



**Relays, Timers, Interface Modules,
Sockets and Accessories.**
2001 Catalogue



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The power in relays and timers since 1954



ISO 9001



ISO 14001



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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.



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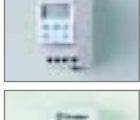














Telephone: Fax:

Finder customer: YES NO

PRICE LIST

CATALOG ON CD-ROM

SALES ENGINEER TO VISIT

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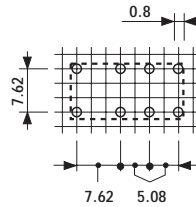
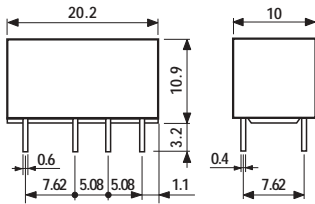
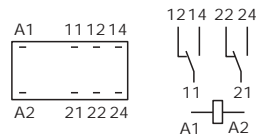
30 Series - Subminiature D.I.L. Relays 1.25 A

- Switching capacity of low signals
- Sensitive DC coil, 200mW
- Protection category: IP 67

30.22



- Low absorption
- PCB mounting



| Contact specifications | |
|---|--|
| Contact configuration | 2 CO (DPDT) |
| 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/HP —/— |
| 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 (0.7...1.5)U _N |
| 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 strenght between open contacts V AC | 750 |
| Ambient temperature range | °C -40...+85 |
| Protection category | IP 67 |
| Approvals: (according to type) | |

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

ORDERING INFORMATION

Example: a 30 series P.C.B. mount relay with 2 CO (DPDT) contacts, with coil rated at 12 V sensitive DC.

| | | | | | | | | | | | | | |
|---------------|----------|-------------------------|----------|---------------------|----------|-------------------------|----------|-------------------------------|----------|----------------------------|---------------------------|------------------------------|--------------------------------|
| 3 | 0 | 2 | 2 | 7 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | | |
| Series | | Type | | No. of poles | | Coil version | | Coil voltage | | A: Contact material | B: Contact circuit | C: Options | D: Special applications |
| 2 = P.C.B. | | 2 = 2 CO (DPDT), 1.25 A | | 7 = Sensitive DC | | see coil specifications | | 0 = Standard AgNi+Au (5µm) | | 0 = Standard | | 0 = Standard 1 = Standard | |

TECHNICAL DATA

INSULATION

| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 125 |
| | rated impulse withstand voltage | kV | 1.2 |
| | pollution degree | | 2 |
| | overvoltage category | | I |

OTHER DATA

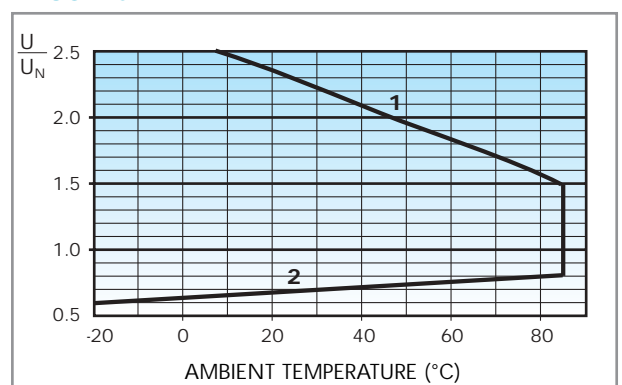
| | | | |
|---|-------------------------|-------|-----|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/10 | |
| POWER LOST IN THE ENVIRONMENT | without contact current | W | 0.2 |
| | with rated current | W | 0.4 |
| RECOMMENDED DISTANCE between RELAY mounted on P.C.B.s | mm | ≥5 | |

COIL SPECIFICATIONS

DC VERSION DATA (0.2 W sensitive)

| Nominal voltage U_N | Coil code | Operating range | | Resistance R | Rated coil absorption I at U_N |
|--------------------------|-----------|-----------------|-----------|-------------------|---------------------------------------|
| | | U_{min} | U_{max} | | |
| V | | V | V | Ω | mA |
| 5 | 7.005 | 4 | 9.5 | 125 | 40 |
| 6 | 7.006 | 4.8 | 11.4 | 180 | 33 |
| 9 | 7.009 | 7.2 | 17.1 | 405 | 22 |
| 12 | 7.012 | 9.6 | 22.8 | 720 | 16 |
| 24 | 7.024 | 19.2 | 45.6 | 2,880 | 8.3 |
| 48 | 7.048 | 38.4 | 91.2 | 11,520 | 4.1 |

R 30 DC



Operating range vs ambient temperature.

1 - Max coil voltage permitted

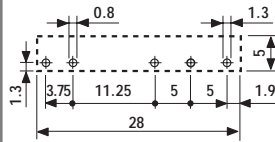
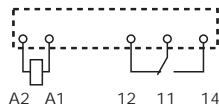
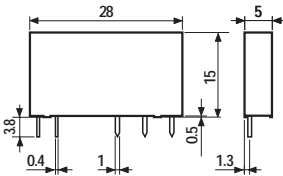
2 - Min pick-up voltage with coil at ambient temperature

- 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
- PCB mounting



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

| Contact specifications | |
|---|---|
| Contact configuration | 1 CO (SPDT) |
| 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/HP —/— |
| 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 |
| Protection category | IP 50 |
| Approvals: (according to type) | |
| | GOST UL VDE |

ORDERING INFORMATION

Example: a 34 series ultra-slim P.C.B. relay, 1 CO (SPDT) 6 A, with 24 V sensitive DC coil.

| | | | |
|---|---|---|---|
| 3 | 4 | . | 5 |
|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | . | 7 | . | 0 | 2 | 4 | . | 0 |
|---|---|---|---|---|---|---|---|---|

| |
|---|
| A |
|---|

| |
|---|
| B |
|---|

| |
|---|
| C |
|---|

| |
|---|
| D |
|---|

Series —————

Type —————
5 = P.C.B. - 5 mm pinning

No. of poles —————
1 = 1 CO (SPDT), 6 A

Coil version —————
7 = Sensitive DC

Coil voltage —————
see coil specifications

A: Contact material
0 = Standard AgNi
5 = AgSnO₂ + Au

B: Contact circuit
0 = Standard

C: Options
1 = Standard

D: Special applications
0 = Standard

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

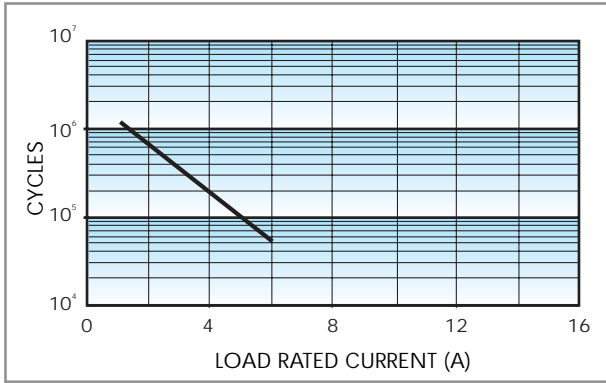
| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2 kV) |

OTHER DATA

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

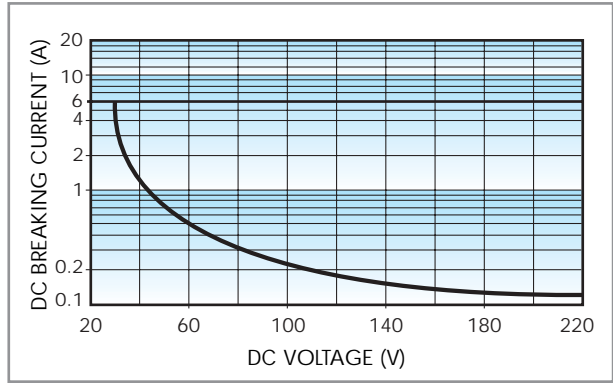
CONTACT SPECIFICATIONS

F 34



Electrical life vs AC1 load.

H 34



Breaking capacity in DC1 load.

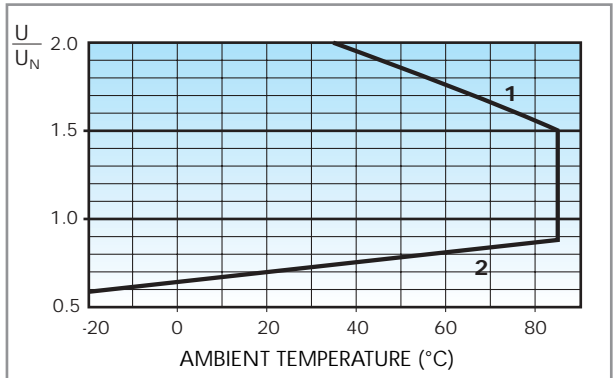
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release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

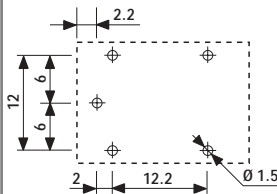
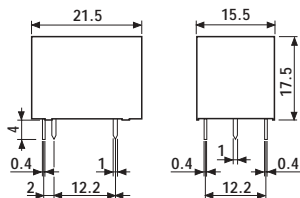
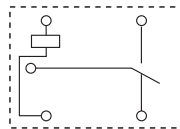
- 1 - Max coil voltage permitted
- 2 - Min pick-up voltage with coil at ambient temperature

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

36.11



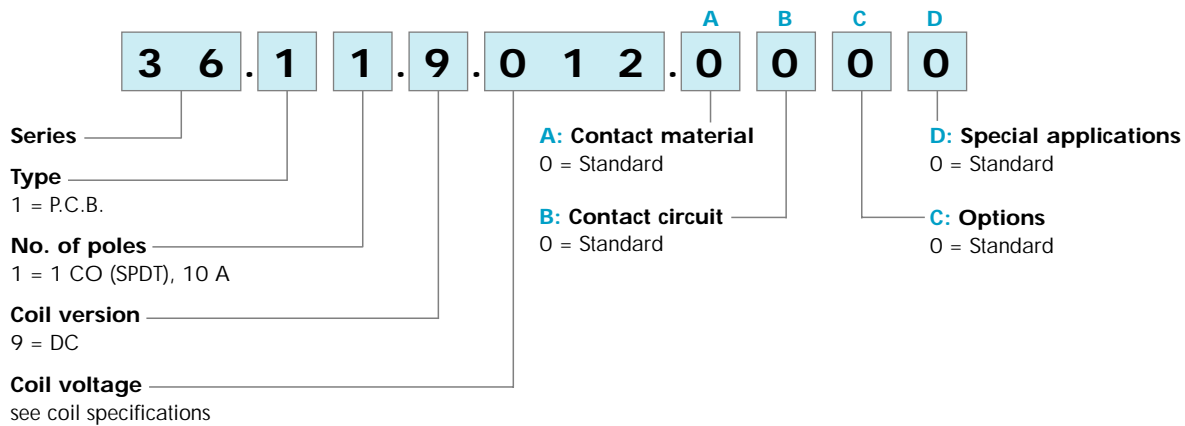
- Sugar cube
- 1 pole
- PCB mounting



| Contact specifications | | |
|---|-----------------|------------------------------|
| Contact configuration | | 1 CO (SPDT) |
| Rated current/Maximum peak current | A | 10/15 |
| Rated voltage/Maximum switching voltage | V AC | 250/250 |
| Rated load in AC1 | VA | 2,500 |
| Rated load in AC15 (230 VAC) | VA | 500 |
| Single phase motor rating (230 VAC) | kW/HP | 0.37/0.6 |
| Breaking capacity in DC1: 30/110/220V | A | 10/0.2/0.12 |
| Minimum switching load | mW (V/mA) | 500 (5/100) |
| Standard contact material | | 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 |
| Operating range | AC (50 Hz) | — |
| | DC | $(0.75 \dots 1.5)U_N$ |
| 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 | —/10 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | 100 · 10 ³ |
| Operate/release time (bounce included) | ms | 10/5 |
| Insulation according to EN 61810-5 | | 2.5 kV/2 |
| Insulation between coil and contacts (1.2/50µs) | kV | 4 |
| Dielectric strength between open contacts | V AC | 1,000 |
| Ambient temperature range | °C | -40...+85 |
| Protection category | | IP 67 |
| Approvals: (according to type) | | |

ORDERING INFORMATION

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



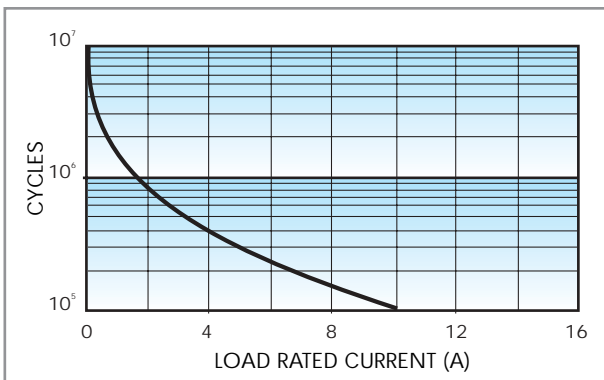
TECHNICAL DATA

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 |

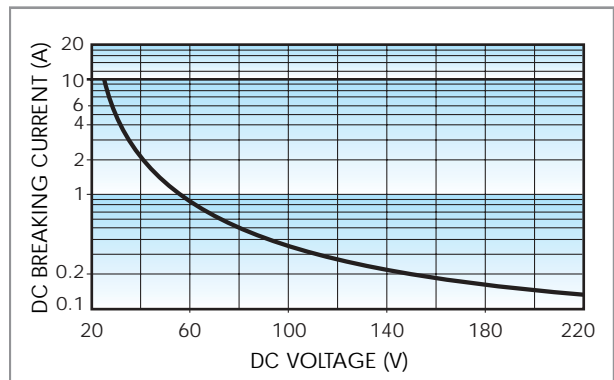
CONTACT SPECIFICATIONS

F 36



Electrical life vs AC1 load.

H 36



Breaking capacity in DC1 load.

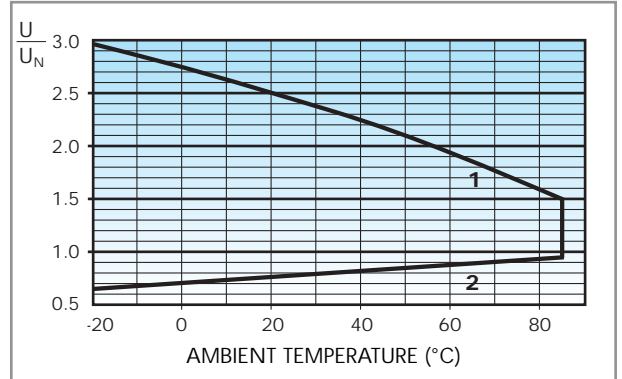
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release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

40.31

40.51

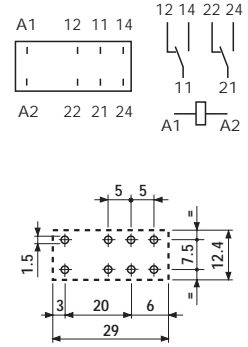
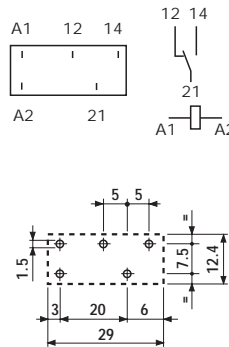
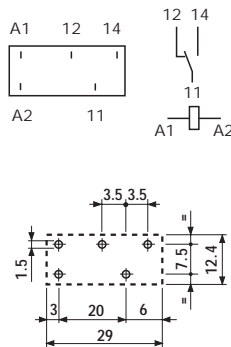
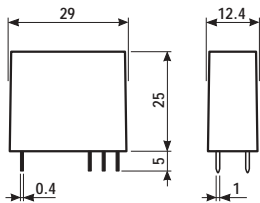
40.52



- 1 pole, 10 A
- 3.5 mm pinning
- PCB / for use with 95 series sockets

- 1 pole, 10 A
- 5 mm pinning
- PCB / for use with 95 series sockets

- 2 pole, 8 A
- 5 mm pinning
- PCB / for use with 95 series sockets



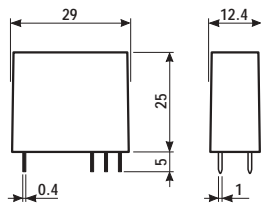
* for 400 V applications, requirements for pollution degree 2 are met.

| Contact specifications | | | | |
|---|-----------------|---|--------------|--------------|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) | 2 CO (DPDT) |
| 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/HP | 0.37/0.6 | 0.37/0.6 | 0.3/0.4 |
| 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 | 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 | | |
| Protection category | | IP 50 | | |

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



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

| | 40.61 | 40.xx.6 |
|--|--|---|
| | | |
| | <ul style="list-style-type: none"> - 1 pole, 16 A - 5 mm pinning - PCB / for use with 95 series sockets | <ul style="list-style-type: none"> - Bistable version (1 coil) - PCB / for use with 95 series sockets |
| | | <p>Bistable version (1 coil) types:</p> <p style="margin-left: 40px;">40.31.6...</p> <p style="margin-left: 40px;">40.51.6...</p> <p style="margin-left: 40px;">40.52.6...</p> <p style="margin-left: 40px;">40.61.6...</p> <p style="margin-left: 40px;">For wiring diagrams see page 16</p> |
| Contact specifications | | |
| Contact configuration | 1 CO (SPDT) | |
| 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/HP | 0.55/0.8 | 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 |
| Rated power AC/DC/sens. DC VA (50 Hz)/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 |
| 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 |
| Protection category | IP 50 | |
| 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

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

4 0 . 5 2 . 8 . 2 3 0 . ^A0 ^B0 ^C0 ^D0

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 CO (SPDT)
for: 40.31, 10 A
40.51, 10 A
40.61, 16 A
- 2 = 2 CO (DPDT)
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 = Standard
- 3 = Contact NO

D: Special applications

- 0 = Standard
- 1 = Sealed version (IP67)
- 3 = High temperature (+125°C)
sealed version

C: Options

- 0 = Standard

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 - 4 - 5 | 0 - 3 | 0 | 0 - 1 |
| 40.31/51 | DC | 0 - 2 - 4 - 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

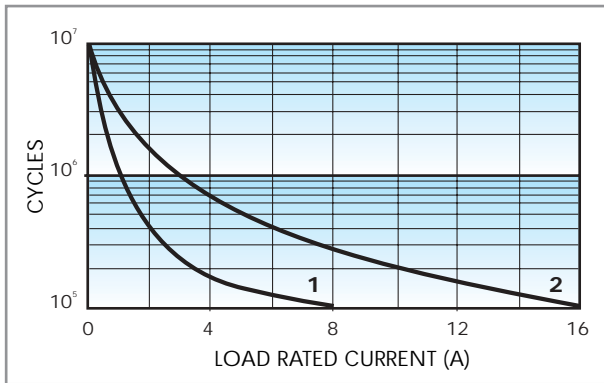
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

OTHER DATA

| | | | |
|---|-------------------------|----------------|--------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/4 (1CO) | 3/3 (2CO) |
| POWER LOST IN THE ENVIRONMENT | without contact current | W | |
| | with rated current | W | 0.6 |
| | | 1.2 (40.31/51) | 2 (40.61/52) |
| RECOMMENDED DISTANCE between RELAY mounted on P.C.B.s | mm | ≥5 | |

CONTACT SPECIFICATIONS

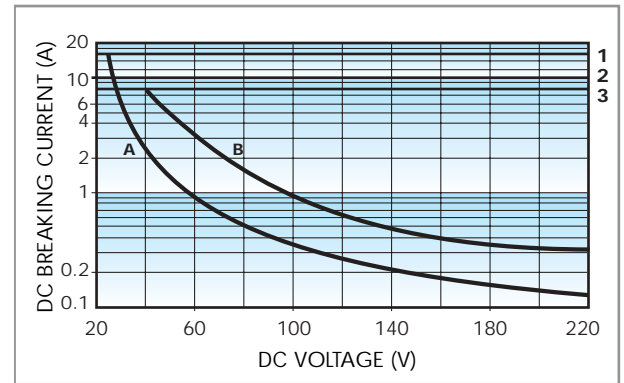
F 40



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



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 absorption 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 absorption 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 |

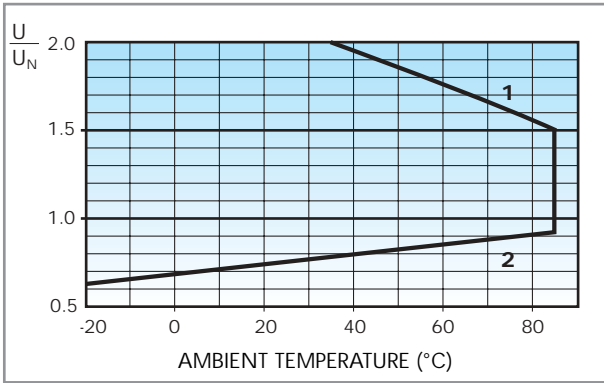
* $U_{min} = 0.8 U_N$ for 40.61 ** $U_{max} = 1.5 U_N$ for 40.61

AC VERSION DATA

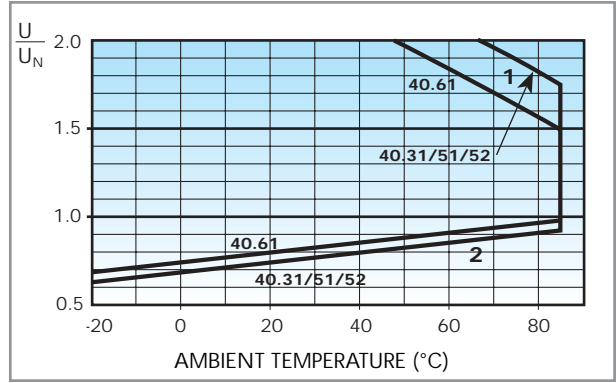
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption I at U_N (50Hz) mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--|
| | | U_{min} V | U_{max} V | | |
| 6 | 8.006 | 4.8 | 6.6 | 21 | 168 |
| 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 |

COIL SPECIFICATIONS

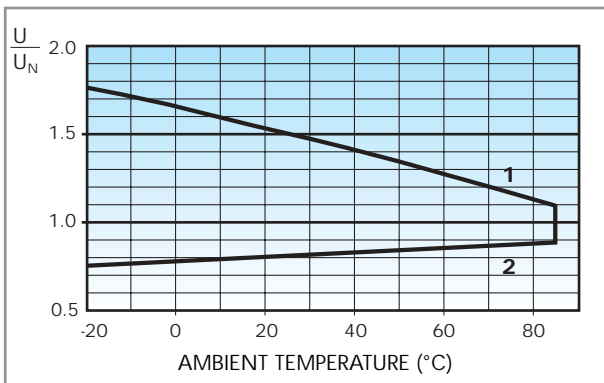
R 40 DC



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

BISTABLE COIL SPECIFICATIONS

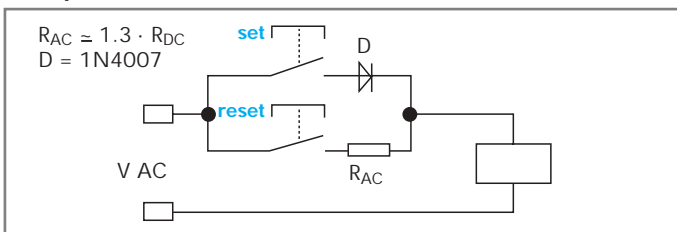
AC/DC VERSION DATA (bistable)

| Nominal voltage U_N V | Coil V | Operating range | | Resistance R Ω | Rated coil absorption 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 |

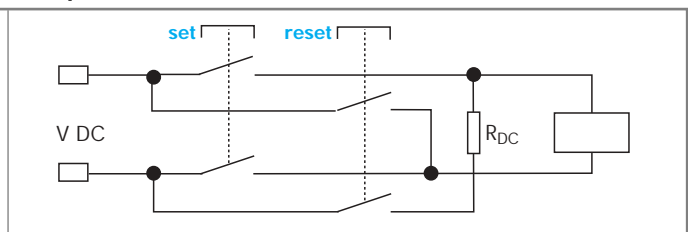
** R_{DC} = Resistance in DC, $R_{AC} = 1.3 \times R_{DC}$

Wiring Diagram for 40 Series bistable coil version

AC Operation



DC 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 current limiting resistor (RAC) and the contacts return to the reset position.

