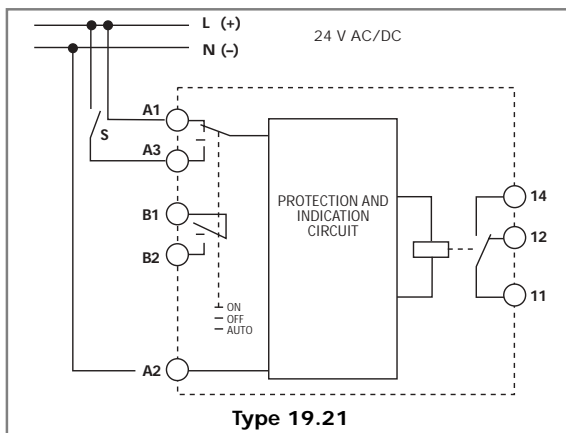
| DIELECTRIC STRENGTH | | | |
|-------------------------------|------|--|-------|
| - between supply and contacts | V AC | | 3,000 |
| - between open contacts | V AC | | 1,000 |

19

OTHER DATA

| POWER LOST TO THE ENVIRONMENT | | | |
|-------------------------------|----|-----------------|----------------|
| - without contact current | W | | 0.4 |
| - with rated current | W | | 1.8 |
| MAX WIRE SIZE | | solid cable | stranded cable |
| | | mm ² | 1x6 / 2x2.5 |
| | | AWG | 1x10 / 2x14 |
| SCREW TORQUE | Nm | | 0.5 |

WIRING DIAGRAM



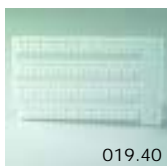
The max switching voltage between B₁ and B₂ terminal is 24 V AC/DC (300mA).

SELECTOR POSITION

| Selector switch | Control switch (S) | Output relay | LED | B ₁ -B ₂ contact |
|-----------------|--------------------|--------------|------------|--|
| AUTO | Closed | ON | ON | Closed |
| | Open | OFF | OFF | Closed |
| ON | — | ON | ON | Open |
| OFF | — | OFF | OFF | Open |

The B₁ - B₂ contact signals when the selector switch is in the Auto position. The LED indicates the state of the Modular relay's output contacts.

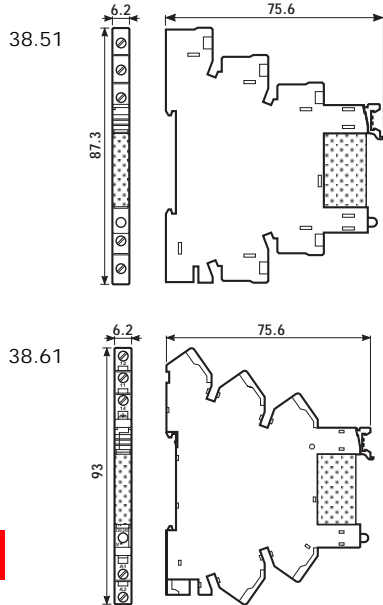
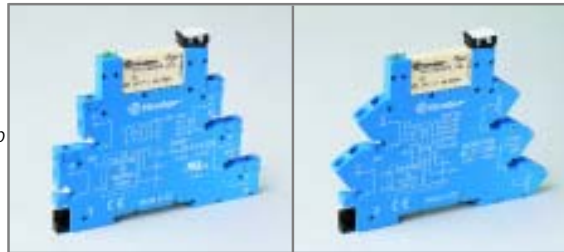
ACCESSORIES



Sheet of marker tags (40 tags)

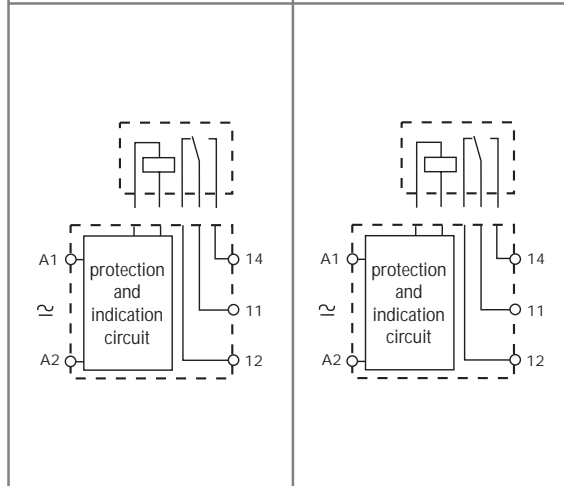
019.40

- Relay interface modules for use with PLC systems, 6.2 mm wide
- Sensitive DC coil or AC/DC coil version
- Supplied with integral coil indication and protection circuit
- Instant removal of relay using plastic retaining clip
- 35 mm rail (EN 50022) mounting


38.51
38.61


- Screw terminal
- Electromechanical relay
- 35 mm rail mounting

- Screw less terminal
- Electromechanical relay
- 35 mm rail mounting

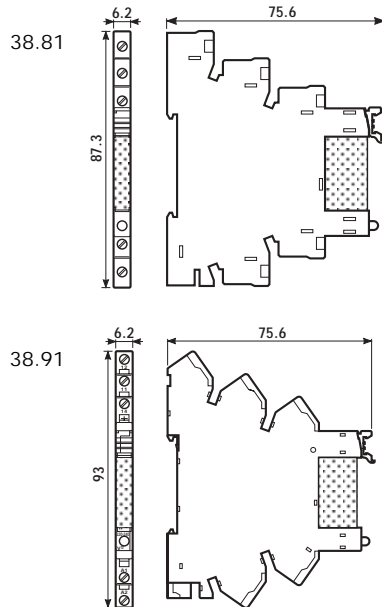
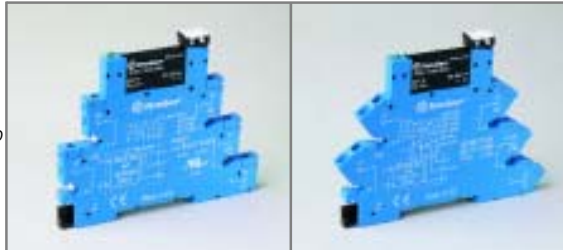


38

| Contact specifications | | | |
|---|--------------------|---|---|
| Contact configuration | | 1 CO | 1 CO |
| Rated current/Maximum peak current | A | 6/10 | 6/10 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | 250/400* |
| Rated load in AC1 | VA | 1,500 | 1,500 |
| Rated load in AC15 (230 VAC) | VA | 300 | 300 |
| Single phase motor rating (230 VAC) | kW | — | — |
| Breaking capacity in DC1: 30/110/220V | A | 6/0.2/0.15 | 6/0.2/0.15 |
| Minimum switching load | mW (V/mA) | 500 (12/10) | 500 (12/10) |
| Standard contact material | | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage (U _N) | V DC/AC (50/60 Hz) | 12 · 24 · 48 · 60 · 110...125 · 230...240 | |
| | V DC | 6 · 12 · 24 · 48 · 60 | |
| Rated power AC/DC | VA (50 Hz)/W | see table page 81 | see table page 81 |
| Operating range | AC/DC (50 Hz) | see table page 81 | see table page 81 |
| | DC | see table page 81 | see table page 81 |
| Holding voltage | AC/DC | 0.6 U _N /0.6 U _N | 0.6 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.1 U _N /0.05 U _N | 0.1 U _N /0.05 U _N |
| Technical data | | | |
| Mechanical life AC/DC | cycles | —/10 · 10 ⁶ | —/10 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 60 · 10 ³ | 60 · 10 ³ |
| Operate/release time (bounce included) | ms | 7/11 | 7/11 |
| Insulation according to EN 61810-5 | | 3.6 kV/3 | 3.6 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 (8mm) | 6 (8mm) |
| Dielectric strength between open contacts | V AC | 1,000 | 1,000 |
| Ambient temperature range (AC/DC)/(DC) | °C | -40...+55/-40...+70 | -40...+55/-40...+70 |
| Protection category | | IP20 | IP20 |
| Approvals (relay): (according to type) | | | |
| | | GOST | GOST |

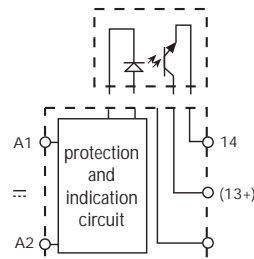
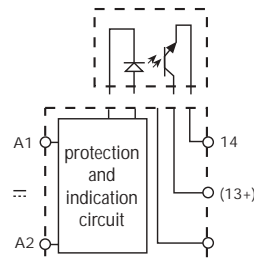
* for 400 V applications, requirements for pollution degree 2 are met.

- Relay interface modules for use with PLC systems, 6.2 mm wide
- Sensitive DC coil or AC/DC coil version
- Supplied with integral coil indication and protection circuit
- Instant removal of relay using plastic retaining clip
- 35 mm rail (EN 50022) mounting


38.81
38.91


- Screw terminal
- SSR relay
- 35 mm rail mounting

- Screwless terminal
- SSR relay
- 35 mm rail mounting



| Output circuit | | | | | |
|--|------|-------------------|--------|-------------------|--------|
| Maximum switching current | A | 2 | 0,1 | 2 | 0,1 |
| Rated voltage | V DC | 24 | 48 | 24 | 48 |
| Switching voltage range | V DC | 0...24 | 0...48 | 0...24 | 0...48 |
| Maximum blocking voltage | V DC | 33 | 60 | 33 | 60 |
| Input circuit | | | | | |
| Nominal voltage | V DC | 24 - 60 | | 24 - 60 | |
| Operating range | V DC | see table page 80 | | see table page 80 | |
| Control current | mA | see table page 80 | | see table page 80 | |
| Release voltage | V DC | see table page 80 | | see table page 80 | |
| Technical data | | | | | |
| Dielectric strength between input/output | V | 2500 | | 2500 | |
| Ambient temperature range | °C | -20...+55 | | -20...+55 | |
| Protection category | | IP20 | | IP20 | |
| Approvals: (according to type) | | — | | — | |

ORDERING INFORMATION

ELECTROMECHANICAL RELAY (EMR)

Example: a 38 series relay interface module with 1 CO contact, with coil rated at 12 V DC.

| | | | | | | |
|---------------------|--|--|--|-------------------------------------|--|--|
| | 3 8 . 5 1 . 7 . 0 1 2 . 0 0 5 0 | | A | B | C | D |
| Series | 3 8 | | | | | |
| Type | 5 | | | | | |
| | 5 = Electromechanical relay, with screw terminal 6 = Electromechanical relay, with screwless terminal | | | | | |
| No. of poles | 1 | | | | | |
| | 1 = 1 pole, 6 A | | | | | |
| Coil version | 7 | | | | | |
| | 0 = AC (50/60 Hz)/ DC 7 = Sensitive DC | | | | | |
| Coil voltage | 0 1 2 | | | | | |
| | see coil specifications | | | | | |
| | | | 0 | 0 | 5 | 0 |
| | | | A: Contact material 0 = AgNi Standard 4 = AgSnO ₂ 5 = AgNi + Au | B: Contact circuit 0 = CO | C: Options 5 = Standard DC (positive A1) 6 = Standard AC/DC | D: Special versions 0 = Standard |

SOLID STATE RELAY (SSR)

Example: a 38 series SSR relay interface module with 2 A, with 24 V DC supply.

38

| | |
|------------------------|--|
| | 3 8 . 8 1 . 7 0 2 4 . 9 0 2 4 |
| Series | 3 8 |
| Type | 8 |
| | 8 = SSR relay, with screw terminal 9 = SSR relay, with screwless terminal |
| Output | 1 |
| | 1 = 1 NO |
| Control circuit | 7 0 2 4 |
| | see input specifications |
| | 9 0 2 4 |
| | Output circuit 9024 = 2 A - 24 V DC 7048 = 100 mA - 48 V DC |

SOLID STATE RELAY

OTHER DATA

| | | | | | |
|-------------------------------|-------------------------|---------------|----------------|--------------|----------------|
| POWER LOST TO THE ENVIRONMENT | without contact current | W | 0.17 | | |
| | with rated current | W | 0.4 | | |
| WIRE STRIP LENGTH | mm | 10 | | | |
| | | | 38.81 | 38.91 | |
| ⊖ SCREW TORQUE | Nm | 0.5 | | | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x2.5 / 2x1.5 | 1x2.5 / 2x1.5 | 1x2.5 | 1x2.5 |
| | AWG | 1x14 / 2x16 | 1x14 / 2x16 | 1x14 | 1x14 |

INPUT SPECIFICATION

DC VERSION DATA

| Nominal voltage U _N | Supply code | Operating range | | Release voltage | Control current I at U _N |
|-----------------------------------|--------------|------------------|------------------|-----------------|--|
| | | U _{min} | U _{max} | | |
| V | | V | V | V | mA |
| 24 | 7.024 | 16.8 | 30 | 10 | 7 |
| 60 | 7.060 | 35.6 | 72 | 20 | 3 |

ELECTROMECHANICAL RELAY

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

IMMUNITY

| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

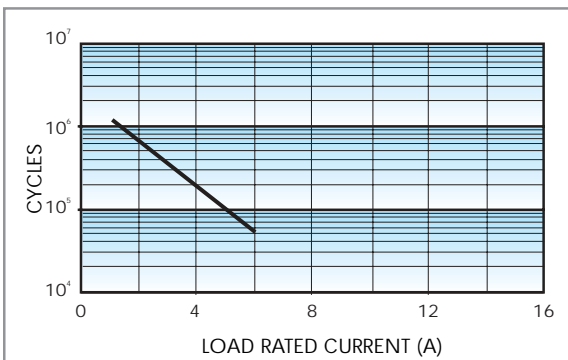
OTHER DATA

| | | | | | | |
|---|-------------------------|-----------------|------------------------|---------------|----------------|-------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/5 | | | | |
| POWER LOST TO THE ENVIRONMENT | without contact current | W | 0.2 (12V) - 0.9 (240V) | | | |
| | with rated current | W | 0.5 (12V) - 1.5 (240V) | | | |
| WIRE STRIP LENGTH | mm | 10 | | | | |
| | | 38.51 | 38.61 | | | |
| SCREW TORQUE | Nm | 0.5 | | | | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable | |
| | | mm ² | 1x2.5 / 2x1.5 | 1x2.5 / 2x1.5 | 1x2.5 | 1x2.5 |
| | | AWG | 1x14 / 2x16 | 1x14 / 2x16 | 1x14 | 1x14 |

38

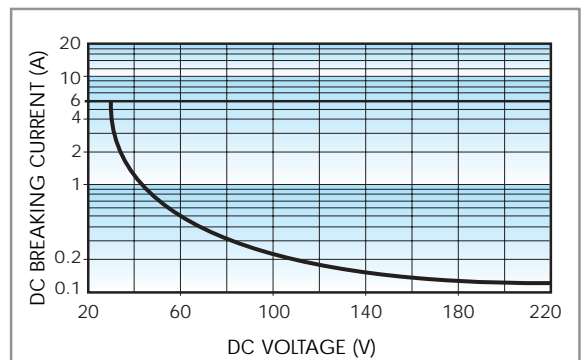
CONTACT SPECIFICATIONS

F 38



Electrical life vs AC1 load.

H 38



Breaking capacity in DC1 load.

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release time of load will be increase.

ELECTROMECHANICAL RELAY

COIL SPECIFICATIONS

AC/DC VERSION DATA

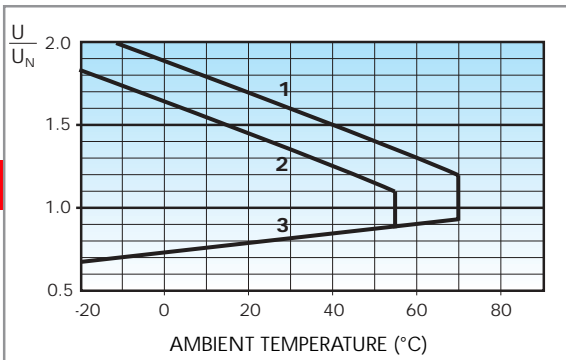
| Nominal voltage U_N V | Coil code | Operating range | | Rated coil consumption I at U_N mA | Power consumption P at U_N W |
|-------------------------------|--------------|-----------------|----------------|--|--------------------------------------|
| | | U_{min} V | U_{max} V | | |
| 12 | 0.012 | 9.8 | 13.2 | 19 | 0.2 |
| 24 | 0.024 | 19.2 | 26.4 | 12 | 0.3 |
| 48 | 0.048 | 38.4 | 52.8 | 9 | 0.4 |
| 60 | 0.060 | 48 | 66 | 7 | 0.5 |
| 110...125 | 0.125 | 88 | 138 | 5(*) | 0.6(*) |
| 230...240 | 0.240 | 184 | 264 | 4(*) | 0.9(*) |

(*) Rated coil consumption and power consumption values relate to $U_N = 125$ and 240 V.

DC VERSION DATA (sensitive)

| Nominal voltage U_N V | Coil code | Operating range | | Rated coil consumption I at U_N mA |
|-------------------------------|--------------|-----------------|----------------|--|
| | | U_{min} V | U_{max} V | |
| 6 | 7.006 | 5 | 7.2 | 48.1 |
| 12 | 7.012 | 9.8 | 14.4 | 15.2 |
| 24 | 7.024 | 18.2 | 28.8 | 9.4 |
| 48 | 7.048 | 35 | 57.6 | 6.3 |
| 60 | 7.060 | 43.5 | 72 | 5.2 |

R 38



Operating range Vs ambient temperature.

- 1 - Max coil voltage permitted at nominal load (DC version).
- 2 - Max coil voltage permitted at nominal load (AC/DC version).
- 3 - Min pick-up voltage with coil at ambient temperature.



| COMBINATION FOR ELECTROMECHANICAL RELAY | | | |
|---|-------------------|------------------|--------------------|
| Code | Supply voltage | Type of relay | Type of socket |
| 38.51.0.012.0060 | 12 V AC/DC | 34.51.7.012.0010 | 93.01.0.024 |
| 38.51.0.024.0060 | 24 V AC/DC | 34.51.7.024.0010 | 93.01.0.024 |
| 38.51.0.048.0060 | 48 V AC/DC | 34.51.7.048.0010 | 93.01.0.060 |
| 38.51.0.060.0060 | 60 V AC/DC | 34.51.7.060.0010 | 93.01.0.060 |
| 38.51.0.125.0060 | 110...125 V AC/DC | 34.51.7.060.0010 | 93.01.0.125 |
| 38.51.0.240.0060 | 220...240 V AC/DC | 34.51.7.060.0010 | 93.01.0.240 |
| 38.51.7.006.0050 | 6 V DC | 34.51.7.005.0010 | 93.01.7.024 |
| 38.51.7.012.0050 | 12 V DC | 34.51.7.012.0010 | 93.01.7.024 |
| 38.51.7.024.0050 | 24 V DC | 34.51.7.024.0010 | 93.01.7.024 |
| 38.51.7.048.0050 | 48 V DC | 34.51.7.048.0010 | 93.01.7.060 |
| 38.51.7.060.0050 | 60 V DC | 34.51.7.060.0010 | 93.01.7.060 |
| | | | |
| 38.61.0.012.0060 | 12 V AC/DC | 34.51.7.012.0010 | 93.11.0.024 |
| 38.61.0.024.0060 | 24 V AC/DC | 34.51.7.024.0010 | 93.11.0.024 |
| 38.61.0.125.0060 | 110...125 V AC/DC | 34.51.7.060.0010 | 93.11.0.125 |
| 38.61.0.240.0060 | 220...240 V AC/DC | 34.51.7.060.0010 | 93.11.0.240 |
| 38.61.7.012.0050 | 12 V DC | 34.51.7.012.0010 | 93.11.7.024 |
| 38.61.7.024.0050 | 24 V DC | 34.51.7.024.0010 | 93.11.7.024 |
| | | | |
| COMBINATION FOR SSR RELAY | | | |
| Code | Supply voltage | Type of relay | Type of socket |
| 38.81.7.024.xxxx | 24 V DC | 34.81.7.024.xxxx | 93.01.7.024 |
| 38.81.7.060.xxxx | 60 V DC | 34.81.7.060.xxxx | 93.01.7.060 |
| | | | |
| 38.91.7.024.xxxx | 24 V DC | 34.81.7.024.xxxx | 93.11.7.024 |
| 38.91.7.060.xxxx | 60 V DC | 34.81.7.060.xxxx | 93.11.7.060 |

38

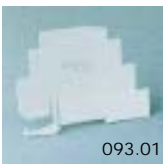
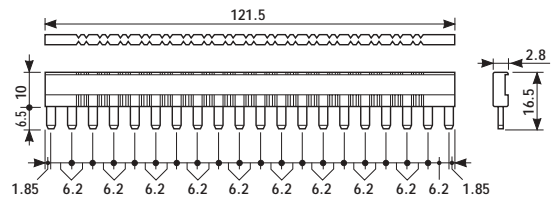
In **bold** the preferred versions.

ACCESSORIES



- RATED VALUES: 36 A - 250 V

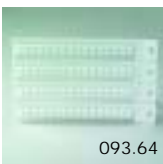
| | |
|---|--------|
| 20-way jumper link for 38 series | 093.20 |
|---|--------|



| | |
|--------------------------|--------|
| Plastic separator | 093.01 |
|--------------------------|--------|

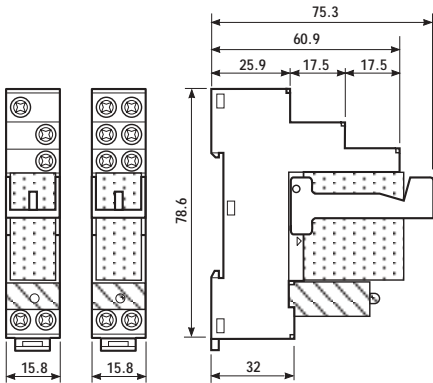
Thickness 2mm, required at the start and the end of a group of interfaces.
 Can be used for visual separation group, must be used for:

- protective separation of different voltages of neighbouring PLC interfaces according to VDE 0106-101
- protection of cut jumper links



| | |
|---------------------------------------|--------|
| Sheet of marker tags (64 tags) | 093.64 |
|---------------------------------------|--------|

- Relay interface modules for use with PLC systems, 15.8 mm wide
- AC or sensitive DC coil versions available
- Instant removal of relay using plastic retaining clip
- Supply status indication or coil suppression module provided
- Identification label
- 35 mm rail (EN 50022) mounting



48.31 48.52/61

* for 400 V applications, requirements for pollution degree 2 are met.

48

Contact specifications

| | | 48.31 | 48.52 | 48.61 |
|---|-----------|-------------|------------|-------------|
| Contact configuration | | 1 CO | 2 CO | 1 CO |
| Rated current/Maximum peak current | A | 10/20 | 8/15 | 16/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400* | 250/250 | 250/400* |
| Rated load in AC1 | VA | 2,500 | 2,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 500 | 400 | 750 |
| Single phase motor rating (230 VAC) | kW | 0.37 | 0.3 | 0.55 |
| Breaking capacity in DC1: 30/110/220V | A | 10/0.3/0.12 | 8/0.3/0.12 | 16/0.3/0.12 |
| Minimum switching load | mW (V/mA) | 300 (5/5) | 300 (5/5) | 500 (10/5) |
| Standard contact material | | AgNi | AgNi | AgCdO |

Coil specifications

| | | 48.31 | 48.52 | 48.61 |
|-----------------------------------|-----------------|--|--|--|
| Nominal voltage (U _N) | V AC (50/60 Hz) | 12 · 24 · 110 · 120 · 230 | 12 · 24 · 110 · 120 · 230 | 12 · 24 · 110 · 120 · 230 |
| | V DC | 12 · 24 · 125 | 12 · 24 · 125 | 12 · 24 · 125 |
| Rated power AC/sens. DC | VA (50 Hz)/W | 1.2/0.5 | 1.2/0.5 | 1.2/0.5 |
| Operating range | AC (50 Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | sens. DC | (0.73...1.5)U _N | (0.73...1.5)U _N | (0.8...1.5)U _N |
| Holding voltage | AC/DC | 0.8 U _N /0.4 U _N | 0.8 U _N /0.4 U _N | 0.8 U _N /0.4 U _N |
| Must drop-out voltage | AC/DC | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N | 0.2 U _N /0.1 U _N |

Technical data

| | | | | |
|---|--------|--|-------------------------|--|
| Mechanical life AC/DC | cycles | 10 · 10 ⁶ /20 · 10 ⁶ | 10 · 10 ⁶ /— | 10 · 10 ⁶ /20 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 200 · 10 ³ | 150 · 10 ³ | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 10/10 · (15/12 sens.) | 10/10 · (15/12 sens.) | 10/10 · (15/12 sens.) |
| Insulation according to EN 61810-5 | | 3.6 kV/3 | 3.6 kV/2 | 3.6 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 (8mm) | 6 (8mm) | 6 (8mm) |
| Dielectric strength between open contacts | V AC | 1,000 | 1,000 | 1,000 |
| Ambient temperature range | °C | -40...+70 | -40...+70 | -40...+70 |
| Protection category | | IP 20 | IP 20 | IP 20 |

Approvals (relay): (according to type)



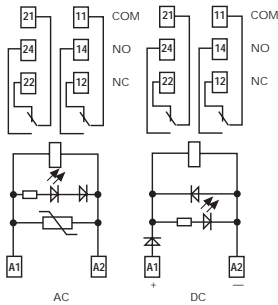
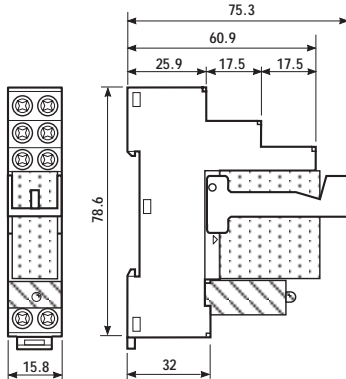
| | 48.31 | 48.52 | 48.61 |
|--|---|--|---|
| | | | |
| | - 1 pole, 10 A - 35 mm rail mounting | - 2 pole, 8 A - 35 mm rail mounting | - 1 pole, 16 A - 35 mm rail mounting |
| | | | |

- Relay interface modules for use with PLC systems, 15.8 mm wide
- AC or sensitive DC coil versions available
- Instant removal of relay using plastic retaining clip
- Supply status indication or coil suppression module provided
- Identification label
- 35 mm rail (EN 50022) mounting

48.62



- 2 pole, 10 A
- 35 mm rail mounting



* for 400 V applications requirements for pollution degree 2 are met.

| Contact specification | |
|---|--|
| Contact configuration | 2 CO |
| Rated current/Maximum peak current | A 10/20 |
| Rated voltage/Maximum switching voltage V AC | 250/400* |
| Rated load in AC1 | VA 2,500 |
| Rated load in AC15 (230 VAC) | VA 500 |
| Single phase motor rating (230 VAC) | kW 0.37 |
| Breaking capacity in DC1: 30/110/220V | A 10/0.3/0.12 |
| Minimum switching load | mW (V/mA) 300 (5/5) |
| Standard contact material | AgNi |
| Coil specifications | |
| Nominal voltage (U _N) | V AC (50/60 Hz) — V DC 12 · 24 · 125 |
| Rated power AC/sens. DC | VA (50 Hz)/W —/0.5 |
| Operating range | AC (50 Hz) — sens. DC (0.8...1.5)U _N |
| Holding voltage | AC/DC —/0.8 U _N |
| Must drop-out voltage | AC/DC —/0.2 U _N |
| Technical data | |
| Mechanical life AC/DC | cycles —/20 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles 100 · 10 ³ |
| Operate/release time (bounce included) | ms 10/10 |
| Insulation according to EN 61810-5 | 3.6 kV/3 |
| Insulation between coil and contacts (1.2/50µs) | kV 6 (8mm) |
| Dielectric strength between open contacts | V AC 1,000 |
| Ambient temperature range | °C -40...+70 |
| Protection category | IP 20 |
| Approvals (relay): (according to type) | |
| | |

ORDERING INFORMATION

Example: a 48 series 35 mm rail (EN 50022) mount relay interface module with 2 CO - 6 A, coil rated 24 V sensitive DC, green LED + diode.

4

8

.

5

.

2

.

7

.

0

2

4

.

0

A

0

B

0

C

5

D

0

Series ———

Type ———
 3 = 35 mm rail mount
 5 = 35 mm rail mount
 6 = 35 mm rail mount

No. of poles ———
 1 = 1 pole for 48.31, 10 A
 48.61, 16 A
 2 = 2 pole for 48.52, 8 A
 48.62, 10 A, DC only

Coil version ———
 7 = Sensitive DC
 8 = AC (50/60 Hz)

Coil voltage ———
 see coil specifications

A: Contact material
 0 = Standard

B: Contact circuit
 0 = CO

C: Options
 5 = Standard for DC:
 green LED + diode (polarity +A1)
 6 = Standard for AC:
 green LED + Varistor

D: Special versions
 0 = Standard

TECHNICAL DATA

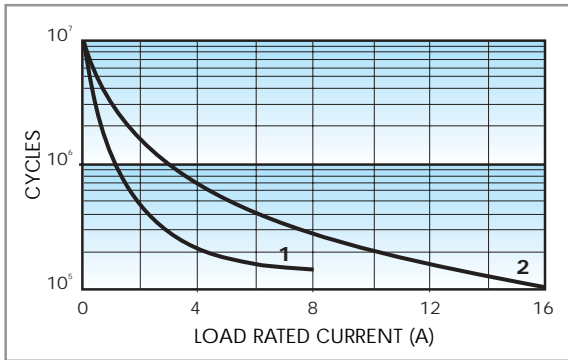
| | | | |
|-----------|------------------------------------|---------------------------------|-----------------------------|
| 48 | INSULATION | | |
| | INSULATION according to EN 61810-5 | insulation rated voltage | V 250 |
| | | rated impulse withstand voltage | kV 3.6 |
| | | pollution degree | 3 (48.31/61/62) 2 (48.52) |
| | overvoltage category | III | |

| | |
|--------------------------------|---|
| IMMUNITY | |
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

| | | | | | |
|---|-------------------------|---------------|-------------|----------------|-------------|
| OTHER DATA | | | | | |
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/4 (1 CO) | 3/3 (2 CO) | | |
| POWER LOST TO THE ENVIRONMENT | without contact current | W 0.7 | | | |
| | with rated current | W 1.2 (48.31) | 1.3 (48.52) | 1.2 (48.61) | 1.2 (48.62) |
| WIRE STRIP LENGTH | mm | 8 | | | |
| SCREW TORQUE | Nm | 0.5 | | | |
| MAX WIRE SIZE | | solid cable | | stranded cable | |
| | mm ² | 1x6 / 2x2.5 | | 1x4 / 2x2.5 | |
| | AWG | 1x10 / 2x14 | | 1x12 / 2x14 | |

CONTACT SPECIFICATIONS

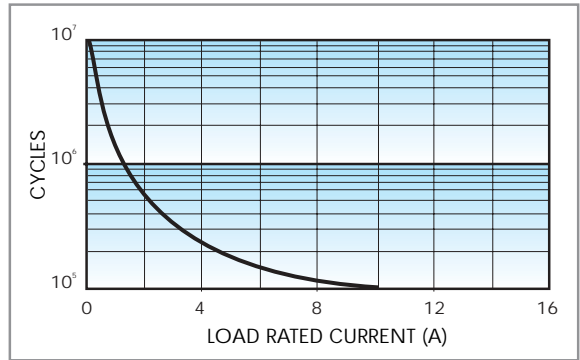
F 48/1



Electrical life vs AC1 load.

- 1** - Type 48.52 (8 A).
- 2** - Type 48.31 (10 A).
- Type 48.61 (16 A).

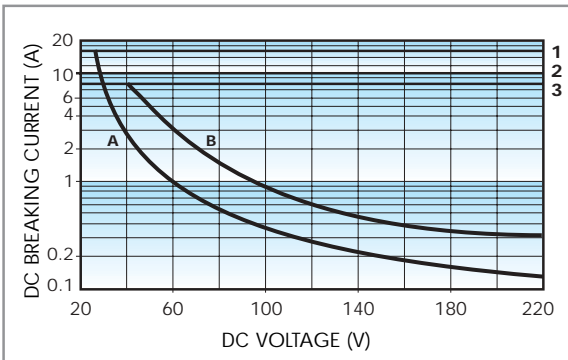
F 48/2



Electrical life vs AC1 load.

- Type 48.62 (10 A).

H 48/1



Breaking capacity for DC1 load.