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 (RDC) 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

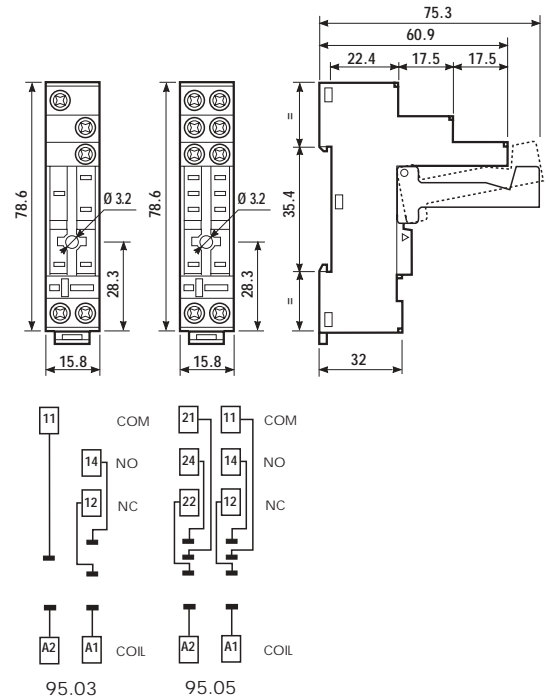
Approvals
(according to type):



| Relay type | | 40.31 | 40.51, 40.52, 40.61 |
|---|--------|--------------|---------------------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 95.03 | 95.05 |
| | BLACK* | 95.03.0 | 95.05.0 |
| Retaining and release clip (supplied with socket) | | 095.01 | 095.01 |
| Identification tag | | 095.00.4 | 095.00.4 |
| Modules | | 99.02 | 99.02 |
| Timer modules | | 86.10, 86.20 | 86.10, 86.20 |
| 8-way jumper link for 95.03 and 95.05 sockets | | 095.18 | 095.18 |

- 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
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:

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



99.02

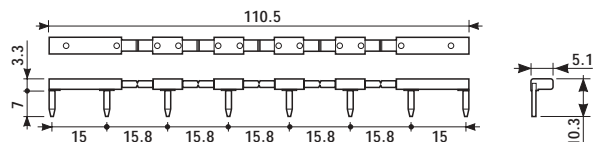
| 99 Series modules for 95.03 and 95.05 sockets | | BLUE | BLACK* |
|---|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.02.3.000.00 | 99.02.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.02.2.000.00 | 99.02.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 | 99.02.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 | 99.02.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 | 99.02.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.02.9.024.99 | 99.02.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.02.9.060.99 | 99.02.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.02.9.220.99 | 99.02.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.02.0.024.79 | 99.02.0.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.02.9.060.79 | 99.02.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.02.9.220.79 | 99.02.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 | 99.02.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 | 99.02.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 | 99.02.0.230.98.0 |
| RC | (6...24) V DC/AC | 99.02.0.024.09 | 99.02.0.024.09.0 |
| RC | (28...60) V DC/AC | 99.02.0.060.09 | 99.02.0.060.09.0 |
| RC | (110...240) V DC/AC | 99.02.0.230.09 | 99.02.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.02.8.230.07 | 99.02.8.230.07.0 |

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



095.18

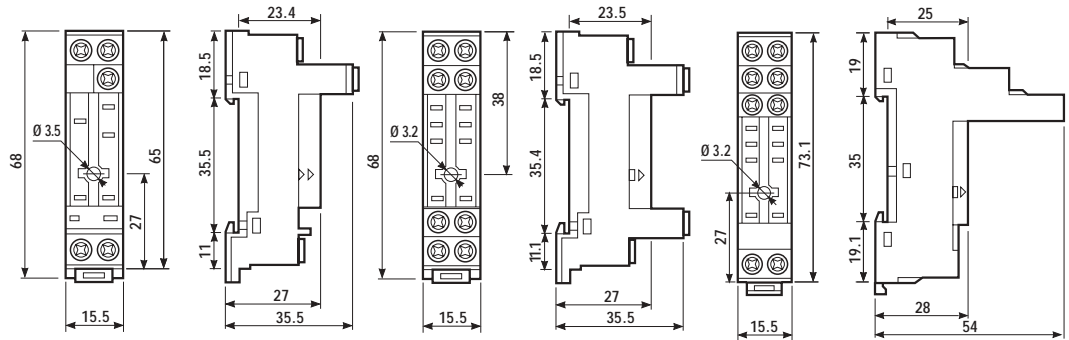
- RATED VALUES: 10 A - 250 V



*Available on request



| Relay type | 40.31 | 40.51, 40.52, 40.61 | | |
|---|--------|---------------------|---------|---------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 95.63 | 95.65 | 95.75 |
| | BLACK* | 95.63.0 | 95.65.0 | 95.75.0 |
| Retaining clip (supplied with socket) | 095.71 | 095.71 | 095.71 | |
| Modules | 99.01 | — | 99.01 | |
| 8-way jumper link for 95.63 and 95.75 sockets | 095.08 | 095.08 | 095.08 | |

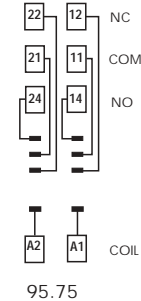
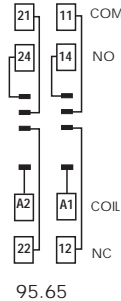
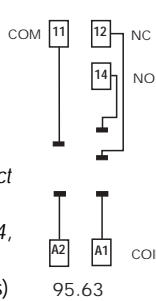


Approvals
(according to type):



- 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 (1.2/50µs) between coil and contacts (Types 95.63/75 only)
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:



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



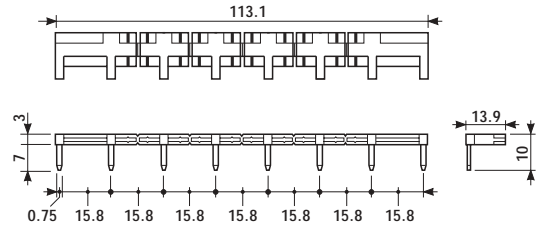
| 99 Series modules for 95.63 and 95.75 sockets | | BLUE | BLACK* |
|---|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.01.3.000.00 | 99.01.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.01.2.000.00 | 99.01.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 | 99.01.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 | 99.01.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 | 99.01.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.01.9.024.99 | 99.01.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.01.9.060.99 | 99.01.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.01.9.220.99 | 99.01.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.01.0.024.79 | 99.01.0.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.01.9.060.79 | 99.01.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.01.9.220.79 | 99.01.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 | 99.01.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 | 99.01.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 | 99.01.0.230.98.0 |
| RC | (6...24) V DC/AC | 99.01.0.024.09 | 99.01.0.024.09.0 |
| RC | (28...60) V DC/AC | 99.01.0.060.09 | 99.01.0.060.09.0 |
| RC | (110...240) V DC/AC | 99.01.0.230.09 | 99.01.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.01.8.230.07 | 99.01.8.230.07.0 |

* Available on request



- RATED VALUES: 10 A - 250 V

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



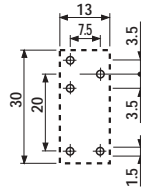
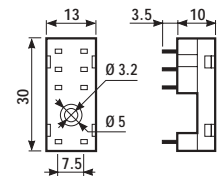
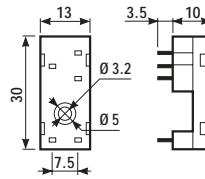
| Relay type | 40.31 | 40.51, 40.52, 40.61 |
|---|--------|---------------------|
| P.C.B. socket | BLUE | 95.13 |
| | BLACK* | 95.13.0 |
| Metal retaining clip (supplied with socket) | 095.51 | 095.51 |
| Plastic retaining clip | 095.52 | 095.52 |



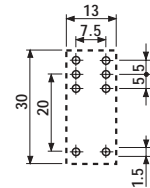
Approvals
(according to type):



- 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

*Available on request

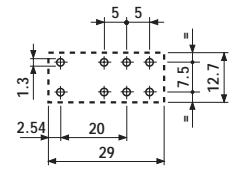
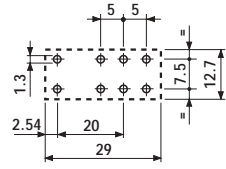
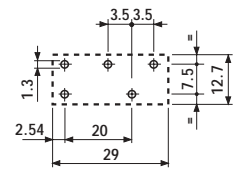
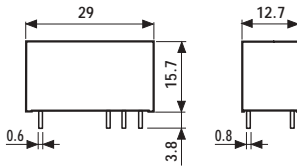
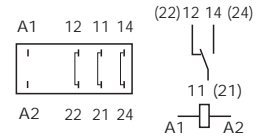
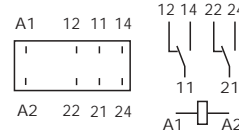
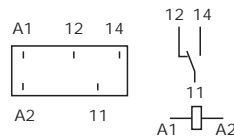
- Low-profile, only 15.7 mm high
- DC coil versions 0.4 W
- 8 mm, 6 kV(1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets and accessories: see 95 and 99 series

41.31
41.52
41.61


- 1 pole, 12 A
 - low profile, 3.5 mm pinning
 - PCB / for use with 95 series sockets

- 2 pole, 8 A
 - low profile, 5 mm pinning
 - PCB / for use with 95 series sockets

- 1 pole, 16 A
 - low profile, 5 mm pinning
 - PCB / for use with 95 series sockets



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

| Contact specifications | | | | |
|---|-----------------|-----------|---------------------------|---------------------------|
| Contact configuration | | | 1 CO (SPDT) | 2 CO (DPDT) |
| Rated current/Maximum peak current | | A | 12/25 | 8/15 |
| Rated voltage/Maximum switching voltage | | V AC | 250/400* | 250/400* |
| Rated load in AC1 | | VA | 3,000 | 2,000 |
| Rated load in AC15 (230 VAC) | | VA | 600 | 400 |
| Single phase motor rating (230 VAC) | | kW/HP | 0.5/0.75 | 0.3/0.5 |
| Breaking capacity in DC1: 30/110/220V | | A | 12/0.3/0.12 | 8/0.3/0.12 |
| Minimum switching load | | mW (V/mA) | 300 (5/5) | 300 (5/5) |
| Standard contact material | | | AgNi | AgNi |
| 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 |
| 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 |
| Must drop-out voltage | AC/DC | | —/0.1U _N | —/0.1 U _N |
| Technical data | | | | |
| Mechanical life AC/DC | cycles | | —/30 · 10 ⁶ | —/30 · 10 ⁶ |
| Electrical life at rated load AC1 | cycles | | 150 · 10 ³ | 80 · 10 ³ |
| Operate/release time (bounce included) | ms | | 7/8 | 7/8 |
| Insulation according to EN 61810-5 | | | 3.6kV/3 | 3.6kV/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 | | °C | −40...+85 | −40...+85 |
| Protection category | | | IP 50 | IP 50 |

Approvals: (according to type)



ORDERING INFORMATION

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

4

1

5

.

2

9

.

0

2

4

.

0

.

0

.

0

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 CO (SPDT) for
41.31, 12 A
41.61, 16A

2 = 2 CO (DPDT)
for 41.52, 8 A

Coil version ———

9 = DC

Coil voltage ———

see coil specifications

A: Contact material
0 = AgNi Standard

B: Contact circuit
0 = Standard

C: Options
0 = Standard

D: Special applications
0 = Standard

TECHNICAL DATA

INSULATION

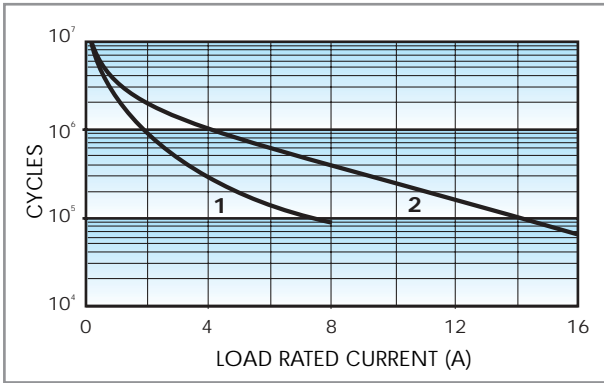
| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

OTHER DATA

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

CONTACT SPECIFICATIONS

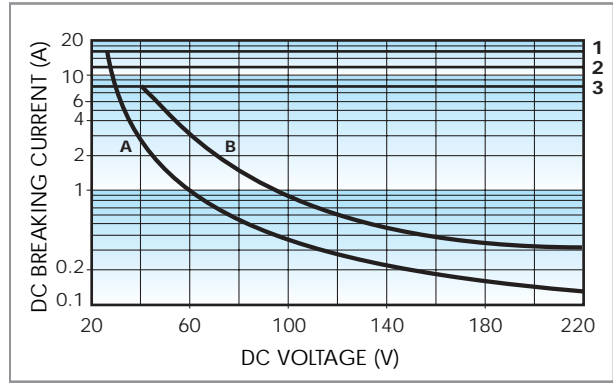
F 41



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

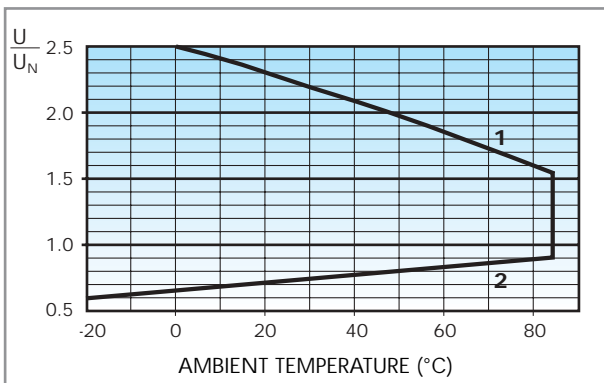
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release 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 absorption 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 | 42.0 | 90 | 7,340 | 8.1 |
| 110 | 9.110 | 77.0 | 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



95.05

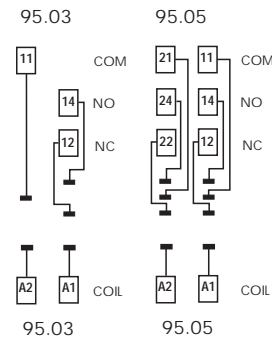
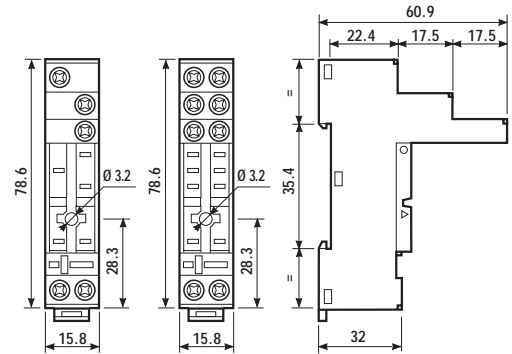
Approvals
(according to type):



- 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
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) °C
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:

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

| Relay type | 41.31 | 41.52, 41.61 |
|---|--------------|--------------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 95.03 |
| | BLACK* | 95.03.0 |
| Identification tag | 095.00.4 | 095.00.4 |
| Modules | 99.02 | 99.02 |
| Timer modules | 86.10, 86.20 | 86.10, 86.20 |
| 8-way jumper link for 95.03 and 95.05 sockets | 095.18 | 095.18 |



99.02

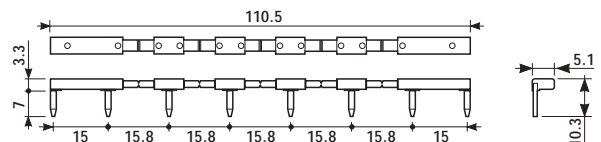
| 99 Series modules for 95.03 and 95.05 sockets | | BLUE | BLACK* |
|---|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.02.3.000.00 | 99.02.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.02.2.000.00 | 99.02.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 | 99.02.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 | 99.02.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 | 99.02.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.02.9.024.99 | 99.02.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.02.9.060.99 | 99.02.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.02.9.220.99 | 99.02.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.02.0.024.79 | 99.02.0.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.02.9.060.79 | 99.02.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.02.9.220.79 | 99.02.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 | 99.02.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 | 99.02.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 | 99.02.0.230.98.0 |
| RC | (6...24) V DC/AC | 99.02.0.024.09 | 99.02.0.024.09.0 |
| RC | (28...60) V DC/AC | 99.02.0.060.09 | 99.02.0.060.09.0 |
| RC | (110...240) V DC/AC | 99.02.0.230.09 | 99.02.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.02.8.230.07 | 99.02.8.230.07.0 |

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



095.18

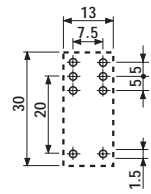
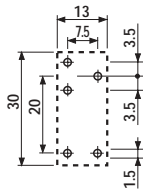
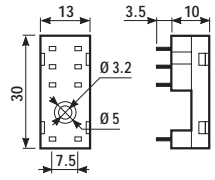
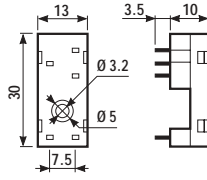
- RATED VALUES: 10 A - 250 V



*Available on request



| Relay type | 41.31 | 41.52, 41.61 | |
|------------------------|--------|--------------|---------|
| P.C.B. socket | BLUE | 95.13 | 95.15 |
| | BLACK* | 95.13.0 | 95.15.0 |
| Metal retaining clip | 095.41 | 095.41 | |
| Plastic retaining clip | 095.42 | 095.42 | |



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

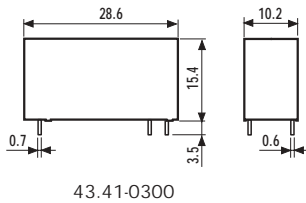
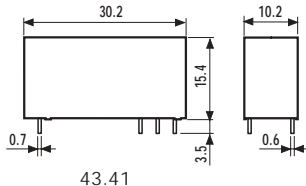
* Available on request

- 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

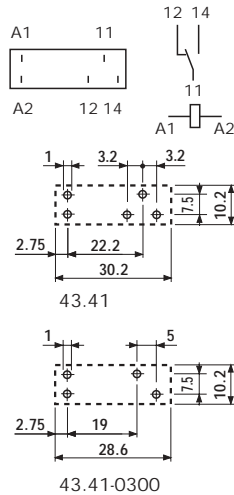
43.41



- 1 pole
- 3.2 mm pinning
- PCB mounting



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



| Contact specifications | | |
|---|-----------------|------------------------------------|
| Contact configuration | | 1 CO (SPDT) |
| Rated current/Maximum peak current | A | 10/15 |
| 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/HP | —/— |
| 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 |
| 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 | | 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 |
| Protection category | | IP 50 |
| Approvals: (according to type) | | GOST |

ORDERING INFORMATION

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

| | | | |
|---|---|---|---|
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">4</div> <div style="border: 1px solid black; padding: 2px 5px;">3</div> <div style="font-size: 10px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">4</div> <div style="font-size: 10px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">1</div> <div style="font-size: 10px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">7</div> <div style="font-size: 10px;">.</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="font-size: 10px;">.</div> <div style="border: 1px solid black; padding: 2px 5px;">2</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 _____ 4 = P.C.B. - 3.2 mm pinning</p> <p>No. of poles _____ 1 = 1 CO (SPDT), 10 A</p> <p>Coil version _____ 7 = Sensitive DC</p> <p>Coil voltage _____ see coil specifications</p> | <p>A: Contact material 2 = AgCdO Standard</p> <p>B: Contact circuit 0 = Standard 3 = NO</p> | <p>C: Options 0 = Standard</p> <p>D: Special applications 0 = Standard 1 = Sealed version (IP 67)</p> |
|---|---|---|---|

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 | 0 - 3 | 0 | 0 - 1 |

TECHNICAL DATA

INSULATION

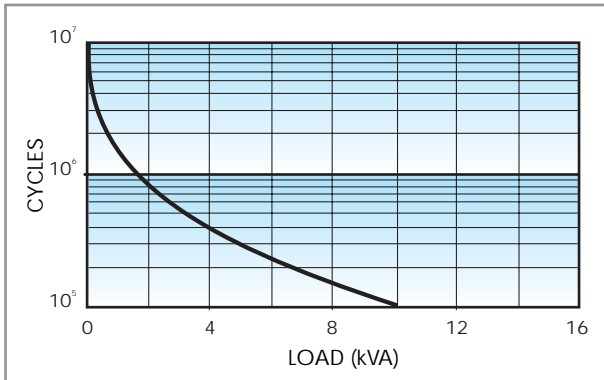
| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

OTHER DATA

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

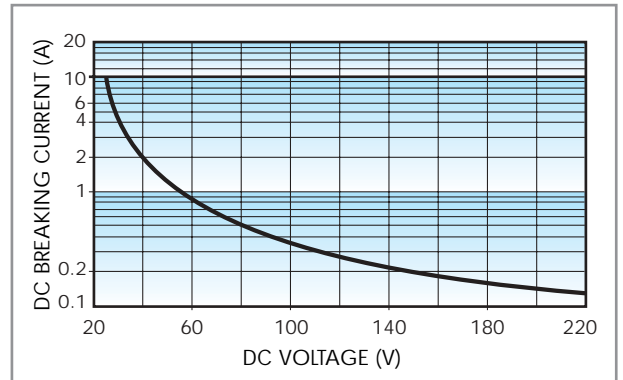
CONTACT SPECIFICATIONS

F 43



Electrical life vs AC1 load.

H 43



Breaking capacity in DC1 load.

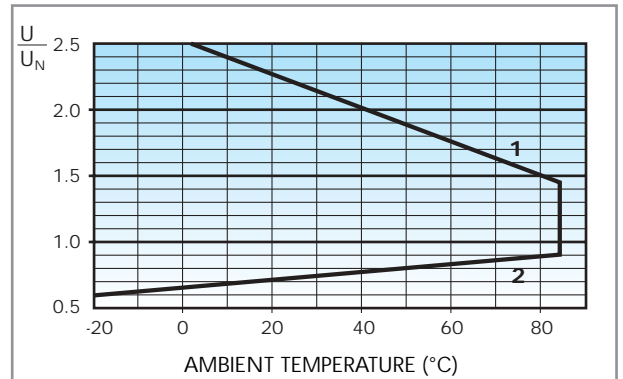
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^5$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release 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 absorption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 3 | 7.003 | 2.2 | 7 | 36 | 83.5 |
| 6 | 7.006 | 4.2 | 13.4 | 150 | 40 |
| 9 | 7.009 | 6.5 | 20.8 | 330 | 27.3 |
| 12 | 7.012 | 8.4 | 28.1 | 600 | 20 |
| 18 | 7.018 | 13 | 41 | 1,300 | 13.8 |
| 24 | 7.024 | 16.8 | 51.4 | 2,300 | 10.4 |
| 36 | 7.036 | 25.2 | 74.7 | 5,200 | 6.9 |
| 48 | 7.048 | 33.6 | 98 | 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



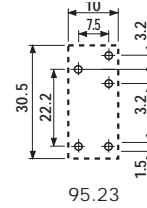
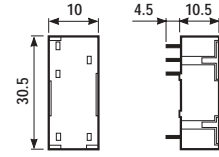
95.23

| | | |
|---------------------------------------|--------------|---------|
| Relay type | 43.41 | |
| P.C.B. socket | BLUE | 95.23 |
| | BLACK* | 95.23.0 |
| Retaining clip (supplied with socket) | 095.43 | |

Approvals
(according to type):



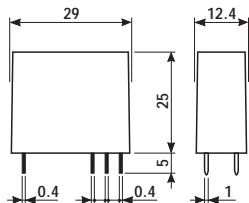
- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s) between coil and contacts
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C



95.23

* Available on request

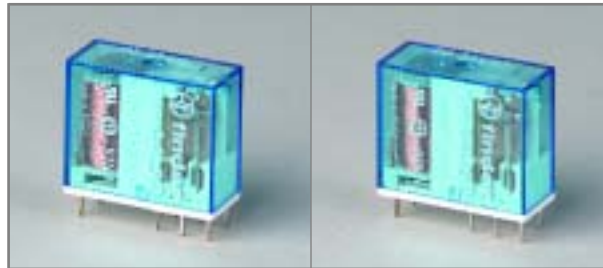
- DC and sensitive DC available
- 8 mm, 6 kV (1.2/50 μs) between coil and contacts
- Ambient temperature +85°C
- Sockets and accessories: see 95, 99 and 86 series



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

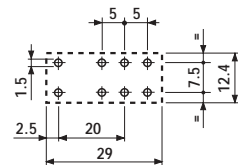
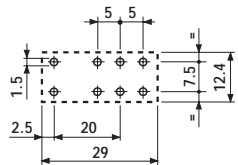
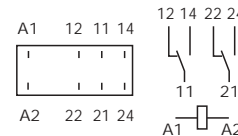
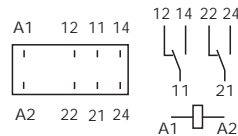
44.52

44.62



- 2 pole, 6 A
- 5 mm pinning
- PCB / for use with 95 series sockets

- 2 pole, 10 A
- 5 mm pinning
- PCB / for use with 95 series sockets



| Contact specifications | | | |
|---|-----------------|--|--|
| Contact configuration | | 2 CO (DPDT) | 2 CO (DPDT) |
| 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/HP | 0.185/0.3 | 0.37/0.6 |
| 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 | —/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 | —/20 · 10 ⁶ | —/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) | 10/12 · (15/12 sens) |
| 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 | °C | -40...+85 | -40...+85 |
| Protection category | | IP 50 | IP 50 |
| Approvals: (according to type) | | GOST RINA UL cRU US VDE | |

ORDERING INFORMATION

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

| | | | | | | | | | | | | |
|--|----------|----------|----------|----------|----------|----------|----------|----------|---|----------|--|----------|
| | 4 | 4 | 5 | 2 | 9 | 0 | 2 | 4 | 0 | 0 | 0 | 0 |
| | | | | | | | | | A | B | C | D |
| Series | 44 | | 5 | | 2 | | 9 | | 0 | | 0 | |
| Type | 5 | | 6 | | 2 | | 9 | | 0 | | 0 | |
| 5 = P.C.B. - 5 mm pinning 6 = P.C.B. - 5 mm pinning | | | | | | | | | | | | |
| No. of poles | 2 | | 2 | | 2 | | 2 | | 0 | | 0 | |
| 2 = 2 CO (DPDT) 44.52, 6 A 44.62, 10 A | | | | | | | | | | | | |
| Coil version | 7 | | 9 | | 0 | | 0 | | 0 | | 0 | |
| 7 = Sensitive DC 9 = DC | | | | | | | | | | | | |
| Coil voltage | 24 | | 24 | | 24 | | 24 | | 0 | | 0 | |
| see coil specifications | | | | | | | | | | | | |
| | | | | | | | | | A: Contact material 0 = AgNi Standard 4 = AgSnO ₂ for 44.62 only | | D: Special applications 0 = Standard | |
| | | | | | | | | | B: Contact circuit 0 = Standard | | C: Options 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 | | 3 |
| | overvoltage category | | III |

IMMUNITY

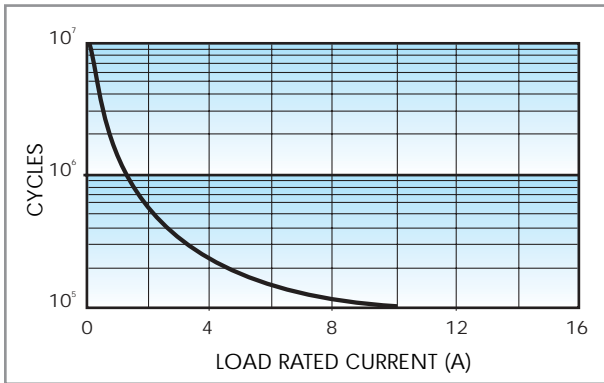
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

OTHER DATA

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

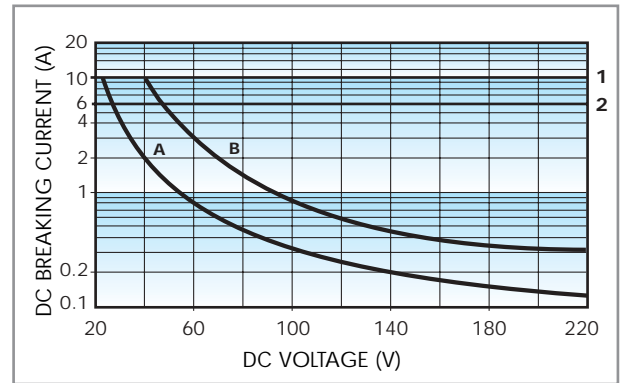
CONTACT SPECIFICATIONS

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)

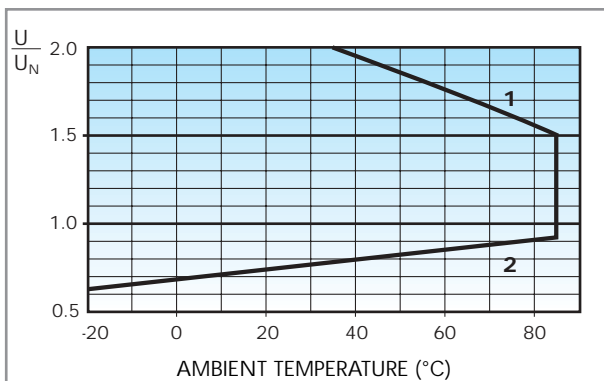
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.4 | 9 | 55 | 109 |
| 9 | 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 absorption 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

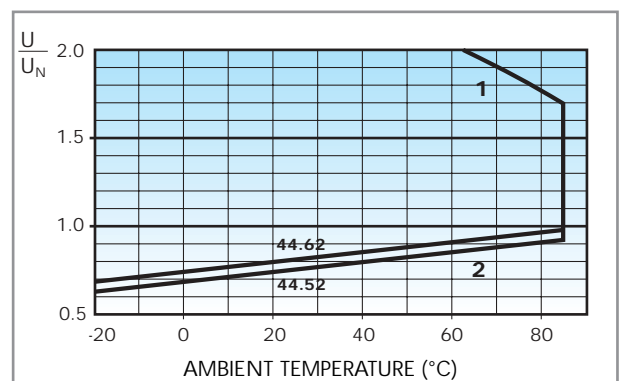


Operating range (DC version) vs ambient temperature.

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

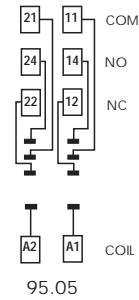
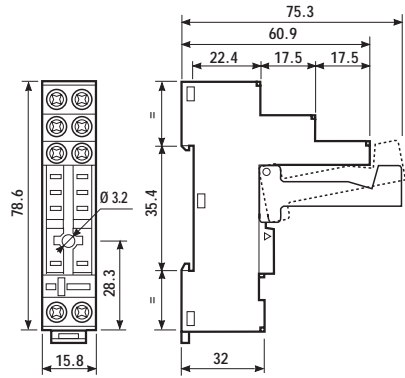
Approvals
(according to type):



| | | |
|--|---------------------|--------------|
| Relay type | 44.52, 44.62 | |
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 95.05 |
| | BLACK* | 95.05.0 |
| Retaining and release clip (supplied with socket) | | 095.01 |
| Identification tag | | 095.00.4 |
| Modules | | 99.02 |
| Timer modules | | 86.10, 86.20 |
| 8-way jumper link for 95.05 sockets | | 095.18 |

- 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
- MAX WIRE SIZE:

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



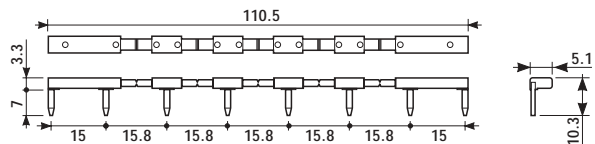
99.02

| 99 Series modules for 95.05 sockets | | BLUE | BLACK* |
|--|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.02.3.000.00 | 99.02.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.02.2.000.00 | 99.02.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 | 99.02.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 | 99.02.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 | 99.02.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.02.9.024.99 | 99.02.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.02.9.060.99 | 99.02.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.02.9.220.99 | 99.02.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.02.0.024.79 | 99.02.0.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.02.9.060.79 | 99.02.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.02.9.220.79 | 99.02.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 | 99.02.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 | 99.02.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 | 99.02.0.230.98.0 |
| RC | (6...24) V DC/AC | 99.02.0.024.09 | 99.02.0.024.09.0 |
| RC | (28...60) V DC/AC | 99.02.0.060.09 | 99.02.0.060.09.0 |
| RC | (110...240) V DC/AC | 99.02.0.230.09 | 99.02.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.02.8.230.07 | 99.02.8.230.07.0 |



095.18

| | |
|--|--------|
| 8-way jumper link for 95.05 sockets | 095.18 |
|--|--------|



- RATED VALUES: 10 A - 250 V

* Available on request



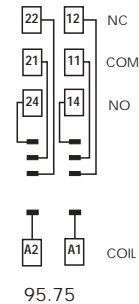
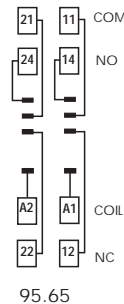
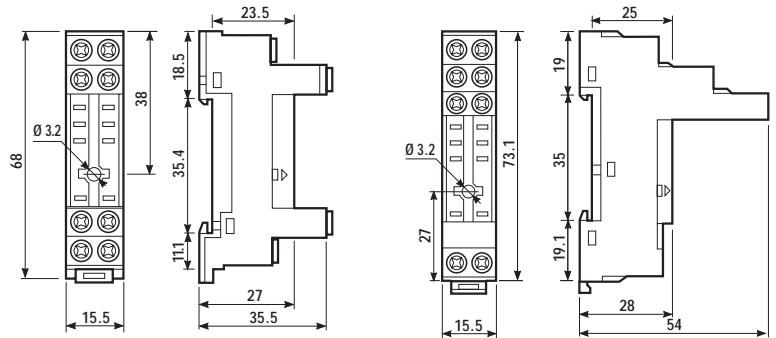
Approvals
(according to type):



- RATED VALUES: 10 A - 250 V
- INSULATION: ≥ 6 kV (1.2/50 μ s)
between coil and contacts (95.75 only)
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70) $^{\circ}$ C
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:

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

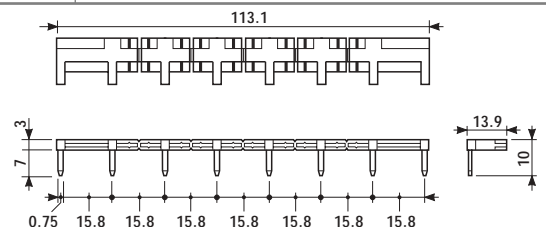
| Relay type | 44.52, 44.62 | |
|---|--------------|---------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 95.65 |
| | BLACK* | 95.65.0 |
| Retaining clip (supplied with socket) | 095.71 | 095.71 |
| Modules | — | 99.01 |
| 8-way jumper link for 95.65/75 sockets | 095.08 | 095.08 |



| 99 Series modules for 95.75 sockets | | BLUE | BLACK* |
|-------------------------------------|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.01.3.000.00 | 99.01.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.01.2.000.00 | 99.01.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 | 99.01.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 | 99.01.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 | 99.01.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.01.9.024.99 | 99.01.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.01.9.060.99 | 99.01.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.01.9.220.99 | 99.01.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.01.0.024.79 | 99.01.0.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.01.9.060.79 | 99.01.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.01.9.220.79 | 99.01.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 | 99.01.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 | 99.01.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 | 99.01.0.230.98.0 |
| RC | (6...24) V DC/AC | 99.01.0.024.09 | 99.01.0.024.09.0 |
| RC | (28...60) V DC/AC | 99.01.0.060.09 | 99.01.0.060.09.0 |
| RC | (110...240) V DC/AC | 99.01.0.230.09 | 99.01.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.01.8.230.07 | 99.01.8.230.07.0 |



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



- RATED VALUES: 10 A - 250 V

*Available on request



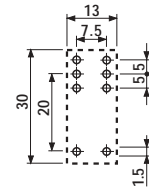
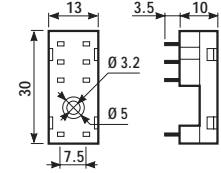
95.15

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, 40.62 | |
| P.C.B. socket | BLUE | 95.15 |
| | BLACK* | 95.15.0 |
| Metal retaining clip (supplied with socket) | | 095.51 |
| Plastic retaining clip | | 095.52 |



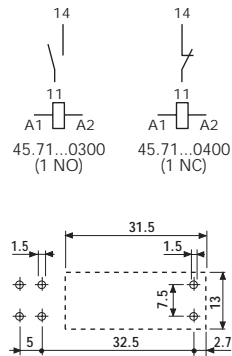
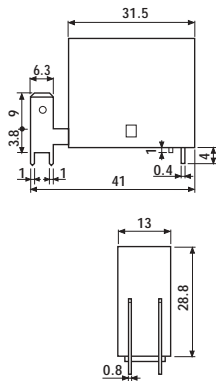
95.15

45.71

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



- 1 NO or 1 NC
- Max ambient temperature +125°C
- PCB mounting + Faston 250



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

| Contact specifications | |
|---|--|
| Contact configuration | 1 NO (SPST - NO)/1 NC (SPST - 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/HP 0.55/0.8 |
| 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) | <div style="display: flex; justify-content: space-between;"> V AC (50/60 Hz) — V DC 6 - 12 - 24 - 48 - 60 </div> |
| Rated power AC/DC | VA (50 Hz)/W —/0.36 |
| Operating range | <div style="display: flex; justify-content: space-between;"> AC (50 Hz) — DC (0.7...1.2)U_N </div> |
| 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 (1.2/50μs) | kV 6 (8mm) |
| Dielectric strength between open contacts | V AC 1,000 |
| Ambient temperature range | °C -40...+125 |
| Protection category | IP 50 |
| Approvals: (according to type) | GOST |

ORDERING INFORMATION

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

| | | | | | | | | | | | | |
|-------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | 4 | 5 | 7 | 1 | 7 | 0 | 1 | 2 | 0 | 3 | 0 | 0 |
| | A | | B | | C | | D | | | | | |
| Series | | | | | | | | | | | | |
| Type | | | | | | | | | | | | |
| 7 = P.C.B. - Faston 250 | | | | | | | | | | | | |
| No. of poles | | | | | | | | | | | | |
| 1 = 1 pole, 16 A | | | | | | | | | | | | |
| Coil version | | | | | | | | | | | | |
| 7 = Sensitive DC | | | | | | | | | | | | |
| Coil voltage | | | | | | | | | | | | |
| see coil specifications | | | | | | | | | | | | |

| | |
|----------------------------|--------------------------------|
| A: Contact material | D: Special applications |
| 0 = Standard AgCdO | 0 = Standard |
| B: Contact circuit | C: Options |
| 3 = NO | 0 = Standard |
| 4 = NC | |

TECHNICAL DATA

INSULATION

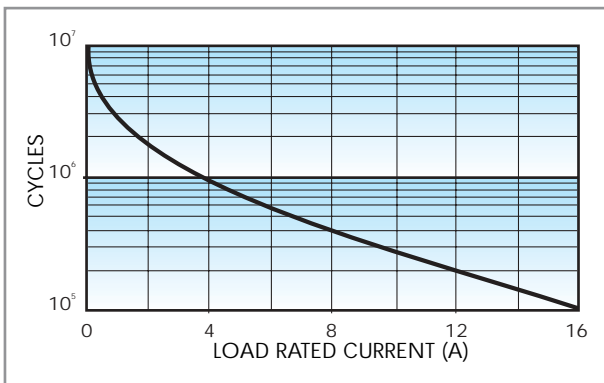
| | | | |
|------------------------------------|---------------------------------|----|-----|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 |
| | overvoltage category | | III |

OTHER DATA

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

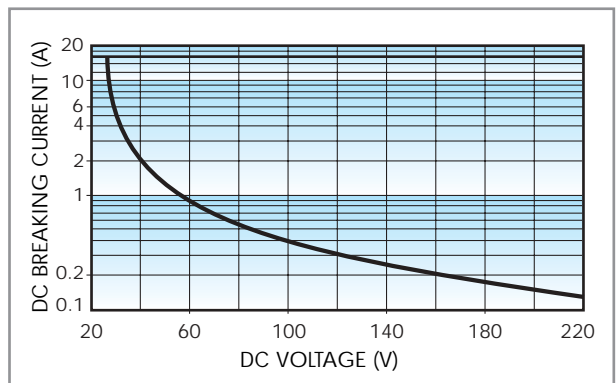
CONTACT SPECIFICATIONS

F 45



Electrical life AC1 load (+85°C).

H 45



Breaking capacity for DC1 load.

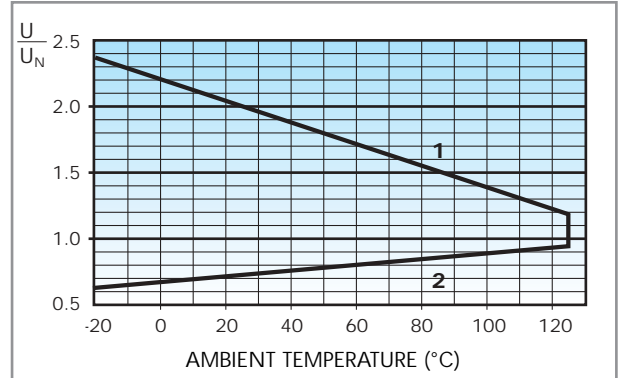
- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.
 - In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.
- Note:** the release 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 absorption 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 | 29 | 1,600 | 15 |
| 48 | 7.048 | 33.6 | 58 | 6,000 | 8 |
| 60 | 7.060 | 42 | 72 | 8,000 | 7.5 |

R 45 DC



Operating range vs ambient temperature

1 - Max coil voltage permitted

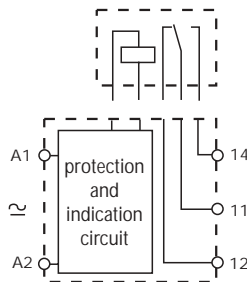
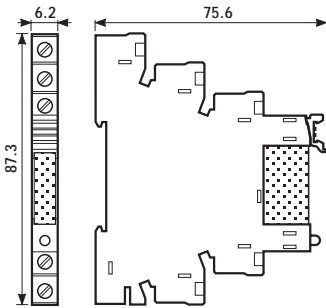
2 - Min pick-up voltage with coil at ambient temperature

- Relay interface modules for use with PLC systems, 6.2 mm wide
- Sensitive 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



- 6.2 mm wide
- 1 pole
- 35 mm rail (EN 50022) mounting



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

| Contact specifications | | |
|---|--------------------|---|
| Contact configuration | | 1 CO (SPDT) |
| 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/HP | —/— |
| Breaking capacity in DC1: 30/110/220V | A | 6/0.2/0.15 |
| Minimum switching load | mW (V/mA) | 500 (12/10) |
| Standard contact material | | 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 40 |
| Operating range | AC/DC (50 Hz) | see table page 40 |
| | DC | (0.7...2.2)U _N |
| Holding voltage | AC/DC | 0.6 U _N /0.6 U _N |
| Must drop-out voltage | AC/DC | 0.1 U _N /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 | 7/11 |
| 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...+55 |
| Protection category | | IP 20 |
| Approvals (relay): (according to type) | | |
| GOST | | |

ORDERING INFORMATION

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

| | | | | | | | | | | | | | | | | | |
|------------------------------------|----------|----------|---|----------|----------|----------------------------|----------|----------|--|----------|----------|--|--|--|--------------------------------|--|--|
| 3 | 8 | 5 | 1 | 7 | 0 | 1 | 2 | 0 | 0 | 5 | 0 | | | | | | |
| Series | | | Type | | | A: Contact material | | | B: Contact circuit | | | C: Options | | | D: Special applications | | |
| 5 = electromechanical relay output | | | 1 = 1 CO (SPDT), 6 A | | | 0 = Ag Ni Standard | | | 0 = Standard | | | 5 = Standard DC: green LED + diode (positive A1) | | | 0 = Standard | | |
| No. of poles | | | Coil version | | | B: Contact circuit | | | C: Options | | | D: Special applications | | | | | |
| 1 = 1 CO (SPDT), 6 A | | | 0 = AC (50/60 Hz)/ DC 7 = Sensitive DC | | | 0 = Standard | | | 5 = Standard DC: green LED + diode (positive A1) 6 = Standard AC/DC | | | 0 = Standard | | | | | |
| Coil voltage | | | see coil specifications | | | | | | | | | | | | | | |

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

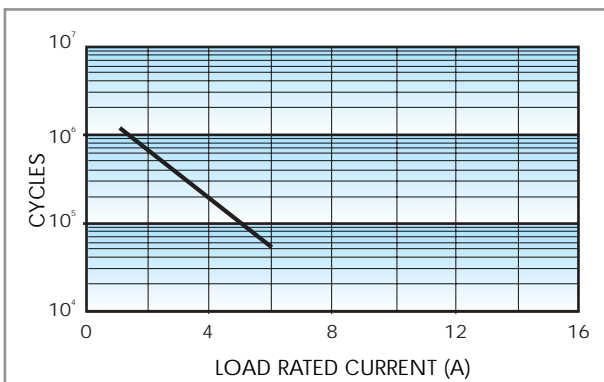
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 3 (2kV) |

OTHER DATA

| | | | |
|---|-------------------------|------|------------------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/5 | |
| POWER LOST IN THE ENVIRONMENT | without contact current | W | 0.2 (12V) - 0.9 (240V) |
| | with rated current | W | 0.5 (12V) - 1.5 (240V) |

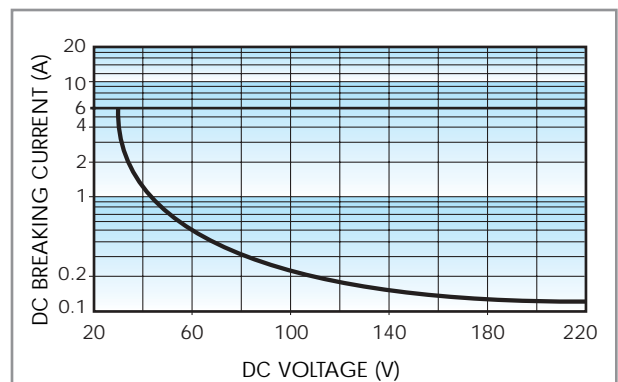
CONTACT SPECIFICATIONS

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.