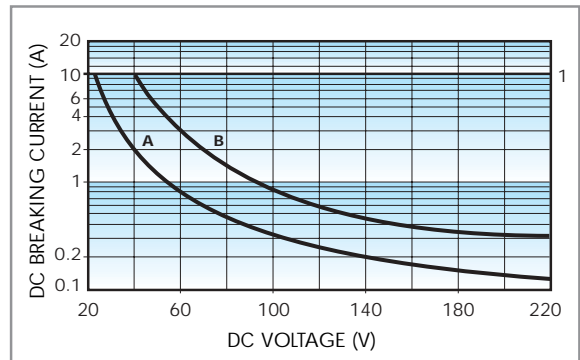
- 1** - Type 48.61.
- 2** - Type 48.31.
- 3** - Type 48.52.
- A** - Load applied to 1 contact
- B** - Load applied to 2 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

H 48/2



Breaking capacity for DC1 load.

- 1** - Type 48.62.
- A** - Load applied to 1 contact
- B** - Load applied to 2 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

COIL SPECIFICATIONS

AC VERSION DATA

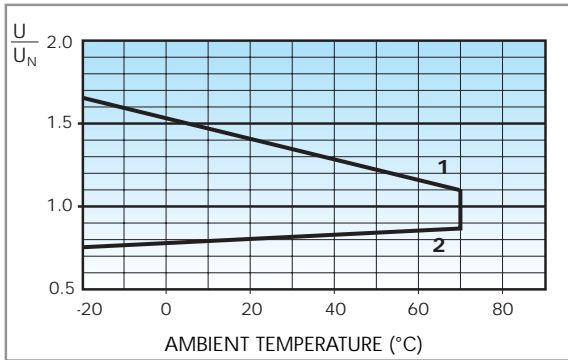
| Nominal voltage U_N V | Coil code | Operating range | | Rated coil consumption I at U_N (50Hz) mA |
|-------------------------------|--------------|-----------------|----------------|---|
| | | U_{min} V | U_{max} V | |
| 12 | 8.012 | 9.6 | 13.2 | 90.5 |
| 24 | 8.024 | 19.2 | 26.4 | 46 |
| 110 | 8.110 | 88 | 121 | 10.1 |
| 120 | 8.120 | 96 | 132 | 11.8 |
| 230 | 8.230 | 184 | 253 | 60.2 |

DC VERSION DATA (0.5 W sensitive)

| Nominal voltage U_N V | Coil code | Operating range | | Rated coil consumption I at U_N mA |
|-------------------------------|--------------|------------------|----------------|--|
| | | U_{min}^* V | U_{max} V | |
| 12 | 7.012 | 8.8 | 21 | 41 |
| 24 | 7.024 | 17.5 | 42 | 22.2 |
| 125 | 7.125 | 92 | 218 | 4 |

* $U_{min} = 0.8 U_N$ for 48.61 and 48.62

R 48 AC

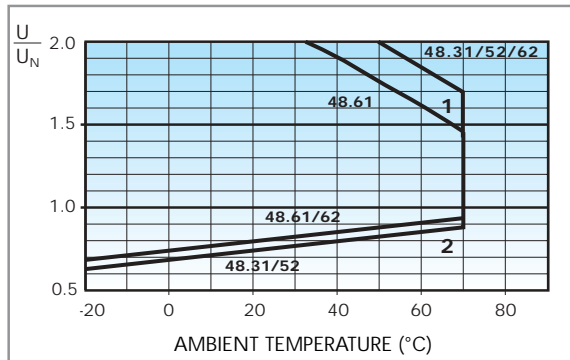


Operating range (AC version) vs ambient temperature.

48

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

R 48 sens. DC



Operating range (sensitive DC version) vs ambient temperature.

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

COMBINATIONS

| Code | Type of Socket | Type of Relay | Module | Retaining Clip |
|-------|----------------|---------------|--------|----------------|
| 48.31 | 95.03 | 40.31 | 99.02 | 095.01 |
| 48.52 | 95.05 | 40.52 | 99.02 | 095.01 |
| 48.61 | 95.05 | 40.61 | 99.02 | 095.01 |
| 48.62 | 95.05 | 44.62 | 99.02 | 095.01 |

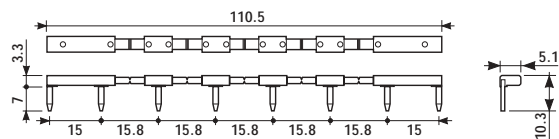
ACCESSORIES



8-way jumper link for 48 series

095.18

- RATED VALUES: 10 A - 250 V



PACKAGING CODES

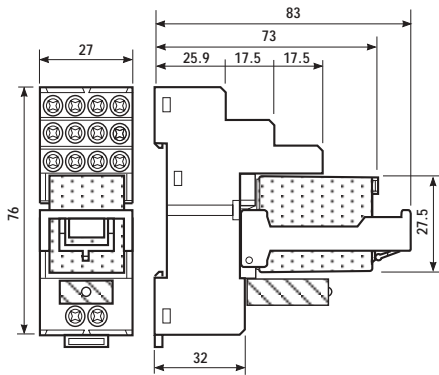
How to code and identify retaining clip and packaging options for relay interface module.

Code options according to the last three letters:

4 8 5 2 7 0 2 4 0 0 5 0 S P A

- A** Standard packaging
- B** Blister packaging
- SP** Plastic retaining clip

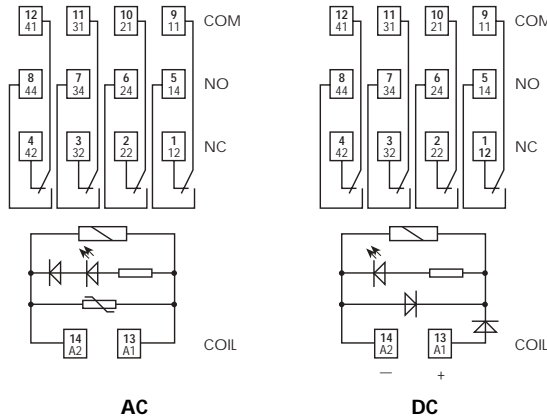
- Relay interface modules for use with PLC systems, 27mm wide
- AC and DC versions available
- Supply status indication and coil suppression module provided
- Identification label
- 35 mm rail (EN 50022) mounting



58.34



- 4 pole, 5 A
- 35 mm rail mounting



Contact specifications

| | | |
|---|-----------|-------------|
| Contact configuration | | 4 CO |
| Rated current/Maximum peak current | A | 5/10 |
| Rated voltage/Maximum switching voltage | V AC | 250/250 |
| Rated load in AC1 | VA | 1,250 |
| Rated load in AC15 (230 VAC) | VA | 250 |
| Single phase motor rating (230 VAC) | kW | 0.125 |
| Breaking capacity in DC1: 30/110/220V | A | 5/0.25/0.12 |
| Minimum switching load | mW (V/mA) | 300 (5/5) |
| Standard contact material | | AgNi |

Coil specifications

| | | |
|---------------------------|-----------------|--------------------------------|
| Nominal voltage (U_N) | V AC (50/60 Hz) | 12 · 24 · 48 · 110 · 120 · 230 |
| | V DC | 12 · 24 · 48 |
| Rated power AC/DC | VA (50 Hz)/W | 1.5/1 |
| Operating range | AC (50 Hz) | $(0.8 \dots 1.1) U_N$ |
| | DC | $(0.8 \dots 1.1) U_N$ |
| Holding voltage | AC/DC | $0.8 U_N / 0.5 U_N$ |
| Must drop-out voltage | AC/DC | $0.2 U_N / 0.1 U_N$ |

Technical data

| | | |
|---|--------------|---------------------------------|
| Mechanical life AC/DC | cycles | $20 \cdot 10^6 / 50 \cdot 10^6$ |
| Electrical life at rated load AC1 | cycles | $150 \cdot 10^3$ |
| Operate/release time (bounce included) | ms | 10/20 |
| Insulation according to EN 61810-5 | | 3.6 kV/2 |
| Insulation between coil and contacts (1.2/50 μ s) | kV | 3.6 |
| Dielectric strength between open contacts | V AC | 1,000 |
| Ambient temperature range | $^{\circ}$ C | -40...+70 |
| Protection category | | IP 20 |

Approvals (relay): (according to type)



ORDERING INFORMATION

Example: a 58 series 35 mm rail (EN 55022) mounting interface module, 4 CO, 24 V DC coil with green LED + diode.

5 8 . 3 4 . 9 . 0 2 4 . 0 0 5 0

Series ————

Type ————
3 = 35mm rail mount

No. of poles ————
4 = 4 pole, 5 A

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

Coil voltage ————
see coil specifications

A: Contact material
0 = AgNi Standard

B: Contact circuit
0 = CO

C: Options
5 = Standard DC: green LED + diode (polarity +A1)
6 = Standard AC: green LED + varistor

D: Special versions
0 = Standard

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 2 |
| | overvoltage category | | III |

IMMUNITY

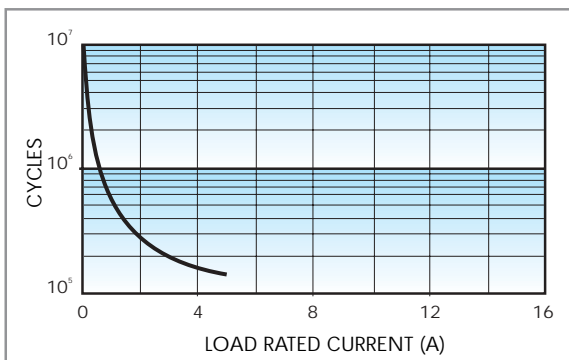
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

| | | | | |
|--------------------|---|-------------------------|-------------|----------------|
| 58 | VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 6/6 | |
| | POWER LOST TO THE ENVIRONMENT | without contact current | W | 1 |
| with rated current | | W | 2.6 | |
| | WIRE STRIP LENGTH | mm | 8 | |
| | SCREW TORQUE | Nm | 0.5 | |
| | MAX WIRE SIZE | | solid cable | stranded cable |
| | | mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| | | AWG | 1x10 / 2x14 | 1x12 / 2x14 |

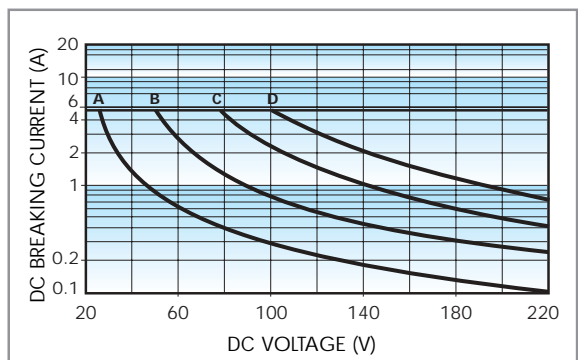
CONTACT SPECIFICATIONS

F 58



Contact life vs AC1 load.

H 58



Breaking capacity for DC1 load.

- A** = Load applied to 1 contact;
- B** = Load applied to 2 contacts in series
- C** = Load applied to 3 contacts in series;
- D** = Load applied to 4 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

COIL SPECIFICATIONS

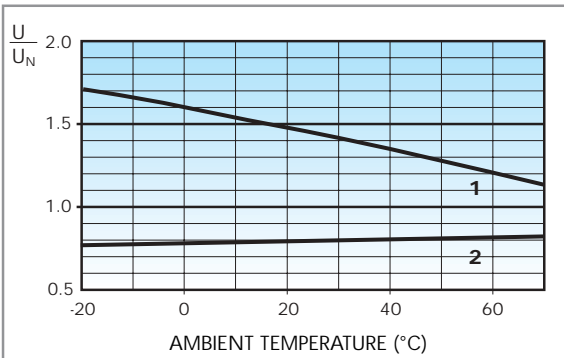
AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 12 | 8.012 | 9.6 | 13.2 | 50 | 97 |
| 24 | 8.024 | 19.2 | 26.4 | 190 | 53 |
| 48 | 8.048 | 38.4 | 52.8 | 770 | 25 |
| 110 | 8.110 | 88 | 121 | 4,000 | 12.5 |
| 120 | 8.120 | 96 | 132 | 4,700 | 12 |
| 230 | 8.230 | 184 | 253 | 17,000 | 6 |

DC VERSION DATA

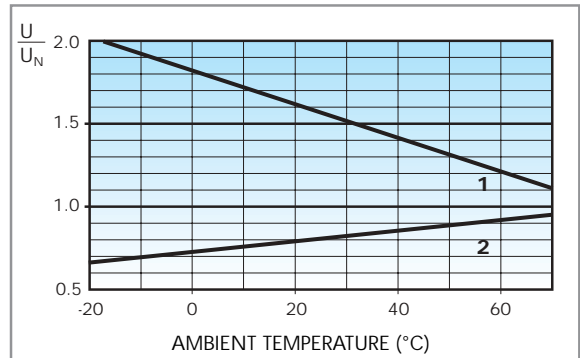
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 12 | 9.012 | 9.6 | 13.2 | 140 | 86 |
| 24 | 9.024 | 19.2 | 26.4 | 600 | 40 |
| 48 | 9.048 | 38.4 | 52.8 | 2,400 | 20 |

R 58 AC



Operating range (AC type) vs ambient temperature.
1 - Max coil voltage permitted.
2 - Min pick-up voltage with coil at ambient temperature.

R 58 DC



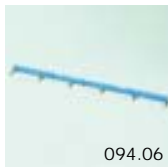
Operating range (DC type) vs ambient temperature.
1 - Max coil voltage permitted.
2 - Min pick-up voltage with coil at ambient temperature.

COMBINATIONS

58

| Code | Type of Socket | Type of Relay | Module | Retaining Clip |
|-------|----------------|---------------|--------|----------------|
| 58.34 | 94.04 | 55.34 | 99.02 | 094.01 |

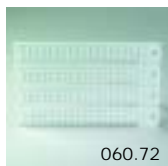
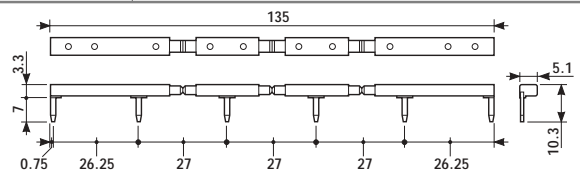
ACCESSORIES



094.06

- RATED VALUES: 10 A - 250 V

| | |
|--|--------|
| 6-way jumper link for 58 series | 094.06 |
|--|--------|



060.72

| | |
|---------------------------------------|--------|
| Sheet of marker tags (72 tags) | 060.72 |
|---------------------------------------|--------|

PACKAGING CODES

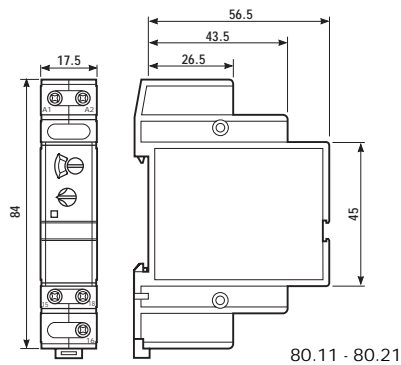
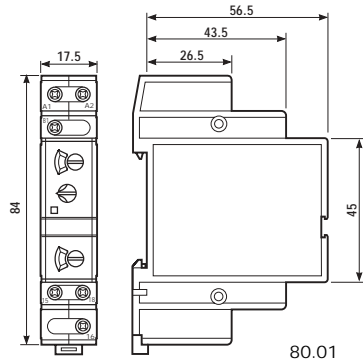
How to code and identify retaining clip and packaging options for relay interface module.

Code options according to the last three letters:



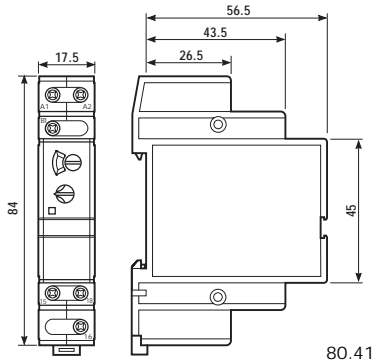
- A** Standard packaging
- B** Blister packaging
- SP** Plastic retaining clip

- Mono-function and multi-function versions available
- Rotary selector
- 17.5 mm wide
- Six time scales from 0.1s to 20h
- 35 mm rail (EN 50022) mount
- High input/output insulation

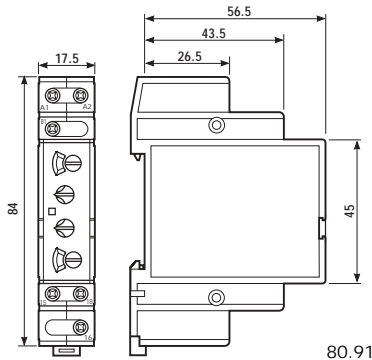


| | 80.01 | 80.11 | 80.21 |
|--|--|---|---|
| | | | |
| | - Multi-voltage - Multi-function | - Mono-voltage - Mono-function | - Mono-voltage - Mono-function |
| | AI: ON delay DI: ON pulse SW: Symmetrical recycler: ON start BE: Signal OFF delay CE: Signal ON and OFF delay DE: Signal ON pulse | AI: ON delay | DI: ON pulse |
| | wiring diagram (without signal START) wiring diagram (with signal START) | wiring diagram (without signal START) | wiring diagram (without signal START) |
| 80 Contact specifications | | | |
| Contact configuration | 1 CO | 1 CO | 1 CO |
| 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 in AC1 VA | 4000 | 4000 | 4000 |
| Rated load in AC15 (230 VAC) VA | 750 | 750 | 750 |
| Single phase motor rating (230 VAC) kW | 0.55 | 0.55 | 0.55 |
| Breaking capacity in DC1: 30/110/220V A | 16/0.3/0.12 | 16/0.3/0.12 | 16/0.3/0.12 |
| Minimum switching load mW(V/mA) | 500 (10/5) | 500 (10/5) | 500 (10/5) |
| Standard contact material | AgCdO | AgCdO | AgCdO |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 12...240 | 24 - 230...240 |
| | V DC | 12...240 (non polarized) | 24 |
| Rated power AC/DC VA (50Hz)/W | < 1.8/ < 1.4 | < 1.8/ < 0.6 | < 1.8/ < 0.6 |
| Operating range | AC | 10.2...265 V | (0.85...1.1)U _N |
| | DC | 10.2...265 V | (0.85...1.1)U _N |
| Technical data | | | |
| Specified time range | (0.1...2) s, (1...20) s, (0.1...2) min, (1...20) min, (0.1...2) h, (1...20) h | | |
| Repeatability % | ± 1 | ± 1 | ± 1 |
| Recovery time ms | ≤ 50 | ≤ 50 | ≤ 50 |
| Minimum control impulse ms | 50 | — | — |
| Setting accuracy-full range % | ± 5 | ± 5 | ± 5 |
| Electrical life at rated load in AC1 cycles | 100·10 ³ | 100·10 ³ | 100·10 ³ |
| Ambient temperature range °C | -10...+50 | -10...+50 | -10...+50 |
| Protection category | IP 20 | IP 20 | IP 20 |
| Approvals: (according to type) | | | |

- Mono-function and multi-function versions available
- Rotary selector
- 17.5 mm wide
- Six time scales from 0.1s to 20h
- 35 mm rail (EN 50022) mount
- High input/output insulation



80.41



80.91

80.41

80.91

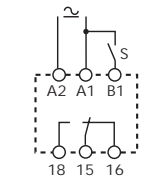


- Mono-voltage
- Mono-function

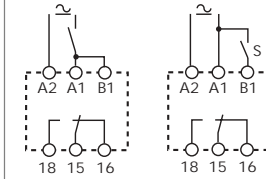
- Multi-voltage
- Mono-function

BE: Signal OFF delay

LI: Asymmetrical recycler (ON starting)
LE: Signal asymmetrical recycler (ON starting)



wiring diagram (with signal START)



wiring diagram (without signal START) wiring diagram (with signal START)

| Contact specifications | | | |
|---|---------------|---|--------------------------|
| Contact configuration | | 1 CO | 1 CO |
| Rated current/Maximum peak current | A | 16/30 | 16/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 4000 | 4000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 |
| Single phase motor rating (230 VAC) | kW | 0.55 | 0.55 |
| Breaking capacity in DC1: | 30/110/220V 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 | | AgCdO | AgCdO |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 24 - 230...240 | 12...240 |
| | V DC | 24 | 12...240 (non polarized) |
| Rated power AC/DC | VA (50Hz)/W | < 1.8/ < 0.6 | < 1.8/ < 1.4 |
| Operating range | AC | (0.85...1.1)U _N | 10.2...265 V |
| | DC | (0.85...1.1)U _N | 10.2...265 V |
| Technical data | | | |
| Specified time range | | (0.1...2) s, (1...20) s, (0.1...2) min, (1...20) min, (0.1...2) h, (1...20) h | |
| Repeatability | % | ± 1 | ± 1 |
| Recovery time | ms | ≤ 50 | ≤ 50 |
| Minimum control impulse | ms | 50 | 50 |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range | °C | -10...+50 | -10...+50 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | CE | |

ORDERING INFORMATION

Example: a 80 series, modular timers, 1 CO, 16 A, supply rated at 12 ... 240 V AC/DC.

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

Series

Type

0 = Multi-function (AI, DI, SW, BE, CE, DE)

1 = ON delay (AI)

2 = ON pulse (DI)

4 = Signal OFF delay (BE)

9 = Asymmetrical recycler ON starting (LI, LE)

No. of poles

1 = 1 CO

Supply voltage

024 = 24 V AC/DC

240 = 230...240 V AC (80.11, 80.21, 80.41)

240 = 12 ... 240 V AC/DC (80.01, 80.91)

Supply version

0 = AC (50/60 Hz)/DC (80.01, 80.91)

8 = AC (50/60 Hz) (80.11, 80.21, 80.41)

TECHNICAL DATA

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 | 4kV |
| 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 |

80

INSULATION

| | | | |
|---|------------------------------------|------|-------|
| DIELECTRIC STRENGTH | - between input and output circuit | V AC | 4,000 |
| | - between open contacts | V AC | 1,000 |
| INSULATION (1.2/50 µs) between input and output | | kV | 6 |

OTHER DATA

| | | | | |
|---|---------------------------|-----------------|----------------|-------------|
| CURRENT ABSORPTION on signal control (B1) | | < 1 mA | | |
| POWER LOST TO THE ENVIRONMENT | - without contact current | W | 1.3 | |
| | - with rated current | W | 3.2 | |
| MAX WIRE SIZE | | solid cable | stranded cable | |
| | | mm ² | 1x6 / 2x4 | 1x4 / 2x2.5 |
| | | AWG | 1x10 / 2x12 | 1x12 / 2x14 |
| SCREW TORQUE | | Nm | 0.8 | |

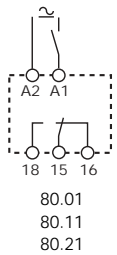
FUNCTIONS

| | LED Red | Supply voltage | NO output contact | Contacts | |
|---------------------------|---------|----------------|---------------------------|----------|---------|
| | | | | Open | Closed |
| U = Supply voltage | | OFF | Open | 15 - 18 | 15 - 16 |
| S = Signal switch | | ON | Open | 15 - 18 | 15 - 16 |
| | | ON | Open (Timing in Progress) | 15 - 18 | 15 - 16 |
| | | ON | Closed | 15 - 16 | 15 - 18 |

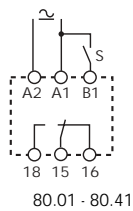
Without signal Start = Start via contact in supply line (A1).
 With signal Start = Start via contact into control terminal (B1).

Wiring diagram

Without signal START



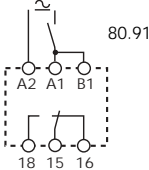
With signal START



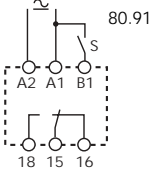
| | | |
|-------------------------------|--|--|
| Type 80.01 80.11 | | (AI) ON delay. Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed. |
| 80.01 80.21 | | (DI) ON pulse. Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset. |
| 80.01 | | (SW) Symmetrical recycler: ON start. 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). |

| | | |
|----------------|--|--|
| 80.01 80.41 | | (BE) Signal OFF delay. Power is permanently 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. |
| 80.01 | | (CE) Signal ON and OFF delay. Power is permanently 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. |
| 80.01 | | (DE) Signal ON pulse. Power is permanently 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. |

Without signal START



With signal START



| | | |
|-------|--|---|
| 80.91 | | (LI) Asymmetrical recycler (ON starting). 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. |
| 80.91 | | (LE) Signal asymmetrical recycler (ON starting) Power is permanently applied to the timer. Closing Signal Switch (S) causes the output contacts to transfer immediately and cycle between ON and OFF, until opened. |

NOTE: time scales and functions must be set before energising the timer.



* - 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 = 230VAC
 B1-A2 = 12VAC

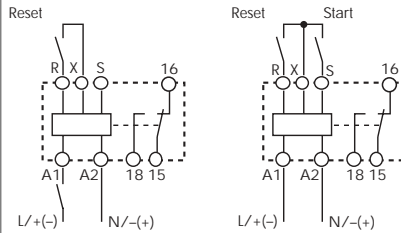
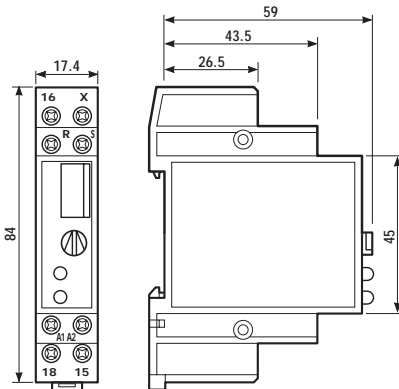
- Multi-voltage multi-function timer
- One module (17.5 mm) wide housing
- Seven functions (4 with supply start and 3 with signal start)
- Six time scales, from 0.1s to 10h
- 35 mm rail (EN 50022) mount

81.01



- Multi-voltage (DC non polarized)
- Multi-function
- 35 mm rail mounting

- AI:** ON delay
DI: ON pulse
SW: Symmetrical recycler:
 ON start
SP: Symmetrical recycler:
 OFF start
BE: Signal OFF delay
DE: Signal ON pulse
EE: Signal OFF pulse



wiring diagram
(without signal START)

wiring diagram
(with signal START)

Contact specifications

| | |
|---|---------------------------|
| Contact configuration | 1 CO |
| Rated current/Maximum peak current | A 16/30 |
| Rated voltage/Maximum switching voltage | V AC 250/400 |
| Rated load in AC1 | VA 4,000 |
| Rated load in AC15 (230 VAC) | VA 750 |
| Single phase motor rating (230 VAC) | kW 0.55 |
| Breaking capacity in DC1: | 30/110/220V A 16/0.3/0.12 |
| Minimum switching load | mW(V/mA) 500 (10/5) |
| Standard contact material | AgCdO |

Supply specifications

| | | |
|-------------------|---------------|--------------------------|
| Nominal voltage | V AC(50/60Hz) | 12...230 |
| | V DC | 12...230 (non polarized) |
| Rated power AC/DC | VA (50Hz)/W | < 2/< 2 |
| Operating range | AC | 10.8...250 |
| | DC | 10.8...250 |

Technical data

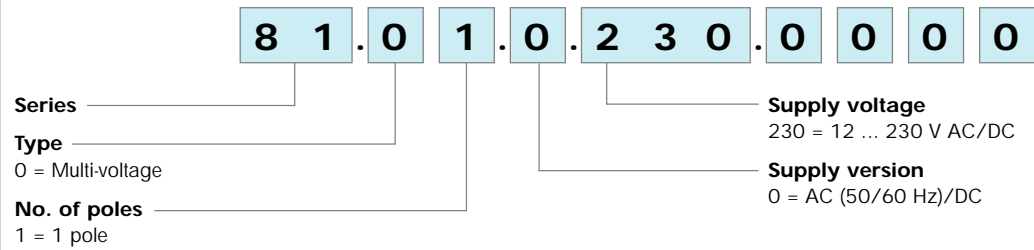
| | | |
|--------------------------------------|--------|--|
| Specified time range | | (0,1...1)s,(1...10)s,(10...60)s,(1...10)min,(10...60)min,(1...10)h |
| Repeatability | % | ± 1 |
| Recovery time | ms | ≤ 50 |
| Minimum control impulse | ms | 50 |
| Setting accuracy-full range | % | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ |
| Ambient temperature range | °C | -10...+50 |
| Protection category | | IP 20 |

Approvals: (according to type)



ORDERING INFORMATION

Example: a 81 series multi-voltage timer with 1 CO contact, 16 A for 12 ... 230 V AC/DC supply.



TECHNICAL DATA

EMC SPECIFICATIONS

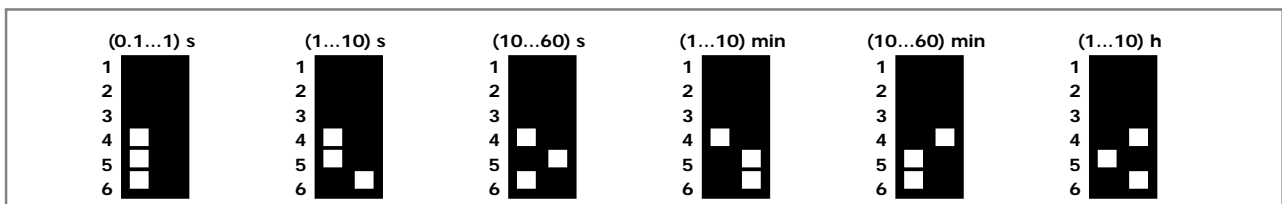
| TYPE OF TEST | REFERENCE STANDARD | |
|---|---------------------|--------------|
| ELECTROSTATIC DISCHARGE | - contact discharge | EN 61000-4-2 |
| | - air discharge | EN 61000-4-2 |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 | 10 V/m |
| FAST TRANSIENTS (burst) (5-50 ns, 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 |
| | - differential mode | EN 61000-4-5 |
| 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 | < 1 mA (S-X) | < 1 mA (R-X) | | | |
| POWER LOST TO THE ENVIRONMENT | | | | | |
| - without contact current | W 1.3 | | | | |
| - with rated current | W 3.2 | | | | |
| | LOWER TERMINAL | UPPER TERMINAL | | | |
| MAX WIRE SIZE | solid cable | stranded cable | solid cable | stranded cable | |
| | mm ² | 1x6 / 2x4 | 1x4 / 2x2.5 | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x12 / 2x14 | 1x12 / 2x14 | 1x14 / 2x14 |
| SCREW TORQUE | Nm 0.8 | 0.8 | | | |

81

TIME SCALES



NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

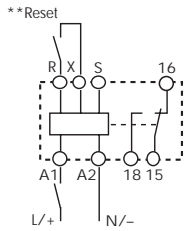
| | LED | | Supply voltage | NO output contact | Contacts | |
|---------------------------|-------|-----|----------------|-------------------|----------|---------|
| | Green | Red | | | Open | Closed |
| U = Supply voltage | | | OFF | Open | 15 · 18 | 15 · 16 |
| S = Signal switch | | | ON | Open | 15 · 18 | 15 · 16 |
| C = Output contact | | | ON | Closed | 15 · 16 | 15 · 18 |
| R = RESET | | | ON | Closed | 15 · 16 | 15 · 18 |

Without signal Start= Start via contact in supply line (A1).

With signal Start = Start via contact into control terminal (S-X).

Wiring diagram

Without signal START



**Reset facility is optional

1

2

3

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

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

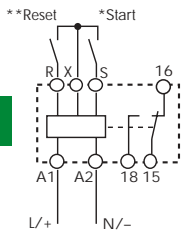
(SW) Symmetrical recycler: ON start.
Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).

(SP) Symmetrical recycler: OFF start.
Apply power to timer. Output contacts transfer after time T has elapsed and cycle between OFF and ON for as long as power is applied. The ratio is 1:1 (time on = time off).

U

c

With signal START



* Terminals R, X & S must not be directly connected to the timer supply voltage, but they should be considered to be a supply voltage potential for the purposes of insulation.
**Reset facility is optional

81

1

2

3

(BE) Signal OFF delay.
Power is permanently 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.

(DE) Signal ON pulse.
Power is permanently 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) Signal OFF pulse.
Power is permanently 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.

U

S

c

RESET

Function (R)

In each and every function and time scale, the timer is immediately released when the reset switch is depressed.

1

2

3

On depressing the Signal Reset Switch the timer is immediately released. Releasing the Signal Reset Switch reactivates the function. Example: ON delay function.