COIL SPECIFICATIONS

AC/DC VERSION DATA

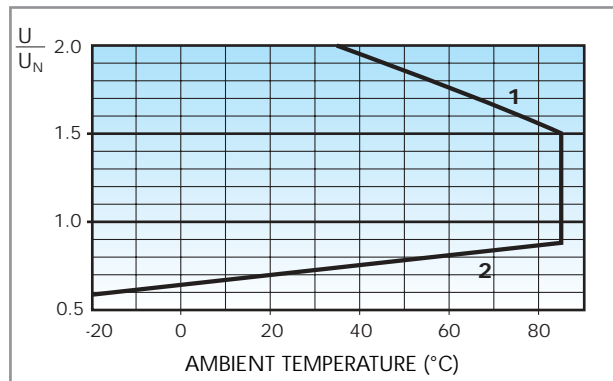
| Nominal voltage U_N V | Coil code | Operating range | | Rated coil absorption I at U_N mA | Power absorption P at U_N W |
|-------------------------------|-----------|-----------------|----------------|---|-------------------------------------|
| | | U_{min} V | U_{max} V | | |
| 12 | 0.012 | 9.8 | 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(*) |

(*) Nominal absorption and Power absorption values relate at $U_N = 125$ and 240 V.

DC VERSION DATA (sensitive)

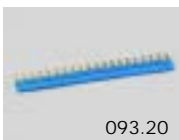
| Nominal voltage U_N V | Coil code | Operating range | | Rated coil absorption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|---|
| | | U_{min} V | U_{max} V | |
| 6 | 7.006 | 5 | 7.2 | 48.1 |
| 12 | 7.012 | 9.8 | 14.4 | 15.2 |
| 24 | 7.024 | 18.2 | 28.8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

R 38 sens. DC



Operating range Vs ambient temperature
1 - Max coil voltage permitted at nominal load
2 - Min pick-up voltage with coil at ambient temperature

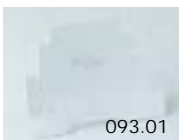
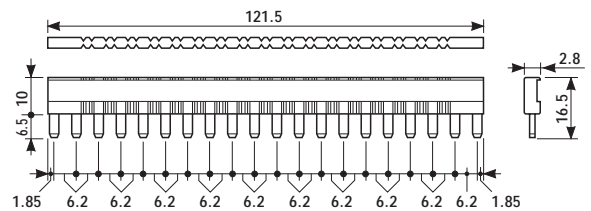
ACCESSORIES



093.20

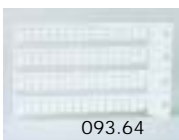
- RATED VALUES: 36 A - 250 V

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



093.01

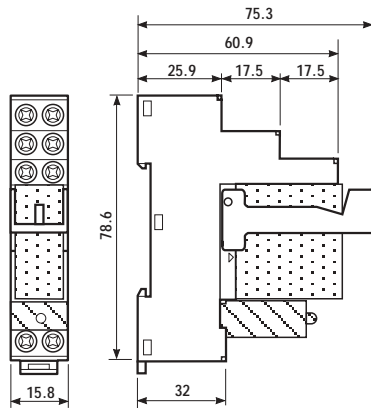
| | |
|--------------------------|--------|
| Plastic separator | 093.01 |
|--------------------------|--------|



093.64

| | |
|---------------------------------------|--------|
| 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 protection module provided
- Identification label
- 35 mm rail (EN 50022) mounting

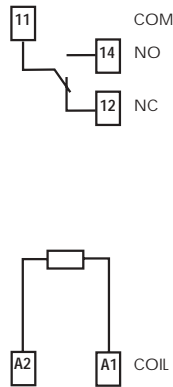


* for 400 V applications, requirements for pollution degree 2 are met.

48.31



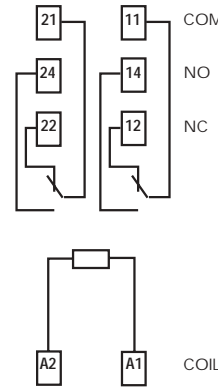
- 1 pole, 10 A
- 35 mm rail (EN 50022) mounting



48.52



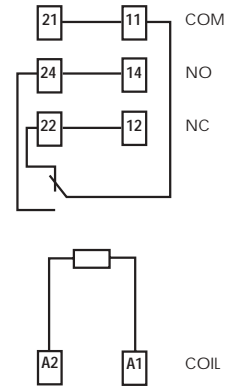
- 2 pole, 8 A
- 35 mm rail (EN 50022) mounting



48.61



- 1 pole, 16 A
- 35 mm rail (EN 50022) mounting



| Contact specifications | | | | |
|---|-----------------|--|--|--|
| Contact configuration | | 1 CO (SPDT) | 2 CO (DPDT) | 1 CO (SPDT) |
| 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/HP | 0.37/0.6 | 0.3/0.4 | 0.55/0.8 |
| 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 | | | | |
| 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 |
| | DC/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)

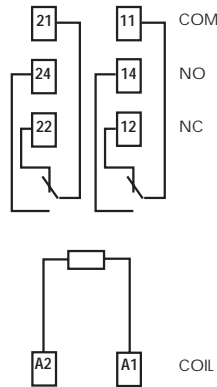
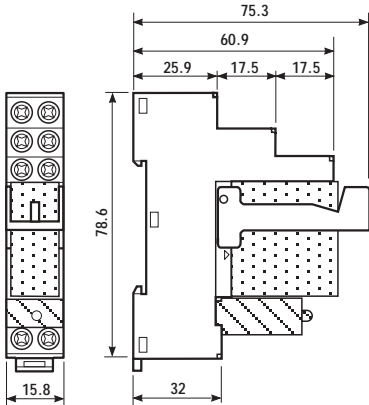


48.62

- 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 protection module provided
- Identification label
- 35 mm rail (EN 50022) mounting



- 2 pole, 10 A
- 35 mm rail (EN 50022) mounting



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

| Contact specification | | |
|---|-----------------|---------------------------|
| Contact configuration | | 2 CO (DPDT) |
| 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/HP | 0.37/0.6 |
| 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) | — |
| | DC/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 (DPDT) 6 A, coil rated 24 V sensitive DC, green LED + diode.

4

8

.

5

.

2

.

7

.

0

2

4

.

0

0

.

5

0

Series _____

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

No. of poles _____
 1 = 1 CO (SPDT) for 48.31, 10 A
 48.61, 16 A
 2 = 2 CO (DPDT) 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 = Standard

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

D: Special applications
 0 = Standard

TECHNICAL DATA

INSULATION

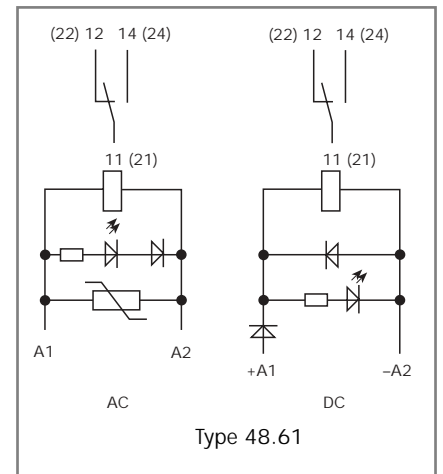
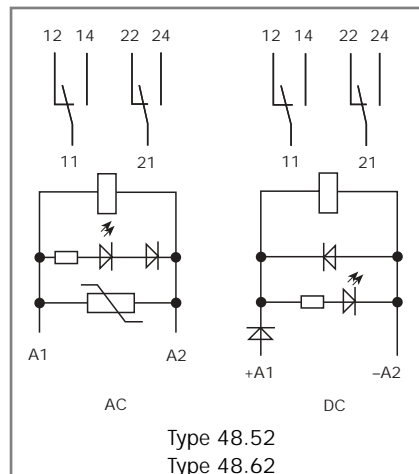
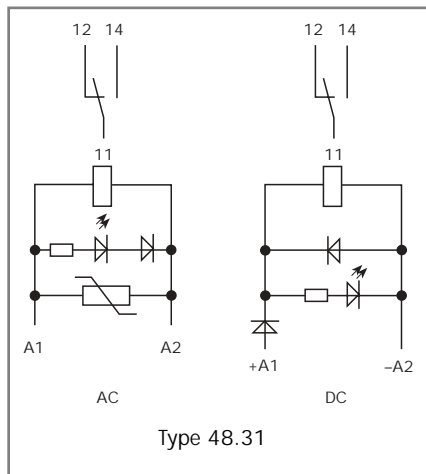
| | | | |
|------------------------------------|---------------------------------|----|-----------------------------|
| INSULATION according to EN 61810-5 | insulation rated voltage | V | 250 |
| | rated impulse withstand voltage | kV | 3.6 |
| | pollution degree | | 3 (48.31/61/62) 2 (48.52) |
| | overvoltage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

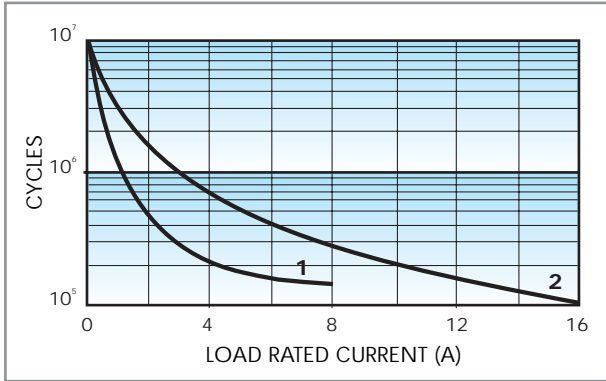
OTHER DATA

| | | | |
|---|-------------------------|-------------|---|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/4 (1 CO) | 3/3 (2 CO) |
| POWER LOST IN THE ENVIRONMENT | without contact current | W | |
| | with rated current | W | W |
| | | 1.2 (48.31) | 1.3 (48.52) 1.2 (48.61) 1.2 (48.62) |



CONTACT SPECIFICATIONS

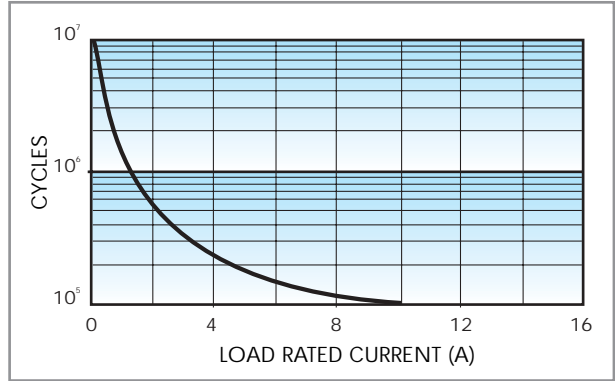
F 48/1



Electrical life vs AC1 load.

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

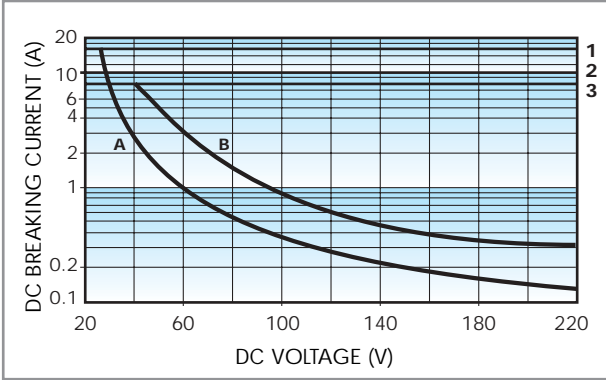
F 48/2



Electrical life vs AC1 load.

Type 48.62 (10 A).

H 48/1



Breaking capacity for DC1 load.

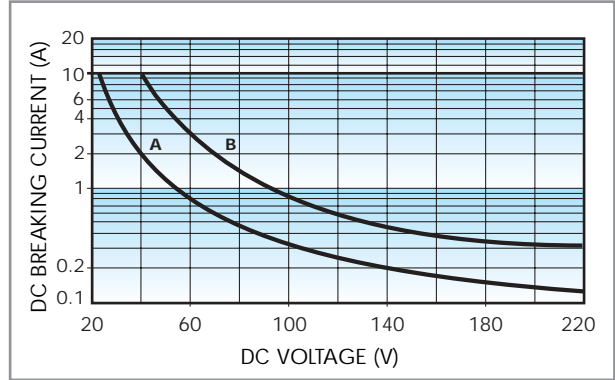
- 1** - Type 48.61.
- 2** - Type 48.31.
- 3** - Type 48.52.
- A** - Load applied to 1 contact
- B** - Load applied to 2 contacts in series

- 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

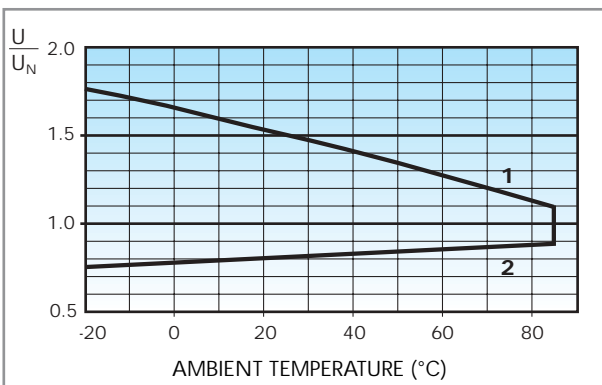
| Nominal voltage U_N V | Coil code | Operating range | | Rated coil absorption I at U_N (50Hz) mA |
|-------------------------------|--------------|-----------------|----------------|--|
| | | U_{min} V | U_{max} V | |
| 12 | 8.012 | 9.6 | 13.2 | 90.5 |
| 24 | 8.024 | 19.2 | 26.4 | 46 |
| 110 | 8.110 | 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 absorption 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 |

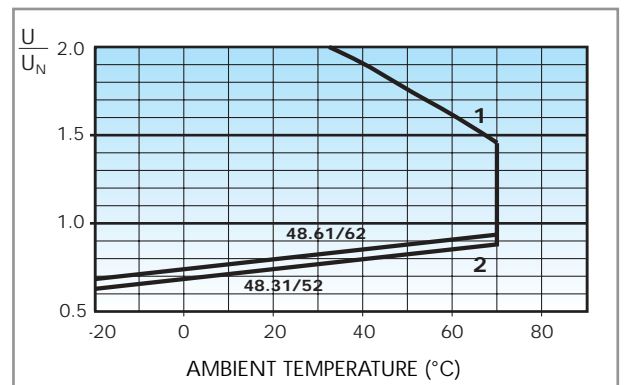
* $U_{min} = 0.8 U_N$ for 48.61 and 48.62

R 48 AC



Operating range (AC version) vs ambient temperature.
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

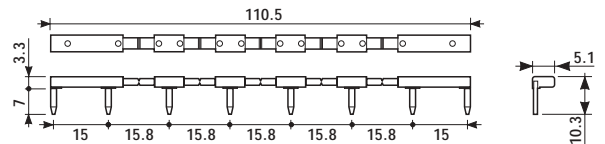
ACCESSORIES



8-way jumper link for 48 series

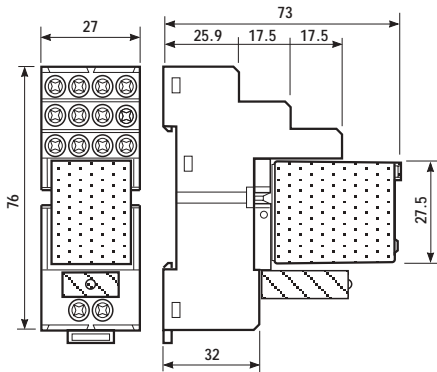
095.18

- RATED VALUES: 10 A - 250 V

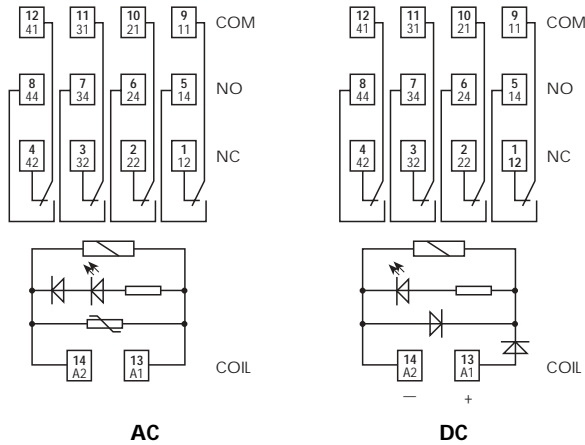


- Relay interface modules for use with PLC systems, 27mm wide
- AC and DC versions available
- Supply status indication or coil protection module provided
- Identification label
- 35 mm rail (EN 50022) mounting

58.34



- 4 pole, 5 A
- 35 mm rail (EN 50022) mounting



Contact specifications

| | | |
|---|-------------|-------------|
| Contact configuration | 4 CO (4PDT) | |
| 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/HP | 0.125/0.2 |
| 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 ($1.2/50\mu s$) | kV | 3.6 |
| Dielectric strength between open contacts | V AC | 1,000 |
| Ambient temperature range | $^{\circ}C$ | $-40 \dots +70$ |
| 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 (4PDT), 24 V DC coil with green LED + diode.

| | | | | | | | | | | | |
|----------------------|----------|----------|----------|----------------------------|----------|----------|----------|--|----------|----------|----------|
| 5 | 8 | 3 | 4 | 9 | 0 | 2 | 4 | 0 | 0 | 5 | 0 |
| Series | | | | A: Contact material | | | | D: Special applications | | | |
| Type | | | | 0 = AgNi Standard | | | | 0 = Standard | | | |
| 3 = 35mm rail mount | | | | B: Contact circuit | | | | C: Options | | | |
| No. of poles | | | | 0 = Standard | | | | 50 = Standard DC: LED + diode (polarity +A1) | | | |
| 4 = 4 CO (4PDT), 5 A | | | | Coil version | | | | 60 = Standard AC: LED + varistor | | | |
| Coil voltage | | | | 8 = AC (50/60 Hz) | | | | | | | |
| | | | | 9 = DC | | | | | | | |
| | | | | see coil specifications | | | | | | | |

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

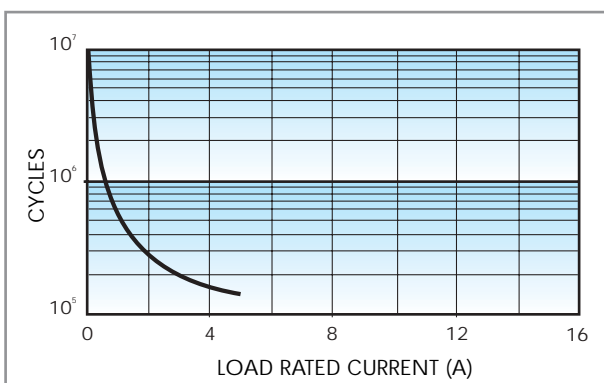
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

| | | |
|---|-------------------------|-----|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 6/6 |
| POWER LOST IN THE ENVIRONMENT | without contact current | W |
| | with rated current | W |

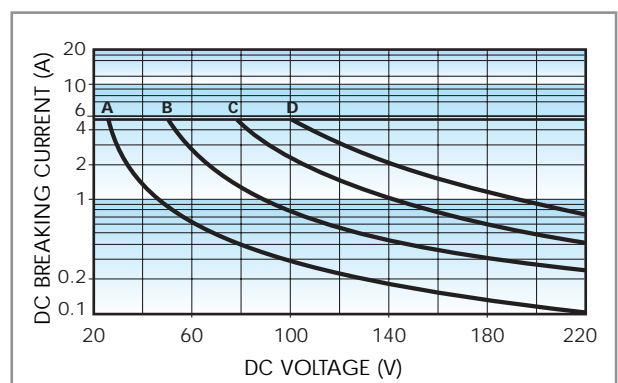
CONTACT SPECIFICATIONS

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

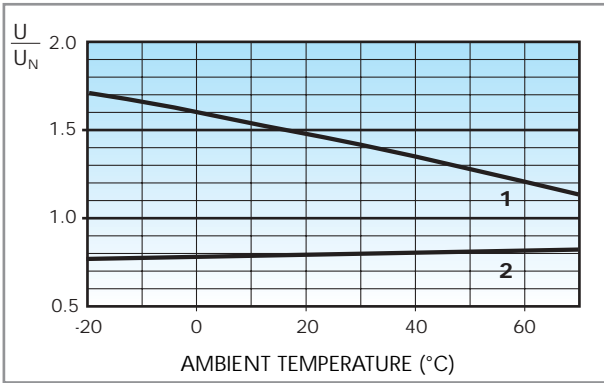
AC VERSION DATA

| 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 |

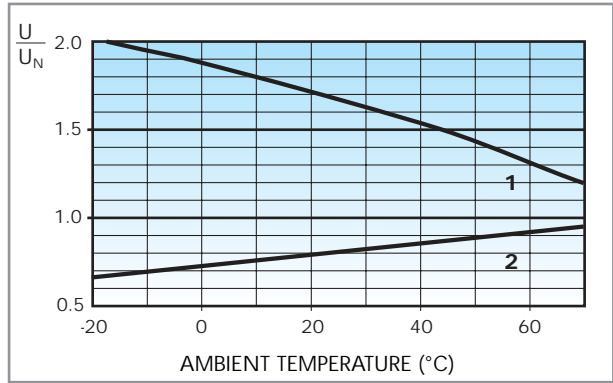
R 58 AC



Operating range (AC type) vs ambient temperature.