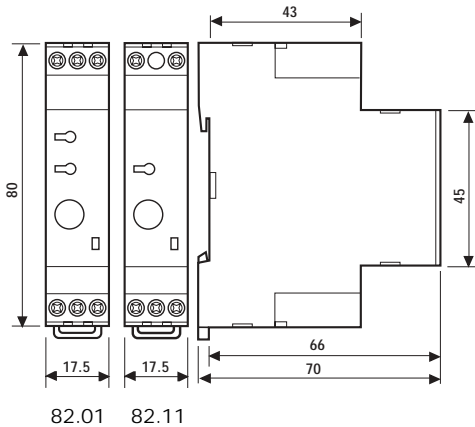
Depressing the Signal Reset Switch terminates the interval time. To re-start, it is necessary to depress the Signal Switch again. Example: ON pulse function.

U

R

c

- Mono or multi-function timers
- One module (17.5 mm) wide
- Five functions
- Six time scales, from 0.05s to 10h
- 35 mm rail (EN 50022) mount



82.01

82.11



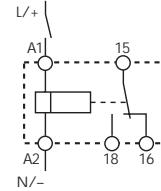
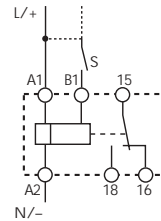
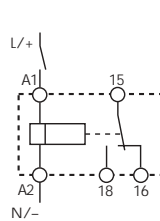
- Multi-function
- Multi-voltage
- 35 mm rail mounting

- Mono-function
- Multi-voltage
- 35 mm rail mounting

AI: ON delay
DI: ON pulse
SW: Symmetrical recycler:
 ON start

BE: Signal OFF delay

AI: ON delay



wiring diagram
(without signal START)

wiring diagram
(with signal START)

wiring diagram
(without signal START)

Contact specifications

| | | | |
|---|---------------|------------|------------|
| Contact configuration | | 1 CO | 1 CO |
| Rated current/Maximum peak current | A | 5/20 | 5/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 1,250 | 1,250 |
| Rated load in AC15 (230 VAC) | VA | 250 | 250 |
| Single phase motor rating (230 VAC) | kW | 0.125 | 0.125 |
| Breaking capacity in DC1: | 30/110/220V A | 5/0.3/0.12 | 5/0.3/0.12 |
| Minimum switching load | mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | | AgCdO | AgCdO |

Supply specifications

| | | | |
|-------------------|---------------|----------------------------|----------------------------|
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...48 | 24...48 |
| Rated power AC/DC | VA (50Hz)/W | 5/0.5 | 5/0.5 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.2)U _N | (0.85...1.2)U _N |

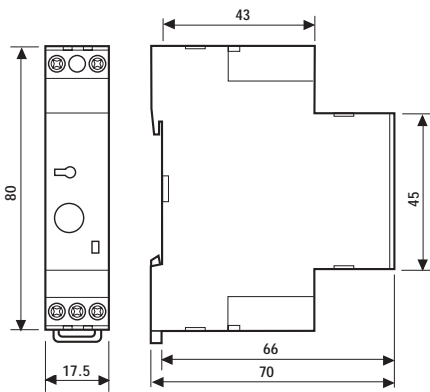
Technical data

| | | | |
|--------------------------------------|--------|---|--|
| 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 |
| Repeatability | % | ± 1 | ± 1 |
| Recovery time | ms | ≤ 100 | ≤ 100 |
| Minimum control impulse | ms | 250 | 250 |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range | °C | -20...+50 | -20...+50 |
| Protection category | | IP 20 | IP 20 |

Approvals: (according to type)



- Mono or multi-function timers
- One module (17.5 mm) wide
- Five functions
- Six time scales, from 0.05s to 10h
- 35 mm rail (EN 50022) mount

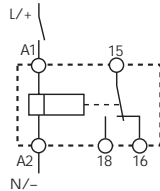


82.21



- Mono-function
- Multi-voltage
- 35 mm rail mounting

DI: ON pulse



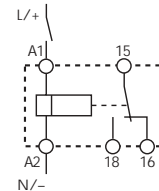
wiring diagram
(without signal START)

82.31



- Mono-function
- Multi-voltage
- 35 mm rail mounting

SW: Symmetrical recycler: ON start



wiring diagram
(without signal START)

Contact specifications

| | | | |
|---|---------------|------------|------------|
| Contact configuration | | 1 CO | 1 CO |
| Rated current/Maximum peak current | A | 5/20 | 5/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 1,250 | 1,250 |
| Rated load in AC15 (230 VAC) | VA | 250 | 250 |
| Single phase motor rating (230 VAC) | kW | 0.125 | 0.125 |
| Breaking capacity in DC1: | 30/110/220V A | 5/0.3/0.12 | 5/0.3/0.12 |
| Minimum switching load | mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | | AgCdO | AgCdO |

Supply specifications

| | | | |
|-------------------|---------------|----------------------------|----------------------------|
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...48 | 24...48 |
| Rated power AC/DC | VA (50Hz)/W | 5/0.5 | 5/0.5 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.2)U _N | (0.85...1.2)U _N |

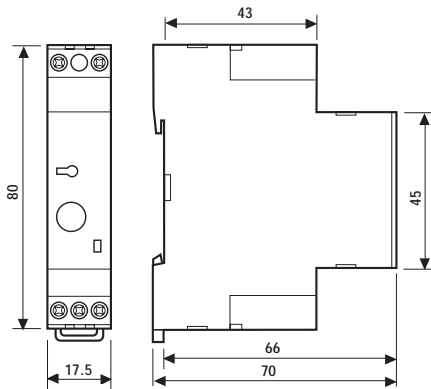
Technical data

| | | | |
|--------------------------------------|--------|---|--|
| 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 |
| Repeatability | % | ± 1 | ± 1 |
| Recovery time | ms | ≤ 100 | ≤ 100 |
| Minimum control impulse | ms | 250 | 250 |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range | °C | -20...+50 | -20...+50 |
| Protection category | | IP 20 | IP 20 |

Approvals: (according to type)

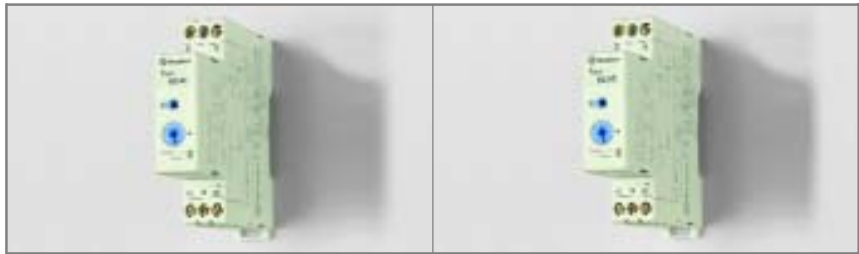


- Mono or multi-function timers
- One module (17.5 mm) wide
- Five functions
- Six time scales, from 0.05s to 10h
- 35 mm rail (EN 50022) mount



82.41

82.82

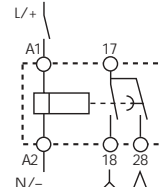
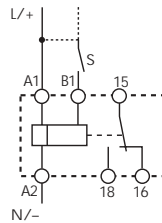


- Mono-function
- Multi-voltage
- 35 mm rail mounting

- Mono-function
- Multi-voltage
- 35 mm rail mounting

BE: Signal OFF delay

SD: Star- Delta



wiring diagram
(with signal START)

wiring diagram
(without signal START)

| Contact specifications | | | |
|---|---------------|--|--|
| Contact configuration | | 1 CO | 2 NO |
| Rated current/Maximum peak current | A | 5/20 | 5/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 1,250 | 1,250 |
| Rated load in AC15 (230 VAC) | VA | 250 | 250 |
| Single phase motor rating (230 VAC) | kW | 0.125 | 0.125 |
| Breaking capacity in DC1: | 30/110/220V A | 5/0.3/0.12 | 5/0.3/0.12 |
| Minimum switching load | mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | | AgCdO | AgCdO |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...48 | 24...48 |
| Rated power AC/DC | VA (50Hz)/W | 5/0.5 | 5/0.5 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.2)U _N | (0.85...1.2)U _N |
| 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 | (0.15...3)s, (0.5...10)s, (0.05...1)min, (0.5...10)min |
| Repeatability | % | ± 1 | ± 1 |
| Recovery time | ms | ≤ 100 | ≤ 100 |
| Minimum control impulse | ms | 250 | 250 |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range | °C | -20...+50 | -20...+50 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

Example: a 82 series, multi-function modular timer, 24 to 48 V DC and 24 to 240 V AC (50/60) Hz supply voltage.

| | | | | | | | | | | | |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | 8 | 2 | 0 | 1 | 0 | 2 | 4 | 0 | 0 | 0 | 0 |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|

Series —————

Type —————

0 = Multi-function (AI, DI, BE, SW)
 1 = ON delay (AI)
 2 = ON pulse (DI)
 3 = Symmetrical recycler: ON start (SW)
 4 = Signal OFF delay (BE)
 8 = Star - delta (SD)

Supply voltage

240 = { 24...48 V DC
 24...240 V AC

Supply version

0 = AC (50/60 Hz)/DC

No. of poles

1 = 1 pole for types 0, 1, 2, 3, 4
 2 = 2 pole for star - delta

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|---|---------------------|--------------|
| ELECTROSTATIC DISCHARGE | - contact discharge | EN 61000-4-2 |
| | - air discharge | EN 61000-4-2 |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 | 10V/m |
| FAST TRANSIENTS (burst) (5-50 ns, 5 kHz) on Supply terminals | EN 61000-4-4 | 6 kV |
| SURGES (1.2/50 µs) on Supply terminals | - common mode | EN 61000-4-5 |
| | - differential mode | EN 61000-4-5 |
| 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) | 1mA | |
| POWER LOST TO THE ENVIRONMENT | - without contact current | W |
| | - with rated current | W |
| | | |
| MAX WIRE SIZE | solid cable | stranded cable |
| | mm ² | 1x4 / 2x2.5 |
| | AWG | 1x12 / 2x14 |
| SCREW TORQUE | Nm | 1 |

82

TIME SCALES

| Type | Function Code | Function | s | s | s | min | min | h | h |
|-------|---------------|--------------------------------|----------|----------|-----------|----------|-----------|----------|-----------|
| | | | 0.05 | 0.15 | 0.5 | 0.05 | 0.5 | 0.05 | 0.5 |
| | | | 1 | 3 | 10 | 1 | 10 | 1 | 10 |
| 82.01 | AI | ON delay | • | | • | • | • | • | • |
| | BE | Signal OFF delay | • | | • | • | • | • | • |
| | DI | ON pulse | • | | • | • | • | • | • |
| | SW | Symmetrical recycler: ON start | • | | • | • | • | • | • |
| 82.11 | AI | ON delay | • | | • | • | • | • | |
| 82.21 | DI | ON pulse | • | | • | • | • | • | |
| 82.31 | SW | Symmetrical recycler: ON start | • | | • | • | • | • | |
| 82.41 | BE | Signal OFF delay | • | | • | • | • | • | |
| 82.82 | SD | Star - delta | | • | • | • | • | | |

NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

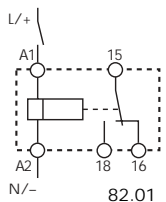
| | LED | Relay type | Supply voltage | NO output contact | Contacts | |
|---------------------------|-----|-------------------------|----------------|---------------------|----------|---------|
| | | | | | Open | Closed |
| U = Supply Voltage | | 82.01 82.11 82.21 | ON | Open | 15 - 18 | 15 - 16 |
| S = Signal switch | | 82.31 82.41 | ON | Closed | 15 - 16 | 15 - 18 |
| C = Output contact | | 82.82 | ON | Closed (\wedge) | 17 - 28 | 17 - 18 |
| | | | ON | Closed (Δ) | 17 - 18 | 17 - 28 |

Without signal Start = Start via contact in supply line (A1).

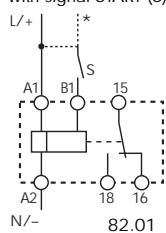
With signal Start = Start via contact into control terminal (B1).

Wiring diagram

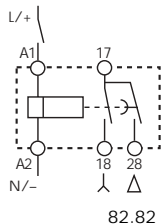
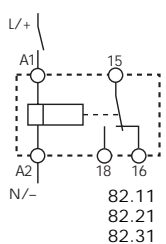
Multi-function without signal START



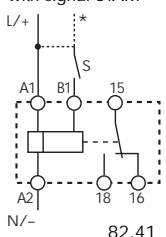
with signal START (S)



Mono-function without signal START



with signal START



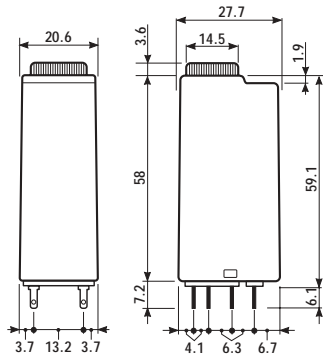
| | | |
|-------------------|--|---|
| Type 82.01 | | (AI) ON delay. Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed. |
| | | (DI) ON pulse. Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset. |
| | | (SW) Symmetrical recycler: ON start. 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) Signal OFF delay. Power is permanently 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. |

| | | |
|--------------|--|--|
| 82.11 | | (AI) ON delay. Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed. |
| 82.21 | | (DI) ON pulse. Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset. |
| 82.31 | | (SW) Symmetrical recycler: ON start. 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). |
| 82.82 | | (SD) Star - delta. Apply power to timer. The star contact (\wedge) closes immediately. After preset delay has elapsed the star contact (\wedge) resets. After a further fixed time of ~60 ms the delta contact (Δ) closes and remains in that position, until reset on power off. |
| 82.41 | | (BE) Signal OFF delay. Power is permanently 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. |

* A voltage other than the supply voltage can be applied to the command START (B1).

Example: A1 - A2 = 230 V AC / B1 - A2 = 24 V AC

- Plug-in timer relay
- 2, 3 or 4 CO contact available
- Six time scales, from 0.1s to 10h
- Sockets: see 94 series



85.32

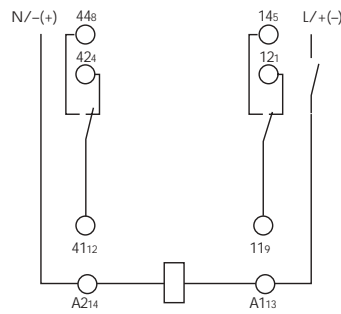
85.33



- 2 Pole, 10A
- AC/DC supply non polarized
- Plug-in for use with 94 series sockets

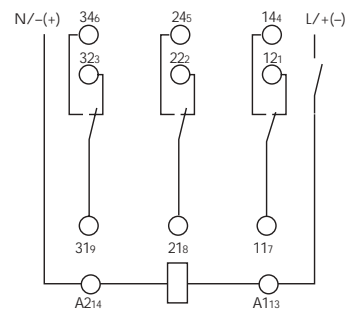
- 3 Pole, 10A
- AC/DC supply non polarized
- Plug-in for use with 94 series sockets

AI: ON delay
DI: ON pulse



wiring diagram

AI: ON delay
DI: ON pulse



wiring diagram

Contact specifications

| | | | |
|---|---------------|-------------|-------------|
| Contact configuration | | 2 CO | 3 CO |
| Rated current/Maximum peak current | A | 10/20 | 10/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 2,500 | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 500 | 500 |
| Single phase motor rating (230 VAC) | kW | 0.37 | 0.37 |
| Breaking capacity in DC1: | 30/110/220V A | 10/0.25/0.1 | 10/0.25/0.1 |
| Minimum switching load | mW(V/mA) | 300 (5/5) | 300 (5/5) |
| Standard contact material | | AgNi | AgNi |

Supply specifications

| | | | |
|-------------------|---------------|--|--|
| Nominal voltage | V AC(50/60Hz) | 230...240 | 230...240 |
| | V AC/DC | 12 · 24 · 48 · 110...125 (non polarized) | 12 · 24 · 48 · 110...125 (non polarized) |
| Rated power AC/DC | VA (50Hz)/W | 2/2 | 2/2 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.1) U _N | (0.85...1.1)U _N |

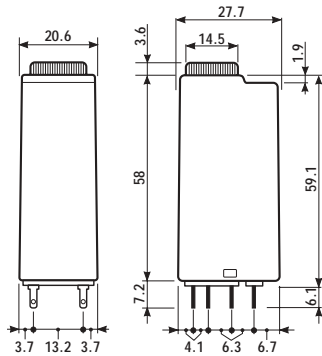
Technical data

| | | | |
|--------------------------------------|--------|---|---------------------|
| Specified time range | | (0.1...1) s, (1...10) s, (10...60) s, (1...10) min, (10...60) min, (1...10) h | |
| Repeatability | % | ± 2 | ± 2 |
| Recovery time | ms | ≤ 20 | ≤ 20 |
| Minimum control impulse | ms | — | — |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 200·10 ³ | 200·10 ³ |
| Ambient temperature range | °C | -20...+60 | -20...+60 |
| Protection category | | IP 40 | IP 40 |

Approvals: (according to type)



- Plug-in timer relay
- 2, 3 or 4 CO contact available
- Six time scales, from 0.1s to 10h
- Sockets: see 94 series

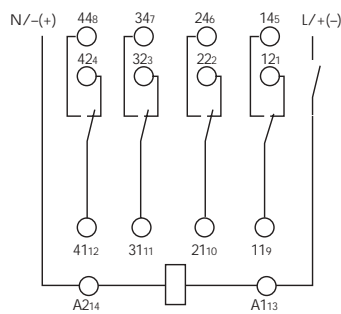


85.34



- 4 Pole, 5A
- AC/DC supply non polarized
- Plug-in for use with 94 series sockets

AI: ON delay
DI: ON pulse



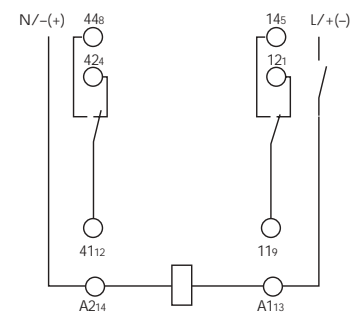
wiring diagram

85.52



- 2 Pole, 10A
- AC/DC supply non polarized
- Plug-in for use with 94 series sockets

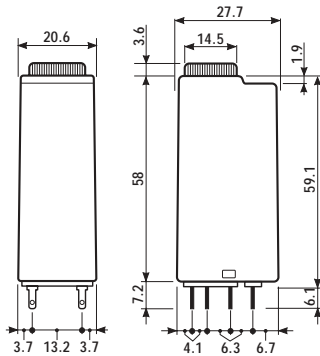
SW: Symmetrical recycler: ON start
SP: Symmetrical recycler: OFF start



wiring diagram

| Contact specifications | | | |
|---|---------------|---|--|
| Contact configuration | | 4 CO | 2 CO |
| Rated current/Maximum peak current | A | 5/10 | 10/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/250 | 250/400 |
| Rated load in AC1 | VA | 1,250 | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 250 | 500 |
| Single phase motor rating (230 VAC) | kW | 0.125 | 0.37 |
| Breaking capacity in DC1: | 30/110/220V A | 5/0.25/0.1 | 10/0.25/0.1 |
| Minimum switching load | mW(V/mA) | 300 (5/5) | 300 (5/5) |
| Standard contact material | | AgNi | AgNi |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 230...240 | 230...240 |
| | V AC/DC | 12 - 24 - 48 - 110...125 (non polarized) | 12 - 24 - 48 - 110...125 (non polarized) |
| Rated power AC/DC | VA (50Hz)/W | 2/2 | 2/2 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.1) U _N | (0.85...1.1)U _N |
| Technical data | | | |
| Specified time range | | (0.1...1) s, (1...10) s, (10...60) s, (1...10) min, (10...60) min, (1...10) h | |
| Repeatability | % | ± 2 | ± 2 |
| Recovery time | ms | ≤ 20 | ≤ 20 |
| Minimum control impulse | ms | — | — |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 150·10 ³ | 200·10 ³ |
| Ambient temperature range | °C | -20...+60 | -20...+60 |
| Protection category | | IP 40 | IP 40 |
| Approvals: (according to type) | | | |

- Plug-in timer relay
- 2, 3 or 4 CO contact available
- Six time scales, from 0.1s to 10h
- Sockets: see 94 series

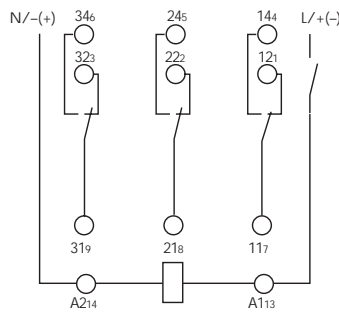


85.53



- 3 Pole, 10A
- AC/DC supply non polarized
- Plug-in for use with 94 series sockets

SW: Symmetrical recycler: ON start
SP: Symmetrical recycler: OFF start



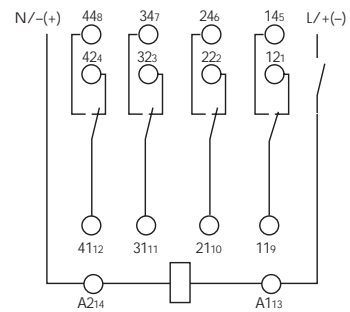
wiring diagram

85.54



- 4 Pole, 5A
- AC/DC supply non polarized
- Plug-in for use with 94 series sockets

SW: Symmetrical recycler: ON start
SP: Symmetrical recycler: OFF start



wiring diagram

Contact specifications

| | | | |
|---|---------------|-------------|------------|
| Contact configuration | | 3 CO | 4 CO |
| Rated current/Maximum peak current | A | 10/20 | 5/20 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/250 |
| Rated load in AC1 | VA | 2,500 | 1,250 |
| Rated load in AC15 (230 VAC) | VA | 500 | 250 |
| Single phase motor rating (230 VAC) | kW | 0.37 | 0.125 |
| Breaking capacity in DC1: | 30/110/220V A | 10/0.25/0.1 | 5/0.25/0.1 |
| Minimum switching load | mW(V/ma) | 300 (5/5) | 300 (5/5) |
| Standard contact material | | AgNi | AgNi |

Supply specifications

| | | | |
|-------------------|---------------|--|--|
| Nominal voltage | V AC(50/60Hz) | 230...240 | 230...240 |
| | V AC/DC | 12 - 24 - 48 - 110...125 (non polarized) | 12 - 24 - 48 - 110...125 (non polarized) |
| Rated power AC/DC | VA (50Hz)/W | 2/2 | 2/2 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.1) U _N | (0.85...1.1)U _N |

Technical data

| | | | |
|--------------------------------------|--------|---|---------------------|
| Specified time range | | (0.1...1) s, (1...10) s, (10...60) s, (1...10) min, (10...60) min, (1...10) h | |
| Repeatability | % | ± 2 | ± 2 |
| Recovery time | ms | ≤ 20 | ≤ 20 |
| Minimum control impulse | ms | — | — |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 200·10 ³ | 150·10 ³ |
| Ambient temperature range | °C | -20...+60 | -20...+60 |
| Protection category | | IP 40 | IP 40 |

Approvals: (according to type)



ORDERING INFORMATION

Example: 85 series timer, 4 CO, 24 V AC/DC supply voltage with AI - DI functions.

| | | |
|---|---|--|
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">8</div> <div style="border: 1px solid black; padding: 2px 5px;">5</div> <div style="border: 1px solid black; padding: 2px 5px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">3</div> <div style="border: 1px solid black; padding: 2px 5px;">4</div> <div style="border: 1px solid black; padding: 2px 5px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> <div style="border: 1px solid black; padding: 2px 5px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> <div style="border: 1px solid black; padding: 2px 5px;">2</div> <div style="border: 1px solid black; padding: 2px 5px;">4</div> <div style="border: 1px solid black; padding: 2px 5px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> </div> | <p>Series</p> <p>Type 3 = Functions: AI (ON delay) · DI (ON pulse) 5 = Functions: SW · SP (Symmetrical Recycler)</p> <p>No. of poles 2 = 2 pole · 10 A 3 = 3 pole · 10 A 4 = 4 pole · 5 A</p> | <p>Supply voltage 012 = 12 V AC/DC 024 = 24 V AC/DC 048 = 48 V AC/DC 110 = 110...125 V AC/DC 230 = 230...240 V AC</p> <p>Supply version 0 = AC (50/60 Hz)/DC 8 = AC (50/60 Hz) for 230 V only</p> |
|---|---|--|

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|---|---------------------|--------------|
| ELECTROSTATIC DISCHARGE | - contact discharge | EN 61000-4-2 |
| | - air discharge | EN 61000-4-2 |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 | 15 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 |
| | - differential mode | EN 61000-4-5 |
| RADIO-FREQUENCY COMMON MODE (0.15 ÷ 80 MHz) on Supply terminals | EN 61000-4-6 | 10 V |
| POWER-FREQUENCY (50 Hz) | EN 61000-4-8 | 30 A/m |
| RADIATED AND CONDUCTED EMISSION | EN 55022 | class B |

OTHER DATA

| POWER LOST TO THE ENVIRONMENT | 2 pole | 3 pole | 4 pole |
|-------------------------------|--------|--------|--------|
| - without contact current | W 1.6 | 1.6 | 1.6 |
| - with rated current | W 3.7 | 4.7 | 3.3 |

85

TIME SCALES

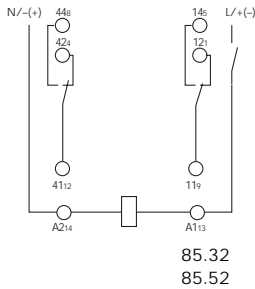
| | | | | | |
|-------------|------------|-------------|--------------|---------------|------------|
| (0.1...1) s | (1...10) s | (10...60) s | (1...10) min | (10...60) min | (1...10) h |
| | | | | | |
| 1 2 3 | 1 2 3 | 1 2 3 | 1 2 3 | 1 2 3 | 1 2 3 |

NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

| | Green | LED | Red | Supply voltage | NO output contact |
|---------------------------|-------|-----|-----|----------------|-------------------|
| U = Supply voltage | | | | OFF | Open |
| C = Output contact | | | | ON | Open |
| | | | | ON | Closed |

Wiring diagram



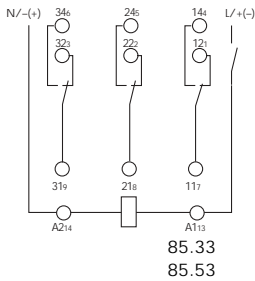
Types: 85.32, 85.33, 85.34

1 2 3 4

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

1 2 3 4

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



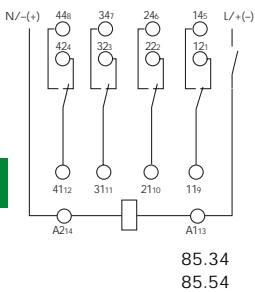
Types: 85.52, 85.53, 85.54

1 2 3 4

(SW) Symmetrical recycler: ON start.
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).

1 2 3 4

(SP) Symmetrical recycler: OFF start.
Apply power to timer.
Output contacts transfer after time T has elapsed and cycle between OFF and ON for as long as power is applied. The ratio is 1:1 (time on = time off).





94.04

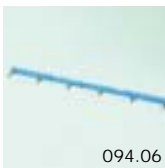
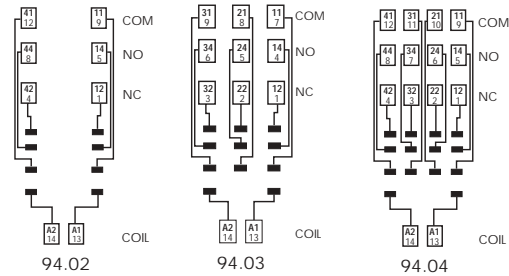
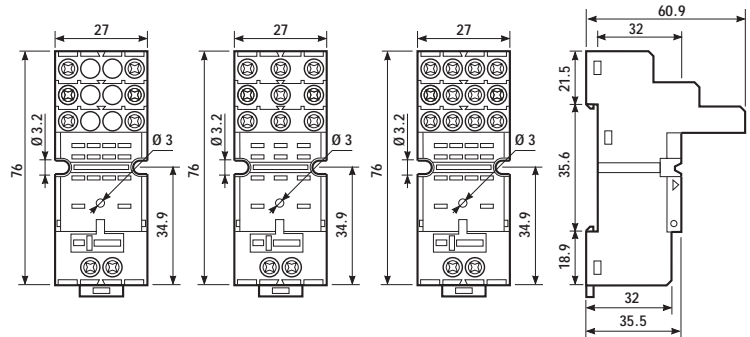
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

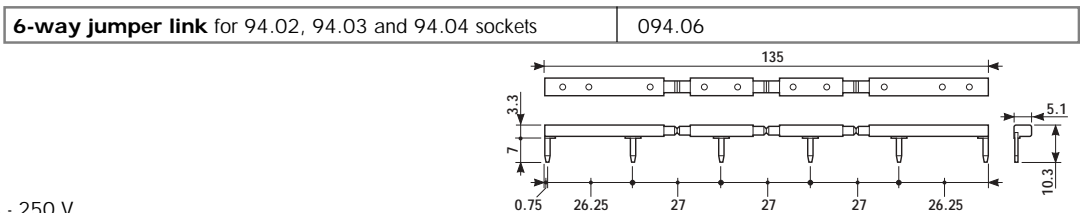
| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Timer type | 85.32, 85.52 | 85.33, 85.53 | 85.34, 85.54 |
|---|--------------|--------------|--------------|
| Colour | BLUE | BLACK | BLUE |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | 94.02 | 94.02.0 | 94.03 |
| Retaining clip (supplied with timer) | 094.81 | | |
| 6-way jumper link for 94.02, 94.03 and 94.04 sockets | 094.06 | 094.06.0 | 094.06 |
| Identification tag | 094.00.4 | | |



094.06

- RATED VALUES: 10 A - 250 V





94.74

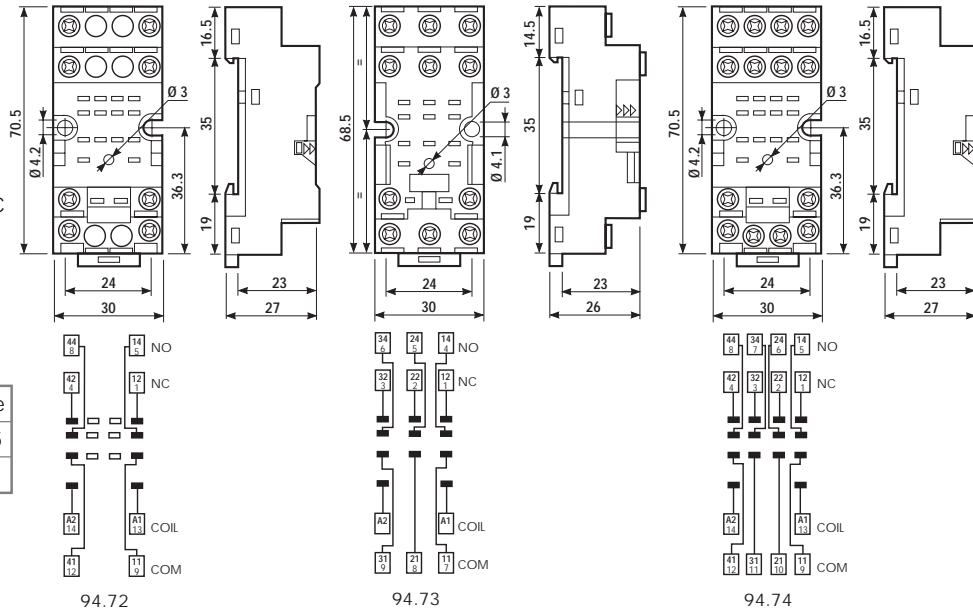
Approvals
(according to type):



- RADET VALUES: 10 A · 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE:
(-40...+70)°C
- TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|---------------|---------------|
| mm ² | 1x2.5 / 2x1.5 | 1x2.5 / 2x1.5 |
| AWG | 1x14 / 2x16 | 1x14 / 2x16 |

| Timer type | 85.32, 85.52 | | 85.33, 85.53 | | 85.34, 85.54 | |
|---|--------------|---------|--------------|---------|--------------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | 94.72 | 94.72.0 | 94.73 | 94.73.0 | 94.74 | 94.74.0 |
| Retaining clip (supplied with timer) | 094.81 | | | | | |



94.82

Approvals
(according to type):

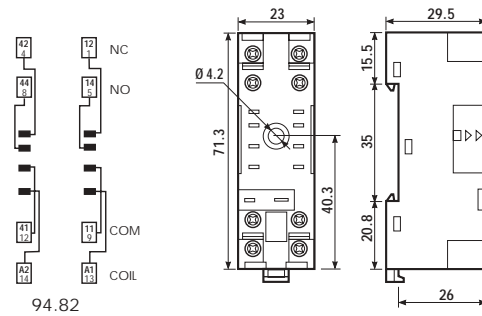


85

- RATED VALUES: 10 A · 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 9 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|---------------|---------------|
| mm ² | 1x2.5 / 2x1.5 | 1x2.5 / 2x1.5 |
| AWG | 1x14 / 2x16 | 1x14 / 2x16 |

| Timer type | 85.32, 85.52 | |
|---|--------------|---------|
| Colour | BLUE | BLACK |
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | 94.82 | 94.82.0 |
| Retaining clip (supplied with timer) | 094.81 | |



- Mono-function timer modules
- Timer module for 92, 94, 95 series sockets
- LED indicator

86.10

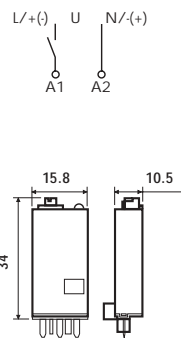
86.20



- Mono-function
- Plug-in for use with 92.03 - 94.02 - 94.03 - 94.04 - 95.03 - 95.05 sockets

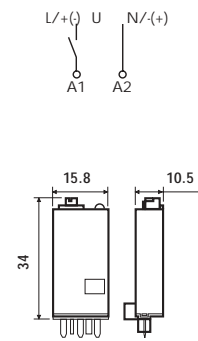
- Mono-function
- Plug-in for use with 92.03 - 94.02 - 94.03 - 94.04 - 95.03 - 95.05 sockets

AI: ON delay



wiring diagram

DI: ON pulse



wiring diagram

Contact specifications

| | |
|---|---------------|
| Contact configuration | |
| Rated current/Maximum peak current | A |
| Rated voltage/Maximum switching voltage | V AC |
| Rated load in AC1 | VA |
| Rated load in AC15 (230 VAC) | VA |
| Single phase motor rating (230 VAC) | kW |
| Breaking capacity in DC1: | 30/110/220V A |
| Minimum switching load | mW(V/mA) |
| Standard contact material | |

see 40, 44, 55 and 62 series relays

see 40, 44, 55 and 62 series relays

Supply specifications

| | |
|-------------------|---------------|
| Nominal voltage | V AC(50/60Hz) |
| | V DC |
| Rated power AC/DC | mW |
| Operating range | AC |
| | DC |

| |
|---------------------------|
| 12...24 |
| 12...24 (non polarized) |
| 150 |
| (0.8...1.1)U _N |
| (0.8...1.1)U _N |

| |
|---------------------------|
| 12...24 |
| 12...24 (non polarized) |
| 150 |
| (0.8...1.1)U _N |
| (0.8...1.1)U _N |

Technical data

| | |
|--------------------------------------|--------|
| Specified time range | |
| Repeatability | % |
| Recovery time | ms |
| Minimum control impulse | ms |
| Setting accuracy-full range | % |
| Electrical life at rated load in AC1 | cycles |
| Ambient temperature range | °C |
| Protection category | |

| |
|--|
| (1.5...15)s,(6...60)s,(0.8...8)min,(6.4...64)min |
| ± 1 |
| ≤ 150 |
| — |
| ± 5 |
| see 40, 44, 55 and 62 series relays |
| 0...+50 |
| IP 20 |

| |
|--|
| (1.5...15)s,(6...60)s,(0.8...8)min,(6.4...64)min |
| ± 1 |
| ≤ 150 |
| — |
| ± 5 |
| see 40, 44, 55 and 62 series relays |
| 0...+50 |
| IP 20 |

Approvals: (according to type)



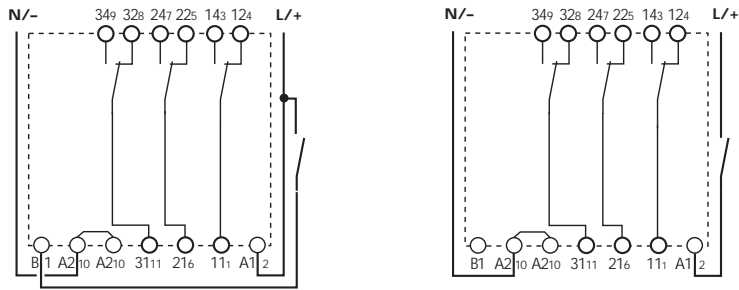
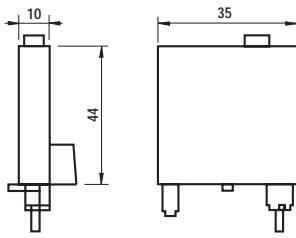
- Multi-function timer modules
- Timer module for 90 series sockets
- LED indicator

86.60



- Time scale: from 15ms to 10 h
- Multi-function
- Plug-in for use with 90.72 and 90.73 sockets

- | | |
|--|--|
| BE: Signal OFF delay | AI: ON delay |
| DE: Signal ON pulse | DI: ON pulse |
| EE: Signal OFF pulse | SW: Symmetrical recycler: ON start |
| FE: Signal ON delay + OFF pulse | SP: Symmetrical recycler: OFF start |



(with signal START) wiring diagram (without signal START)

Contact specifications

| | |
|--|---------------|
| Contact configuration | |
| Rated current/Maximum peak current | A |
| Rated voltage/Maximum switching voltage V AC | |
| Rated load in AC1 | VA |
| Rated load in AC15 (230 VAC) | VA |
| Single phase motor rating (230 VAC) | kW |
| Breaking capacity in DC1: | 30/110/220V A |
| Minimum switching load | mW(V/mA) |
| Standard contact material | |

see 60 series relays

Supply specifications

| | | |
|--------------------------------|---------------|------------------------|
| Nominal voltage | V AC(50/60Hz) | 12...90 · 110...240 |
| | V DC | 12...90 · 110...220 |
| Rated current absorption AC/DC | mA | 4.6/8 |
| Operating range | AC | 10.8...100 · 100...255 |
| | DC | 10.8...100 · 100...240 |

Technical data

| | | |
|--------------------------------------|--------|---|
| Specified time range | | (15...125)ms, (0.1...1)s, (1...10)s, (0.1...1)min, (1...10)min, (0.1...1)h, (1...10)h |
| Repeatability | % | ± 1 |
| Recovery time | ms | ≤ 120 |
| Minimum control impulse | ms | 20 |
| Setting accuracy-full range | % | ± 1 |
| Electrical life at rated load in AC1 | cycles | see 60 series relays |
| Ambient temperature range | °C | -20...+50 |
| Protection category | | IP 20 |

Approvals: (according to type)



ORDERING INFORMATION

Example: a 86 series mono-function timer module with (12 to 24) V AC/DC supply voltage.

| | | | | | | | | | | | | | | | |
|------------------------|----------|----------|------------------------|----------|----------|---|----------|----------|---|----------|----------|----------|----------|----------|----------|
| 8 | 6 | . | 1 | 0 | . | 0 | . | 0 | 2 | 4 | . | 0 | 0 | 0 | 0 |
| Series | | | Type | | | No. of poles | | | Supply voltage | | | | | | |
| 1 = Mono-function (AI) | | | 2 = Mono-function (DI) | | | 6 = Multi-function (AI, DI, SW, SP, BE, DE, EE, FE) | | | 024 = 12...24 V AC/DC (86.10/20 only) | | | | | | |
| | | | | | | | | | 100 = 12...90 V AC/DC (86.60 only) | | | | | | |
| | | | | | | | | | 250 = $\begin{cases} 110...220 \text{ V DC} \\ 110...240 \text{ V AC} \end{cases}$ (86.60 only) | | | | | | |
| | | | | | | | | | Supply version | | | | | | |
| | | | | | | | | | 0 = AC (50/60 Hz)/DC | | | | | | |

COMBINATIONS

| Number of poles | Relay type | Socket type | Timer module |
|-----------------|-------------------|-------------|--------------|
| 1 | 40.31 | 95.03 | 86.10/86.20 |
| 1 | 40.61 | 95.05 | 86.10/86.20 |
| 2 | 40.52/44.52/44.62 | 95.05 | 86.10/86.20 |
| 2 | 55.32 | 94.02 | 86.10/86.20 |
| 2 | 62.32 | 92.03 | 86.10/86.20 |
| 3 | 55.33 | 94.03 | 86.10/86.20 |
| 3 | 62.33 | 92.03 | 86.10/86.20 |
| 4 | 55.34 | 94.04 | 86.10/86.20 |
| 2 | 60.12 | 90.72 | 86.60 |
| 3 | 60.13 | 90.73 | 86.60 |

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | 86.10/20 | 86.60 |
|---|---------------------|--------------|---------|
| ELECTROSTATIC DISCHARGE | - contact discharge | EN 61000-4-2 | n.a. |
| | - air discharge | EN 61000-4-2 | 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 | 2 kV | 2 kV |
| SURGES (1.2/50 µs) on Supply terminals | - common mode | EN 61000-4-5 | 2 kV |
| | - differential mode | EN 61000-4-5 | — |
| 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 |

86

OTHER DATA

| | 86.10, 86.20 | 86.60 |
|---|----------------------------------|----------------------|
| CURRENT ABSORPTION on signal control (B1) | mA | — |
| POWER LOST IN THE ENVIRONMENT | | |
| - without contact current | W | 0.2 |
| - with rated current | see 40, 44, 55, 62 series relays | see 60 series relays |

TIME SCALES

Type 86.10
Type 86.20

| | | | |
|--------------|------------|---------------|----------------|
| (1.5...15) s | (6...60) s | (0.8...8) min | (6.4...64) min |
| | | | |

Type 86.60

| | | | | | | |
|---------------|-------------|------------|---------------|--------------|-------------|------------|
| (15...125) ms | (0.1...1) s | (1...10) s | (0.1...1) min | (1...10) min | (0.1...1) h | (1...10) h |
| | | | | | | |
| 6 5 4 | 6 5 4 | 6 5 4 | 6 5 4 | 6 5 4 | 6 5 4 | 6 5 4 |

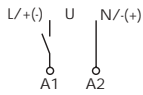
NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

| | LED | | Supply voltage | NO output contact |
|---------------------------|--------------------|--------|----------------|-------------------|
| | Green (86.60 only) | Yellow | | |
| U = Supply Voltage | | | OFF | Open |
| S = Signal switch | | | ON | Open |
| C = Output Contact | | | ON | Closed |

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

Wiring diagram



Type 86.10

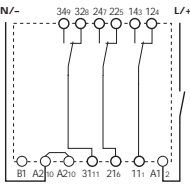
(AI) ON delay.
 Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.

Type 86.20

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

Type 86.60

without signal START



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

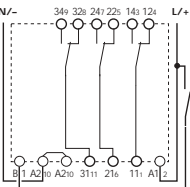
(DI) ON pulse.
 Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.

(SW) Symmetrical recycler: ON start.
 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).

(SP) Symmetrical recycler: OFF start.
 Apply power to timer. Output contacts transfer after time T has elapsed and cycle between OFF and ON for as long as power is applied. The ratio is 1:1 (time on = time off).

86

with signal START



(BE) Signal OFF delay.
 Power is permanently 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.

(DE) Signal ON pulse.
 Power is permanently 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) Signal OFF pulse.
 Power is permanently 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) Signal ON pulse + OFF pulse.
 Power is permanently 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.



95.05

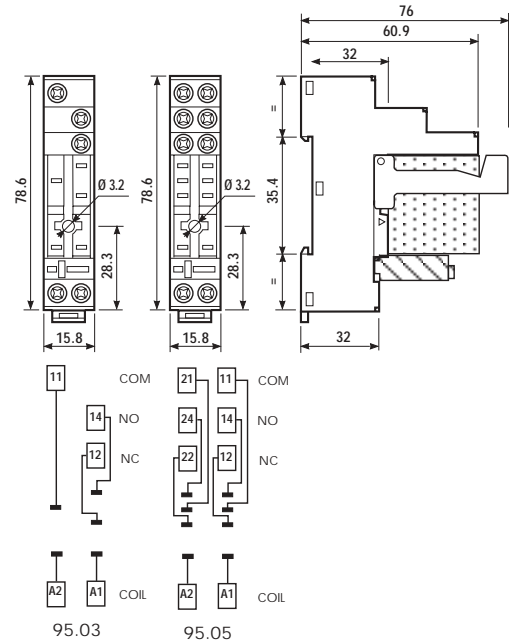
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C
- TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Relay type | 40.31 | | 40.51/52/61, 44.52/62 | |
|---|--------------|----------|-----------------------|----------|
| | BLUE | BLACK | BLUE | BLACK |
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 095.01 supplied with socket packaging code SPA | 95.03 | 95.03.0 | 95.05 | 95.05.0 |
| Retaining and release clip | 095.01 | 095.01.0 | 095.01 | 095.01.0 |
| 8-way jumper link for 95.03 and 95.05 sockets | 095.18 | 095.18.0 | 095.18 | 095.18.0 |
| Identification tag | 095.00.4 | | | |
| Timer modules | 86.10, 86.20 | | | |



94.04

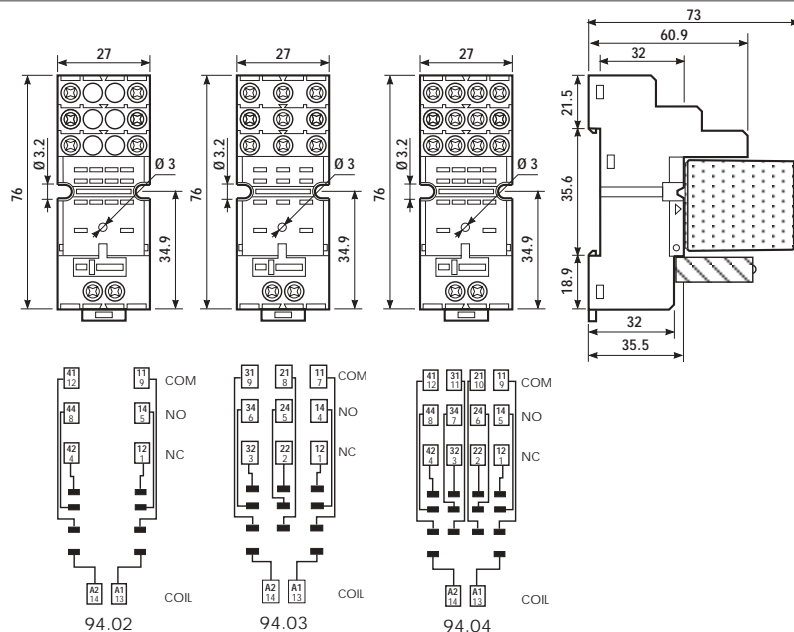
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C
- TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 8 mm
- MAX WIRE SIZE: mm² - AWG

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x12 / 2x14 |

| Relay type | 55.32 | | 55.33 | | 55.32, 55.34 | |
|---|--------------|----------|--------|----------|--------------|----------|
| | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Colour | BLUE | BLACK | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 094.71 supplied with socket packaging code SPA | 94.02 | 94.02.0 | 94.03 | 94.03.0 | 94.04 | 94.04.0 |
| Retaining clip | 094.71 | | | | | |
| 6-way jumper link for 94.02, 94.03 and 94.04 sockets | 094.06 | 094.06.0 | 094.06 | 094.06.0 | 094.06 | 094.06.0 |
| Identification tag | 094.00.4 | | | | | |
| Timer modules | 86.10, 86.20 | | | | | |





92.03

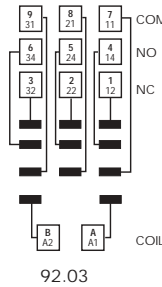
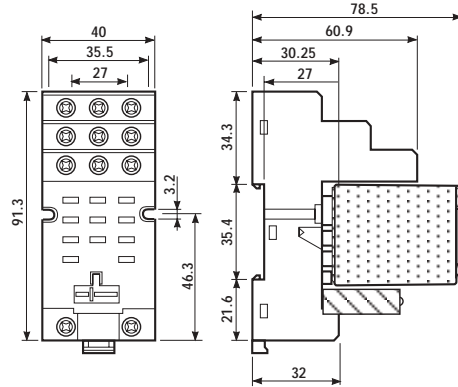
Approvals
(according to type):



- RATED VALUES: 16 A · 250 V
- DIELECTRIC STRENGTH: ≥ 2.5 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- WIRE STRIP LENGTH: 10 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|------------|---------------|
| mm ² | 1x10 / 2x4 | 1x6 / 2x4 |
| AWG | 1x8 / 2x12 | 1x10 / 2x12 |

| Relay type | 62.32 | | 62.33 | |
|---|--------------|---------|-------|---------|
| | Colour | BLUE | BLACK | BLUE |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount retaining clip 092.71 supplied with socket packaging code SPA | 92.03 | 92.03.0 | 92.03 | 92.03.0 |
| Retaining clip | 092.71 | | | |
| Timer modules | 86.10, 86.20 | | | |



90.73

Approvals
(according to type):

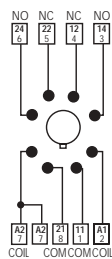
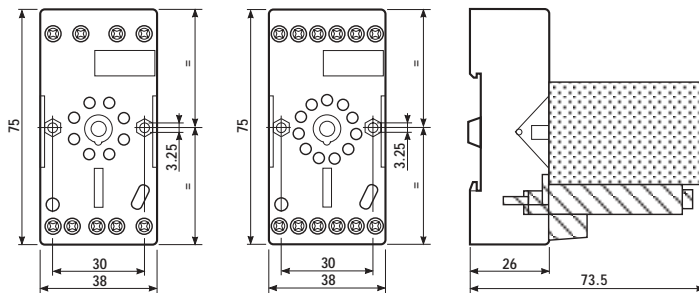
86



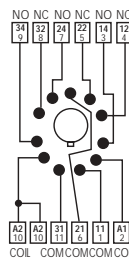
- Double ground terminal (A2).
- RATED VALUES: 10 A · 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- WIRE STRIP LENGTH: 7 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x4 | 1x6 / 2x4 |
| AWG | 1x10 / 2x12 | 1x10 / 2x12 |

| Relay type | 60.12 | | 60.13 | |
|---|--------|---------|-------|---------|
| | Colour | BLUE | BLACK | BLUE |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | 90.72 | 90.72.0 | 90.73 | 90.73.0 |
| Retaining clip | 090.33 | | | |
| Timer modules | 86.60 | | 86.60 | |

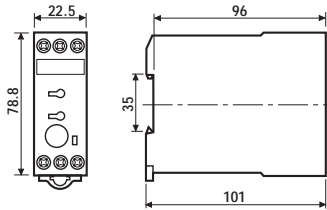


90.72

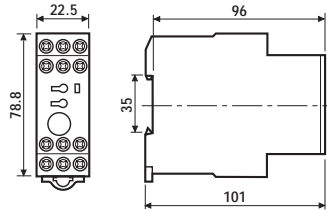


90.73

- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



87.01



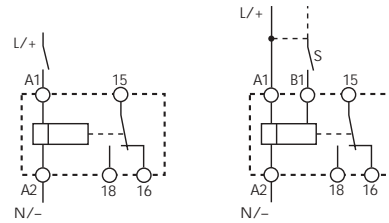
87.02

87.01



- Multi-function
- 1 pole
- 35 mm rail mounting

- | | |
|---|------------------------------------|
| AI: ON delay | BE: Signal OFF delay |
| DI: ON pulse | CE: Signal ON and OFF Delay |
| GI: Fixed pulse delayed | DE: Signal ON pulse |
| SW: Symmetrical recycler: ON start | EE: Signal OFF pulse |



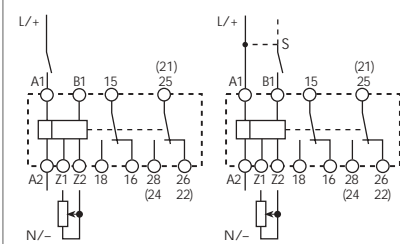
wiring diagram (without signal START) wiring diagram (with signal START)

87.02



- Multi-function
- Timing can be regulated using ext. Potentiometer
- 2 timed contacts or 1 timed + 1 instantaneous contact
- 35 mm rail mounting

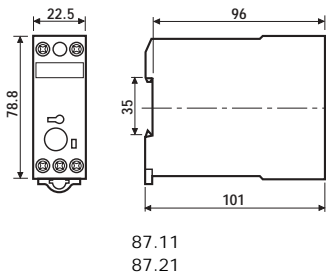
- | | |
|---|------------------------------------|
| AI: ON delay | BE: Signal OFF delay |
| DI: ON pulse | CE: Signal ON and OFF Delay |
| GI: Fixed pulse delayed | DE: Signal ON pulse |
| SW: Symmetrical recycler: ON start | EE: Signal OFF pulse |



wiring diagram (without signal START) wiring diagram (with signal START)

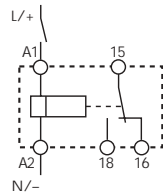
| Contact specifications | | | |
|---|---------------|-----------------------------|---|
| Contact configuration | | 1 CO | 2 CO |
| Rated current/Maximum peak current | A | 8/30 | 8/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 2,000 | 2,000 |
| Rated load in AC15 (230 VAC) | VA | 400 | 400 |
| Single phase motor rating (230 VAC) | kW | 0.185 | 0.185 |
| Breaking capacity in DC1: | 30/110/220V A | 8/0.5/0.2 | 8/0.5/0.2 |
| Minimum switching load | mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | | AgCdO | AgCdO |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...48 | 24...48 |
| Rated power AC/DC | VA (50Hz)/W | 5/0.5 | 5/0.5 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.2) U _N | (0.85...1.2)U _N |
| Technical data | | | |
| Specified time range | | See page 123 | See page 123 |
| Repeatability | % | ± 2 | ± 2 |
| Recovery time | ms | 50 | 50 |
| Minimum control impulse | ms | 50 | 50 |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100-10 ³ | 100-10 ³ |
| Ambient temperature range | °C | -20...+60 | -20...+60 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | | 87 |

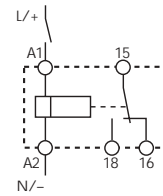
- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount


87.11
87.21


- Mono-function
- 35 mm rail mounting

- Mono-function
- 35 mm rail mounting

AI: ON delay

 wiring diagram
(without signal START)

DI: ON pulse

 wiring diagram
(without signal START)

Contact specifications

| | | | |
|---|---------------|------------|------------|
| Contact configuration | | 1 CO | 1 CO |
| Rated current/Maximum peak current | A | 8/30 | 8/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 2,000 | 2,000 |
| Rated load in AC15 (230 VAC) | VA | 400 | 400 |
| Single phase motor rating (230 VAC) | kW | 0.185 | 0.185 |
| Breaking capacity in DC1: | 30/110/220V A | 8/0.5/0.2 | 8/0.5/0.2 |
| Minimum switching load | mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | | AgCdO | AgCdO |

Supply specifications

| | | | |
|-------------------|---------------|-----------------------------|----------------------------|
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...48 | 24...48 |
| Rated power AC/DC | VA (50Hz)/W | 5/0.5 | 5/0.5 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.2) U _N | (0.85...1.2)U _N |

Technical data

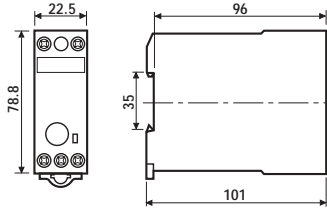
| | | | |
|--------------------------------------|--------|---------------------|---------------------|
| Specified time range | | See page 123 | See page 123 |
| Repeatability | % | ± 0.2 | ± 0.2 |
| Recovery time | ms | 50 | 50 |
| Minimum control impulse | ms | — | — |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range | °C | -20...+60 | -20...+60 |
| Protection category | | IP 20 | IP 20 |

Approvals: (according to type)

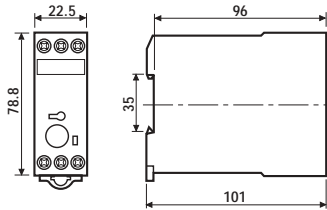

GOST



- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



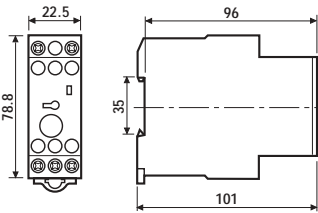
87.31



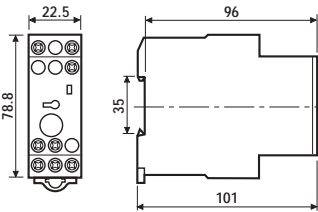
87.41

| | 87.31 | 87.41 |
|--|--|---|
| | | |
| | <ul style="list-style-type: none"> - Mono-function - 35 mm rail mounting | <ul style="list-style-type: none"> - Mono-function - 35 mm rail mounting |
| | <p>SW: Symmetrical recycler: ON start</p> <div style="text-align: center;"> <p>wiring diagram (without signal START)</p> </div> | <p>BE: Signal OFF delay</p> <div style="text-align: center;"> <p>wiring diagram (with signal START)</p> </div> |
| Contact specifications | | |
| Contact configuration | 1 CO | 1 CO |
| Rated current/Maximum peak current A | 8/30 | 8/30 |
| Rated voltage/Maximum switching voltage V AC | 250/400 | 250/400 |
| Rated load in AC1 VA | 2,000 | 2,000 |
| Rated load in AC15 (230 VAC) VA | 400 | 400 |
| Single phase motor rating (230 VAC) kW | 0.185 | 0.185 |
| Breaking capacity in DC1: 30/110/220V A | 8/0.5/0.2 | 8/0.5/0.2 |
| Minimum switching load mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | AgCdO | AgCdO |
| Supply specifications | | |
| Nominal voltage V AC(50/60Hz) | 24...240 | 24...240 |
| V DC | 24...48 | 24...48 |
| Rated power AC/DC VA (50Hz)/W | 5/0.5 | 5/0.5 |
| Operating range AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| DC | (0.85...1.2) U _N | (0.85...1.2)U _N |
| Technical data | | |
| Specified time range | See page 123 | See page 123 |
| Repeatability % | ± 0.2 | ± 0.2 |
| Recovery time ms | 50 | 50 |
| Minimum control impulse ms | — | 50 |
| Setting accuracy-full range % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range °C | -20...+60 | -20...+60 |
| Protection category | IP 20 | IP 20 |
| Approvals: (according to type) | GOST | |

- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



87.61



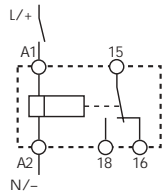
87.62

87.61



- 1 pole
- Mono-function
- 35 mm rail mounting

BI: True OFF delay



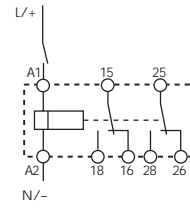
wiring diagram
(without signal START)

87.62



- 2 pole
- Mono-function
- 35 mm rail mounting

BI: True OFF delay



wiring diagram
(without signal START)

Contact specifications

| | | |
|--|------------|------------|
| Contact configuration | 1 CO | 2 CO |
| Rated current/Maximum peak current A | 5/10 | 5/10 |
| Rated voltage/Maximum switching voltage V AC | 250/400 | 250/400 |
| Rated load in AC1 VA | 1,250 | 1,250 |
| Rated load in AC15 (230 VAC) VA | 250 | 250 |
| Single phase motor rating (230 VAC) kW | 0.125 | 0.125 |
| Breaking capacity in DC1: 30/110/220V A | 5/0.5/0.2 | 5/0.5/0.2 |
| Minimum switching load mW(V/mA) | 300 (10/5) | 300 (10/5) |
| Standard contact material | AgCdO | AgCdO |

Supply specifications

| | | | |
|-------------------------------|---------------|-----------------------------|----------------------------|
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...240 | 24...240 |
| Rated power AC/DC VA (50Hz)/W | | 1.5/1.5 | 1.5/1.5 |
| Operating range | AC | (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC | (0.85...1.2) U _N | (0.85...1.2)U _N |

Technical data

| | | | |
|---|--|---------------------|---------------------|
| Specified time range | | See page 123 | See page 123 |
| Repeatability % | | ± 1 | ± 1 |
| Recovery time ms | | 50 | 50 |
| Minimum control impulse ms | | 300 ms (A1 - A2) | 300 ms (A1 - A2) |
| Setting accuracy-full range % | | ± 5 | ± 5 |
| Electrical life at rated load in AC1 cycles | | 100·10 ³ | 100·10 ³ |
| Ambient temperature range °C | | -20...+60 | -20...+60 |
| Protection category | | IP 20 | IP 20 |

Approvals: (according to type)



GOST



ORDERING INFORMATION

Example: 87 series 8 A multi-function timer, 1 CO contact, with (24...240) V AC (50/60) Hz and (24...48) V DC supply.

| | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 8 | 7 | 0 | 1 | 0 | 2 | 4 | 0 | 0 | 0 | 0 |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|

Series —————

Type —————

0 = Multi-function (AI, BE, CE, DI, DE, EE, GI, SW, ON, OFF)
 1 = ON delay (AI)
 2 = ON pulse (DI)
 3 = Symmetrical recycler: ON start (SW)
 4 = Signal OFF delay (BE)
 6 = True OFF delay (power OFF) (BI)
 8 = Star - delta (SD)
 9 = Asymmetrical recycler (LI, LE, PI, PE)

Supply voltage
 240 = { 24...48 V DC
 24...240 V AC
 240 = 24...240 V AC/DC for 87.61 and 87.62

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

No. of poles
 1 = 1 pole
 2 = 2 pole for 87.02/62
 2 = 2 pole for 87.82

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|---|---------------------|--------------|
| ELECTROSTATIC DISCHARGE | - contact discharge | EN 61000-4-2 |
| | - air discharge | EN 61000-4-2 |
| 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 | 6 kV |
| SURGES (1.2/50 µs) on Supply terminals | - common mode | EN 61000-4-5 |
| | - differential mode | EN 61000-4-5 |
| 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

| | | | | |
|-------------------------------|--|--------------------------------|-----------------|----------------|
| SIGNAL CONTROL (B1) | - current absorption | 1 mA | | |
| | - max cable length (capacity of ≤ 10 nF / 100 m) | ≤ 250 m | | |
| POWER LOST TO THE ENVIRONMENT | | 87.01/02/11/21/31/41/91 | 87.61/62 | 87.82 |
| | - without contact current W | 5 | 1.5 | 8 |
| | - with rated current W | 15 | 7 | 18 |
| MAX WIRE SIZE | | solid cable | | stranded cable |
| | mm ² | 1x4 / 2x2.5 | | 1x4 / 2x1.5 |
| | AWG | 1x12 / 2x14 | | 1x12 / 2x16 |
| SCREW TORQUE | Nm | 1.2 | | |

87

TIME SCALES

NOTE: time scales and functions must be set before energising the timer.

| Type | Function Code | Function | s | s | s | min | min | min | h | h | h | h |
|-----------------|---------------|---|------|-------------|-----|-------------|------|-----|------|------|-----|----|
| | | | 0.05 | 0.15 | 0.5 | 0.05 | 0.15 | 0.5 | 0.05 | 0.15 | 0.5 | 3 |
| | | | 1 | 3 | 10 | 1 | 3 | 10 | 1 | 3 | 10 | 60 |
| 87.01/ | AI | ON delay | • | • | • | • | • | • | • | • | • | • |
| 87.02 | BE | Signal OFF delay | • | • | • | • | • | • | • | • | • | • |
| | CE | Signal ON and OFF delay | • | • | • | • | • | • | • | • | • | • |
| | DI | ON pulse | • | • | • | • | • | • | • | • | • | • |
| | DE | Signal ON pulse | • | • | • | • | • | • | • | • | • | • |
| | EE | Signal OFF pulse | • | • | • | • | • | • | • | • | • | • |
| | GI | Fixed pulse (0,5s) delayed | • | • | • | • | • | • | • | • | • | • |
| | SW | Symmetrical recycler: ON start | • | • | • | • | • | • | • | • | • | • |
| 87.11 | AI | ON delay | • | • | • | • | • | • | • | • | • | • |
| 87.21 | DI | ON pulse | • | • | • | • | • | • | • | • | • | • |
| 87.31 | SW | Symmetrical recycler: ON start | | | • | | | | | | | |
| 87.41 | BE | Signal OFF delay | • | • | • | • | • | • | • | • | • | • |
| 87.61/ 87.62 | BI | True OFF delay (power OFF) | | 0.15 2.5 | • | 0.07 1.3 | | • | | | | |
| 87.82 | SD | Star - delta ($T_{II} = \sim 60$ ms) | | | | • | | | | | | |
| 87.91 | LI | Asymmetrical recycler (ON starting) | • | • | • | • | • | • | • | • | • | • |
| | LE | Signal asymmetrical recycler (ON starting) | • | • | • | • | • | • | • | • | • | • |
| | PI | Asymmetrical recycler (OFF starting) | • | • | • | • | • | • | • | • | • | • |
| | PE | Signal asymmetrical recycler (OFF starting) | • | • | • | • | • | • | • | • | • | • |

FUNCTIONS

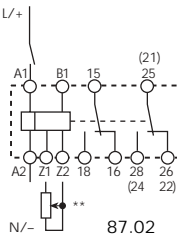
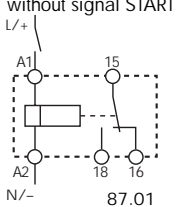
| | LED** Green | Timing | NO output contact | Timed | | Contacts | | |
|---------------------------|----------------|-------------|-------------------|---------------------|---------------------|------------|------------------------|----------|
| | | | | Open | Closed | DIP switch | Instantaneous* Open | Closed |
| U = Supply Voltage | | None | Open | 15 - 18 25 - 28* | 15 - 16 25 - 26* | Up | 21 - 24* | 21 - 22* |
| S = Signal switch | | In progress | Open | 15 - 18 25 - 28* | 15 - 16 25 - 26* | | 21 - 22* | 21 - 24* |
| C = Output Contact | | In progress | Closed | 15 - 16 25 - 26* | 15 - 18 25 - 28* | | 21 - 22* | 21 - 24* |
| | | None | Closed | 15 - 16 25 - 26* | 15 - 18 25 - 28* | Down | 21 - 22* | 21 - 24* |

* 25-26-28 only for type 87.02 with 2 timed contacts. 21-22-24 only for type 87.02 with 1 instantaneous contact + 1 timed positioning the front DIP switch. ** The LED on types 87.61 and 87.62 is illuminated when supply voltage is supplied to timer.