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

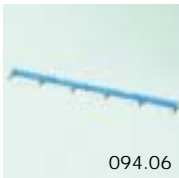
R 58 DC



Operating range (DC type) vs ambient temperature.

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

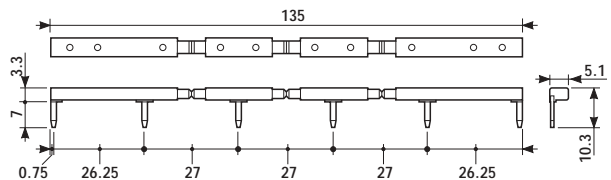
ACCESSORIES






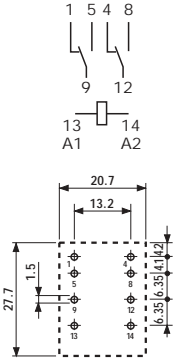
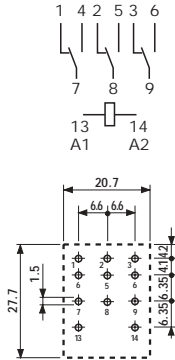
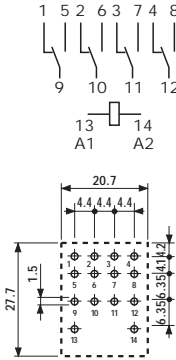

6-way jumper link for 58 series

094.06




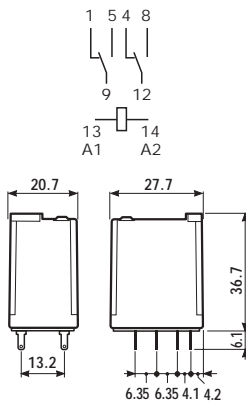
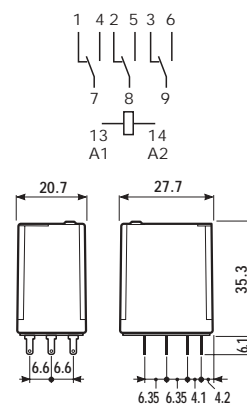
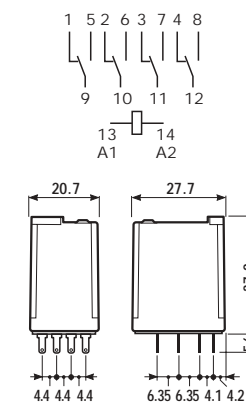

- RATED VALUES: 10 A - 250 V



- 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 type
- Sockets and accessories: see 94, 99 and 86 series

| | 55.12 | 55.13 | 55.14 |
|--|--|---|--|
| |  |  |  |
| | - 2 pole - PCB mounting | - 3 pole - PCB mounting | - 4 pole - PCB mounting |
| |  <p style="text-align: center;">h = 35.5 mm</p> |  <p style="text-align: center;">h = 35.5 mm</p> |  <p style="text-align: center;">h = 35.5 mm</p> |
| Contact specifications | | | |
| Contact configuration | 2 CO (DPDT) | 3 CO (3PDT) | 4 CO (4PDT) |
| 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/HP | 0.37/0.6 | 0.37/0.6 | 0.125/0.2 |
| 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 | (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 | 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 strenght between open contacts V AC | 1,000 | 1,000 | 1,000 |
| Ambient temperature range °C | -40...+70 | -40...+70 | -40...+70 |
| Protection category | IP 50 | IP 50 | IP 50 |
| 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 type
- Sockets and accessories: see 94, 99 and 86 series

| | 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 (DPDT) | 3 CO (3PDT) | 4 CO (4PDT) |
| 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/HP 0.37/0.6 | kW/HP 0.37/0.6 | kW/HP 0.125/0.2 |
| 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 strenght between open contacts | V AC | 1,000 | 1,000 |
| Ambient temperature range | °C | -40...+70 | -40...+70 |
| Protection category | | IP 50 | IP 50 |
| Approvals: (according to type) |  | | |

ORDERING INFORMATION

Example: a 55 series plug-in relay, 4 CO (4PDT) 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 CO (DPDT), 10 A 3 = 3 CO (3PDT), 10 A 4 = 4 CO (4PDT), 5 A Coil version 8 = AC (50/60 Hz) 9 = DC Coil voltage see coil specifications | A: Contact material 0 = Standard 2 = AgCdO 5 = AgNi + 5µm Au B: Contact circuit 0 = Standard | D: Special applications 0 = Standard 1 = Sealed (for 55.12, 55.13 and 55.14 only) 6 = Rear flange mount C: Options 0 = Standard 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

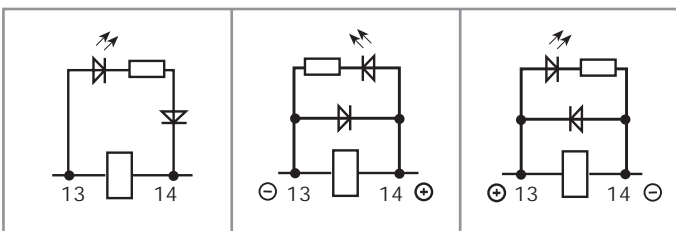
Preferred versions

| | 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 |

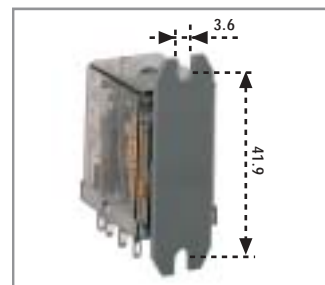
POSSIBLE OPTIONS



Option = 0030
0050
0054

Option = 0060
0070
0074

Option = 0080
0090
0094



Option = 0006
REAR MOUNT FLANGE



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

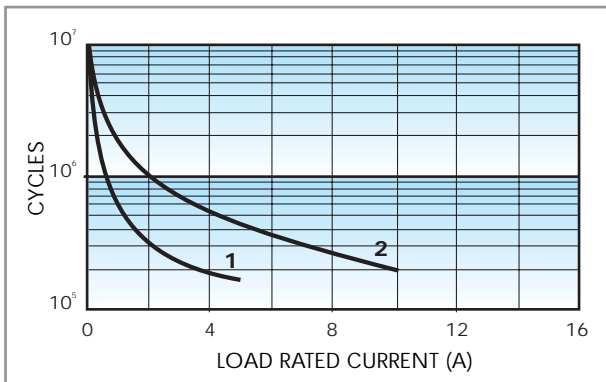
| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4 kV) |

OTHER DATA

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

CONTACT SPECIFICATIONS

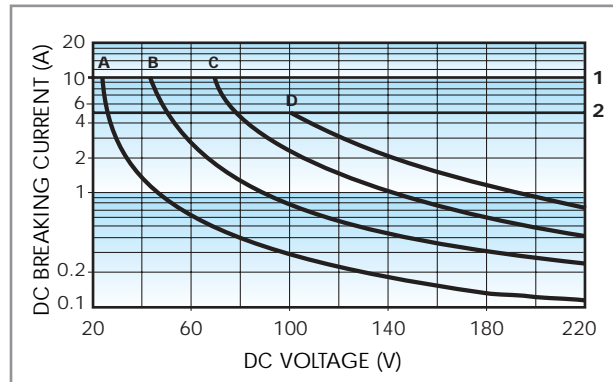
F 55



Electrical life vs AC1 load.

- 1** - 4 CO (4PDT) relay type (5 A).
- 2** - 2 - 3 CO (DPDT - 3PDT) relay type (10 A).

H 55



Breaking capacity for DC1 load.

- 1** - 2 - 3 CO (DPDT - 3PDT) type.
- 2** - 4 CO (4PDT) 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

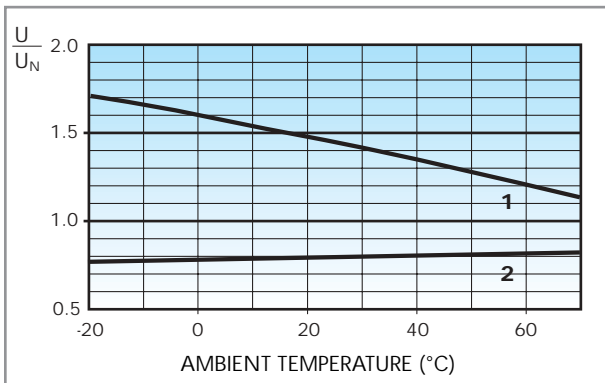
AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption 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

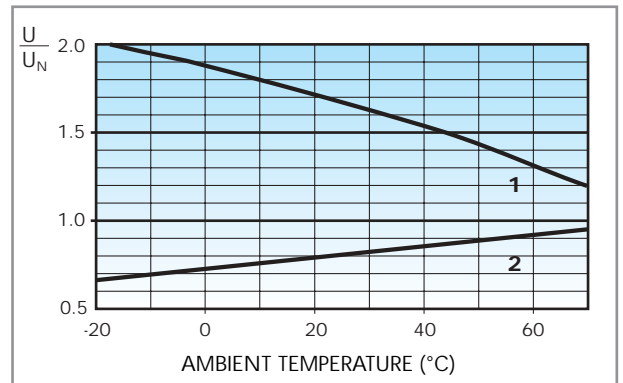
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.8 | 6.6 | 40 | 150 |
| 12 | 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 |

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

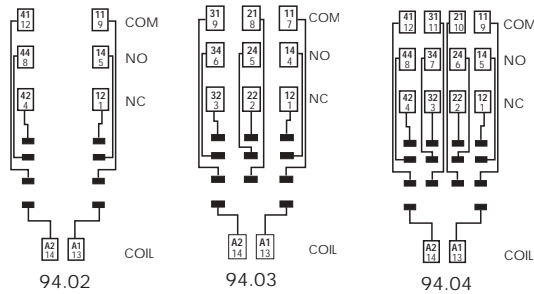
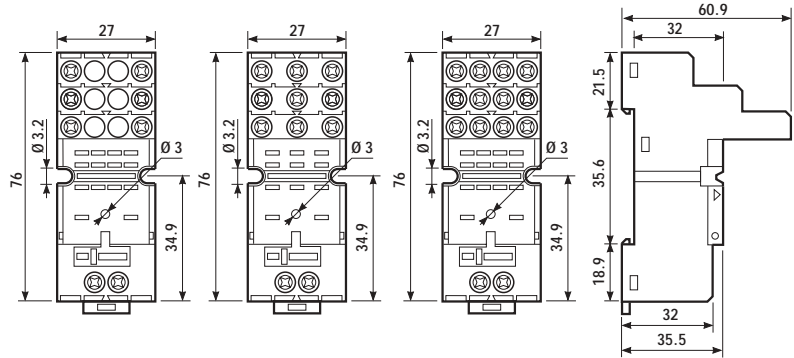
Approvals
(according to type):



| Relay type | 55.32 | 55.33 | 55.32, 55.34 | |
|---|--------------|--------------|--------------|---------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.02 | 94.03 | 94.04 |
| | BLACK* | 94.02.0 | 94.03.0 | 94.04.0 |
| Retaining clip (supplied with socket) | 094.71 | 094.71 | 094.71 | |
| Identification tag | 094.00.4 | 094.00.4 | 094.00.4 | |
| Modules | 99.02 | 99.02 | 99.02 | |
| 6 way jumper link for 94.02, 94.03 and 94.04 sockets | 094.06 | 094.06 | 094.06 | |
| Timer modules | 86.10, 86.20 | 86.10, 86.20 | 86.10, 86.20 | |

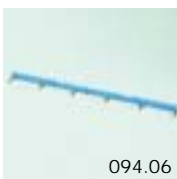
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:

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



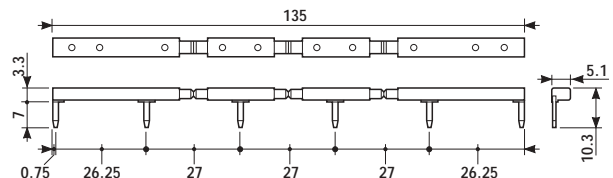
99.02

| 99 Series modules for 94.02, 94.03 and 94.04 sockets | | BLUE | BLACK* |
|--|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.02.3.000.00 | 99.02.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.02.2.000.00 | 99.02.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.02.0.024.59 | 99.02.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.02.0.060.59 | 99.02.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.02.0.230.59 | 99.02.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.02.9.024.99 | 99.02.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.02.9.060.99 | 99.02.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.02.9.220.99 | 99.02.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.02.9.024.79 | 99.02.9.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.02.9.060.79 | 99.02.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.02.9.220.79 | 99.02.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.02.0.024.98 | 99.02.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.02.0.060.98 | 99.02.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.02.0.230.98 | 99.02.0.230.98.0 |
| RC circuit | (6...24) V DC/AC | 99.02.0.024.09 | 99.02.0.024.09.0 |
| RC circuit | (28...60) V DC/AC | 99.02.0.060.09 | 99.02.0.060.09.0 |
| RC circuit | (110...240) V DC/AC | 99.02.0.230.09 | 99.02.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.02.8.230.07 | 99.02.8.230.07.0 |



094.06

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



- RATED VALUES: 10 A - 250 V

*Available on request



94.74

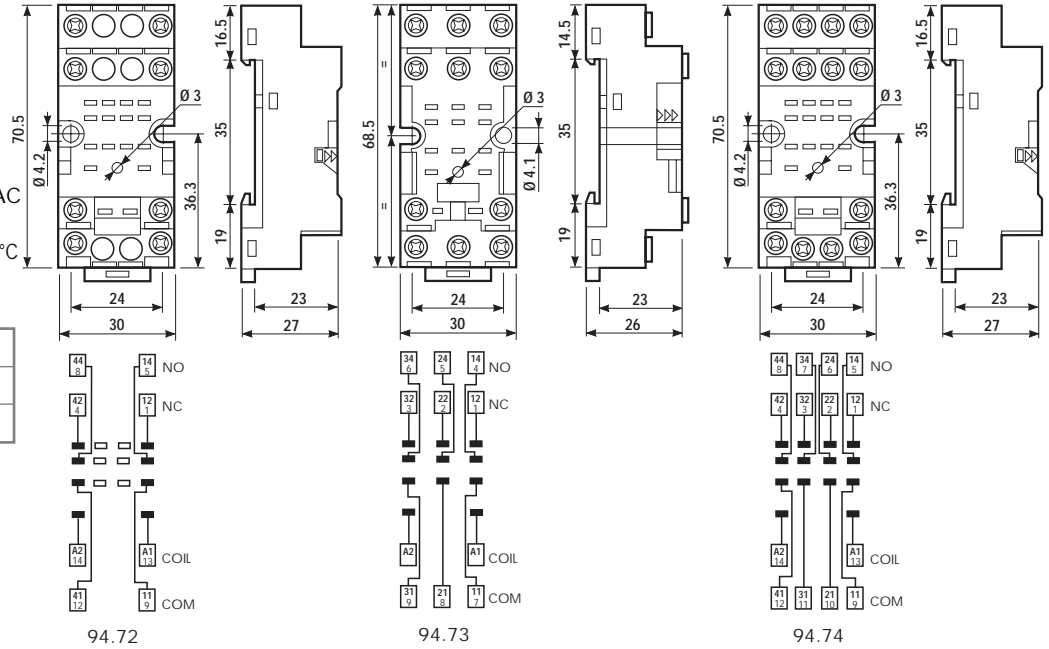
| Relay type | 55.32 | 55.33 | 55.32, 55.34 |
|---|--------|---------|--------------|
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.72 | 94.73 |
| | BLACK* | 94.72.0 | 94.73.0 |
| Retaining clip (supplied with sockets) | 094.71 | 094.71 | 094.71 |
| Modules | 99.01 | 99.01 | 99.01 |

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
- MAX WIRE SIZE:

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



94.82

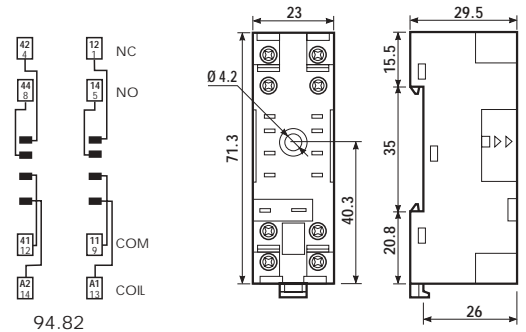
| Relay type | 55.32 | 55.33 | 55.32, 55.34 |
|---|--------|---------|--------------|
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.82 | — |
| | BLACK* | 94.82.0 | — |
| Retaining clip (supplied with sockets) | 094.71 | — | — |
| Modules | 99.01 | — | — |

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
- MAX WIRE SIZE:

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



99.01

| 99 Series modules for 94.72, 94.73, 94.74 and 94.82 sockets | BLUE | BLACK* |
|---|----------------|------------------|
| Diode (6...220) V DC | 99.01.3.000.00 | 99.01.3.000.00.0 |
| Diode (inverted polarity) (6...220) V DC | 99.01.2.000.00 | 99.01.2.000.00.0 |
| LED (6...24) V DC/AC | 99.01.0.024.59 | 99.01.0.024.59.0 |
| LED (28...60) V DC/AC | 99.01.0.060.59 | 99.01.0.060.59.0 |
| LED (110...240) V DC/AC | 99.01.0.230.59 | 99.01.0.230.59.0 |
| LED + Diode (6...24) V DC | 99.01.9.024.99 | 99.01.9.024.99.0 |
| LED + Diode (28...60) V DC | 99.01.9.060.99 | 99.01.9.060.99.0 |
| LED + Diode (110...220) V DC | 99.01.9.220.99 | 99.01.9.220.99.0 |
| LED + Diode (inverted polarity) (6...24) V DC | 99.01.9.024.79 | 99.01.9.024.79.0 |
| LED + Diode (inverted polarity) (28...60) V DC | 99.01.9.060.79 | 99.01.9.060.79.0 |
| LED + Diode (inverted polarity) (110...220) V DC | 99.01.9.220.79 | 99.01.9.220.79.0 |
| LED + Varistor (6...24) V DC/AC | 99.01.0.024.98 | 99.01.0.024.98.0 |
| LED + Varistor (28...60) V DC/AC | 99.01.0.060.98 | 99.01.0.060.98.0 |
| LED + Varistor (110...240) V DC/AC | 99.01.0.230.98 | 99.01.0.230.98.0 |
| RC circuit (6...24) V DC/AC | 99.01.0.024.09 | 99.01.0.024.09.0 |
| RC circuit (28...60) V DC/AC | 99.01.0.060.09 | 99.01.0.060.09.0 |
| RC circuit (110...240) V DC/AC | 99.01.0.230.09 | 99.01.0.230.09.0 |
| No - remanence (110...240) V AC | 99.01.8.230.07 | 99.01.8.230.07.0 |

*Available on request



94.84.1

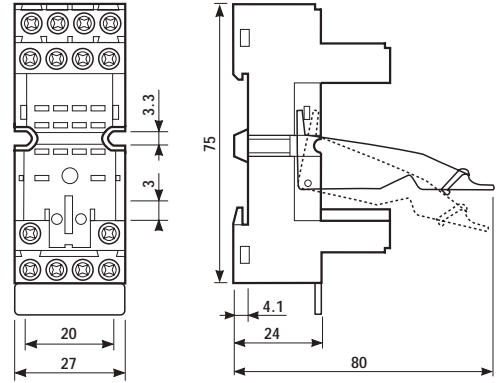
Approvals
(according to type):



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

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

| Relay type | 55.32, 55.34 | |
|---|--------------|----------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.84.1 |
| | BLACK* | 94.84.10 |
| Retaining and release clip | | 094.91 |
| Identification tag | | 094.80.2 |
| Modules | | 99.80 |



94.84.1



99.80

| 99 Series modules for 94.84.1 sockets | | BLUE | BLACK* |
|---------------------------------------|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.80.3.000.00 | 99.80.3.000.00.0 |
| LED | (6...24) V DC/AC | 99.80.0.024.59 | 99.80.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.80.0.060.59 | 99.80.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.80.0.230.59 | 99.80.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.80.9.024.99 | 99.80.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.80.9.060.99 | 99.80.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.80.9.220.99 | 99.80.9.220.99.0 |
| LED + Varistor | (6...24) V DC/AC | 99.80.0.024.98 | 99.80.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.80.0.060.98 | 99.80.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.80.0.230.98 | 99.80.0.230.98.0 |
| RC circuit | (6...24) V DC/AC | 99.80.0.024.09 | 99.80.0.024.09.0 |
| RC circuit | (28...60) V DC/AC | 99.80.0.060.09 | 99.80.0.060.09.0 |
| RC circuit | (110...240) V DC/AC | 99.80.0.230.09 | 99.80.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.80.8.230.07 | 99.80.8.230.07.0 |



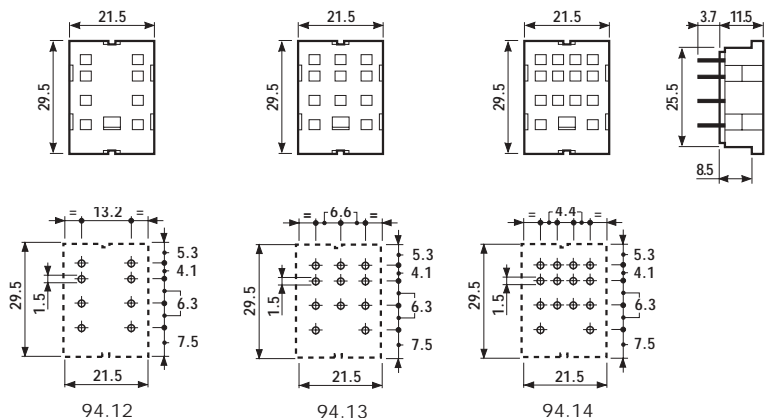
94.14

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 |
|--|--------|---------|--------------|
| P.C.B. socket | BLUE | 94.12 | 94.13 |
| | BLACK* | 94.12.0 | 94.13.0 |
| Metal retaining clip (supplied with sockets) | 094.51 | 094.51 | 094.51 |