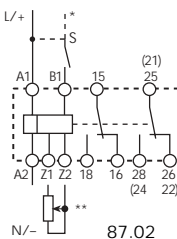
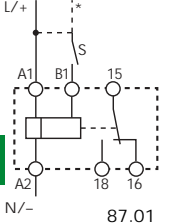
Without signal Start= Start via contact in supply line (A1). With signal Start = Start via contact into control terminal (B1).

Wiring diagram

Multi-function without signal START



with signal START



* A voltage other than the supply voltage can be applied to the command START (B1).
Example:
A1 - A2 = 230 V AC/
B1 - A2 = 24 V AC

** Type 87.02: regulated using an external potentiometer (10 kΩ · 0.25 W).

NB.: remove link between Z1-Z2 and position the Timer potentiometer on "zero".

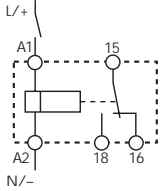
| | |
|--|--|
| <p>Type 87.01 87.02</p> | <p>(AI) ON delay. Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.</p> |
| | <p>(DI) ON pulse. Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.</p> |
| | <p>(GI) Fixed pulse (0.5s) delayed. Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs after a fixed time of 0.5s. 0.5s.</p> |
| | <p>(SW) Symmetrical recycler: ON start. 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).</p> |
| | <p>(BE) Signal OFF delay. Power is permanently 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.</p> |
| | <p>(CE) Signal ON and OFF delay. Power is permanently 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.</p> |
| | <p>(DE) Signal ON pulse. Power is permanently 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.</p> |
| | <p>(EE) Signal OFF pulse. Power is permanently 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.</p> |
| | <p>Permanently ON. Selecting the function ON when power is applied to the relay the first contact transfers immediately and remains in that position.</p> |
| <p>Permanently OFF. The contact returns to the original position when the OFF function is selected.</p> | |

FUNCTIONS

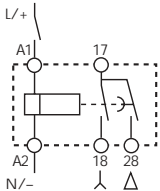
Wiring diagram

Monofunction

without signal START

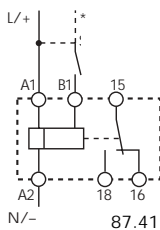


- 87.11
- 87.21
- 87.31
- 87.61



87.62

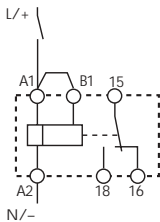
with signal START (S)



87.41

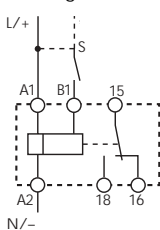
Asymmetrical recycler

without signal START



87.91

with signal START (S)

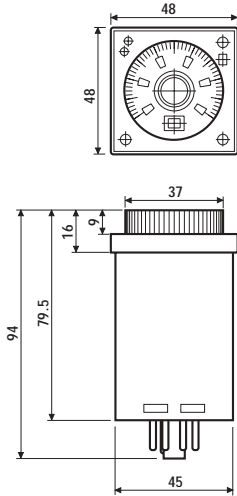


87.91

| Type | U | c | Symbol | Description |
|--------------|---|---|--------|--|
| 87.11 | | | (AI) | ON delay. Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed. |
| 87.21 | | | (DI) | ON pulse. Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset. |
| 87.31 | | | (SW) | Symmetrical recycler: ON start. 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). |
| 87.61 | | | (BI) | True OFF delay (power OFF). Apply power to timer (minimum 300ms). Output contacts transfer immediately. Removal of power initiates the preset delay, after which time the output contacts reset. |
| 87.82 | | | (SD) | Star - delta. Apply power to timer. The star contact (λ) closes immediately. After preset delay has elapsed the star contact (λ) resets. After a further fixed time of ~60 ms the delta contact (Δ) closes and remains in that position, until reset on power off. |
| 87.41 | | | (BE) | Signal OFF delay. Power is permanently 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. |

| | | | | |
|--------------|-----------------|--|------|--|
| 87.91 | switch position | | (LI) | Asymmetrical recycler (ON starting). 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. |
| | switch position | | (PI) | Asymmetrical recycler (OFF starting). 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. |
| | switch position | | (LE) | Signal asymmetrical recycler (ON starting) Power is permanently applied to the timer. Closing Signal Switch (S) causes the output contacts to transfer immediately and cycle between ON and OFF, until opened. |
| | switch position | | (PE) | Signal asymmetrical recycler (OFF starting). Power is permanently applied to the timer. Closing the Signal Switch (S) initiates delay T1 after which the output contacts transfer and continue to cycle between OFF and ON, until the Signal Switch is opened. |

- 8 - 11 pin plug-in version available
- Multi-voltage and multi-function versions available
- Time scales from 0.05s to 100h
- "1 delayed contact + 1 instantaneous contact" version available (type 88.12)
- Sockets: 90 series



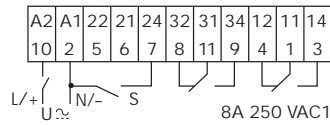
88.02



- Multi-function
- 11 pin
- Plug-in for use with 90 series sockets

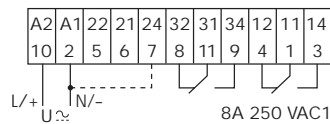
AE: Signal ON delay
BE: Signal OFF delay
DE: Signal ON pulse

with signal START



AI: ON delay
HI: ON pulse
SW: Symmetrical recycle: ON start

without signal START



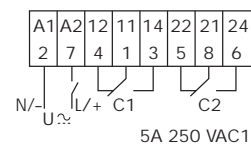
88.12



- Multi-function
- 8 pin, 2 timed contacts or 1 timed + 1 instantaneous contact
- Plug-in for use with 90 series sockets

AI a: ON Delay (2 timed contacts)
AI b: ON Delay (1 timed + 1 instantaneous contact)
DI a: ON Pulse (2 timed contacts)
DI b: ON Pulse (1 timed + 1 instantaneous contact)

without signal START



Contact specifications

| | | | |
|---|---------------|------------|------------|
| Contact configuration | | 2 CO | 2 CO |
| Rated current/Maximum peak current | A | 8/15 | 5/10 |
| Rated voltage/Maximum switching voltage | V AC | 250/250 | 250/400 |
| Rated load in AC1 | VA | 2,000 | 1,250 |
| Rated load in AC15 (230 VAC) | VA | 400 | 250 |
| Single phase motor rating (230 VAC) | kW | 0.3 | 0.125 |
| Breaking capacity in DC1: | 30/110/220V A | 8/0.3/0.12 | 5/0.3/0.12 |
| Minimum switching load | mW(V/mA) | 300 (5/5) | 500 (5/5) |
| Standard contact material | | AgNi | AgCdO |

88

Supply specifications

| | | | |
|-------------------|---------------|----------------------|--------------------|
| Nominal voltage | V AC(50/60Hz) | 24...230 | 24...230 |
| | V DC | 24...230 | 24...48 |
| Rated power AC/DC | VA (50Hz)/W | 3.5 (230 V)/1 (24 V) | 9 (230 V)/1 (24 V) |
| Operating range | AC | 20.4...264.5 | 20.4...264.5 |
| | DC | 20.4...264.5 | 20.4...55.2 |

Technical data

| | | | |
|--------------------------------------|--------|---|---------------------|
| Specified time range | | (0.05s...5h) - (0.05s...10h) - (0.05s...50h) - (0.05s...100h) | |
| Repeatability | % | ± 1 | ± 1 |
| Recovery time | ms | 300 | 200 |
| Minimum control impulse | ms | 50 | — |
| Setting accuracy-full range | % | ± 3 | ± 3 |
| Electrical life at rated load in AC1 | cycles | 100·10 ³ | 100·10 ³ |
| Ambient temperature range | °C | -10...+55 | -10...+55 |
| Protection category | | IP 40 | IP 40 |

Approvals: (according to type)



ORDERING INFORMATION

Example: 88 series multi-function timer, 2 CO contact 8 A, with (24...230) V AC (50/60) Hz and (24...230) V DC supply.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Series | 8 | 8 | . | 0 | 2 | . | 0 | . | 2 | 3 | 0 | . | 0 | 0 | 0 | 0 |
| Type | | | | | | | | | | | | | | | | |
| 0 = Functions AI, SW, AE, BE, DE, HI | | | | | | | | | | | | | | | | |
| 1 = Functions AI a, AI b, DI a, DI b | | | | | | | | | | | | | | | | |
| No. of poles | | | | | | | | | | | | | | | | |
| 2 = 2 pole | | | | | | | | | | | | | | | | |
| Supply voltage | | | | | | | | | | | | | | | | |
| 230 = { 24...230 V AC (for type 88.12) | | | | | | | | | | | | | | | | |
| { 24...48 V DC (for type 88.12) | | | | | | | | | | | | | | | | |
| 230 = 24...230 V AC/DC (for type 88.02) | | | | | | | | | | | | | | | | |
| Supply version | | | | | | | | | | | | | | | | |
| 0 = AC (50/60 Hz)/DC | | | | | | | | | | | | | | | | |

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|---|---------------------|--------------|
| ELECTROSTATIC DISCHARGE | - contact discharge | EN 61000-4-2 |
| | - air discharge | EN 61000-4-2 |
| 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 | 2 kV/5 kV |
| SURGES (1.2/50 µs) on Supply terminals | - common mode | EN 61000-4-5 |
| | - differential mode | EN 61000-4-5 |
| RADIO-FREQUENCY COMMON MODE (0.15 ÷ 80 MHz) on Supply terminals | EN 61000-4-6 | 3 V |

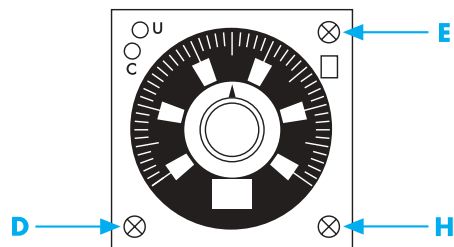
TIME SCALES

END SCALE

| | s | min | h | x10 h |
|------------|-------|---------|-------|-------|
| 0.5 | 0.5 s | 0.5 min | 0.5 h | 5 h |
| 1 | 1 s | 1 min | 1 h | 10 h |
| 5 | 5 s | 5 min | 5 h | 50 h |
| 10 | 10 s | 10 min | 10 h | 100 h |

TIME SCALES AND FUNCTIONS SELECTION

| | | 88.02 | 88.12 |
|----------|------------------------------|------------------------|------------------------|
| E | Function selector | AE, AI, BE, DE, HI, SW | AI a, AI b, DI a, DI b |
| D | Time scale selector | 0.5, 1, 5, 10 | 0.5, 1, 5, 10 |
| H | Unit of time selector | s, min, h, 10h | s, min, h, 10h |



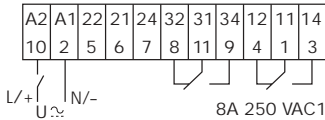
FUNCTIONS

U = Supply Voltage
S = Signal switch
C = Output Contact

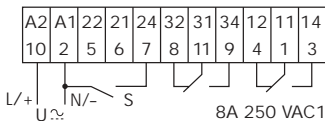
Without signal Start= Start via contact in supply line (A1).
 With signal Start = Start via contact into control terminal (7/24).

Wiring diagram

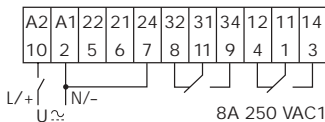
without signal START



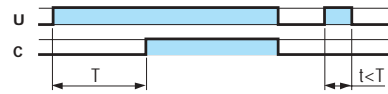
with signal START



without signal START



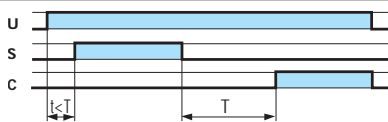
Type 88.02



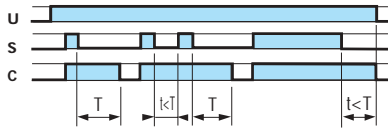
(AI) ON delay.
 Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.



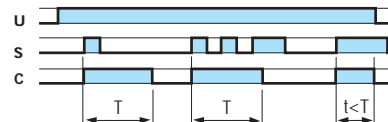
(SW) Symmetrical recycler: ON start.
 Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).



(AE) ON delay.
 When power is applied, the timer will function as an ON delay except when the Signal Switch (S) is closed which will force the output and the timing process into the reset condition.



(BE) Signal OFF delay.
 Power is permanently 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.



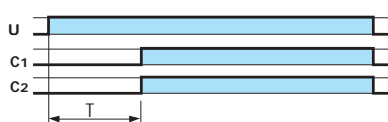
(DE) Signal ON pulse.
 Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.



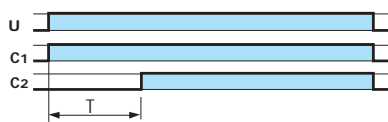
(HI) ON pulse.
 Apply power to timer. Output contacts transfer immediately. After preset time has elapsed, contacts reset.

N.B. Ensure a fixed connection between Terminals 2 and 7.

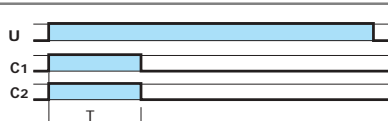
Type 88.12



(AI a) ON Delay (2 timed contacts).
 Apply power to timer. Contacts (C₁ and C₂) transfer after preset time has elapsed. Reset occurs when power is removed.



(AI b) ON Delay (1 timed contact + 1 instantaneous contact).
 Apply power to timer. Output contact (C₁) transfers immediately. Contact (C₂) transfers after the preset time has elapsed. Reset occurs when power is removed.



(DI a) ON pulse (2 timed contacts).
 Apply power to timer. Output contacts (C₁ and C₂) transfer immediately. After preset time has elapsed, the contacts reset.



(DI b) ON pulse (1 timed contact + 1 instantaneous contact).
 Apply power to timer. Output contacts (C₁ and C₂) transfer immediately. After preset time has elapsed, the contact (C₂) resets. Contact (C₁) resets when power is removed.



90.21

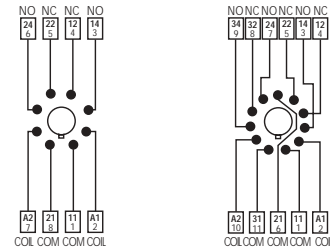
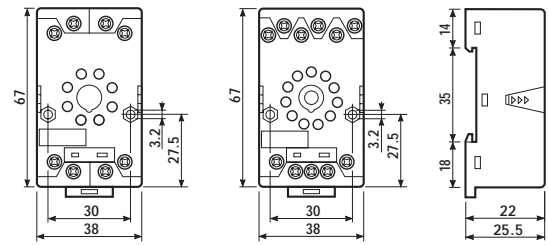
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.5 Nm
- WIRE STRIP LENGTH: 10 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x6 / 2x2.5 | 1x6 / 2x2.5 |
| AWG | 1x10 / 2x14 | 1x10 / 2x14 |

| Timer type | 88.12 | | 88.02 | |
|---|-------|---------|-------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | 90.20 | 90.20.0 | 90.21 | 90.21.0 |



90.20

90.21



90.26

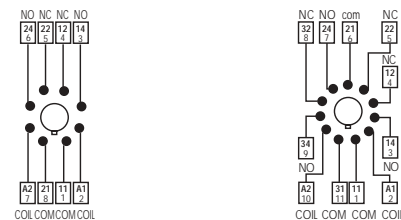
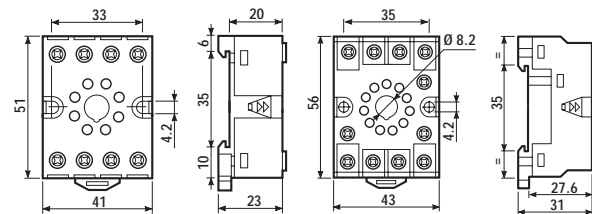
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- WIRE STRIP LENGTH: 11 mm
- MAX WIRE SIZE:

| | solid wire | stranded wire |
|-----------------|-------------|---------------|
| mm ² | 1x4 / 2x2.5 | 1x4 / 2x2.5 |
| AWG | 1x12 / 2x14 | 1x12 / 2x14 |

| Timer type | 88.12 | | 88.02 | |
|---|-------|---------|-------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | 90.26 | 90.26.0 | 90.27 | 90.27.0 |



90.26

90.27



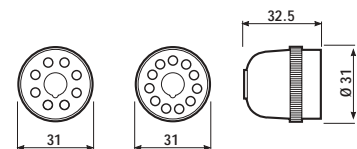
90.13.4

Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C



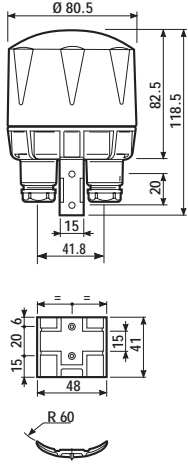
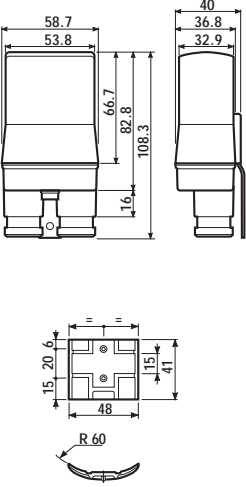






| Timer type | 88.12 | | 88.02 | |
|--|-------|---------|-------|---------|
| Colour | BLUE | BLACK | BLUE | BLACK |
| Sockets 8-11 pin backwired with solder terminals | — | 90.12.4 | — | 90.13.4 |



90.12.4

90.13.4

- A range of light dependent relays with 1 or 2 NO contacts
- Pole or flange mounting
- Double break (phase + neutral) type available (type 10.32)
- Sensitivity adjustment from 1 to 50 lux

| | 10.32 | 10.41 |
|---|---|--|
| |  |  |
| | - 2 NO, 16 A - Pole mount | - 1 NO, 12 A - Pole mount |
| |  |  |
| Contact specifications | | |
| Contact configuration | 2 NO | 1 NO |
| Rated current/Max. peak current A | 16/30 (100 A · 5 ms) | 12/25 (100 A · 5 ms) |
| Rated voltage/Max. switching voltage V AC | 230/— | 230/— |
| Rated load in AC1 VA | 3,700 | 2,800 |
| Rated load in AC15 (230 VAC) VA | 700 | 600 |
| Nominal lamp rating: incandescence (230V) W | 2,000 | 1,200 |
| compensated fluorescent (230V) W | 750 | 420 |
| uncompensated fluorescent (230V) W | 1,000 | 600 |
| halogens (230V) W | 2,000 | 1,200 |
| Minimum switching load mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Supply specifications | | |
| Nominal voltage V AC (50/60Hz) | 230 | 230 |
| V DC | — | — |
| Rated power AC/DC VA (50Hz)/W | 2.5/— | 2/— |
| Operating range AC (50Hz) | (0.85...1.1)U _N | (0.8...1.1)U _N |
| DC | — | — |
| Technical data | | |
| Electrical life at rated load in AC1 cycles | 100 · 10 ³ | 100 · 10 ³ |
| Threshold setting lx | 1...80 (switching ON) | 1...80 (switching ON) |
| lx | 2...150 (switching OFF) | 2...150 (switching OFF) |
| Delay time: switching ON/OFF s | 6/25 | 15/25 |
| Ambient temperature range °C | -30...+70 | -30...+70 |
| Protection category | IP 54 | IP 54 |
| Approvals: (according to type) |    |    |

10

ORDERING INFORMATION

Example: a 10 series light dependent relay with 1 NO - 12 A contact and screw terminal connections, with 230 V AC supply.

| | | |
|--|--|--|
| | 1 0 . 4 1 . 8 . 2 3 0 . 0 0 0 0 | |
| Series | 1 0 | |
| Type | 4 1 | |
| 3 = Pole mount - 2 NO 4 = Pole mount - 1 NO | | |
| No. of poles | 8 . 2 | |
| 1 = Single phase switch 1 NO, 12 A 2 = Double phase switch 2 NO, 16 A | | |
| | | Supply voltage 230 = 230 V |
| | | Supply version 8 = AC (50/60 Hz) |

TECHNICAL DATA

INSULATION

10.32

10.41

| | | | |
|--|------|-------|-------|
| DIELECTRIC STRENGTH - between open contacts | V AC | 1,000 | 1,000 |
|--|------|-------|-------|

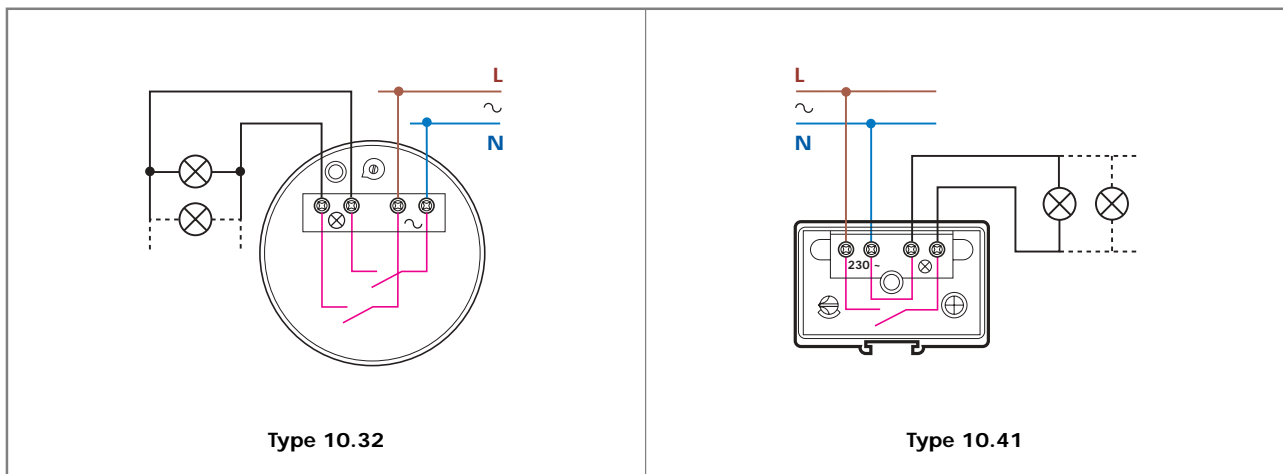
OTHER DATA

10.32

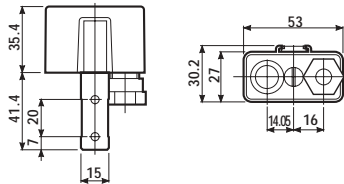
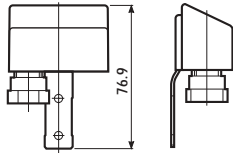
10.41

| | | | | | |
|------------------|-----------------|-----------------------------|----------------|----------------------------|----------------|
| CABLE GRIP | Ø mm | (8.9...13) | | (8.9...13) | |
| PRESET THRESHOLD | lx | 5 switch ON / 20 switch OFF | | 3 switch ON / 8 switch OFF | |
| MAX WIRE SIZE | mm ² | solid cable | stranded cable | solid cable | stranded cable |
| | | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x6 / 2x4 | 1x6 / 2x2.5 |
| | | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x10 / 2x12 |
| ⊕ SCREW TORQUE | Nm | 1.2 | | 1.2 | |

WIRING DIAGRAMS



- Type 11.01 is suitable for use on staircases and in entrance halls.
- Selector with 3 positions:**
 - **high range** (threshold setting 20...1000lx)
 - **low range** (threshold setting 1...30lx)
 - **continuous light** (particularly interesting for the Test at the first installation).
- Type 11.71: with 1 CO contact and with 12...24 VAC/DC voltage supply.
- SELV separation between contact and supply circuit.
- Supplied with separate sensitive photocell.
- LED indication.
- 35 mm rail (EN 50022) mount.



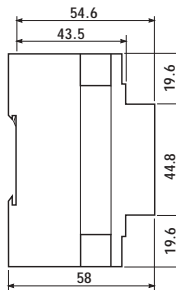
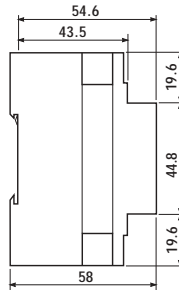
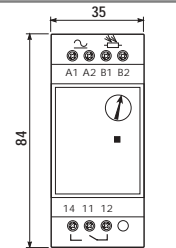
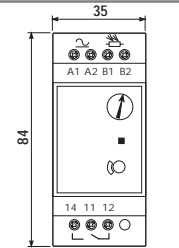
011.00
Sensitive photocell

11.01

11.71



- 1 pole
 - 35 mm rail mount
 - "zero hysteresis"
- 1 pole
 - 35 mm rail mount
 - low voltage version available



| Contact specifications | | 11.01 | 11.71 |
|--|-------------------|---------------------------|------------------------------|
| Contact configuration | | 1 CO | 1 CO |
| Rated current/Max. peak current | A | 16/30 (100 A · 5 ms) | 16/30 (100 A · 5 ms) |
| Rated voltage/Max. switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 4,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 |
| Nominal lamp rating: incandescence (230V) | W | 2,000 (NO contact) | 2,000 (NO contact) |
| compensated fluorescent (230V) | W | 550 (NO contact) | 550 (NO contact) |
| uncompensated fluorescent (230V) | W | 1,000 (NO contact) | 1,000 (NO contact) |
| halogens (230V) | W | 2,000 (NO contact) | 2,000 (NO contact) |
| Minimum switching load | mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgSnO ₂ | AgSnO ₂ |
| Supply specifications | | 11.01 | 11.71 |
| Nominal voltage | V DC/AC (50/60Hz) | — | 12...24 |
| | V AC (50/60Hz) | 230 | 110...125 230...240 |
| Rated power AC/DC | VA (50Hz)/W | 2/— | 1.3/0.8 |
| Operating range | DC/AC (50Hz) | — | (9.6...33.6) V |
| | AC (50Hz) | (0.8...1.1)U _N | (88...137) V (184...264) V |
| Technical data | | 11.01 | 11.71 |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Threshold setting | lx | 1...30 (low range) | 1...100 (switching ON) |
| | lx | 20...1,000 (high range) | 2...150 (switching OFF) |
| Delay time: switching ON/OFF | s | 15/25 | 15/25 |
| Ambient temperature range | °C | -20...+50 | -20...+60 |
| Protection category: light dependent relay/photocell | | IP 20/IP 54 | IP 20/IP 54 |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

Example: a 11 series light dependent relay "zero hysteresis" with 1 CO - 16 A contact and 35 mm rail mounting, with 230 V AC supply.

1 1 . 0 1 . 8 . 2 3 0 . 0 0 0 0

Series

Type

0 = 35 mm rail (EN 50022) mounting, "zero hysteresis"
7 = 35 mm rail (EN 50022) mounting

No. of poles

1 = 1 pole

Supply voltage

024 = 12...24 V AC/DC for 11.71 only
125 = 110...125 V AC for 11.71 only
230 = 230...240 V AC for 11.71 only
230 = 230 V AC for 11.01 only

Supply version

0 = AC (50/60 Hz)/DC for 11.71.0.240 only
8 = AC (50/60 Hz)

TECHNICAL DATA

| INSULATION | | 11.01 | | 11.71 | |
|--|-----------------|-------------|----------------|-------------|----------------|
| DIELECTRIC STRENGTH | | | | | |
| - between supply and contacts | V AC | 4,000 | | 4,000 | |
| - between open contacts | V AC | 1,000 | | 1,000 | |
| OTHER DATA | | 11.01 | | 11.71 | |
| CABLE GRIP of SENSITIVE PHOTOCELL Ø mm | | (7.5...9) | | (7.5...9) | |
| PRESET THRESHOLD lx | | 10 | | 100 | |
| POWER LOST TO THE ENVIRONMENT | | | | | |
| - without contact current | W | 1.3 | | 0.8 | |
| - with rated current | W | 3.1 | | 2 | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x6 / 2x4 | 1x6 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x10 / 2x12 | 1x10 / 2x14 |
| ⊕ SCREW TORQUE | Nm | 0.8 | | 0.8 | |

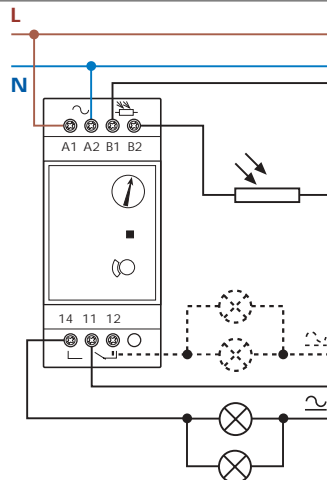
WIRING DIAGRAMS

Type 11.01

RED LED indication:

Blinking = power ON,
relay OFF

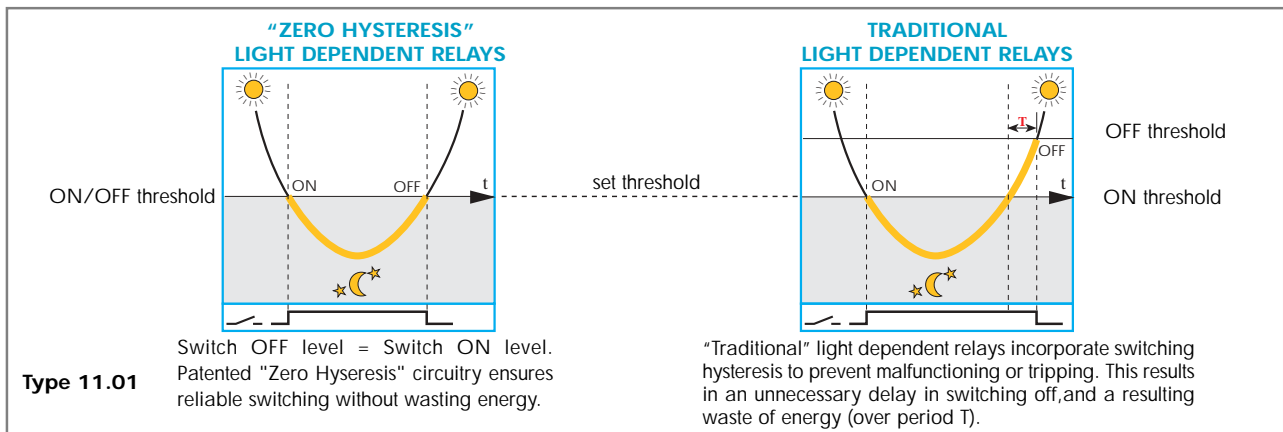
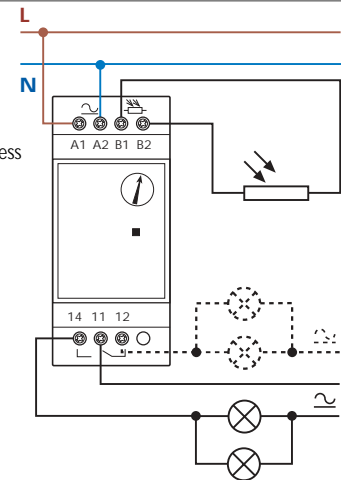
Continuous = power ON,
relay ON



Type 11.71

RED LED indication:

Slow blinking = power ON,
relay OFF
Fast blinking = power ON,
timing in progress
Continuous = power ON,
relay ON

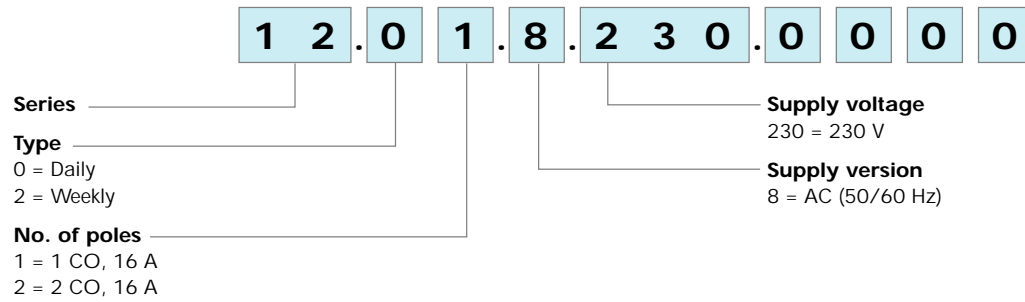


- Two types available:
 - type 12.01 - mechanical daily time switch
 - type 12.21/22 - digital weekly time switch
- 35.8 mm wide
- 35 mm rail (EN 50022) mount
- Internal battery for the set up without supply (type 12.21/22)
- Impulse function (1...59s) (type 12.21/22)

| | 12.01 | 12.21 | 12.22 |
|---|--|--|--|
| | | | |
| | - mechanical daily time switch - 1 CO - 35 mm rail mount | - digital weekly time switch - 1 CO - 35 mm rail mount | - digital weekly time switch - 2 CO - 35 mm rail mount |
| | | | |
| | | | |
| Contact specifications | | | |
| Contact configuration | 1 CO | 1 CO | 2 CO |
| Rated current/Max. peak current | A 16/— | A 16/30 | A 16/30 |
| Rated voltage/Max. switching voltage | V AC 250/— | V AC 250/— | V AC 250/— |
| Rated load in AC1 | VA 4,000 | VA 4,000 | VA 4,000 |
| Rated load in AC15 (230 VAC) | VA 750 | VA 750 | VA 750 |
| Nominal lamp rating: incandescence (230V) | W 2,000 (NO contact) | W 2,000 (NO contact) | W 2,000 (NO contact) |
| compensated fluorescent (230V) | W 750 (NO contact) | W 420 (NO contact) | W 420 (NO contact) |
| uncompensated fluorescent (230V) | W 1,000 (NO contact) | W 1,000 (NO contact) | W 1,000 (NO contact) |
| halogens (230V) | W 2,000 (NO contact) | W 2,000 (NO contact) | W 2,000 (NO contact) |
| Minimum switching load | mW(V/mA) 1,000 (10/10) | mW(V/mA) 1,000 (10/10) | mW(V/mA) 1,000 (10/10) |
| Standard contact material | AgCdO | AgCdO | AgCdO |
| Supply specifications | | | |
| Nominal voltage | V AC (50/60Hz) 230 | V AC (50/60Hz) 24 230 | V AC (50/60Hz) 230 |
| | V DC — | V DC 24 — | V DC — |
| Rated power AC/DC | VA (50Hz)/W 2/— | VA (50Hz)/W 1.4/1.4 2/— | VA (50Hz)/W 2/— |
| Operating range | AC (50Hz) (0.85...1.1)U _N | AC (50Hz) (0.9...1.1)U _N (0.85...1.1)U _N | AC (50Hz) (0.85...1.1)U _N |
| | DC — | DC (0.9...1.1)U _N — | DC — |
| Technical data | | | |
| Electrical life at rated load in AC1 | cycles 50 · 10 ³ | cycles 50 · 10 ³ | cycles 50 · 10 ³ |
| Type of time switch | daily | weekly | weekly |
| Programs | 48 switching point | 30 | 30 |
| Minimum interval setting | min 30 | min 1 | min 1 |
| Accuracy | s/day 1.5 | s/day 1.5 | s/day 1.5 |
| Ambient temperature range | °C -5...+55 | °C -10...+55 -5...+55 | °C -5...+55 |
| Protection category | IP 20 | IP 20 | IP 20 |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

Example: a 12 series, mechanical daily time switch, 1 CO - 16 A, supply voltage 230 V AC.



TECHNICAL DATA

INSULATION

12.01

12.21/12.22

| | | | |
|--|---|-------|-------|
| DIELECTRIC STRENGTH - between open contacts | V | 1,000 | 1,000 |
|--|---|-------|-------|

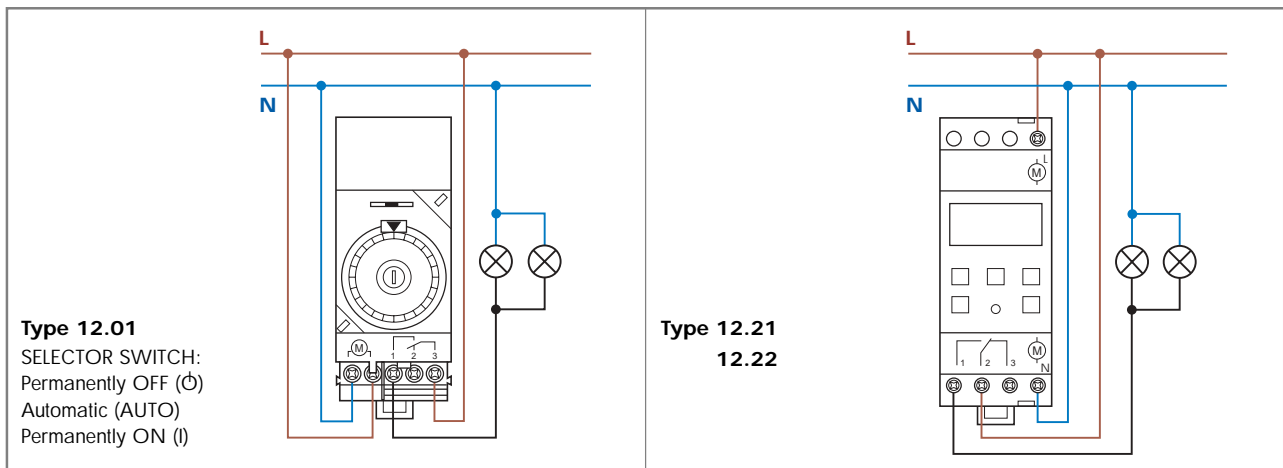
OTHER DATA

12.01

12.21/12.22

| | | | | | |
|-------------------------------|---------------------------|--------------------------------------|-----------------------------------|--------------------------|----------------|
| POWER BACK-UP | | 70 h after 80 h uninterrupted supply | 6 years after the first operation | | |
| POWER LOST IN THE ENVIRONMENT | - without contact current | W | 1.5 | 2 | |
| | - with rated current | W | 2.5 | 3 (1 CO) 4 (2 CO) | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x6 / 2x4 | 1x6 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x10 / 2x12 | 1x10 / 2x14 |
| SCREW TORQUE | Nm | 1.2 | 1.2 | | |

WIRING DIAGRAMS



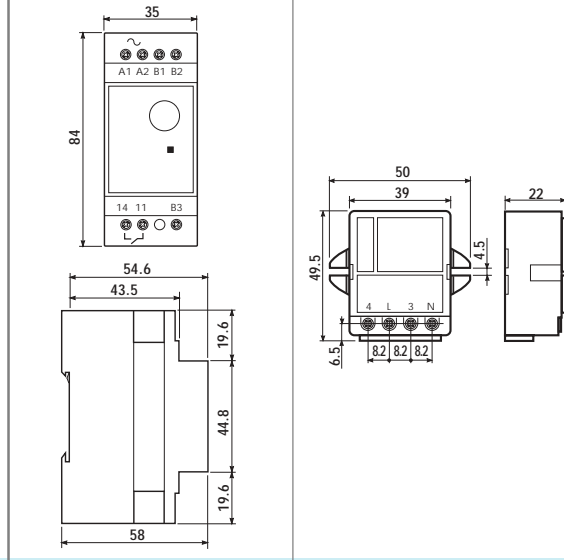
- Electronic step relays
- Control circuit can be used continuously
- Longer mechanical and electrical life, and much quieter than electromechanical step relays
- Suitable for SELV applications (according to IEC 364), type 13.01
- 35 mm rail (EN 50022) or flange mount

13.01

13.71



- | | |
|--|--|
| <ul style="list-style-type: none"> - Low voltage supply 12-24 V - Step or monostable relay - 35 mm rail mount | <ul style="list-style-type: none"> - 1 NO - Panel mount - Screw terminals |
|--|--|



| Contact specifications | | | |
|---|----------------------|-----------------------------|-----------------------------|
| Contact configuration | | 1 NO | 1 NO |
| Rated current/Max. peak current | A | 16/30 (100 A · 5 ms) | 10/20 (100 A · 5 ms) |
| Rated voltage/Max. switching voltage | V AC | 250/400 | 230/— |
| Rated load in AC1 | VA | 4,000 | 2,300 |
| Rated load in AC15 (230 VAC) | VA | 750 | 450 |
| Nominal lamp rating: incandescence (230V) | W | 2,000 | 1,000 |
| compensated fluorescent (230V) | W | 750 | 350 |
| uncompensated fluorescent (230V) | W | 1,000 | 500 |
| halogens (230V) | W | 2,000 | 1,000 |
| Minimum switching load | mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgSnO ₂ | AgSnO ₂ |
| Supply specifications | | | |
| Nominal voltage | V AC (50/60Hz) | 12-24-110...125 - 230...240 | 230 |
| | V DC | 12 - 24 | — |
| Rated power AC/DC | V AC (50Hz)/W | 2.5/2.5 | 1.5/— |
| Operating range | AC (50Hz) | (0.8...1.1)U _N | (0.85...1.15)U _N |
| | DC | (0.9...1.1)U _N | — |
| Technical data | | | |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Maximum impuls duration | | continuous | continuous |
| Dielectric strenght between: | open contacts V AC | 1,000 | 1,000 |
| | supply contacts V AC | 4,000 | — |
| Ambient temperature range | °C | -10...+60 | -10...+60 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | CE | CE |

13

ORDERING INFORMATION

Example: a 13 series, electronic step or monostable relay, 35 mm rail mount and 1 NO - 16 A contact, with 230 V AC supply.

1 3 . 0 1 . 8 . 2 3 0 . 0 0 0 0

Series

Type

0 = 35 mm rail (EN 50022) mount
7 = Panel mount

No. of poles

1 = Single phase switch 1 NO

Supply voltage

012 = 12 V AC/DC

024 = 24 V AC/DC

125 = 110...125 V AC

230 = 230...240 V AC

230 = 230 VAC (13.71 only)

Supply version

0 = AC (50/60 Hz)/DC (for 13.01.0.012 and 13.01.0.024 only)

8 = AC (50/60 Hz)

TECHNICAL DATA

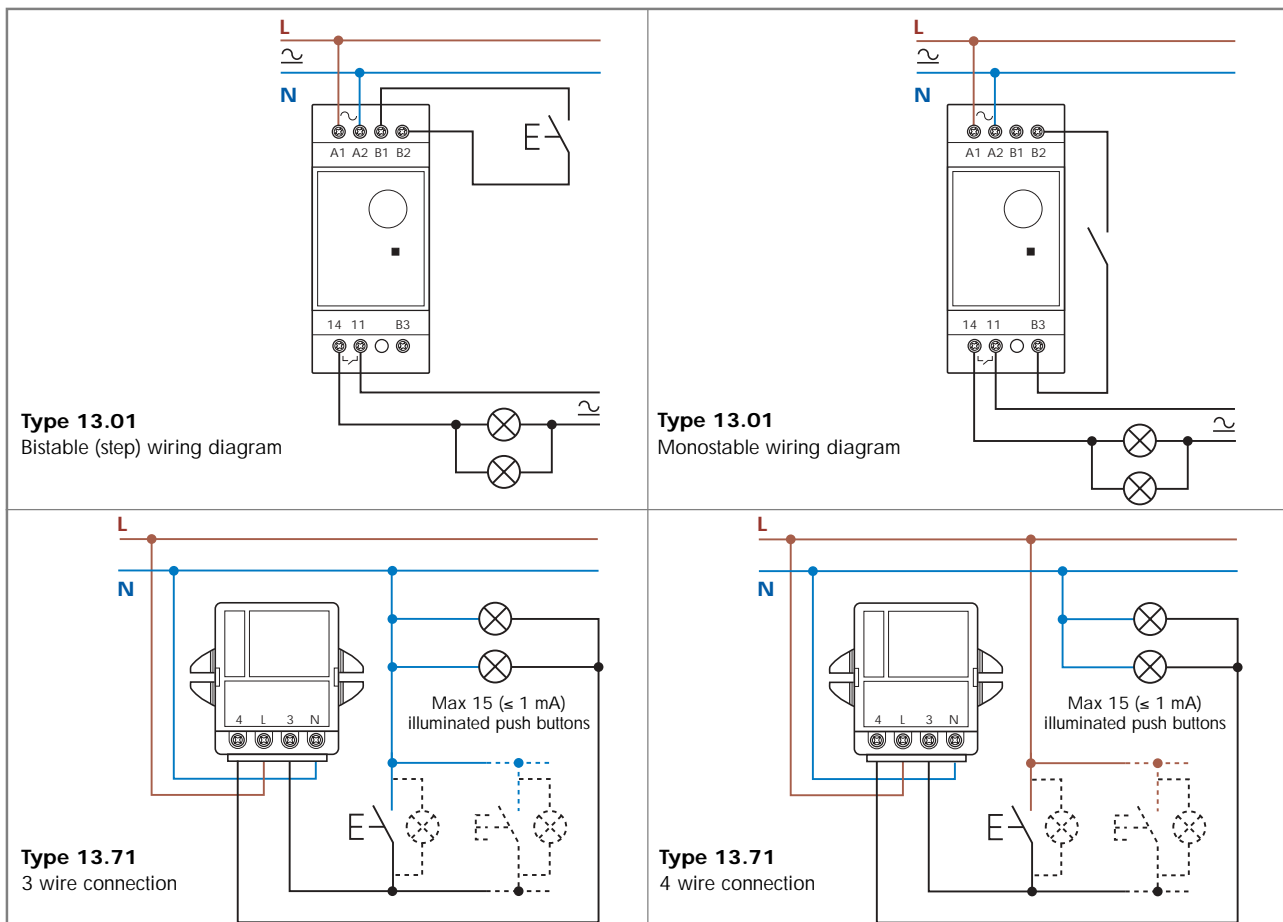
INSULATION

| | 13.01 | 13.71 |
|---|-------|-------|
| DIELECTRIC STRENGTH | | |
| - between control circuit and supply V AC | 4,000 | — |
| - between control circuit and contacts V AC | 4,000 | — |
| - between supply and contacts V AC | 4,000 | — |
| - between open contacts V AC | 1,000 | 1,000 |

OTHER DATA

| | 13.01 | 13.71 | | |
|-------------------------------|-------------|----------------|-------------|----------------|
| POWER LOST IN THE ENVIRONMENT | | | | |
| - without contact current W | 2.2 | 0.5 | | |
| - with rated current W | 3.5 | 2.9 | | |
| MAX WIRE SIZE | solid cable | stranded cable | solid cable | stranded cable |
| mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 |
| AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x12 / 2x14 | 1x14 / 2x14 |
| SCREW TORQUE Nm | 0.8 | | | |

WIRING DIAGRAMS



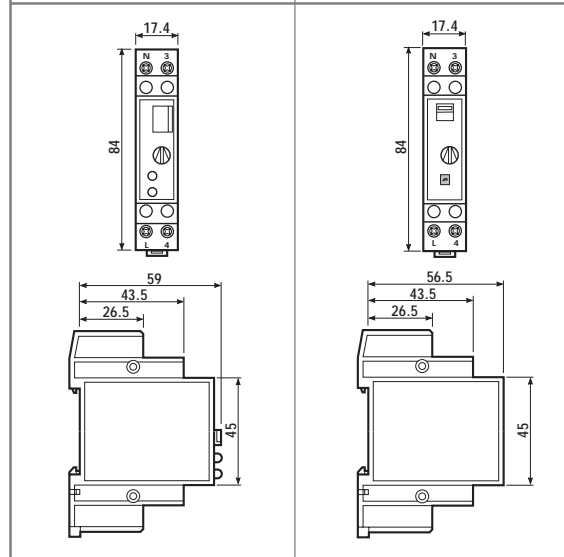
- One module (17.4 mm) wide
- Time range from 30 s to 20 min
- Can be used with illuminated push - buttons
- Suitable for 3 or 4 wiring systems
- LED indicators
- 35 mm rail (EN 50022) mount

14.01

14.71



- | | |
|--|--|
| <ul style="list-style-type: none"> - Multi-function - 1 NO - 35 mm rail mount | <ul style="list-style-type: none"> - For 3 or 4 wiring system - 1 NO - 35 mm rail mount |
|--|--|



| Contact specifications | | 14.01 | 14.71 |
|---|----------------|---------------------------|---------------------------|
| Contact configuration | | 1 NO | 1 NO |
| Rated current/Max. peak current | A | 16/30 (100 A · 5 ms) | 16/30 (100 A · 5 ms) |
| Rated voltage/Max. switching voltage | V AC | 230/— | 230/— |
| Rated load in AC1 | VA | 3,700 | 3,700 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 |
| Nominal lamp rating: incandescence (230V) | W | 2,000 | 2,000 |
| compensated fluorescent (230V) | W | 750 | 750 |
| uncompensated fluorescent (230V) | W | 1,000 | 1,000 |
| halogens (230V) | W | 2,000 | 2,000 |
| Minimum switching load | mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgSnO ₂ | AgSnO ₂ |
| Supply specifications | | 14.01 | 14.71 |
| Nominal voltage | V AC (50/60Hz) | 230 | 230 |
| | V DC | — | — |
| Rated power AC/DC | VA (50Hz)/W | 2/— | 1.5/— |
| Operating range | AC (50Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | — | — |
| Technical data | | 14.01 | 14.71 |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Delay setting | min | 0.5...20 | 0.5...20 |
| Max no. of illuminated push-button (≤1mA) | | 15 | 30 |
| Maximum impulse duration | | continuous | continuous |
| Ambient temperature range | °C | -10...+50 | -10...+60 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | CE GOST | NY NF |

ORDERING INFORMATION

Example: a 14 series single module relay with a single phase switch 1 NO - 16 A contact, with supply rated at 230 V AC.

1 4 . 0 1 . 8 . 2 3 0 . 0 0 0 0

Series

Type

0 = 35 mm rail (EN 50022) mount, multi-function
7 = 35 mm rail (EN 50022) mount

No. of poles

1 = Single phase switch, 16 A

Supply voltage

230 = 230 V

Supply version

8 = AC (50/60 Hz)

TECHNICAL DATA

INSULATION

14.01

14.71

| | | | | |
|-------------------------|------|-------|--|-------|
| DIELECTRIC STRENGTH | | | | |
| - between open contacts | V AC | 1,000 | | 1,000 |

OTHER DATA

14.01

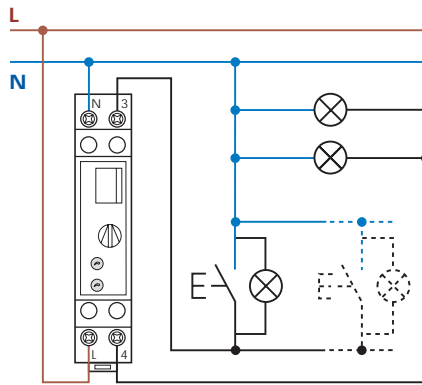
14.71

| | | | | | |
|-------------------------------|-----------------|-------------|----------------|-------------|----------------|
| POWER LOST IN THE ENVIRONMENT | | | | | |
| - without contact current | W | 1.3 | | 1 | |
| - with rated current | W | 3.3 | | 3.3 | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x6 / 2x4 | 1x4 / 2x2.5 | 1x6 / 2x4 | 1x4 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x12 / 2x14 | 1x10 / 2x12 | 1x12 / 2x14 |
| SCREW TORQUE | Nm | 0.8 | | 0.8 | |

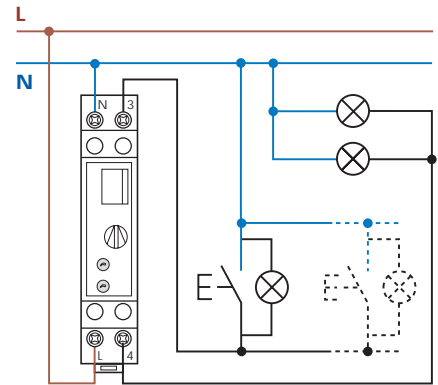
WIRING DIAGRAMS

Type 14.01

LED indication:
red = relay ON
green = power ON



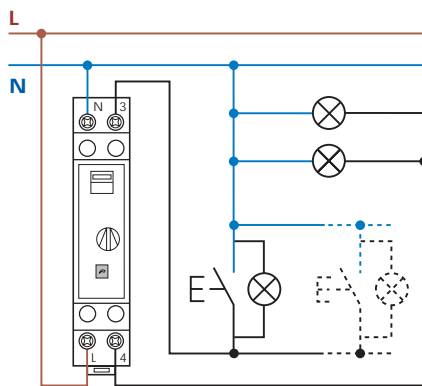
3 wire connection



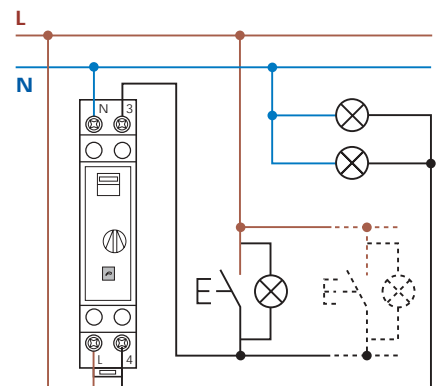
4 wire connection

Type 14.71

LED indication:
red = relay ON



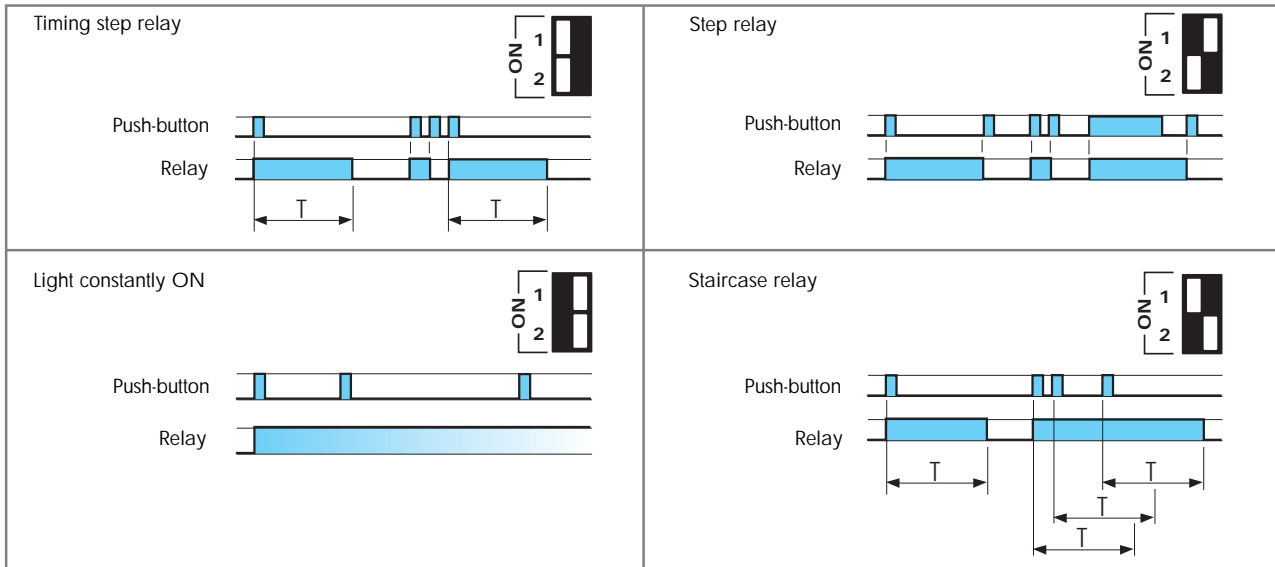
3 wire connection



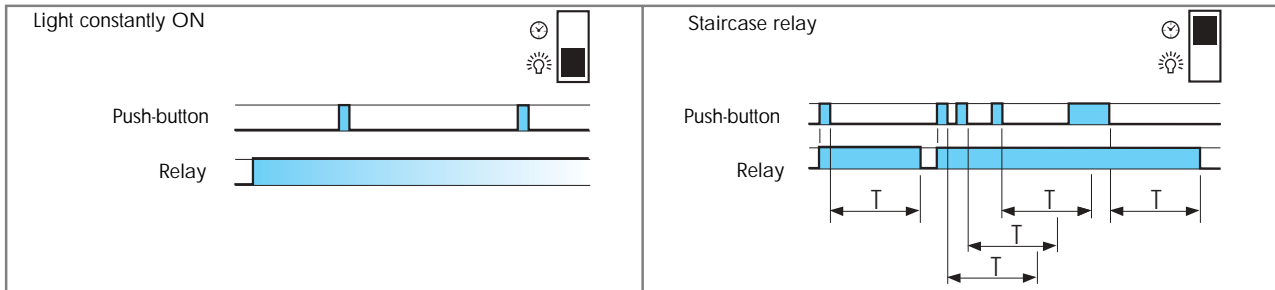
4 wire connection

FUNCTIONS

Type 14.01.8.230 The following functions are selected by means of a DIP SWITCH:



Type 14.71.8.230 The following functions are selected by means of a SELECTOR SWITCH:



1. When the DIP switch is changed from one position to another, the new function comes into effect immediately. It is not therefore necessary to operate the push button again.
2. The "light constantly ON" function can also be attained when the dip switch is set to the "staircase timer" setting. To do this, either keep the push-button pressed for the desired time or install a standard one-way switch in parallel to the push-button.

- One module (17.4mm) wide
- Test button with mechanical indicators
- 6 functions available
- AC and DC coils
- Identification label
- Possible to connect illuminated push buttons
- 35 mm rail (EN 50022) mount

20.21

20.22, 24, 26, 28

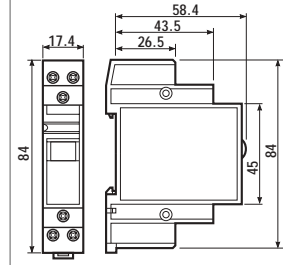
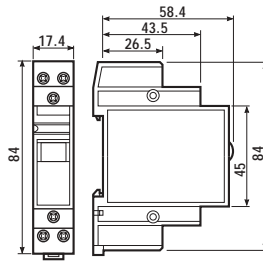
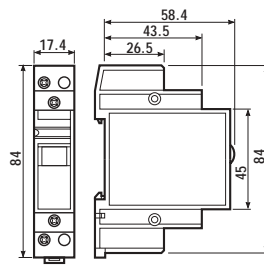
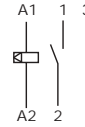
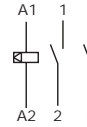
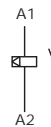
20.23



- Single phase switch 1 NO
- 35 mm rail mount

- Double phase switch
- 35 mm rail mount

- Double phase switch
1 NC + 1 NO
- 35 mm rail mount



| Contact specifications | | | | |
|---|----------------|--|----------------------------|----------------------------|
| Number of contacts | | 1 NO | 2 NO | 1 NC + 1 NO |
| Rated current/Max. peak current | A | 16/30 | 16/30 | 16/30 |
| Rated voltage/Max. switching voltage | V AC | 250/400 | 250/400 | 250/400 |
| Rated load in AC1 | VA | 4,000 | 4,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 | 750 |
| Nominal lamp rating: incandescence (230V) | W | 2,000 | 2,000 | 2,000 |
| compensated fluorescent (230V) | W | 750 | 750 | 750 |
| uncompensated fluorescent (230V) | W | 1,000 | 1,000 | 1,000 |
| halogens (230V) | W | 2,000 | 2,000 | 2,000 |
| Minimum switching load | mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgNi | AgNi | AgNi |
| Coil specifications | | | | |
| Nominal voltage | V AC (50/60Hz) | 8 - 12 - 24 - 48 - 110 - 120 - 230 - 240 | | |
| | V DC | 12 - 24 - 48 - 110 | 12 - 24 - 48 - 110 | 12 - 24 - 48 - 110 |
| Rated power AC/DC | VA (50Hz)/W | 5.5/5 | 5.5/5 | 5.5/5 |
| Operating range | AC | (0.85...1.1)U _N (50Hz)/(0.9...1.1)U _N (60Hz) | | |
| | V DC | (0.9...1.1)U _N | | |
| Technical data | | | | |
| Mechanical life | cycles | 300 · 10 ³ | 300 · 10 ³ | 300 · 10 ³ |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ | 100 · 10 ³ |
| Maximum impulse duration | | 1 h (according to EN60669) | 1 h (according to EN60669) | 1 h (according to EN60669) |
| Insulation between coil and contacts (1.2/50µs) | kV | 4 | 4 | 4 |
| Ambient temperature range | °C | -40...+40 | -40...+40 | -40...+40 |
| Protection category | | IP 20 | IP 20 | IP 20 |
| Approvals: (according to type) | | | | |

ORDERING INFORMATION

Example: a 20 series 35 mm rail (EN 50022) mount relay with double phase switch, 2 NO - 16 A contacts, coil rated at 12 V DC and with AgSnO₂ contacts.

2 0 . 2 2 . 9 . 0 1 2 . 4 0 0 0

Series

Type

2 = 35 mm rail (EN 50022) mount

No. of poles

1 = Single phase switch 1 NO

2 = Double phase switch 2 NO

3 = Double phase switch 1 NC + 1 NO

4 = 4 sequence double phase switch 2 NO

6 = 3 sequence double phase switch 2 NO

8 = 4 sequence double phase switch 2 NO

Contact material

0 = AgNi standard

4 = AgSnO₂

Coil voltage

see coil specifications

Coil version

8 = AC (50/60 Hz)

9 = DC

TECHNICAL DATA

INSULATION

| DIELECTRIC STRENGTH | | |
|-------------------------------|------|-------|
| - between supply and contacts | V AC | 3,500 |
| - between open contacts | V AC | 2,000 |
| - between adjacent contacts | V AC | 2,000 |

OTHER DATA

| POWER LOST TO THE ENVIRONMENT | | 20.21 | 20.22, 20.23, 20.24, 20.26, 20.28 | | |
|-------------------------------|-----------------|--------------------|-----------------------------------|-----------------------|----------------|
| - with rated current | W | 1.3 | 2.6 | | |
| MAX WIRE SIZE | | COIL CLAMPS | | CONTACT CLAMPS | |
| | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 | 1x6 / 2x4 | 1x4 / 2x2.5 |
| | AWG | 1x12 / 2x14 | 1x14 / 2x14 | 1x10 / 2x12 | 1x12 / 2x14 |
| SCREW TORQUE | Nm | 0.8 | | 0.8 | |

If the coil is operated for a prolonged period of time, adequate ventilation of the relays must be provided, for example leaving a gap of about 9mm between pairs of relays.