*Available on request

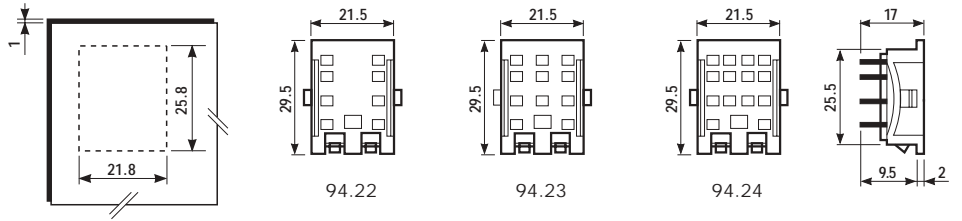


| Relay type | 55.32 | 55.33 | 55.32, 55.34 |
|--|--------|---------|--------------|
| Panel mount solder socket: 1 mm thick panel | BLUE | 94.22 | 94.23 |
| | BLACK* | 94.22.0 | 94.23.0 |
| Metal retaining clip (supplied with sockets) | 094.51 | 094.51 | 094.51 |

Approvals
(according to type):



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

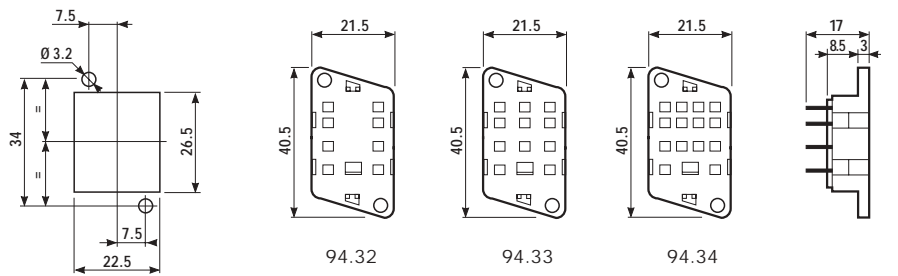


| Relay type | 55.32 | 55.33 | 55.32, 55.34 |
|--|--------|---------|--------------|
| Panel mount socket: M3 screw mount | BLUE | 94.32 | 94.33 |
| | BLACK* | 94.32.0 | 94.33.0 |
| Metal retaining clip (supplied with sockets) | 094.51 | 094.51 | 094.51 |

Approvals
(according to type):




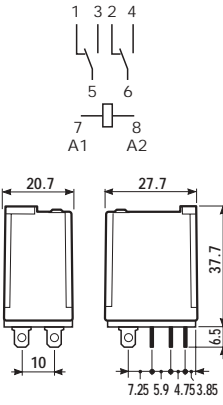
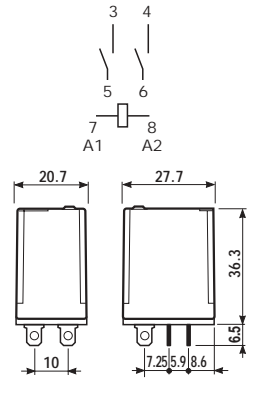
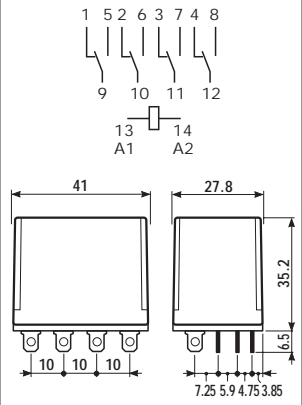



- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- AMBIENT TEMPERATURE: (-40...+70)°C



*Available on request

- 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) | |
| |  |  |  | |
| Contact specifications | | | | |
| Contact configuration | 2 CO (DPDT) | 2 NO (DPST - NO) 1.5 mm | 4 CO (4PDT) | |
| 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/HP 0.55/0.7 | 0.55/0.7 | 0.55/0.7 | |
| 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 | | |
| | DC | (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 | | |
| Protection category | | IP 50 | IP 50 | IP 50 |
| Approvals: (according to type) |  | | | |

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

- 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 - PCB mounting | - 2 NO (1.5 mm gap) - PCB mounting | - 4 pole - PCB mounting |
| | h = 37.7 mm | h = 36.3 mm | h = 35.2 mm |
| Contact specifications | | | |
| Contact configuration | 2 CO (DPDT) | 2 NO (DPST - NO) 1.5 mm | 4 CO (4PDT) |
| 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/HP | 0.55/0.7 | 0.55/0.7 | 0.55/0.7 |
| 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 /0.1 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 /— | 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 strenght between open contacts V AC | 1,000 | 2,000 | 1,000 |
| Ambient temperature range °C | -40...+70 | -40...+70 | -40...+70 |
| Protection category | IP 50 | IP 50 | IP 50 |
| Approvals: (according to type) | | | |

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

ORDERING INFORMATION

Example: a 56 series plug-in relay with 2 CO (DPDT) 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 | | No. of poles | | Coil version | | Coil voltage | | A: Contact material | | B: Contact circuit | | C: Options | | D: Special applications | |
| 56 | | 32 | | 2 | | 9 | | 0 | | 012 | | 00 | | 4 | | 0 | |
| 56 Series | | 3 = Plug-in 4 = P.C.B. | | 2 = 2 CO (DPDT), 12 A 4 = 4 CO (4PDT), 12 A | | 8 = AC (50/60 Hz) 9 = DC | | see coil specifications | | 0 = Standard 2 = AgCdO 4 = AgSnO ₂ | | 0 = Standard 3 = NO | | 0 = Standard 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 (polarity positive to pin 7, DC) 94 = Lockable test button + LED + mechanical indicator (polarity positive to pin 7, DC) | | 0 = Standard 6 = Rear flange mount 7 = Top 35mm rail (EN 50022) mount (4 CO) 8 = Rear 35mm rail (EN 50022) mount (4 CO) | |

Only combinations in the same row are possible

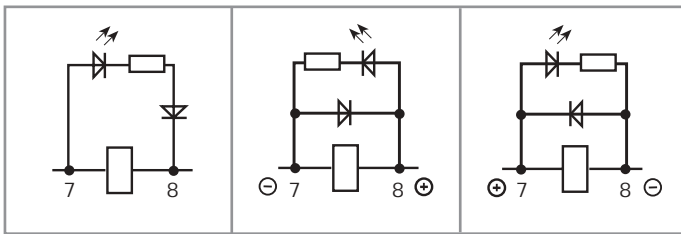
Preferred versions

| | 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/DC | 0 - 2 - 4 | 0 | 0 | 0 - 6 |
| | AC | 0 - 2 - 4 | 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 | 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 - 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 |

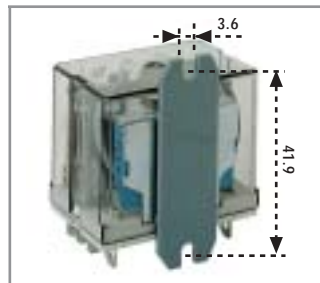
POSSIBLE OPTIONS



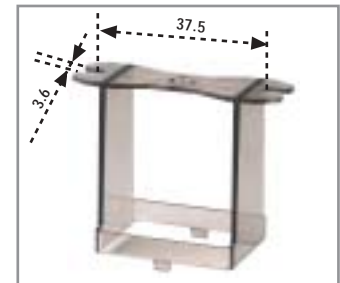
Option = 0030
0050

Option = 0060
0070
0074

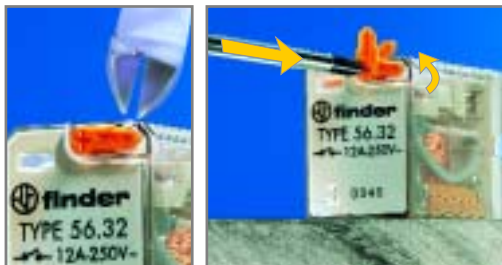
Option = 0080
0090
0094



Option = 0006
REAR MOUNT FLANGE



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



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

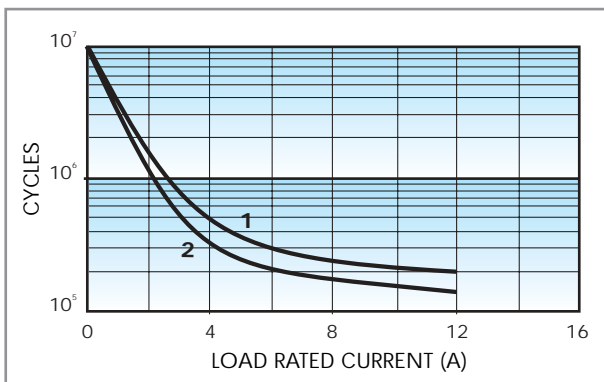
| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4 kV) |

OTHER DATA

| | | | |
|---|-------------------------|-----------------------------------|--------------------|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 8/8 | |
| POWER LOST IN THE ENVIRONMENT | | 2 CO (DPDT)/2 NO (DPST-NO) | 4 CO (4PDT) |
| | without contact current | W | 1.3 |
| | with rated current | W | 3.8 |
| RECOMMENDED DISTANCE between RELAY mounted on P.C.B.s | mm | ≥5 | |

CONTACT SPECIFICATIONS

F 56

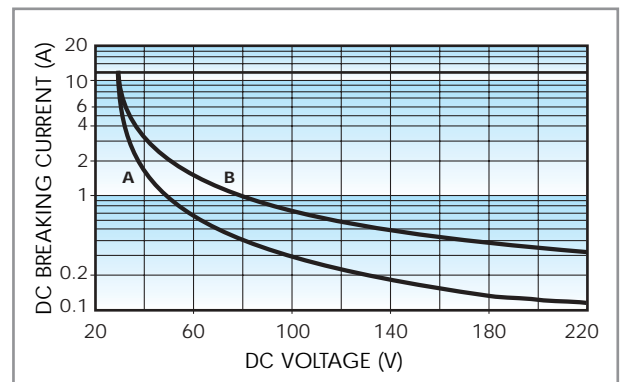


Electrical life vs AC1 load.

1 = Types 56.32/42

2 = Types 56.34/44

H 56



Breaking capacity for DC1 load.

Load applied to 1 contact.

A = other types

B = NO types

- 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 - DPDT, 2 NO - DPST-NO)

| 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 | | |
| 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 - DPDT)

| 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 | | |
| 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 |

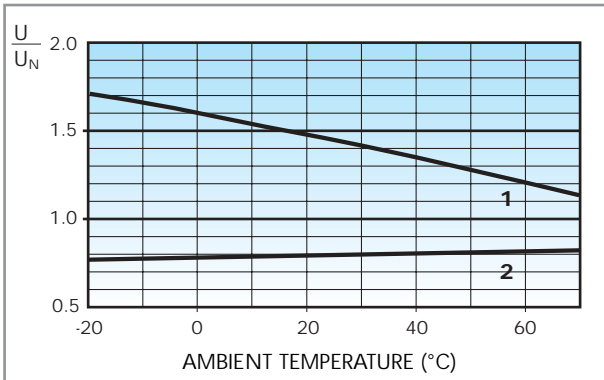
AC VERSION DATA (4 CO - 4PDT)

| 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 | | |
| 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 |

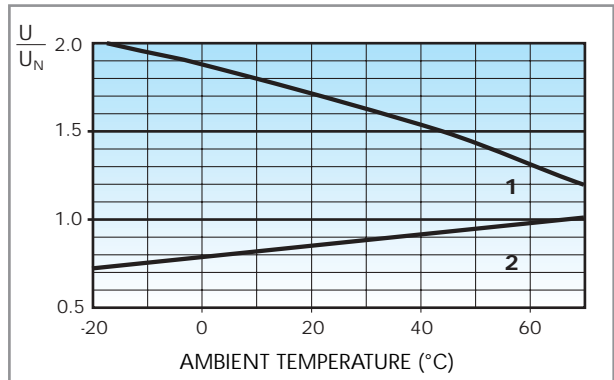
DC VERSION DATA (4 CO - 4PDT)

| 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 | | |
| 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 |

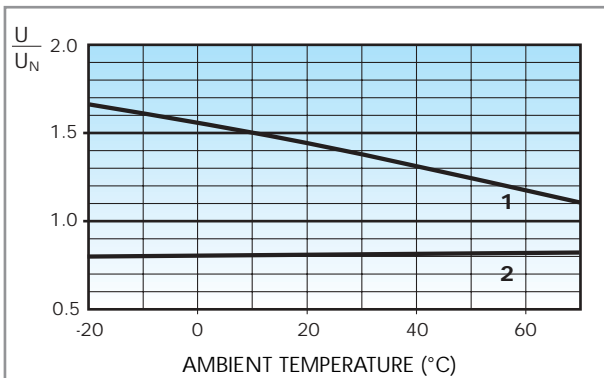
R 56 AC (2 CO - DPDT, 2 NO - DPST-NO)



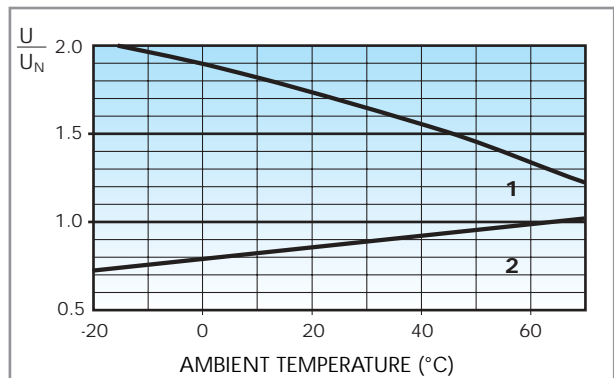
R 56 DC (2 CO - DPDT)



R 56 AC (4 CO - 4PDT)



R 56 DC (4 CO - 4PDT)



Operating range (AC type) vs ambient temperature.

1 - Max coil voltage permitted

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

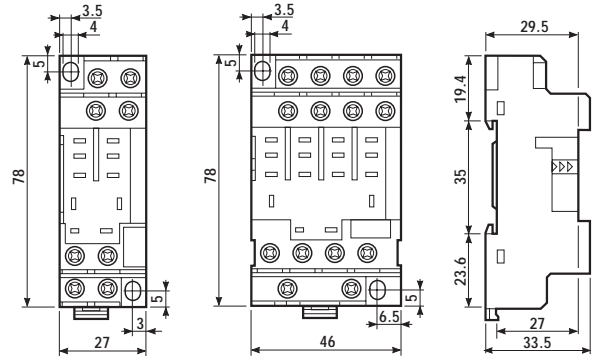
Operating range (DC type) vs ambient temperature.

1 - Max coil voltage permitted

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



| Relay type | 56.32 | 56.34 |
|---|--------|---------|
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 96.72 |
| | BLACK* | 96.72.0 |
| Retaining clip (supplied with socket) | 094.71 | 096.71 |
| Modules | 99.01 | 99.01 |

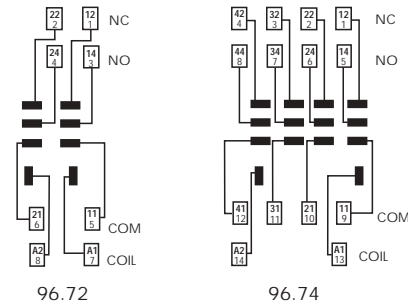


Approvals
(according to type):



- RATED VALUES: 12 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- MAX WIRE SIZE:

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



| 99 Series modules for 96.72 and 96.74 socket | | BLUE | BLACK* |
|--|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.01.3.000.00 | 99.01.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.01.2.000.00 | 99.01.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 | 99.01.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 | 99.01.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 | 99.01.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.01.9.024.99 | 99.01.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.01.9.060.99 | 99.01.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.01.9.220.99 | 99.01.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.01.9.024.79 | 99.01.9.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.01.9.060.79 | 99.01.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.01.9.220.79 | 99.01.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 | 99.01.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 | 99.01.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 | 99.01.0.230.98.0 |
| RC circuit | (6...24) V DC/AC | 99.01.0.024.09 | 99.01.0.024.09.0 |
| RC circuit | (28...60) V DC/AC | 99.01.0.060.09 | 99.01.0.060.09.0 |
| RC circuit | (110...240) V DC/AC | 99.01.0.230.09 | 99.01.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.01.8.230.07 | 99.01.8.230.07.0 |

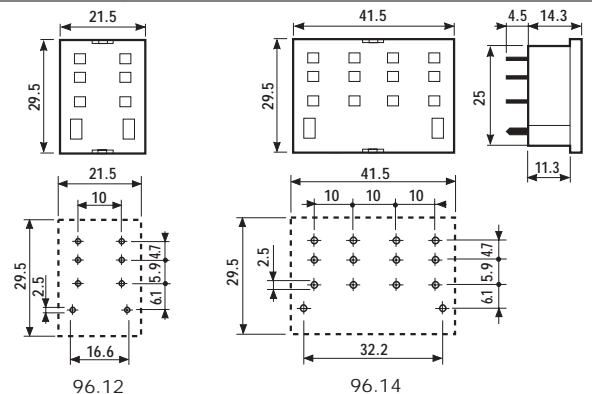


| Relay type | 56.32 | 56.34 |
|---------------------------------------|--------|---------|
| P.C.B. socket | BLUE | 96.12 |
| | BLACK* | 96.12.0 |
| Retaining clip (supplied with socket) | 094.51 | 094.51 |

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



* Available on request

- 8 - 11 pin plug-in or Faston 187 version available
- AC or DC coils
- Lockable test button with mechanical flag indicator
- Rear 35 mm rail (EN 50022) mount and bifurcated contact options
- Sockets and accessories: see 90, 99 and 86 series

| | 60.12 | 60.12 - 0200 | 60.13 |
|---|---|--|--|
| | | | |
| | <ul style="list-style-type: none"> - 2 pole - 8 pin - Plug-In for use with 90 series sockets | <ul style="list-style-type: none"> - 2 bifurcated contacts - 8 pin - Plug-In for use with 90 series sockets | <ul style="list-style-type: none"> - 3 pole - 11 pin - Plug-In for use with 90 series sockets |
| | | | |
| Contact specifications | | | |
| Contact configuration | 2 CO (DPDT) | 2 CO (DPDT) | 3 CO (3PDT) |
| Rated current/Maximum peak current A | 10/20 | 6/10 | 10/20 |
| Rated voltage/Maximum switching voltage V AC | 250/400* | 250/400* | 250/400* |
| Rated load in AC1 VA | 2,500 | 1,500 | 2,500 |
| Rated load in AC15 (230 VAC) VA | 500 | 250 | 500 |
| Single phase motor rating (230 VAC) kW/HP | 0.37/0.6 | 0.185/0.3 | 0.37/0.6 |
| Breaking capacity in DC1: 30/110/220V A | 10/0.4/0.15 | 6/0.3/0.12 | 10/0.4/0.15 |
| Minimum switching load mW (V/mA) | 500 (10/5) | 50 (5/5) | 500 (10/5) |
| Standard contact material | AgNi | AgNi bifurcated contacts | 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 |
| | 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 | 250 · 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 strenght between open contacts V AC | 1,000 | 1,000 | 1,000 |
| Ambient temperature range °C | -40...+70 | -40...+70 | -40...+70 |
| Protection category | IP 50 | IP 50 | IP 50 |
| Approvals: (according to type) | | | |

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

- 8 - 11 pin plug-in or Faston 187 version available
- AC or DC coils
- Lockable test button with mechanical flag indicator
- Rear 35 mm rail (EN 50022) mount and bifurcated contact options
- Sockets and accessories: see 90, 99 and 86 series

60.13 - 0200

60.62

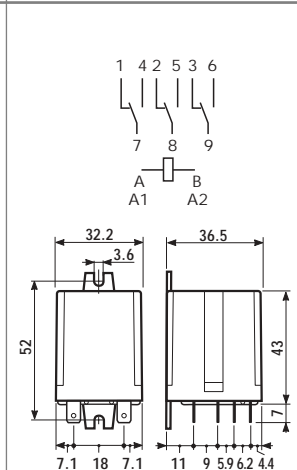
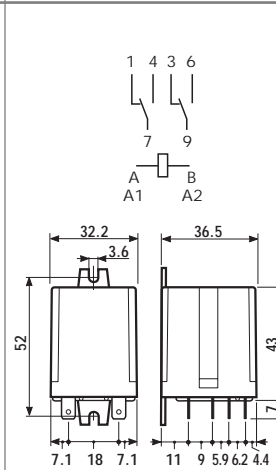
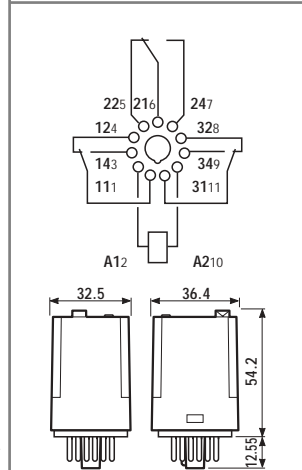
60.63



- 3 bifurcated contacts
- 11 pin
- Plug-In for use with 90 series sockets

- 2 pole
- Faston 187 (4.8x0.8)mm with flange rear mount

- 3 pole
- Faston 187 (4.8x0.8)mm with flange rear mount



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

| Contact specifications | | 60.13 - 0200 | 60.62 | 60.63 |
|---|-----------------|---|--|--|
| Contact configuration | | 3 CO (3PDT) | 2 CO (DPDT) | 3 CO (3PDT) |
| 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/HP | 0.185/0.3 | 0.37/0.6 | 0.37/0.6 |
| 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 |
| Protection category | | IP 50 | IP 50 | IP 50 |

Approvals: (according to type)



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 | . | A | 0 | B | 0 | C | 4 | D | 0 |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|

Series _____

Type _____
 1 = 8/11 pin plug-in
 6 = Faston 187 (mm 4.8x0.8) with flange rear mount

No. of poles _____
 2 = 2 CO (DPDT)
 3 = 3 CO (3PDT)

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

Coil voltage _____
 see coil specifications

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

B: Contact circuit
 0 = Standard
 2 = AgNi bifurcated contacts
 60.12/13 - 6A only