COIL SPECIFICATIONS

AC VERSION DATA

| Nominal voltage U _N | Coil code | Operating range | | Resistance R | Consumption I at U _N (50Hz) |
|--------------------------------|-----------|------------------|------------------|--------------|--|
| | | U _{min} | U _{max} | | |
| V | | V | V | Ω | mA |
| 8 | 8.008 | 6.8 | 8.8 | 4 | 800 |
| 12 | 8.012 | 10.2 | 13.2 | 7.5 | 550 |
| 24 | 8.024 | 20.4 | 26.4 | 27 | 275 |
| 48 | 8.048 | 40.8 | 52.8 | 106 | 150 |
| 110 | 8.110 | 93.5 | 121 | 590 | 64 |
| 120 | 8.120 | 102 | 132 | 680 | 54 |
| 230 | 8.230 | 195.5 | 253 | 2,500 | 28 |
| 240 | 8.240 | 204 | 264 | 2,700 | 27.5 |

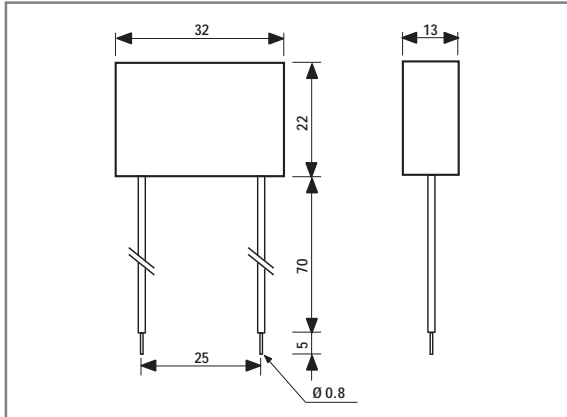
DC VERSION DATA

| Nominal voltage U _N | Coil code | Operating range | | Resistance R | Consumption I at U _N |
|--------------------------------|-----------|------------------|------------------|--------------|---------------------------------|
| | | U _{min} | U _{max} | | |
| V | | V | V | Ω | mA |
| 12 | 9.012 | 10.8 | 13.2 | 27 | 440 |
| 24 | 9.024 | 21.6 | 26.4 | 105 | 230 |
| 48 | 9.048 | 43.2 | 52.8 | 440 | 110 |
| 110 | 9.110 | 99 | 121 | 2,330 | 47 |

| TYPE | Number of steps | SEQUENCES | | | |
|-------|-----------------|-----------|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 20.21 | 2 | | | | |
| 20.22 | 2 | | | | |
| 20.23 | 2 | | | | |
| 20.24 | 4 | | | | |
| 20.26 | 3 | | | | |
| 20.28 | 4 | | | | |

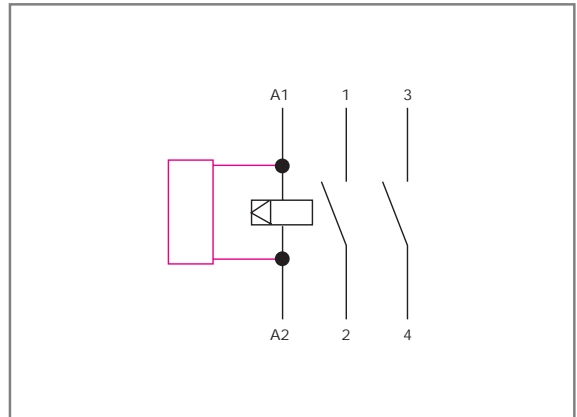
ACCESSORIES

MODULE FOR ILLUMINATED PUSH-BUTTONS



Type 026.00

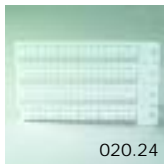
Sealed version, 7.5 cm insulated and flexible terminals.



Example of wiring diagram of type 026.00

This module is necessary if using up to a maximum of 15 illuminated pushbuttons (1.5 mA max, 230 V AC) in the switching input circuit. It must be connected in parallel to the coil of the relay (see diagram).

ACCESSORIES



Sheet of marker tags (24 tags)

020.24

- One module (17.4mm) wide
- Test button
- Identification label
- AC and DC coils
- 35 mm rail (EN 50022) mount

| | 22.21 | 22.22 |
|---|---|--|
| | | |
| | - Single phase switch 1 NO - 35 mm rail mount | - Double phase switch 2 NO - 35 mm rail mount |
| | | |
| | | |
| Contact specifications | | |
| Contact configuration | 1 NO | 2 NO |
| Rated current/Max. peak current | A 20/30 | A 20/30 |
| Rated voltage/Max. switching voltage | V AC 250/400 | V AC 250/400 |
| Rated load in AC1 | VA 5,000 | VA 5,000 |
| Rated load in AC15 (230 VAC) | VA 1,000 | VA 1,000 |
| Single phase motor rating (230 VAC) | kW — | kW — |
| Breaking capacity: 30/110/220 V | A 20/0.3/0.12 | A 20/0.3/0.12 |
| Minimum switching load | mW(V/mA) 1,000 (10/10) | mW(V/mA) 1,000 (10/10) |
| Standard contact material | AgNi | AgNi |
| Coil specifications | | |
| Nominal voltage | V AC (50/60Hz) 8 - 12 - 24 - 48 - 110 - 120 - 230 - 240 | V DC 12 - 24 - 48 - 110 |
| Rated power AC/DC | VA (50Hz)/W 2.3/1.25 | VA (50Hz)/W 2.3/1.25 |
| Operating range | AC (50Hz) (0.85...1.1)U _N | DC (0.9...1.1)U _N |
| | DC (0.9...1.1)U _N | DC (0.9...1.1)U _N |
| Technical data | | |
| Mechanical life | cycles 500 · 10 ³ | cycles 500 · 10 ³ |
| Electrical life at rated load in AC1 | cycles 50 · 10 ³ | cycles 50 · 10 ³ |
| Maximum impulse duration | continuous | continuous |
| Insulation between coil and contacts (1.2/50μs) | kV 4 | kV 4 |
| Ambient temperature range | °C -40...+40 | °C -40...+40 |
| Protection category | IP 20 | IP 20 |
| Approvals: (according to type) | | |

- One module (17.4mm) wide
- Test button
- Identification label
- AC and DC coils
- 35 mm rail (EN 50022) mount

| | 22.23 | 22.24 |
|---|--|--|
| | | |
| | <ul style="list-style-type: none"> - Double phase switch 1 NO + 1 NC - 35 mm rail mount | <ul style="list-style-type: none"> - Double phase switch 2 NC - 35 mm rail mount |
| | | |
| | | |
| Contact specifications | | |
| Contact configuration | 1 NO + 1 NC | 2 NC |
| Rated current/Max. peak current | A 20/30 | 20/30 |
| Rated voltage/Max. switching voltage | V AC 250/400 | 250/400 |
| Rated load in AC1 | VA 5,000 | 5,000 |
| Rated load in AC15 (230 VAC) | VA 1,000 | 1,000 |
| Single phase motor rating (230 VAC) | kW — | — |
| Breaking capacity: 30/110/220 V | A 20/0.3/0.12 | 20/0.3/0.12 |
| Minimum switching load | mW(V/mA) 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | AgNi | AgNi |
| Coil specifications | | |
| Nominal voltage | V AC (50/60Hz) 8 · 12 · 24 · 48 · 110 · 120 · 230 · 240 | |
| | V DC 12 · 24 · 48 · 110 | 12 · 24 · 48 · 110 |
| Rated power AC/DC | VA (50Hz)/W 2.3/1.25 | 2.3/1.25 |
| Operating range | AC (50Hz) (0.85...1.1)U _N | (0.85...1.1)U _N |
| | DC (0.9...1.1)U _N | (0.9...1.1)U _N |
| Technical data | | |
| Mechanical life | cycles 500 · 10 ³ | 500 · 10 ³ |
| Electrical life at rated load in AC1 | cycles 50 · 10 ³ | 50 · 10 ³ |
| Maximum impulse duration | continuous | continuous |
| Insulation between coil and contacts (1.2/50μs) | kV 4 | 4 |
| Ambient temperature range | °C -40...+40 | -40...+40 |
| Protection category | IP 20 | IP 20 |
| Approvals: (according to type) | | |

ORDERING INFORMATION

Example: a 22 series 35 mm rail mount relay with 1 NO - 20 A contacts, with coil rated at 24 V DC, contact material AgSnO₂.

2 2 . 2 1 . 9 . 0 2 4 . 4 0 0 0

Series

Type

2 = 35 mm rail (EN 50022) mount

No. of poles

1 = 1 NO

2 = 2 NO

3 = 1 NO

4 = 2 NC

Contact material

4 = AgSnO₂

Coil voltage

see coil specifications

Coil version

8 = AC (50/60 Hz)

9 = DC

TECHNICAL DATA

CONTACT SPECIFICATIONS

| | | |
|----------------------------------|---|-------|
| NOMINAL RATE LAMPS | | |
| - incandescence (230V) | W | 1,000 |
| - compensated fluorescent (230V) | W | 360 |

INSULATION

| | | |
|-------------------------------|------|-------|
| DIELECTRIC STRENGTH | | |
| - between supply and contacts | V AC | 3,500 |
| - between open contacts | V AC | 2,000 |
| - between adjacent contacts | V AC | 2,000 |

OTHER DATA

22.21

22.22, 22.23, 22.24

| | | | | | |
|-------------------------------|--------------------|-------------|-----------------------|-------------|----------------|
| POWER LOST TO THE ENVIRONMENT | | | | | |
| - without contact current | W | 1.2 | | 1.2 | |
| - with rated current | W | 3.2 | | 5.2 | |
| MAX WIRE SIZE | COIL CLAMPS | | CONTACT CLAMPS | | |
| | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 | 1x6 / 2x6 | 1x6 / 2x4 |
| | AWG | 1x12 / 2x14 | 1x14 / 2x14 | 1x10 / 2x10 | 1x10 / 2x12 |
| ⊕ SCREW TORQUE | Nm | 0.8 | | 0.8 | |

If the coil is operated for a prolonged period of time, adequate ventilation of the relays must be provided, for example leaving a gap of about 9mm between pairs of relays.

COIL SPECIFICATIONS

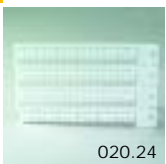
AC VERSION DATA

| Nominal voltage U _N V | Coil code | Operating range | | Resistance R Ω | Consumption I at U _N (50Hz) mA |
|--|--------------|-----------------------|-----------------------|----------------------|---|
| | | U _{min} V | U _{max} V | | |
| 8 | 8.008 | 6.8 | 8.8 | 6.5 | 360 |
| 12 | 8.012 | 10.2 | 13.2 | 13.5 | 245 |
| 24 | 8.024 | 20.4 | 26.4 | 41 | 135 |
| 48 | 8.048 | 40.8 | 52.8 | 186 | 68 |
| 110 | 8.110 | 93.5 | 121 | 970 | 26 |
| 120 | 8.120 | 102 | 132 | 1,380 | 24 |
| 230 | 8.230 | 195.5 | 253 | 4,200 | 12.5 |
| 240 | 8.240 | 204 | 264 | 4,400 | 12 |

DC VERSION DATA

| Nominal voltage U _N V | Coil code | Operating range | | Resistance R Ω | Consumption I at U _N mA |
|--|--------------|-----------------------|-----------------------|----------------------|--|
| | | U _{min} V | U _{max} V | | |
| 12 | 9.012 | 10.8 | 13.2 | 115 | 104.3 |
| 24 | 9.024 | 21.6 | 26.4 | 460 | 52.2 |
| 48 | 9.048 | 43.2 | 52.8 | 1,850 | 25.9 |
| 110 | 9.110 | 99 | 121 | 9,700 | 11.3 |

22 ACCESSORIES



020.24

| | |
|--------------------------------|--------|
| Sheet of marker tags (24 tags) | 020.24 |
|--------------------------------|--------|

- Screw terminal connections
- AC coil
- Panel mount

| | 26.01 | 26.02,04,06,08 | 26.03 |
|---|----------------------------|----------------------------|----------------------------|
| | | | |
| | - Single phase switch 1 NO | - Double phase switch 2 NO | - 1 NC + 1 NO |
| | | | |
| | | | |
| Contact specifications | | | |
| Number of contacts | 1 NO | 2 NO | 1 NC + 1 NO |
| Rated current/Max. peak current | A | 10/20 | 10/20 |
| Rated voltage/Max. switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 2,500 | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 500 | 500 |
| Nominal lamp rating: incandescence (230V) | W | 800 | 800 |
| compensated fluorescent (230V) | W | 360 | 360 |
| uncompensated fluorescent (230V) | W | 500 | 500 |
| halogens (230V) | W | 800 | 800 |
| Minimum switching load | mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage | V AC (50Hz) | 12 - 24 - 48 - 110 - 230 | 12 - 24 - 48 - 110 - 230 |
| | V DC | — | — |
| Rated power AC/DC | VA (50Hz)/W | 4.5/— | 4.5/— |
| Operating range | AC (50Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | — | — |
| Technical data | | | |
| Mechanical life | cycles | 300 · 10 ³ | 300 · 10 ³ |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Maximum impulse duration | | 1 h (according to EN60669) | 1 h (according to EN60669) |
| Insulation between coil and contacts (1.2/50µs) | kV | 4 | 4 |
| Ambient temperature range | °C | -40...+40 | -40...+40 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | GOST | |

ORDERING INFORMATION

Example: a 26 series screw terminal mount relay with double phase switch 2 NO - 10 A contacts, with coil rated at 12 V AC.

2 6 . 0 2 . 8 . 0 1 2 . 0 0 0 0

Series

Type

0 = Screw terminal

No. of poles

1 = Single phase switch 1 NO

2 = Double phase switch 2 NO

3 = Double phase switch 1 NO + 1 NC

4 = 4 sequence double phase switch 2 NO

6 = 3 sequence double phase switch 2 NO

8 = 4 sequence double phase switch 2 NO

Coil voltage

see coil specifications

Coil version

8 = AC (50 Hz)

TECHNICAL DATA

INSULATION

| DIELECTRIC STRENGTH | | |
|-------------------------------|------|-------|
| - between supply and contacts | V AC | 3,500 |
| - between open contacts | V AC | 2,000 |
| - between adjacent contacts | V AC | 2,000 |

OTHER DATA

26.01

26.02, 26.03, 26.04, 26.06, 26.08

| POWER LOST TO THE ENVIRONMENT | | 0.9 | | 1.8 | |
|-------------------------------|-----------------|-------------|----------------|-------------|----------------|
| - with rated current | | W | | | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 |
| | AWG | 1x12 / 2x14 | 1x14 / 2x14 | 1x12 / 2x14 | 1x14 / 2x14 |
| SCREW TORQUE | Nm | 0.8 | | 0.8 | |

COIL SPECIFICATIONS

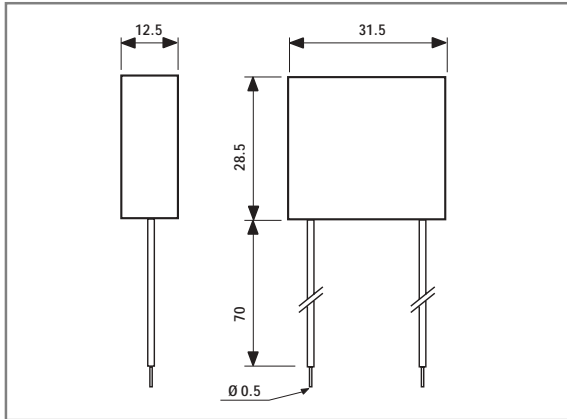
AC VERSION DATA

| Nominal voltage U _N V | Coil code | Operating range | | Resistance R | Consumption I at U _N (50Hz) mA |
|--|--------------|-----------------------|-----------------------|-----------------|---|
| | | U _{min} V | U _{max} V | | |
| 12 | 8.012 | 9.6 | 13.2 | 17 | 370 |
| 24 | 8.024 | 19.2 | 26.4 | 70 | 180 |
| 48 | 8.048 | 38.4 | 52.8 | 290 | 90 |
| 110 | 8.110 | 88 | 121 | 1,500 | 40 |
| 230 | 8.230 | 184 | 253 | 6,250 | 20 |

| TYPE | Number of steps | SEQUENCES | | | |
|-------|-----------------|-----------|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 26.01 | 2 | | | | |
| 26.02 | 2 | | | | |
| 26.03 | 2 | | | | |
| 26.04 | 4 | | | | |
| 26.06 | 3 | | | | |
| 26.08 | 4 | | | | |

ACCESSORIES

12-24 V DC CONTROL APPLICATIONS

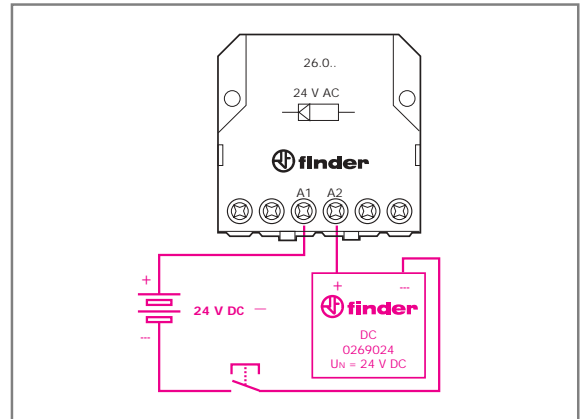


Type: 026.9.012

NOMINAL VOLTAGE: 12 V DC
 MAX TEMPERATURE: + 40 °C
 OPERATING RANGE: (0.9...1.1)U_N

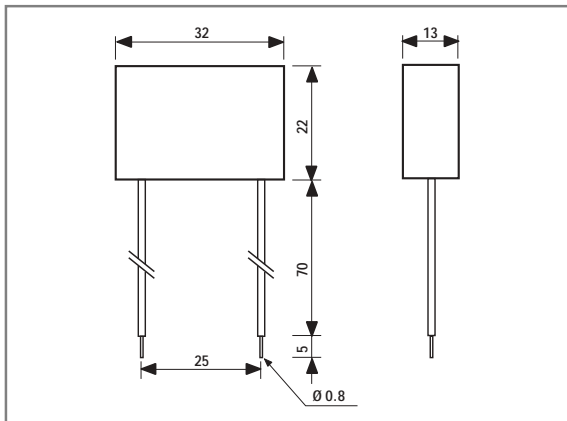
Type: 026.9.024

NOMINAL VOLTAGE: 24 V DC
 MAX TEMPERATURE: + 40 °C
 OPERATING RANGE: (0.9...1.1)U_N



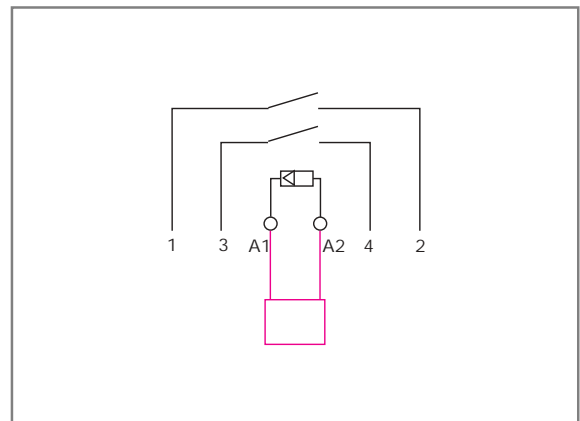
Example of wiring for 24 V DC control application.

MODULE FOR ILLUMINATED PUSH-BUTTONS



Type 026.00

Sealed version, 7.5 cm insulated and flexible terminals.



Example of wiring diagram of type 026.00

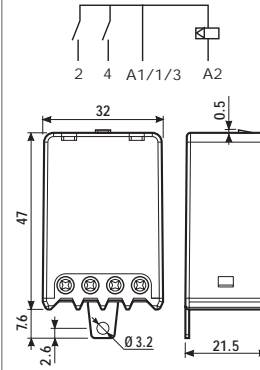
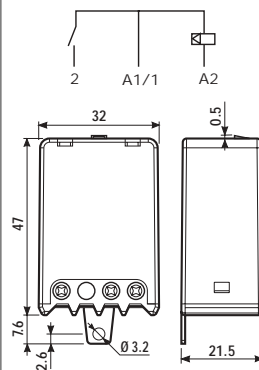
This module is necessary if using up to a maximum of 15 illuminated pushbuttons (1.5 mA max, 230 V AC) in the switching input circuit. It must be connected in parallel to the coil of the relay (see diagram).

- Screw terminal connections
- AC coil
- Panel mount

27.01
27.05/06


- Single phase switch 1 NO

- Double phase switch 2 NO


Contact specifications

| | | | |
|---|----------|---------------|---------------|
| Number of contacts | | 1 | 2 |
| Rated current/Max. peak current | A | 10/20 | 10/20 |
| Rated voltage/Max. switching voltage | V AC | 230/230 | 230/230 |
| Rated load in AC1 | VA | 2,300 | 2,300 |
| Rated load in AC15 (230 VAC) | VA | 500 | 500 |
| Nominal lamp rating: incandescence (230V) | W | 1000 | 1000 |
| compensated fluorescent (230V) | W | 360 | 360 |
| uncompensated fluorescent (230V) | W | 500 | 500 |
| halogens (230V) | W | 800 | 800 |
| Minimum switching load | mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgNi | AgNi |

Coil specifications

| | | | |
|-------------------|-------------|---------------------------|---------------------------|
| Nominal voltage | V AC (50Hz) | 230 | 230 |
| | V DC | — | — |
| Rated power AC/DC | VA (50Hz)/W | 4/— | 4/— |
| Operating range | AC (50Hz) | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | DC | — | — |

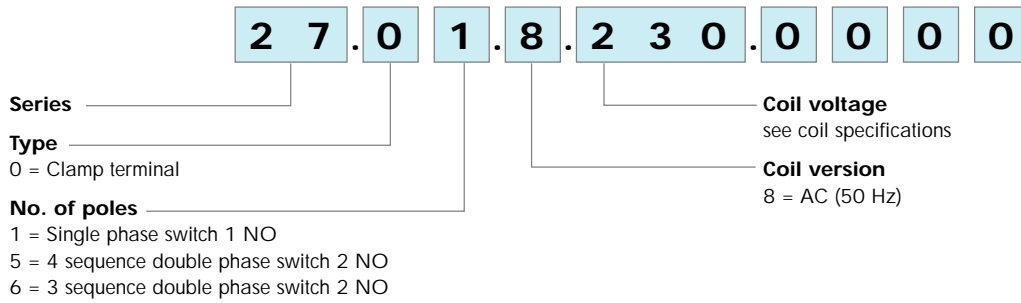
Technical data

| | | | |
|---|--------|----------------------------|----------------------------|
| Mechanical life | cycles | 300 · 10 ³ | 300 · 10 ³ |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Maximum impulse duration | | 1 h (according to EN60669) | 1 h (according to EN60669) |
| Insulation between coil and contacts (1.2/50μs) | kV | 4 | 4 |
| Ambient temperature range | °C | -40...+40 | -40...+40 |
| Protection category | | IP 20 | IP 20 |

Approvals: (according to type)


ORDERING INFORMATION

Example: a 27 series clamp terminal mount relay with single phase switch 1 NO - 10 A contacts, with coil rated at 230 V AC.



TECHNICAL DATA

INSULATION

| | | |
|--|------|-------|
| DIELECTRIC STRENGTH - between open contacts | V AC | 2,000 |
|--|------|-------|

OTHER DATA

| | | 27.01 | | 27.05, 27.06 | |
|---|-----------------|-------------|----------------|--------------|----------------|
| POWER LOST TO THE ENVIRONMENT - with rated current | W | 0.9 | | 1.8 | |
| MAX WIRE SIZE | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 2x2.5 | 1x4 / 2x2.5 | 2x2.5 | 1x4 / 2x2.5 |
| | AWG | 2x14 | 1x12 / 2x14 | 2x14 | 1x12 / 2x14 |
| SCREW TORQUE | Nm | 0.8 | | 0.8 | |

COIL SPECIFICATIONS

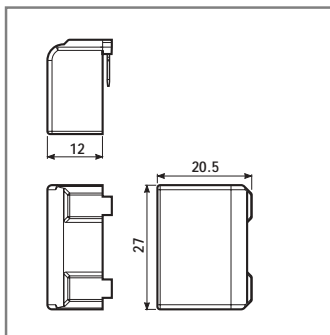
AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R | Consumption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------|--|
| | | U_{min} V | U_{max} V | | |
| 230 | 8.230 | 184 | 253 | 6500 | 17.5 |

| Type | Number of steps | Sequences | | | |
|-------|-----------------|-----------|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 27.01 | 2 | | | | |
| 27.05 | 4 | | | | |
| 27.06 | 3 | | | | |

ACCESSORIES

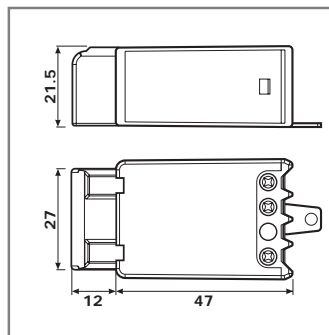
MODULE FOR ILLUMINATED PUSH-BUTTONS



Type O27.00

This module is necessary if using up to a maximum of 15 illuminated push-buttons (1 mA max, 230 V AC) in the switching input circuit.

It must be plugged directly into the relay.



27 series relay with O27.00 module.

REFERENCE STANDARDS AND VALUES

Unless expressly indicated otherwise, the products shown in this catalogue are designed and manufactured according to the requirements of the following European and International Standards:

- EN 61810-1, EN 61810-5, IEC 61810-7, EN 60255-23 for all-or-nothing (elementary) relays
- EN 61812-1 for timers
- EN 60669-1 and EN 60669-2-2 for electromechanical step relays
- EN 60669-1, EN 60669-2-1 and EN 60669-2-3 for electronic step relays and staircase switches
- EN 60065 for light-dependent relays

Other standards, used as reference for double insulation, are:

- VDE 0106 as basic standard
- EN 60335 (VDE 0700) for domestic appliances, prescribing 8mm creepage and clearance between coil and contacts
- EN 50178 (VDE 0160) for industrial appliances, prescribing 5.5 mm clearance and 6.4...8 mm creepage between coil and contacts

According to EN 61810-1, all technical data is specified under standard conditions of 23°C ambient temperature, 96 kPa pressure, 50% humidity, clean air and 50 Hz frequency. The tolerance for coil resistance, nominal absorption and rated power values is $\pm 10\%$.

WORKING CONDITIONS

- Unless expressly indicated otherwise, all relays are suitable for 100% Duty Cycle and all the AC coil relays are suitable for 50 and 60 Hz frequency.
- Environmental conditions causing condensation or ice formation in the relay are not permitted.
- Overvoltage protection (varistor for AC, diode for DC) is recommended in parallel with the coil for nominal voltages ≥ 110 V for the relays of 40, 41, 44 series.
- When relay coils are controlled via a proximity switch, or via cables having length > 10 m, the use of a "residual current bypass" module in parallel with the coil is recommended.

GUIDELINES FOR AUTOMATIC FLOW SOLDER PROCESSES

In general, an automatic flow solder process consists of the following stages:

RELAY MOUNTING - Ensure that the relay terminals are straight and enter the PC board perpendicular to the PC board. For each relay, the catalogue illustrates the necessary PC board pattern (copper side view).

FLUX APPLICATION - This is a particularly delicate process. If the relay is not sealed, flux may penetrate the relay due to capillary forces changing its performance and functionality.

Whether using foam or spray fluxing methods, ensure that flux is applied sparingly and evenly and does not flood through to the component side of the PC board.

By following the above precautions, and assuming the use of alcohol or water based fluxes, it is possible to satisfactorily use relays with protection category RT II.

PREHEATING - Set the preheat time and heat to just achieve the effective evaporation of the flux, taking care not to exceed a component side temperature of 100°C (212°F).

SOLDERING - Set the height of the molten solder wave such that the PC board is not flooded with solder.

Ensure the solder temperature and time are kept to 250°C (482°F) and 3 seconds maximum.

CLEANING - The use of modern "no-clean" flux avoids the necessity of washing the PC board. In special cases where the PC board must be washed the use of wash-tight relays (option 0001 - RT III) is strongly recommended. Even so, avoid washing the relay itself, particularly with aggressive solvents or in cycles using low temperature water, as this may cause thermal shock to the PC board components.

TERMINOLOGY & DEFINITIONS

All the following terms indicated in the catalogue are commonly used in technical language. However, occasionally, National European or International Standards may prescribe the use of different terms, in which case this will be mentioned in the appropriate descriptions that follow.

CONTACT SPECIFICATIONS

CONTACT CONFIGURATION:

| Symbol | Configuration | EU | D | GB | USA |
|--------|------------------------------------|----|---|----|-------------------------------|
| | Make contact (Normally Open) | NO | S | A | SPST-NO DPST-NO nPST-NO |
| | Break contact (Normally Closed) | NC | Ö | B | SPST-NC DPST-NC nPST-NC |
| | Changeover | CO | W | C | SPDT DPDT nPDT |

n = number of poles (3,4,...)

TERMINAL MARKING

The European Standard EN 50005 recommends the following numbering for the marking of relay terminals:

- .1 for common contact terminals (e.g. 11, 21, 31...)
- .2 for NC contact terminals (e.g. 12, 22, 32...)
- .4 for NO contact terminals (e.g. 14, 24, 34...)
- A1 and A2 for coil terminals

For delayed contacts of timers the numbering will be:

- .5 for common contact terminals (e.g. 15, 25, ...)
- .6 for NC contact terminals (e.g. 16, 26, ...)
- .8 for NO contact terminals (e.g. 18, 28, ...)

IEC 67 and American standards prescribe:

- progressive numbering for terminals (1,2,3,...13,14,..)
- sometimes A and B for coil terminals.

RATED CURRENT - The limiting continuous current, is the highest current that a contact can continuously carry within the prescribed temperature limits. It also coincides with the limiting cycling capacity, i.e. the maximum current that a contact is capable of making and breaking under specified conditions.

MAXIMUM PEAK CURRENT - The highest value of inrush current (≤ 0.5 seconds) that a contact can make and cycle (duty cycle ≤ 0.1) without undergoing any permanent degradation of its characteristics due to generated heat. It also coincides with the limiting making capacity

MAXIMUM BLOCKING VOLTAGE (Solid State Relay) - The maximum level of output voltage at which the output circuit will not be destroyed.

RATED VOLTAGE - The line-to-neutral voltage (derived from nominal voltages of contact loads) used for insulation co-ordination.

MAXIMUM SWITCHING VOLTAGE - The highest voltage level (including tolerances) that the contacts are able to switch according to rated voltage.

RATED LOAD IN AC1 - The maximum AC resistive switching power (in VA) that a contact can make, carry and break repeatedly, according to utilisation category AC1, EN 60947-4-1 (see Table 1). It is the product of rated current and rated voltage. It is used as the reference load for electrical life tests.

RATED LOAD IN AC15 - The maximum AC inductive switching power (in VA) that a contact can make, carry and break repeatedly, according to utilisation category AC15, EN 60947-5-1 (see Table 1).

SINGLE PHASE MOTOR RATING - The nominal value of motor power that a relay can switch according to EN 60947-1, UL 508 and CSA 22.2 n. 14 * The figures are given in kW; the horsepower rating can be calculated by multiplying that value by 1.34 (ie. 0.37 kW = 0.5 HP). If reversing motor direction, always allow an intermediate break > 300ms, otherwise an excessive inrush peak current (caused from change of polarity of motor capacitor) may occur, causing contact welding.

RATED LAMPS LOAD - Maximum incandescent and fluorescent lamp ratings for 230 V AC supply voltage. Fluorescent lamps compensated to $\cos \varphi \geq 0.9$.

BREAKING CAPACITY IN DC1 - The maximum value of DC resistive current that contacts can switch, depending on the value of the load voltage (see table 1).

MINIMUM SWITCHING LOAD - The minimum values of power, voltage and current that a contact can reliably switch. For example, if minimum values are 300mW, 5V/5mA:

- with 5V the current must be at least 60mA;
- with 24V the current must be at least 12.5mA;
- with 5 mA the voltage must be at least 60 V.

For gold contact variants, loads no less than 50mW, 5V/2mA are suggested.

With 2 gold contacts in parallel, it is possible to switch 1mW, 0.1V/1mA.

ELECTRICAL LIFE TEST - An AC resistive load test (AC1category) conducted with relay coil (both AC and DC) supplied at rated voltage. Load applied between all movable and NO contacts but without any load on the NC contacts, and vice-versa. These load life values are valid for relays with standard contact material.

Switching frequency: **All-or-nothing relays:** coil 900 cycles/h - contact 900 cycles/h (2s ON - 2s OFF)
Step relays: coil 900 cycles/h - contact 450 cycles/h (4s ON - 4s OFF)

LOAD REDUCTION FACTOR VERSUS COS ϕ - For AC inductive loads (such as solenoids, contactors coils, etc.) the reduction factor corresponding to $\cos \phi$ shall be multiplied by the rated current in order to define the maximum allowed current. It is not valid for electric motors or fluorescent lamps.