D: Special applications
 0 = Standard

C: Options
 0 = Standard
 2 = Mechanical indicator
 3 = LED (AC)
 4 = Test button + mechanical indicator
 5 = Test button + LED (AC)
 54 = Test button + LED (AC) + mechanical indicator
 6 = LED + diode (positive to pin 2, DC)
 7 = Test button + LED + diode (positive to pin 2)
 74 = Test button + LED + diode (positive to pin 2) + mechanical indicator

Only combinations in the same row are possible

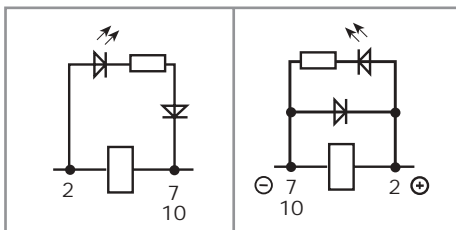
Preferred versions

| | 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 - 2 - 3 - 4 - 5 | 0 |
| | AC | 0 | 0 | 54 | / |
| | AC | 5 | 0 - 2 | 0 - 2 - 3 - 4 - 5 | 0 |
| | AC | 5 | 0 - 2 | 54 | / |
| | DC | 0 | 0 | 0 - 2 - 4 - 6 - 7 | 0 |
| | DC | 0 | 0 | 74 | / |
| | DC | 5 | 0 - 2 | 0 - 2 - 4 - 6 - 7 | 0 |
| 60.62/63 | AC/DC | 0 - 5 | 0 | 0 | 0 |

POSSIBLE OPTIONS



Option = 0030
0050
0054

Option = 0060
0070
0074



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

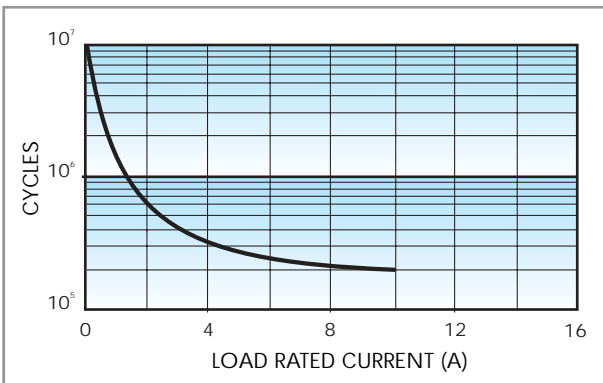
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

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

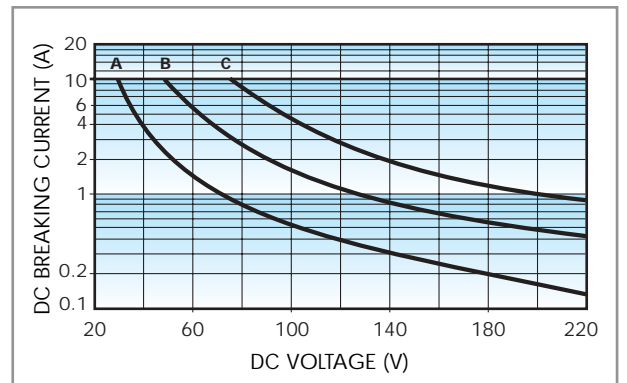
CONTACT SPECIFICATIONS

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

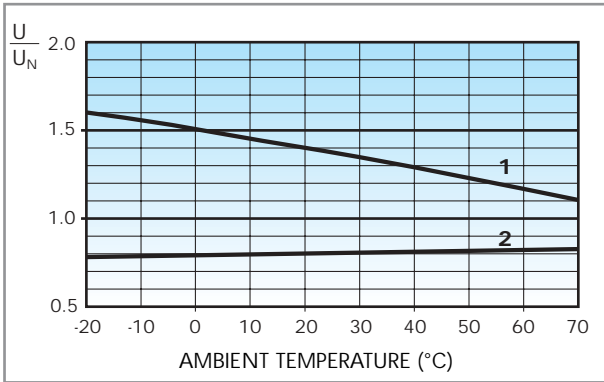
AC VERSION DATA

| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption 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

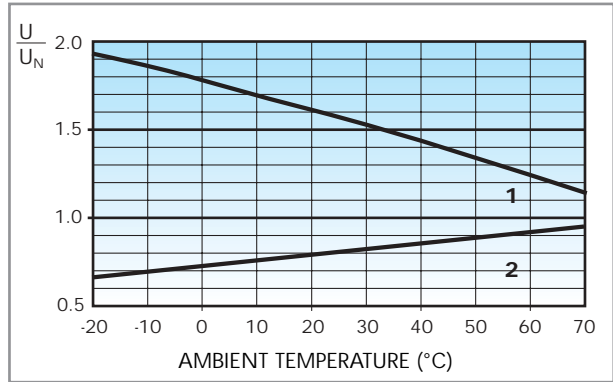
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R Ω | Rated coil absorption I at U_N mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---|
| | | U_{min} V | U_{max} V | | |
| 6 | 9.006 | 4.8 | 6.6 | 28 | 214 |
| 12 | 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



90.21

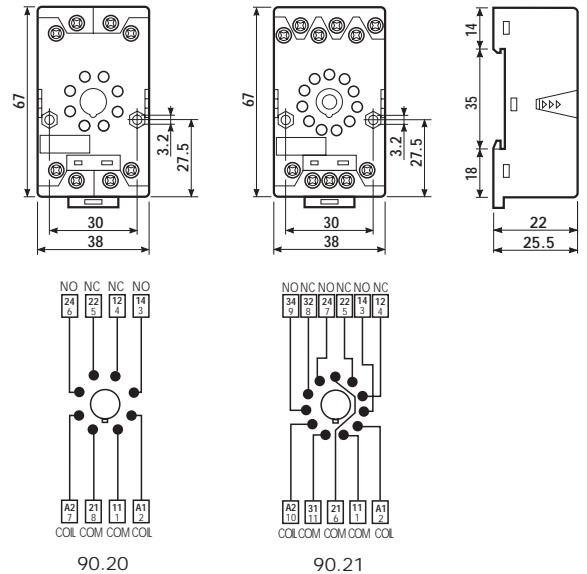
| Relay type | | 60.12 | 60.13 |
|---|--------|---------|---------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 90.20 | 90.21 |
| | BLACK* | 90.20.0 | 90.21.0 |
| Retaining clip (supplied with socket) | | 090.33 | 090.33 |
| Modules | | 99.01 | 99.01 |

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
- MAX WIRE SIZE:

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



99.01

| 99 Series modules for 90.20 and 90.21 sockets | | BLUE | BLACK* |
|---|---------------------|----------------|------------------|
| Diode | (6...220) V DC | 99.01.3.000.00 | 99.01.3.000.00.0 |
| Diode (inverted polarity) | (6...220) V DC | 99.01.2.000.00 | 99.01.2.000.00.0 |
| LED | (6...24) V DC/AC | 99.01.0.024.59 | 99.01.0.024.59.0 |
| LED | (28...60) V DC/AC | 99.01.0.060.59 | 99.01.0.060.59.0 |
| LED | (110...240) V DC/AC | 99.01.0.230.59 | 99.01.0.230.59.0 |
| LED + Diode | (6...24) V DC | 99.01.9.024.99 | 99.01.9.024.99.0 |
| LED + Diode | (28...60) V DC | 99.01.9.060.99 | 99.01.9.060.99.0 |
| LED + Diode | (110...220) V DC | 99.01.9.220.99 | 99.01.9.220.99.0 |
| LED + Diode (inverted polarity) | (6...24) V DC | 99.01.0.024.79 | 99.01.0.024.79.0 |
| LED + Diode (inverted polarity) | (28...60) V DC | 99.01.9.060.79 | 99.01.9.060.79.0 |
| LED + Diode (inverted polarity) | (110...220) V DC | 99.01.9.220.79 | 99.01.9.220.79.0 |
| LED + Varistor | (6...24) V DC/AC | 99.01.0.024.98 | 99.01.0.024.98.0 |
| LED + Varistor | (28...60) V DC/AC | 99.01.0.060.98 | 99.01.0.060.98.0 |
| LED + Varistor | (110...240) V DC/AC | 99.01.0.230.98 | 99.01.0.230.98.0 |
| RC | (6...24) V DC/AC | 99.01.0.024.09 | 99.01.0.024.09.0 |
| RC | (28...60) V DC/AC | 99.01.0.060.09 | 99.01.0.060.09.0 |
| RC | (110...240) V DC/AC | 99.01.0.230.09 | 99.01.0.230.09.0 |
| No - remanence | (110...240) V AC | 99.01.8.230.07 | 99.01.8.230.07.0 |

*Available on request



90.73

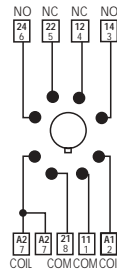
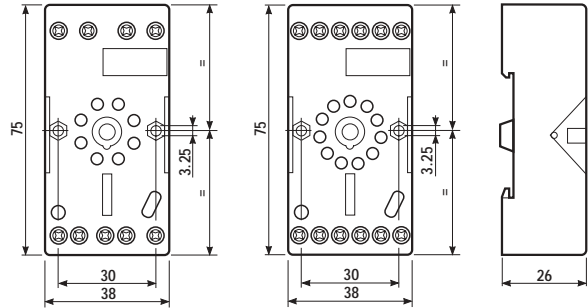
Approvals
(according to type):



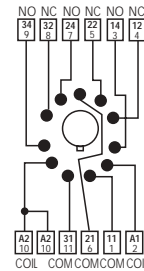
- Double ground terminal (A2).
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- MAX WIRE SIZE:

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

| Relay type | 60.12 | 60.13 |
|---|--------|---------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 90.73 |
| | BLACK* | 90.73.0 |
| Retaining clip (supplied with socket) | 090.33 | 090.33 |
| Modules | 99.73 | 99.73 |
| Timer module | 86.60 | 86.60 |



90.72



90.73



90.23

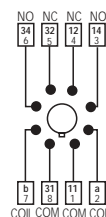
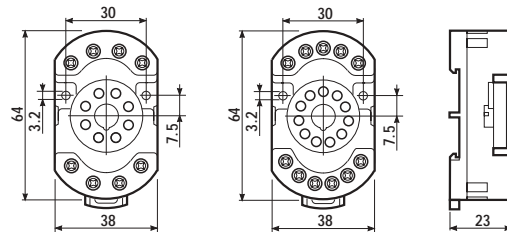
Approvals
(according to type):



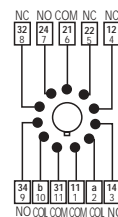
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:

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

| Relay type | 60.12 | 60.13 |
|---|--------|--------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | 90.22 | 90.23 |
| Retaining clip (supplied with socket) | 090.33 | 090.33 |



90.22



90.23

*Available on request



90.26

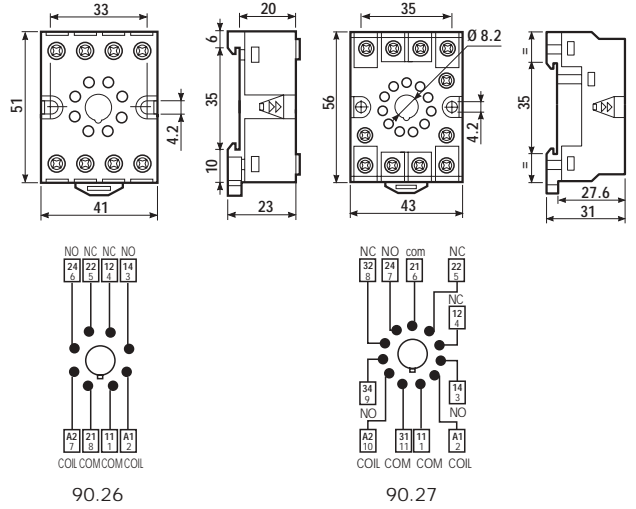
| Relay type | 60.12 | 60.13 |
|--|--------|---------|
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 90.26 |
| | BLACK* | 90.26.0 |
| Retaining clip (supplied with socket) | 090.33 | 090.33 |

Approvals
(according to type):



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

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



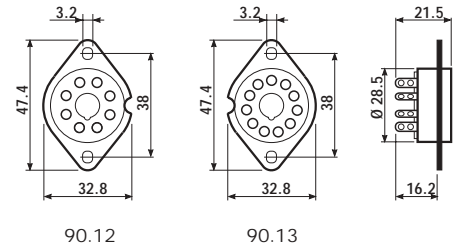
90.12

| Relay type | 60.12 | 60.13 |
|---|-------|-------|
| Flange mount solder socket mount with M3 screw | 90.12 | 90.13 |

Approvals
(according to type):



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



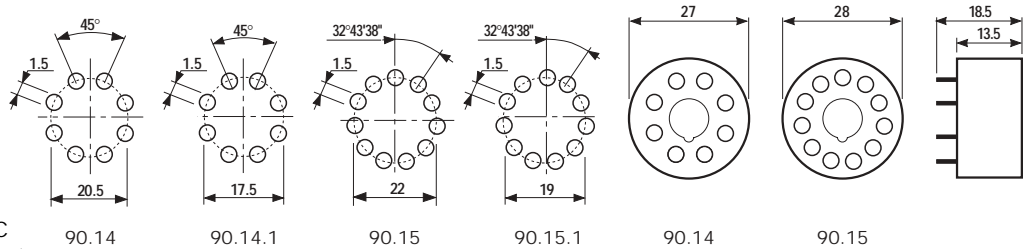
90.15

| Relay type | 60.12 | 60.13 |
|----------------------|-------|--------------------|
| P.C.B. socket | BLUE | 90.14 |
| | BLUE | 90.14.1 (Ø 17.5mm) |
| | | 90.15.1 (Ø 19mm) |

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 types 60.12 and 60.13 (72 tags) | 060.72 |
|---|--------|

*Available on request

- 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 - PCB mounting | - 3 pole - PCB mounting | - 2 pole - Faston 187 (4.8x0.5)mm - Plug-in for use with 92 Series sockets |
| | h = 49.1 mm | h = 49.1 mm | |
| Contact specifications | | | |
| Contact configuration | 2 CO (DPDT) | 3 CO (3PDT) | 2 CO (DPDT) |
| Rated current/Maximum peak current | A 16/30 | A 16/30 | A 16/30 |
| Rated voltage/Maximum switching voltage | V AC 250/400 | V AC 250/400 | V AC 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/HP 0.8/1.2 | kW/HP 0.8/1.2 | kW/HP 0.8/1.2 |
| 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 | | 4kV/3 | 4kV/3 |
| Insulation between coil and contacts (1.2/50μs) | kV | 6 | 6 |
| Dielectric strenght between open contacts | V AC | 1,500 | 1,500 |
| Ambient temperature range | °C | -40...+70 | -40...+70 |
| Protection category | | IP 50 | IP 50 |
| 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 for use with 92 Series sockets | - 2 pole - Faston 250 (6.3x0.8)mm with flange rear mount | - 3 pole - Faston 250 (6.3x0.8)mm with flange rear mount |
| | | | |
| Contact specifications | | | |
| Contact configuration | 3 CO (3PDT) | 2 CO (DPDT) | 3 CO (3PDT) |
| Rated current/Maximum peak current | A 16/30 | A 16/30 | A 16/30 |
| Rated voltage/Maximum switching voltage | V AC 250/400 | V AC 250/400 | V AC 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/HP 0.8/1.2 | kW/HP 0.8/1.2 | kW/HP 0.8/1.2 |
| 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 ⁵ /30 · 10 ⁶ | 10 · 10 ⁵ /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 |
| Protection category | | IP 50 | IP 50 |
| 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

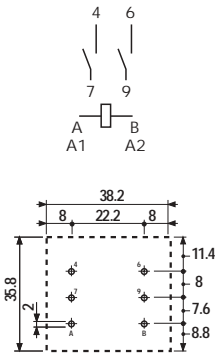
62.32 - 0300



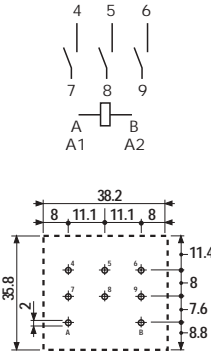
- 2 NO (3mm contact gap)
- PCB mounting

- 3 NO (3mm contact gap)
- PCB mounting

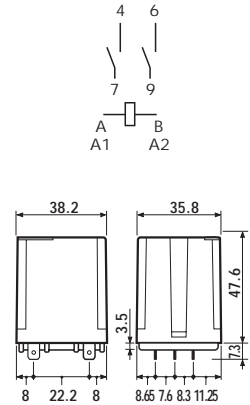
- 2 NO (3mm contact gap)
- Faston 187 (4.8x0.5)mm
- Plug-in for use with 92 Series sockets



h = 51.1 mm



h = 51.1 mm



* Distance between contacts >3mm
(VDE 0700 art. 1)

| Contact specifications | | | | |
|---|-----------------|---|--|--|
| Contact configuration | | 2 NO (DPST - NO) 3 mm* | 3 NO (3PST - NO) 3 mm* | 2 NO (DPST - 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/HP | 0.8/1.2 | 0.8/1.2 | 0.8/1.2 |
| 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) | | 6 | 6 | 6 |
| Dielectric strength between open contacts | | 2,500 | 2,500 | 2,500 |
| Ambient temperature range | | -40...+50 | -40...+50 | -40...+50 |
| Protection category | | IP 50 | IP 50 | IP 50 |
| 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

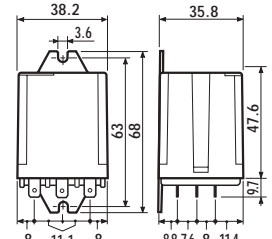
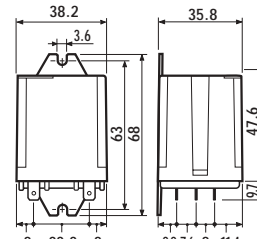
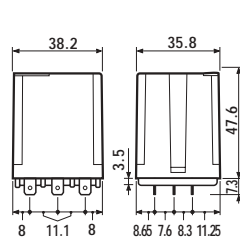
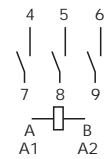
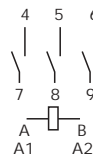
62.83 - 0300



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

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

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

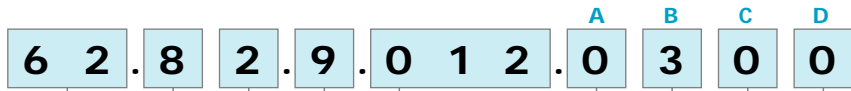


* Distance between contacts >3mm (VDE 0700 art. 1)

| Contact specifications | | 62.33 - 0300 | 62.82 - 0300 | 62.83 - 0300 | | | | | |
|---|-----------------|---|--|--|--|--|--|--|--|
| Contact configuration | | 3 NO (3PST - NO) 3 mm* | 2 NO (DPST - NO) 3 mm* | 3 NO (3PST - 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/HP | 0.8/1.2 | 0.8/1.2 | 0.8/1.2 | | | | | |
| 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 | | | | | | | | | |
| 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 | 4 kV/3 | 4 kV/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 | | | | | |
| Protection category | | IP 50 | IP 50 | IP 50 | | | | | |
| 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 (DPST-NO) contacts, coil rated at 12 V DC.



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 CO (DPDT)
- 3 = 3 CO (3PDT)

Coil version

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

Coil voltage

see coil specifications

A: Contact material

- 0 = Standard
- 4 = AgSnO₂

B: Contact circuit

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

D: Special applications

- 0 = Standard
- 5 = Top flange mount
- 6 = Rear flange mount
- 7 = Top 35 mm rail mount
- 8 = Rear 35 mm rail mount
- 9 = Faston 250 without rear flange mount

C: Options

- 0 = Standard
- 2 = Mechanical indicator
- 3 = LED (AC)
- 4 = Test button + mechanical indicator
- 5 = Test button + LED (AC)
- 54 = Test button + LED (AC) + mechanical indicator
- 6 = LED + diode (DC polarity positive to pin A/A1)
- 7 = Test button + LED + diode (DC polarity positive to pin A/A1)
- 74 = Test button + LED + diode (DC polarity positive to pin A/A1) + mechanical indicator

Only combinations in the same row are possible

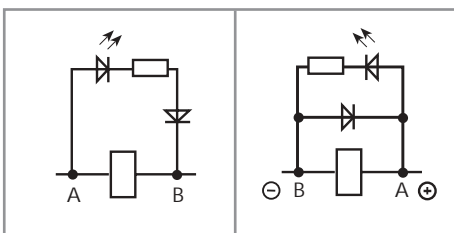
Preferred versions

| | 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 - 9 |
| | 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



Option = 0030
0050

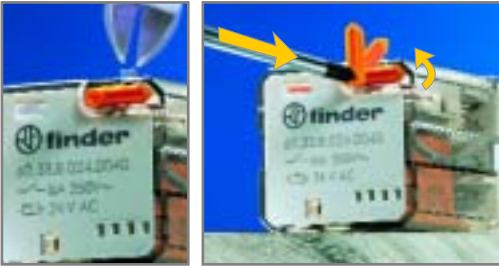
Option = 0060
0070



Option = 0005
TOP MOUNT FLANGE



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



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

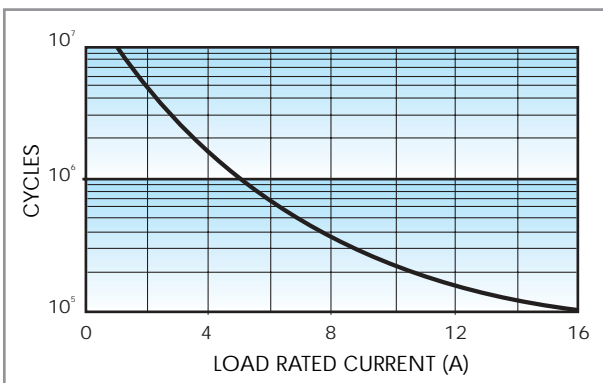
| | |
|--------------------------------|--|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4 kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

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

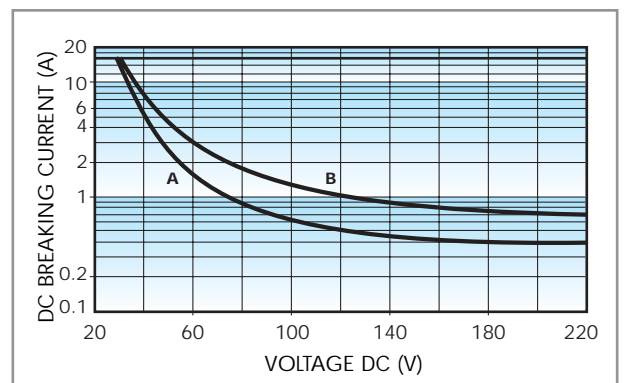
CONTACT SPECIFICATIONS

F 62



Electrical life vs AC1 load.

H 62



Breaking capacity for DC1 load.

Load applied to 1 contact.