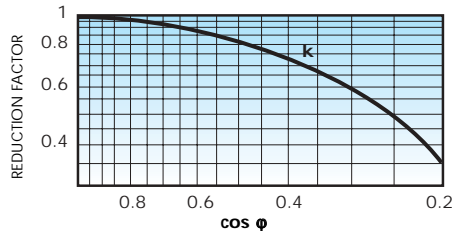


TABLE 1 - Utilisation categories according to EN60947-4-1 and EN 60947-5-1

| Load Category | Supply type | Application |
|---------------|-----------------------------------|---|
| AC 1 | AC single-phase AC three-phase | Resistive or slightly Inductive AC loads. |
| AC 3 | AC three-phase | Starting and stopping of Squirrel-cage motors. Reversing direction of rotation only after stopping motor. |
| AC 4 | AC three-phase | Starting, Stopping and Reversing direction of rotation of Squirrel cage motors. Jogging (Inching). Regenerative braking (Plugging). |
| DC 1 | DC | Resistive loads or slightly inductive DC loads.* |
| AC 14 | AC single-phase | Control of small electromagnetic loads (<72 VA), power contactors, magnetic solenoid valves, and electromagnets. |
| AC 15 | AC single-phase | Control of small electromagnetic loads (>72 VA), power contactors, magnetic solenoid valves, and electromagnets. |
| DC 13 | DC | Control of electromagnetic loads, power contactors, magnetic solenoid valves, and electromagnets |

* The switching voltage at the same current can be doubled by wiring 2 contacts in series.

CONTACT RESISTANCE - Measured, according to contact category (Table 2), at the external terminals of the relay. It is a statistical value, not reproducible. It hasn't any effect on relay reliability on most application. The typical value, measured with 24 V 100 mA, is 50 m Ω .

TABLE 2 - Contact categories according to EN60255-23

The effectiveness with which a relay contact can make an electrical circuit depends on several factors, such as the material used for the contact, its' exposure to environmental pollution and its' design etc.. Therefore, for reliable operation, it is necessary to specify a contact Application Category that will define a particular relay's switching capability in terms of maximum and minimum limits for contact voltage and current. The appropriate Application Category will also define the voltage and current levels used to measure the contact resistance. All Finder relays are category 3, with the exception of 30 series, which is category 2.

| Application category | Voltage (V) | Current (A) | Contact Resistance Measurement (IEC 61810-7) | |
|----------------------|---------------------------------------|---|--|----------------|
| 0 | $U < 0,03$ | $I < 0.01$ | > 30 mV | 10 mA |
| 1 | $0,03 < U < 60$ | $0,01 < I < 0,1$ | 100 mV | 10 mA |
| 2 | $5 < U < 250$ | $0,1 < I < 1$ | 24 V | 100 mA |
| 3 | $5 < U < 600$ | $0,1 < I < 100$ | 24 V | 1000 mA |

TABLE 3 - Contact materials characteristics

| Material | Property | Typical application* |
|---|--|--|
| AgNi + Au (Silver Nickel Gold plated) | - Silver-nickel base with a galvanic hard gold plating of 5 μ m typical thickness - Gold is not attacked by industrial atmospheres - With small loads, contact resistance is lower and more consistent compared to other materials. NOTE: 5 μ m hard gold plating is completely different from 0.2 μ m gold flashing, which allows only protection in storing, but no better performance in use. | Wide range applications: - <u>Small load range</u> (where gold plating erodes very little) from 50 mW (5V 2mA) up to 1.5 W/24 V (resistive load). - <u>Middle load range</u> where gold plating erodes after several operations and the property of basic AgNi becomes dominant. NOTE: for switching lower loads, typically 1mW (0.1V 1mA), (for example in measuring instruments), it is recommended to connect 2 contacts in parallel. |
| AgNi (Silver Nickel) | - Standard contact material for most relay applications. - High wear resistance - Medium resistance to welding | - Resistive and slightly inductive loads - Rated current up to 12 A - Inrush current up to 25 A |
| AgCdO (Silver Cadmium Oxide) | - High wear resistance with higher AC loads - Good resistance to welding | - Inductive and motor loads - Rated current up to 30 A - Inrush current up to 50 A |
| AgSnO ₂ (Silver Tin Oxide) | - Excellent resistance to welding - Low material transfer in DC loads | - Lamp and capacitive loads - Very high Inrush current (up to 120 A) loads |

* It is necessary to refer to the maximum current values specified in the catalogue for each relay.

COIL (or INPUT or SUPPLY) SPECIFICATIONS

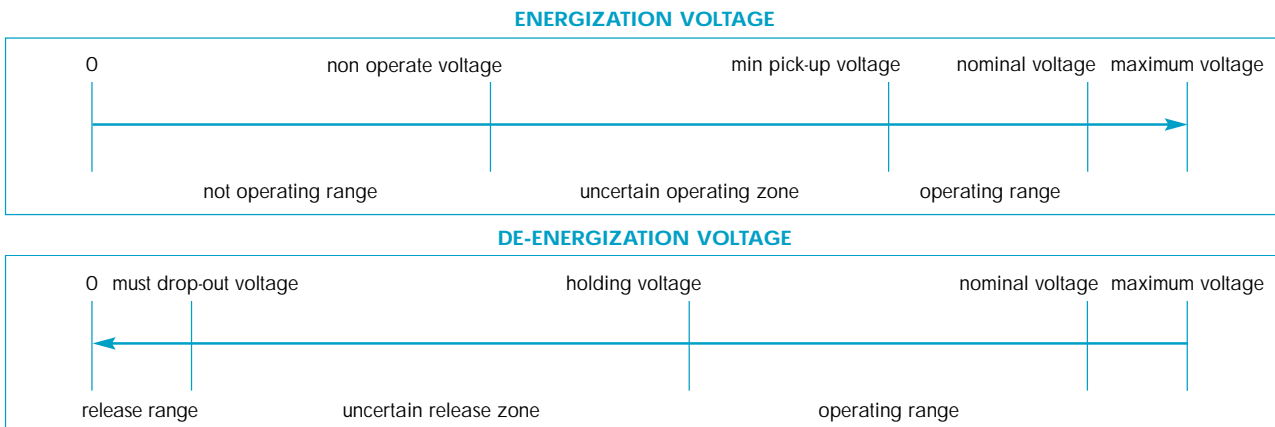
NOMINAL VOLTAGE - The nominal value of coil (or input or supply) voltage for which the relay has been designed, and for which operation is intended. The operating and use characteristics are referred to the rated voltage.

RATED POWER - The DC power value (W) or the apparent AC power value (VA with closed armature) which is absorbed by the coil at 23°C and at rated voltage. It is a short-time value (not steady-state).

OPERATING RANGE - The range of input voltage, in nominal voltage applications, in which the relay works in the whole range of ambient temperatures, according to operating class:

- class 1: 0.8...1.1 U_N
- class 2: 0.85...1.1 U_N

In application where the coil voltage doesn't meet the tolerances of nominal voltage, the diagrams "R" shows the relation of maximum coil voltage permitted and pick-up voltage (without pre-energisation) versus ambient temperature.



NON-OPERATE VOLTAGE - The value of input voltage at which the relay will not operate (not specified in the catalogue).

MINIMUM PICK-UP VOLTAGE (Operate voltage) - The lowest value of applied voltage at which the relay will operate.

MAXIMUM VOLTAGE - The highest applied voltage that the relay can continuously withstand, dependent on ambient temperature (see "R" diagrams).

HOLDING VOLTAGE (Non-release voltage) - The lowest value of coil voltage at which the relay (which has previously been energised with a voltage within the operating range) will not drop-out.

MUST DROP-OUT VOLTAGE (Release voltage) - The value of coil voltage at which the relay (which had previously been energised with a voltage within the operating range) will definitely drop-out.

RESISTANCE - The average value of the coil resistance under the standard prescribed condition of 23°C ambient.

RATED COIL CONSUMPTION - The average value of coil current, when energised at nominal voltage.

CONTROL CURRENT (Solid State Relays) - The nominal value of current consumption of the input circuit, when supplied at nominal voltage.

THERMAL TESTS - Calculation of the coil temperature rise (ΔT) is made by measuring the coil resistance in a controlled temperature oven (not ventilated) until a stable value is reached (no less than 0.5 K variation in 10 minutes).

That is: $\Delta T = (R_2 - R_1) / R_1 \times (234.5 + t_1) \cdot (t_2 - t_1)$

where: R_1 = initial resistance
 R_2 = final resistance
 t_1 = initial temperature
 t_2 = final temperature

INSULATION DATA

INSULATION COORDINATION (according to EN 61810-5 and IEC 60664-1)

In accordance with to EN 61810-5, the insulation characteristics achieved by the relay can be described by just two characteristic parameters – the Rated Impulse Voltage and the Degree of Pollution.

To ensure the correct Insulation Coordination between the relay and the application, the equipment designer (relay user) should establish the Rated Impulse Withstand Voltage appropriate to his application, and the Pollution level for the micro environment in which the relay is situated. He should then match (or coordinate) these two figures with the corresponding values given in the appropriate relay data.

To establish the appropriate Pollution degree and Rated impulse withstand voltage refer either to an appropriate Product Standard (which may be mandatory for the particular type of equipment), or consider the tables below. Select the Rated impulse withstand voltage from a knowledge of the Nominal Voltage of the Supply and a knowledge of the Over Voltage Category (as described in IEC60664-1).

| Nominal voltage of the supply system (mains) according to IEC 600038 | | Voltage line-to-neutral (derived from nominal voltages AC or DC, up to and including) | Rated impulse withstand voltage | | | |
|--|--------------|---|---------------------------------|--------------|--------------|--------------|
| V | | | V | | | |
| Three-phase | Single-phase | | Overvoltage category | | | |
| | | | I | II | III | IV |
| | 120 to 240 | 150 | 800 | 1500 | 2500 | 4000 |
| 230/400* | | 250* | 1200* | 2200* | 3600* | 5500* |
| 230/400 277/480 | | 300 | 1500 | 2500 | 4000 | 6000 |

* For existing products the interpolated values apply

| Pollution degree | Immediate surroundings conditions |
|------------------|---|
| 1 | No pollution or only dry, non-conductive pollution occurs. The pollution has no influence. |
| 2 | Only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected. |
| 3 | Conductive pollution occurs or dry, non-conductive pollution occurs which becomes conductive due to condensation which is to be expected. |
| 4 | The pollution generates persistent conductivity caused by conductive dust or by rain or snow. |

Dependent on the product standard, pollution degree 2 and 3 are commonly prescribed for equipment. For example, EN 50178 (electronic for use in power installations) prescribes, under normal circumstances, contamination level 2.

Examples of specification of Rated Impulse Voltage and the Degree of Pollution :

4 kV/3 (This relay is designed to withstand a rated impulse voltage of 4 kV and pollution degree 3).

4 - 2,5 kV/3 (This relay is designed to withstand rated impulse voltages of 4 kV and 2.5 kV and pollution degree 3).

If only one rated impulse voltage is given, the value refers to all electrical circuits against each other and against the accessible surfaces. If two values are indicated for the rated impulse voltage, the first value refers to the contacts against each other and against the accessible surfaces as well as other electrical circuits. The second value refers to the coil against accessible surfaces and other electrical circuits.

DIELECTRIC STRENGTH - It can be described in terms of an alternating voltage or in terms of a surge (1.2/50 µs impulse) voltage. The correspondence between the alternating voltage and surge voltage is listed in IEC 60664-1 Annex A, Table A.1.

For all Finder relays a 100 % test is carried out with a 50 Hz, alternating voltage applied between all contacts and coil, between adjacent contacts and between open contacts. The leakage current must be less than 3 mA.

Type tests are carried out with both alternating voltage and with impulse voltage.

DIELECTRIC STRENGTH BETWEEN OPEN CONTACTS - It far exceeds the maximum switching voltage. Typical contact gaps of 0.3 – 0.5 mm result in ultimate dielectric strength values of typically 1300 – 1550 V (1.2/50 µs impulse), but always refer to the relay specification.

INSULATION GROUP - The latest way of specifying insulation properties according to the Insulation Coordination replaces the insulation group classification, such as C 250 according to the older VDE 0110 standard.

SAFE SEPARATION / DOUBLE INSULATION - Isolation Co-ordination as described earlier ensures the isolation of hazardous voltages from other circuits to a safe engineering level. But importantly, not on the basis that there is any intentional direct personal access to the isolated circuits or, where failure of insulation would present a particularly high risk. (Telecoms and medical applications, are good examples).

For high risk / high integrity applications there is a need for a very special and higher level of physical isolation and integrity between circuits, and this is provided by safe separation and double insulation. The regulations for safe separation establish the conditions which must be met for PELV (protected extra low voltage) or SELV (safety extra low voltage) circuits.

Consider the common case, where the mains voltage of 230 V and a low voltage circuit both appear within a relay; all the following requirements for the relay, including its connections and wiring, must in consequence be met.

- The low voltage and the 230 V must be separated by double or reinforced insulation. This means that between the two electrical circuits must be guaranteed a dielectric strength of 6 kV (1.2/50 µs), an air distance of 5.5 mm and, depending on the pollution degree and on material used, an appropriate tracking distance.
- The electrical circuits within the relay must be protected against any possibility of bridging caused, for instance, by a loose metal part. This is achieved by the physical separation of circuits into isolated chambers within the relay.
- The wires connected to the relay must also be physically separated from each other. This normally is achieved using separate cable channels.
- For relays mounted on printed circuit boards the appropriate distance between the tracks connected to low voltage and the tracks connected to other voltages must be achieved.

Although this appears quite complex, with the SELV insulation options offered on some Finder relays, the user only needs to address the two last points. And with the coil and contact connections on opposite sides of the relays and sockets, the separation of connections into different cable channels is greatly facilitated.

GENERAL TECHNICAL DATA

CYCLE - Operate and subsequent release of a relay. Over a cycle the coil is energised and de-energised and the contact will progress from the point at which it makes a circuit, through to breaking the circuit, to the point at which it re-makes the circuit.

PERIOD - The time covering one cycle.

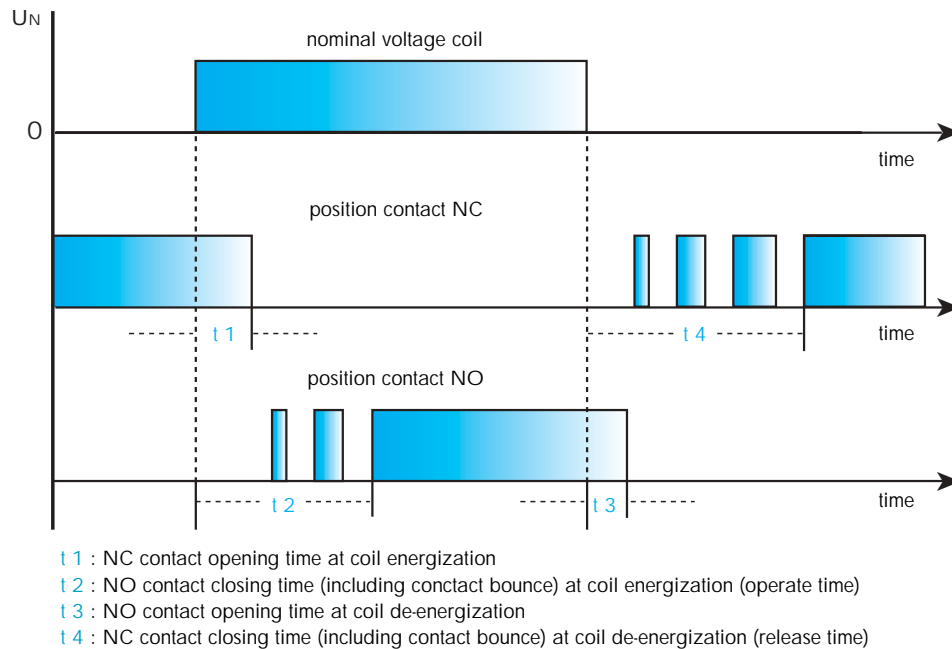
DUTY FACTOR (DF) - During cyclic operation, DF is the ratio between the energised time and one period. For continuous duty, DF = 1.

MECHANICAL LIFE - This test is performed by energising the coils of several relays at 8 cycles per second without any load applied to the contacts. It establishes the ultimate durability of the relay where electrical wear of the contacts is not an issue. The maximum Electrical Life may therefore approach the Mechanical Life where the electrical loading of the contacts is very small.

ELECTRICAL LIFE - See in CONTACT SPECIFICATIONS.

OPERATE TIME - The maximum operate time of contacts with the coil energised at rated voltage. In the catalogue, it includes the bounce time (see following pattern).

RELEASE TIME - The maximum release time of contacts. In the catalogue, it includes the bounce time (see following pattern). It will increase if protection modules are connected in parallel to the coil.



INSULATION COORDINATION according to EN 61810-5 - See in INSULATION DATA.

DIELECTRIC STRENGTH BETWEEN OPEN CONTACTS - See in INSULATION DATA.

AMBIENT TEMPERATURE RANGE - The range of temperatures of the immediate area where the relay is located, and for which operation of the relay is guaranteed (under prescribed conditions).

ENVIRONMENTAL PROTECTION according to IEC 61810-7 - The relay technology categories describe the degree of sealing of the relay case:

| Relay technology category | Condition |
|--------------------------------|---|
| RT O Unenclosed relay | Relay not provided with a protective case. |
| RT I Dust protected relay | Relay provided with a case which protects its mechanism from dust. |
| RT II Flux proof relay | Relay capable of being automatically soldered without allowing the migration of solder fluxes beyond the intended areas. |
| RT III Wash tight relay | Relay capable of being automatically soldered and subsequently undergoing a washing process to remove flux residues without allowing the ingress of flux or washing solvents. |
| RT IV Sealed relay | Relay provided with a case which has no venting to the outside atmosphere |
| RT V Hermetically sealed relay | Sealed relay having an enhanced level of sealing. |

PROTECTION CATEGORY OF ENCLOSURES - according to EN 60529. The first digit is related to the protection against ingress of solid foreign objects into the relay, and also against access to hazardous parts. The second digit relates to the protection against ingress of water. The IP grade is related to normal use, in relay sockets or PC boards. For sockets, IP20 means that the socket is "finger-safe" (VDE0106).

Examples:

IP 00 = Not protected.

IP 20 = Protected against solid foreign objects of 12.5 mm Ø and greater. Not protected against water.

IP 40 = Protected against solid foreign objects of 1 mm Ø and greater. Not protected against water.

IP 50 = Protected against powder (ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the relay). Not protected against water.

IP 67 = Totally protected against powder (dust-tight) and protected against the effect of temporary immersion in water.

VIBRATION RESISTANCE - The maximum acceleration value (measured in $g = 9.81 \text{ m/s}^2$) for frequencies in the range 10-55 Hz which can be applied to the relay in any of the 3 axis, without the opening for more than 10 μs of the NO contact (if the coil is energised) or NC contact (if the coil is not energised). In the energised state, the resistance is usually higher than in non-energised state.

POWER LOST TO THE ENVIRONMENT - The value of the power lost from the relay in working conditions (without contact load or at full load) and may be used in the thermal design of panels.

MOUNTING POSITION - If not expressly indicated, any mounting position of the relay is permitted.

RECOMMENDED DISTANCE BETWEEN RELAYS MOUNTED ON PC.Boards - This is the minimum mounting distance suggested when several relays are mounted on the same PC board. Care shall also be taken that other components mounted on the PC board do not heat the relays.

TORQUE - The maximum value of torque that can be used for tightening terminal screws, according to EN 60999, is 0.4 Nm for M2,5 screws, 0.5 Nm for M3 screws, 0.8 Nm for M3, 5 screws, 1.2 Nm for M4 screws.

The test torque is indicated in the catalogue.. Normally a 20% increase of this value is acceptable.



Both slot-head and cross-head screwdrivers can be used.

MAX WIRE SIZE - Maximum cross-section of cables (solid or stranded wire, without ferrules) that can be connected to each terminal. For use with ferrules, the wire cross-section has to be reduced (e.g. from 4 to 2.5 mm², from 2.5 to 1.5 mm², from 1.5 to 1 mm²).

For any terminals, a minimum cross-section of 0.2 mm² is allowed.

According to EN 60204-1, it is permitted to introduce 2 or more wires into the same terminal. All Finder products are designed in such a way that each terminal can accept 2 or more wires.

SPECIFIED TIME RANGE - Range in which it is possible to set timing using the time scales.

REPEATABILITY - The difference between the upper and lower limits of a range of values taken from several time measurements of a specified time relay under identical stated conditions. Usually repeatability is indicated as a percentage of the mean value of all measured values.

RECOVERY TIME - The time necessary to start the relay again with the defined accuracy after the input energising quantity has been removed.

MINIMUM CONTROL IMPULSE - The shortest duration of a control impulse to fulfil and complete the time function.

SETTING ACCURACY - The difference between the measured value of the specified time and the reference value set on the scale.

THRESHOLD SETTING - For light-dependent relays this is the illumination level (measured in Lux) at which the relay will switch on or off. Pre-set levels and the corresponding range of threshold that can be set using the regulator are indicated in the catalogue.

DELAY TIME - For light-dependent relays this is the delay between the change of state in the electronic circuit sensitive to light variation (usually indicated by change of state of an LED) and the switching of the output relay contact.

CABLE GRIP - Specifies the range of the external diameter of cables that can be reliably gripped.

TYPE - For time switches, this is the type of program (weekly or daily).

PROGRAMS - For time switches, this is the number of different types of programs that can be stored.

MINIMUM INTERVAL SETTING - For time switches, this is the minimum time interval that can be programmed.

BACK-UP POWER - The time when the switch won't lose neither the programs nor the time.

MAXIMUM IMPULSE DURATION - For step relays and staircase switches, this is the maximum command pulse duration permitted.

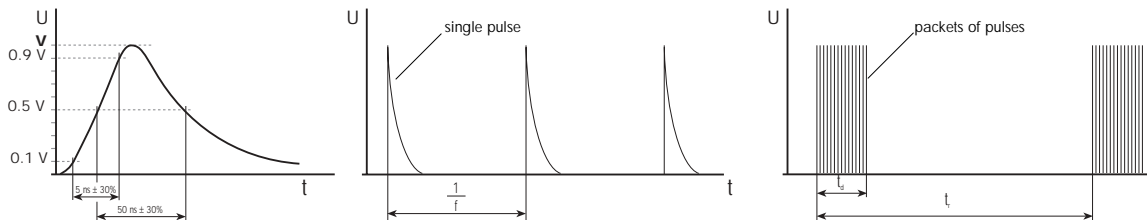
MAX NO. OF ILLUMINATED PUSH-BUTTONS - For step relays and staircase switches, this is the maximum number of illuminated push-buttons (having current absorption < 1 mA @ 230 V AC) that can be connected without causing problems. If the push-button consumption is higher than 1 mA, the maximum number of push-buttons allowed is proportionally reduced (ie. 15 push-buttons x 1 mA is equivalent to 10 push-buttons x 1.5 mA).

EMC (ElectroMagnetic Compatibility) SPECIFICATIONS

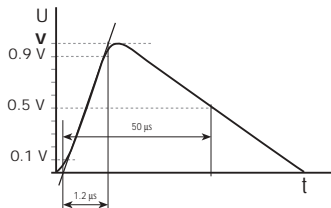
| TYPE OF TEST | REFERENCE STANDARD |
|--|--------------------------|
| ELECTROSTATIC DISCHARGE | EN 61000-4-2 |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 |
| FAST TRANSIENTS (burst) (5-50 ns, 5 kHz) | EN 61000-4-4 |
| SURGES (1.2/50 µs) | EN 61000-4-5 |
| RADIO-FREQUENCY COMMON MODE DISTURBANCES (0.15 ÷ 80 MHz) | EN 61000-4-6 |
| POWER-FREQUENCY MAGNETIC FIELD (50 Hz) | EN 61000-4-8 |
| RADIATED AND CONDUCTED EMISSION | EN 55011 / 55014 / 55022 |

In panel installations, the most frequent and, particularly, more dangerous type of electrical disturbances are the following:

1. **Burst** (fast transients). These are packets of **5/50ns** pulses, having high peak voltage level but low energy since individual pulses are very short - 5 ns rise time (5×10^{-9} seconds) and 50 ns fall time. They simulate the disturbances that can spread along the cables as a consequence of commutation transients from relays, contactors or motors. Usually they are not destructive, but they can affect the correct working of electronic devices.



2. **Surge** (voltage pulses). These are single **1.2/50µs** pulses, with energy much higher than bursts since the duration is considerably longer - 1.2 µs rise time (1.2×10^{-6} seconds) and 50 µs fall time. For this reason they are very often destructive. The Surge test typically simulates disturbances caused by the propagation of atmospheric electrical storm discharges along electrical lines, but often the switching of power contacts (such as the opening of highly inductive loads) can cause disturbances that are very similar, and equally destructive.



The test levels **V** (peak values of the single pulses) are prescribed in appropriate product standards:

- **EN 61812-1** for electronic timers;
- **EN 60669-2-1** for electronic relays and switches;
- **EN 50082-2** (generic standard for immunity in the industrial environment) for other electronic products for industrial application;
- **EN 50082-1** (generic standard for immunity in the domestic environment) for other electronic products for domestic application;

Finder electronic products are in accordance with European EMC Directives **89/336/EEC** and **93/68/EEC** and indeed, have immunity capabilities often higher than the levels prescribed in the above mentioned standards. Nevertheless, it is not impossible that some working environments may impose levels of disturbances far in excess of the guaranteed levels, such that the product could be immediately destroyed!

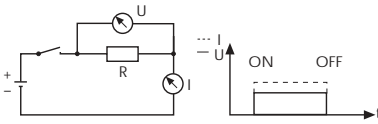
It is therefore necessary to consider Finder products as not being indestructible under all circumstances. The user should pay attention to the disturbances in electrical systems and reduce as much as possible these disturbances. For example, employ arc suppression circuits on the contacts of switches, relays or contactors which otherwise might produce over-voltages when opening electrical circuits (particularly highly inductive or DC loads). Attention should also be paid to the placement of components and cables in such a way as to limit disturbances and their propagation.

EMC rules - Require that it is the equipment designer who must ensure that the emissions from panels or equipment does not exceed the limits stated in EN 50081-1 (generic standard for emission in the domestic environment) or 50081-2 (generic standard for emission in the industrial environment) or any product specific harmonised EMC standard.

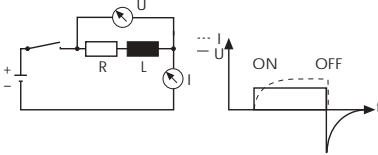
| 99.01 | | 99.02 | | 99.80 | |
|---------|-------------|---------|--------------|---------|--------------|
| | | | | | |
| Sockets | Relays | Sockets | Relays | Sockets | Relays |
| 90.20 | 60.12 | 94.02 | 55.32 | 94.84.1 | 55.32, 55.34 |
| 90.21 | 60.13 | 94.03 | 55.33 | | |
| 94.73 | 55.33 | 94.04 | 55.32/34 | | |
| 94.74 | 55.34 | 95.03 | 40.31 | | |
| 94.82 | 55.32 | 95.05 | 40.51/52/61 | | |
| 95.63 | 40.31 | | 44.52, 44.62 | | |
| 95.75 | 40.51/52/61 | 92.03 | 62.32, 62.33 | | |
| | 44.52/62 | | | | |
| 96.72 | 56.32 | | | | |
| 96.74 | 56.34 | | | | |

| FUNCTION/ OPERATING RANGE | CODE | CODE | CODE |
|--|--|--|--|
| GREEN LED + DIODE MODULE (STANDARD POLARITY) | | | |
| 6 - 24 V DC 28 - 60 V DC 110 - 220 V DC | 99.01.9.024.99 99.01.9.060.99 99.01.9.220.99 | 99.02.9.024.99 99.02.9.060.99 99.02.9.220.99 | 99.80.9.024.99 99.80.9.060.99 99.80.9.220.99 |
| GREEN LED + DIODE MODULE (INVERTED POLARITY) | | | |
| 6 - 24 V DC 28 - 60 V DC 110 - 220 V DC | 99.01.9.024.79 99.01.9.060.79 99.01.9.220.79 | 99.02.9.024.79 99.02.9.060.79 99.02.9.220.79 | |
| GREEN LED + VARISTOR | | | |
| 6 - 24 V AC/DC 28 - 60 V AC/DC 110 - 240 V AC/DC | 99.01.0.024.98 99.01.0.060.98 99.01.0.230.98 | 99.02.0.024.98 99.02.0.060.98 99.02.0.230.98 | 99.80.0.024.98 99.80.0.060.98 99.80.0.230.98 |
| GREEN LED | | | |
| 6 - 24 V AC/DC 28 - 60 V AC/DC 110 - 240 V AC/DC | 99.01.0.024.59 99.01.0.060.59 99.01.0.230.59 | 99.02.0.024.59 99.02.0.060.59 99.02.0.230.59 | 99.80.0.024.59 99.80.0.060.59 99.80.0.230.59 |
| DIODE MODULE (STANDARD POLARITY) | | | |
| 6 - 220 V DC | 99.01.3.000.00 | 99.02.3.000.00 | 99.80.3.000.00 |
| DIODE MODULE (INVERTED POLARITY) | | | |
| 6 - 220 V DC | 99.01.2.000.00 | 99.02.2.000.00 | |
| RC MODULE | | | |
| 6 - 24 V AC/DC 28 - 60 V AC/DC 110 - 240 V AC/DC | 99.01.0.024.09 99.01.0.060.09 99.01.0.230.09 | 99.02.0.024.09 99.02.0.060.09 99.02.0.230.09 | 99.80.0.024.09 99.80.0.060.09 99.80.0.230.09 |
| RESIDUAL CURRENT BYPASS MODULE | | | |
| 110 - 240 V AC | 99.01.8.230.07 | 99.02.8.230.07 | 99.80.8.230.07 |

Voltage-current characteristic when switching an ohmic load (fig. 1).



Voltage-current characteristic when switching a relay coil (fig. 2).



Switching Relay Coils.

When switching a resistive load, the current follows the phase of the voltage directly (Fig 1).

When switching relay coils the current and voltage waveforms are different due to the inductive nature of the coil (Fig 2). A brief explanation of this mechanism is as follows.

On energising the coil, the build up of the magnetic field gives rise to counter electromotive forces which in turn delay the rise in coil current. On de-energisation, the sudden interruption of the coil current causes a sudden collapse of the magnetic field, which in turn induces a high voltage of reverse polarity across the coil. This reverse polarity voltage peak can reach a value typically 15 times higher than the supply voltage, and as a consequence can disturb or destroy electronic devices.

To counteract this potentially damaging effect, relays coils can be suppressed with a Diode, a Varistor (voltage dependent resistor) or a RC (resistor/capacitor) module – dependent on the operating voltage. (See below for descriptions of the various Modules available.)

Whilst the above description is based on the working of a DC coil, the reverse polarity voltage peak on de-energisation applies similarly to AC coils. However, when energising AC coils there will also be a coil inrush current of 1.3 to 1.7 times the nominal coil current – dependent on coil size. If coils are fed via a transformer (and particularly if several are energised at the same time) then this may need to be taken into account when calculating the VA rating of the transformer.

| Diagrams | | Functions |
|--|----------------------------|--|
| <p>99.01.9.xxx.99 only 99.80.9.xxx.99 only</p> | <p>99.02.9.xxx.99 only</p> | <p>GREEN LED +DIODE MODULE (STANDARD POLARITY) Recovery diode modules + LED are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A1). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module. The LED indicator lights up when the coil is energized.</p> |
| <p>99.01.9.xxx.79 only</p> | <p>99.02.9.xxx.79 only</p> | <p>GREEN LED +DIODE MODULE (INVERTED POLARITY) Recovery diode modules + LED are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A2). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module. The LED indicator lights up when the coil is energized.</p> |
| | | <p>GREEN LED + VARISTOR LED modules + Varistor are used for both AC and DC coils. The reverse voltage peaks of the relay coil are limited by the Varistor to approximately 2.5 times the nominal voltage of the supply. When using DC coils it is essential that positive is connected to terminal A1. The relay release time increases insignificantly.</p> |
| | | <p>GREEN LED LED modules are used for AC and DC. The LED indicator lights up when the coil is energized. When using DC it is essential that positive is connected to terminal A1.</p> |
| <p>99.01.3.000.00 only 99.80.3.000.00 only</p> | <p>99.02.3.000.00 only</p> | <p>DIODE MODULE (STANDARD POLARITY) Recovery diode modules are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A1). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module.</p> |
| <p>99.01.2.000.00 only</p> | <p>99.02.2.000.00 only</p> | <p>DIODE MODULE (INVERTED POLARITY) Recovery diode modules are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A2). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module.</p> |
| | | <p>RC MODULE RC circuit modules are used for AC and DC coils. The reverse voltage peaks of the coil are limited by the RC module to approximately 2.5 times the nominal voltage of the supply. The relay release time increases insignificantly.</p> |
| | | <p>RESIDUAL CURRENT BYPASS MODULE Bypass modules are advisable if 110 or 230v AC relays show any tendency to fail to release. Failure to release can be caused by residual currents from AC proximity switches or inductive coupling caused through long parallel lying AC control lines.</p> |