A = other types

B = NO types

- 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 | | |
| 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 absorption 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 |

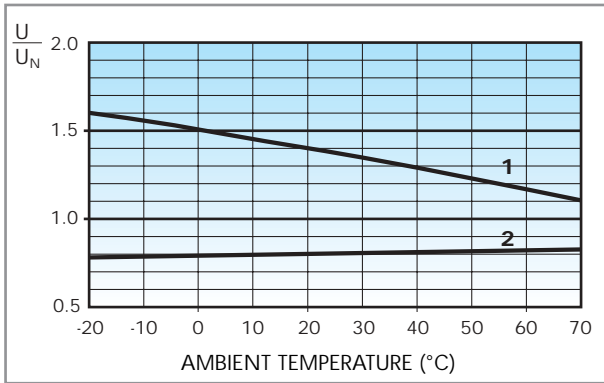
AC (NO/SPDT-NO) VERSION DATA (≥ 3 mm)

| 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 | | |
| 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 |

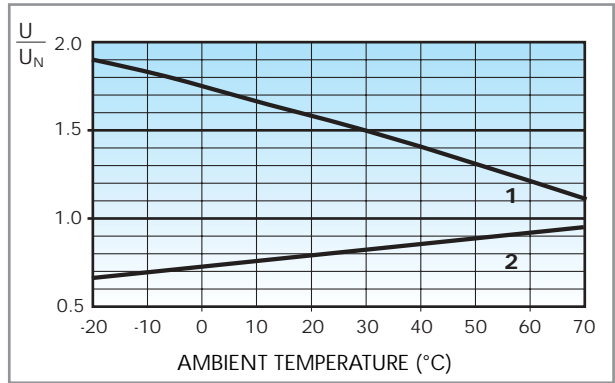
DC (NO/SPDT-NO) VERSION DATA (≥ 3 mm)

| 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 | | |
| 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 |

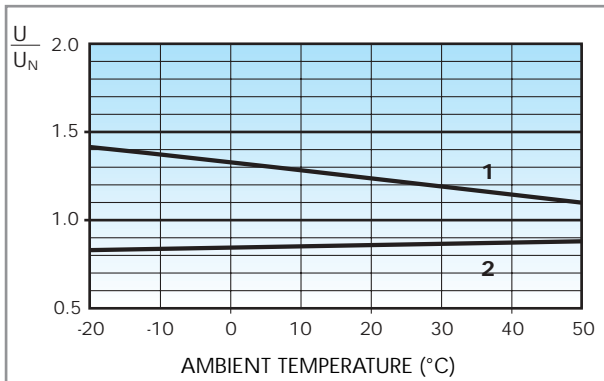
R 62 AC



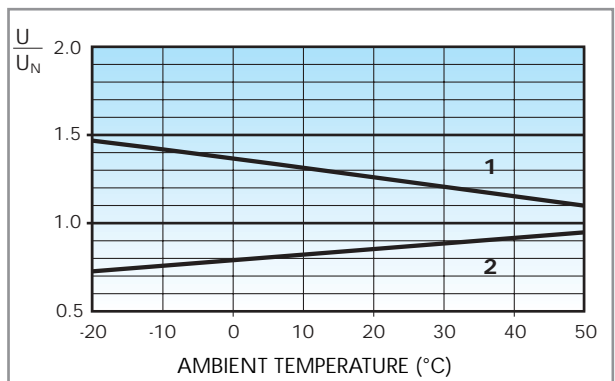
R 62 DC



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



92.03

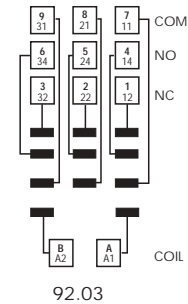
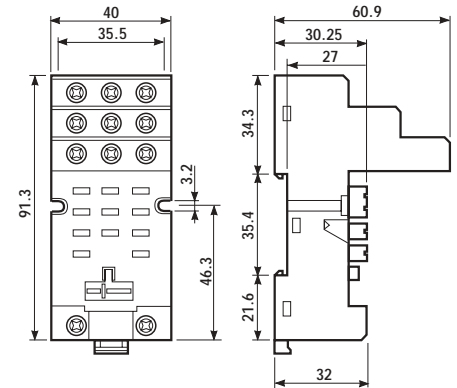
Approvals
(according to type):



- 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
- TORQUE: 0.8 Nm
- MAX WIRE SIZE:

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

| Relay type | 62.32 | 62.33 |
|---|--------------|--------------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 92.03 92.03 |
| | BLACK* | 92.03.10 |
| Retaining clip (supplied with socket) | 092.71 | 092.71 |
| Modules | 99.02 | 99.02 |
| Timer modules | 86.10, 86.20 | 86.10, 86.20 |



99.02

| 99 Series modules for 92.03 socket | BLUE | BLACK* |
|--|----------------|------------------|
| Diode (6...220) V DC | 99.02.3.000.00 | 99.02.3.000.00.0 |
| Diode (inverted polarity) (6...220) V DC | 99.02.2.000.00 | 99.02.2.000.00.0 |
| LED (6...24) V DC/AC | 99.02.0.024.59 | 99.02.0.024.59.0 |
| LED (28...60) V DC/AC | 99.02.0.060.59 | 99.02.0.060.59.0 |
| LED (110...240) V DC/AC | 99.02.0.230.59 | 99.02.0.230.59.0 |
| LED + Diode (6...24) V DC | 99.02.9.024.99 | 99.02.9.024.99.0 |
| LED + Diode (28...60) V DC | 99.02.9.060.99 | 99.02.9.060.99.0 |
| LED + Diode (110...220) V DC | 99.02.9.220.99 | 99.02.9.220.99.0 |
| LED + Diode (inverted polarity) (6...24) V DC | 99.02.9.024.79 | 99.02.9.024.79.0 |
| LED + Diode (inverted polarity) (28...60) V DC | 99.02.9.060.79 | 99.02.9.060.79.0 |
| LED + Diode (inverted polarity) (110...220) V DC | 99.02.9.220.79 | 99.02.9.220.79.0 |
| LED + Varistor (6...24) V DC/AC | 99.02.0.024.98 | 99.02.0.024.98.0 |
| LED + Varistor (28...60) V DC/AC | 99.02.0.060.98 | 99.02.0.060.98.0 |
| LED + Varistor (110...240) V DC/AC | 99.02.0.230.98 | 99.02.0.230.98.0 |
| RC circuit (6...24) V DC/AC | 99.02.0.024.09 | 99.02.0.024.09.0 |
| RC circuit (28...60) V DC/AC | 99.02.0.060.09 | 99.02.0.060.09.0 |
| RC circuit (110...240) V DC/AC | 99.02.0.230.09 | 99.02.0.230.09.0 |
| No - remanence (110...240) V AC | 99.02.8.230.07 | 99.02.8.230.07.0 |

* Available on request



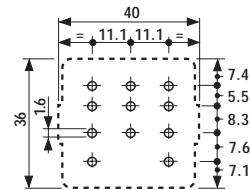
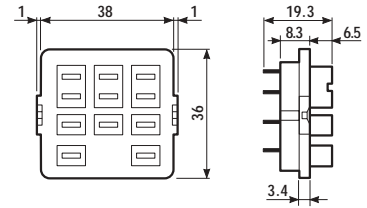
92.13

| Relay type | | 62.32 | 62.33 |
|---------------------------------------|--------|---------|---------|
| P.C.B. socket | BLUE | 92.13 | 92.13 |
| | BLACK* | 92.13.0 | 92.13.0 |
| Retaining clip (supplied with socket) | | 092.54 | 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



92.13



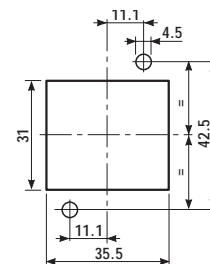
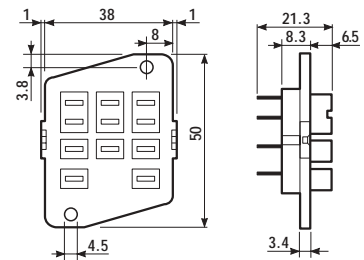
92.33

| Relay type | | 62.32 | 62.33 |
|--|--------|---------|---------|
| Panel mount solder socket: mounted with M3 screw | BLUE | 92.33 | 92.33 |
| | BLACK* | 92.33.0 | 92.33.0 |
| Retaining clip (supplied with socket) | | 092.54 | 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



92.33



062.10

| | |
|---|--------|
| Mounting adaptor for types 62.3x and 62.8x | 062.10 |
|---|--------|

| | |
|---|--------|
| Sheet of marker tags for all types (72 tags) | 060.72 |
|---|--------|

* Available on request

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

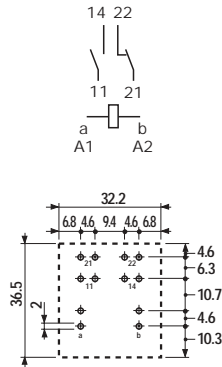
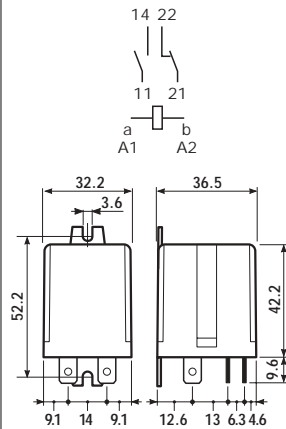
65.31

65.61



- 1 NO + 1NC
- Rear flange mount
- Faston 250 (6.3 x 0.8 mm)

- 1 NO + 1NC
- PCB mounting
- bifurcated terminals



h = 46 mm

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

| Contact specifications | | | |
|---|-----------------|---|--|
| Contact configuration | | 1 NO + 1 NC (SPST-NO + SPST-NC) | 1 NO + 1 NC (SPST-NO + SPST-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/HP | 1.1/1.5 | 1.1/1.5 |
| 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 | (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 /0.6 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 | 80 · 10 ³ | 80 · 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 | 4 | 4 |
| Dielectric strength between open contacts | V AC | 1,500 | 1,500 |
| Ambient temperature range | °C | -40...+50 | -40...+50 |
| Protection category | | IP 50 | IP 50 |
| Approvals: (according to type) | | | |

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

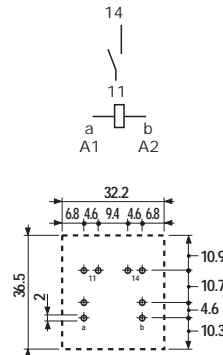
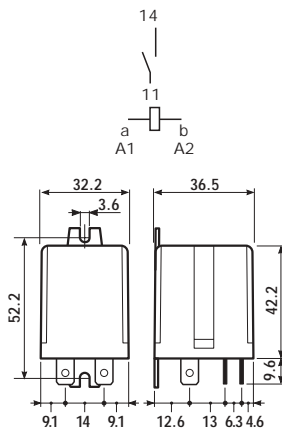
65.31 - 0300

65.61 - 0300



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

- 1 NO
- PCB mounting
- bifurcated terminals



h = 42 mm

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

** Distance between contacts >3mm (VDE 0700 art. 1)

| Contact specifications | | | |
|---|-----------------|---|--|
| Contact configuration | | 1 NO (SPST-NO) 3 mm** | 1 NO (SPST-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/HP | 1.5/2.0 | 1.5/2.0 |
| 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 | (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 /0.6 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 | 50 · 10 ³ | 50 · 10 ³ |
| Operate/release time (bounce included) | ms | 25/— | 25/— |
| Insulation according to EN 61810-5 | | 4 kV/3 | 4 kV/3 |
| Insulation between coil and contacts (1.2/50μs) | | 4 | 4 |
| Dielectric strength between open contacts | | 2,500 | 2,500 |
| Ambient temperature range | | -40...+50 | -40...+50 |
| Protection category | | IP 50 | IP 50 |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

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

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

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 (SPST-NO + SPST-NC)
Coil version _____
 8 = AC (50/60 Hz)
 9 = DC
Coil voltage _____
 see coil specifications

A: Contact material
 0 = Standard
B: Contact circuit
 0 = Standard
 3 = NO

D: Special applications
 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 = Standard

Only combinations in the same row are possible

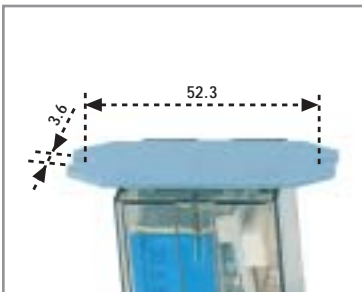
Preferred versions

| | 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 |

POSSIBLE OPTIONS



Option = 0005
 TOP MOUNT FLANGE

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

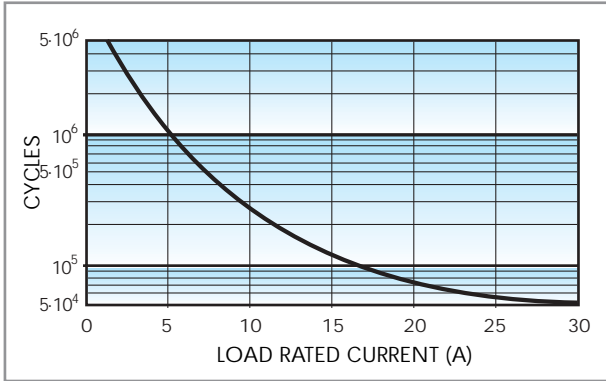
| | |
|--------------------------------|---|
| CONDUCTED DISTURBANCE IMMUNITY | BURST (according to EN 61000-4-4) level 4 (4kV) |
| | SURGE (according to EN 61000-4-5) level 4 (4kV) |

OTHER DATA

| | | | |
|---|--|-----------------------|-----|
| VIBRATION RESISTANCE (10...55Hz): NO/NC | g/g | 10/4 | |
| POWER LOST IN THE ENVIRONMENT | 1 NO (SPST-NO) + 1 NC (SPST-NC) | 1 NO (SPST-NO) | |
| | without contact current W | 1.3 | 1.3 |
| | with rated current W | 2.1 | 3.1 |
| RECOMMENDED DISTANCE between RELAY mounted on P.C.B.s | mm | ≥5 | |

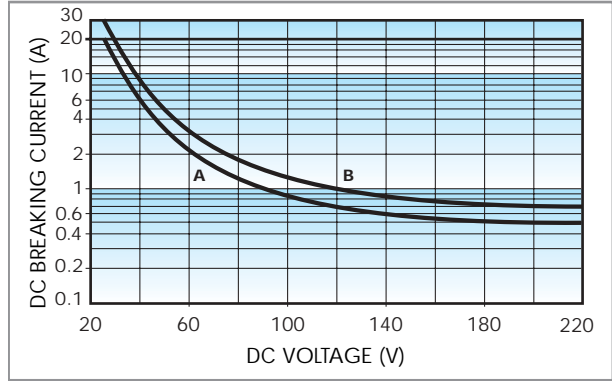
CONTACT SPECIFICATIONS

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.

COIL SPECIFICATIONS

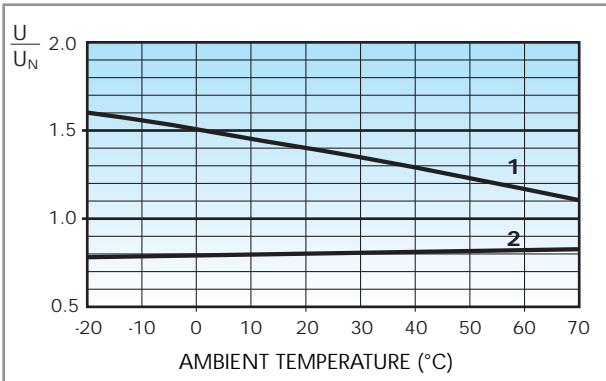
AC VERSION DATA

| 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 | | |
| 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 absorption 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 | 21 | 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

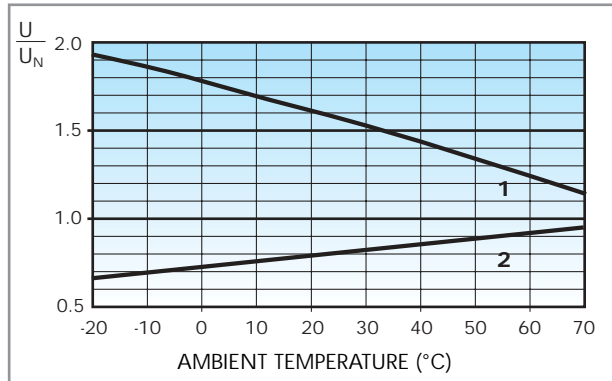


Operating range (AC type) vs ambient temperature.

1 - Max coil voltage permitted

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

R 65 DC

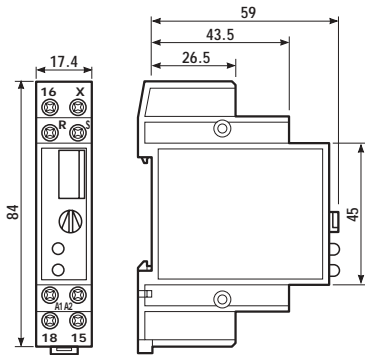


Operating range (DC type) vs ambient temperature.

1 - Max coil voltage permitted

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

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

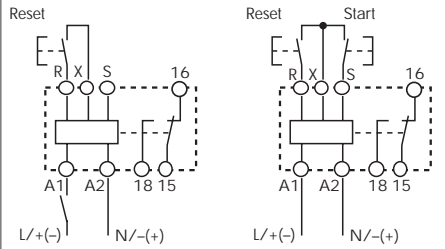


81.01



- Multi-voltage (DC not polarized)
- Multi-function
- 35 mm rail (EN50022) mounting

- AI:** ON Delay **BE:** OFF Delay
DI: ON Pulse **DE:** ON Pulse
SW: Symmetrical recycler **EE:** OFF Pulse
SP: Symmetrical recycler



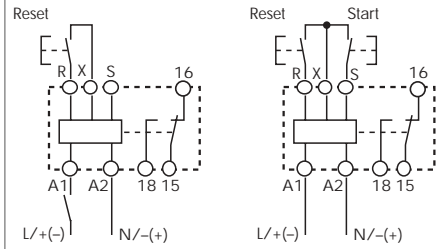
wiring diagram (without external START) wiring diagram (with external START -S)

81.11



- Mono-voltage (DC not polarized)
- Multi-function
- 35 mm rail (EN50022) mounting

- AI:** ON Delay **BE:** OFF Delay
DI: ON Pulse **DE:** ON Pulse
SW: Symmetrical recycler **EE:** OFF Pulse
SP: Symmetrical recycler



wiring diagram (without external START) wiring diagram (with external START -S)

| Contact specifications | | | |
|---|---------------|---|------------------------------------|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) |
| Rated current/Maximum peak current | A | 16/30 | 16/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| Rated load in AC1 | VA | 4,000 | 4,000 |
| Rated load in AC15 (230 VAC) | VA | 750 | 750 |
| Single phase motor rating (230 VAC) | kW/HP | 0.55/0.8 | 0.55/0.8 |
| 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) | 12...230 | 12 - 24 - 48 - 110 - 230 |
| | V DC | 12...230 (non polarized) | 12 - 24 - 48 - 110 (non polarized) |
| Rated power AC/DC | V AC(50Hz)/W | < 2/< 2 | < 1/< 0.7 |
| Operating range | AC | 10.8...250 | (0.85...1.1)U _N |
| | DC | 10.8...250 | (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 | % | ± 1 | ± 1 |
| Recovery time | ms | ≤ 50 | ≤ 100 |
| 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) | | | |

ORDERING INFORMATION

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

| | | | | | | | | | | | | | | | |
|---------------------------------------|----------|----------|---------------------------------------|----------|----------|---------------------|----------|----------|---|----------|----------|----------|----------|----------|----------|
| 8 | 1 | . | 0 | 1 | . | 0 | . | 2 | 3 | 0 | . | 0 | 0 | 0 | 0 |
| Series | | | Type | | | No. of poles | | | Supply voltage | | | | | | |
| 0 = Multi-voltage 1 = Mono-voltage | | | 0 = Multi-voltage 1 = Mono-voltage | | | 1 = 1 CO (SPDT) | | | 012 = 12 V AC/DC (81.11) 024 = 24 V AC/DC (81.11) 048 = 48 V AC/DC (81.11) 110 = 110 V AC/DC (81.11) 230 = 230 V AC (81.11) 230 = 12 ... 230 V AC/DC (81.01) | | | | | | |
| | | | | | | | | | Supply version | | | | | | |
| | | | | | | | | | 0 = AC (50/60 Hz)/DC 8 = AC (50/60 Hz) for 81.11.8.230 only | | | | | | |

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|--|--------------------|------------------------------------|
| ELECTROSTATIC DISCHARGE - contact discharge - air discharge | EN 61000-4-2 | 4 kV 8 kV |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 | 10 V/m |
| FAST TRANSIENTS (burst) (5-50 ns, 5 kHz) on Supply terminals | EN 61000-4-4 | 4 kV |
| SURGES (1.2/50 µs) on Supply terminals - common mode - differential mode | EN 61000-4-5 | 4 kV 4 kV (81.01), 2 kV (81.11) |
| 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 external control | < 1 mA (S-X) | < 1 mA (R-X) | | |
| POWER LOST IN THE ENVIRONMENT | | | | |
| - without contact current | W | 1.3 | | |
| - with rated current | W | 3.2 | | |
| | LOWER TERMINAL | UPPER TERMINAL | | |
| MAX WIRE SIZE | solid cable | flexible cable | solid cable | flexible cable |
| | mm ² | 1x4 / 2x2.5 | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x12 / 2x14 | 1x14 / 2x14 |
| TORQUE | Nm | 0.8 | 0.8 | |

TIME SCALES

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

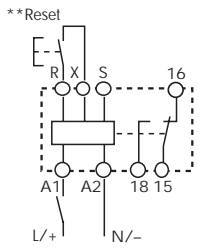
NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

| | LED | | Supply voltage | NO contact position | Contacts | |
|-------------------------------|-------|-----|----------------|---------------------|----------|---------|
| | green | red | | | open | closed |
| U = Supply voltage | | | NO | open | 15 - 18 | 15 - 16 |
| S = START | | | YES | open | 15 - 18 | 15 - 16 |
| C = Relay contact (NO) | | | YES | closed | 15 - 16 | 15 - 18 |
| R = RESET | | | YES | closed | 15 - 16 | 15 - 18 |

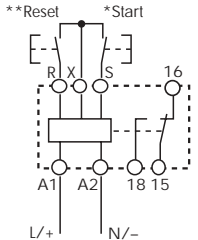
Wiring diagram

Internal Start
Controlled through signal contact in voltage supply line.



**Reset facility is optional

External Start
Controlled through signal contact of external start switch.



* 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

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

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

1

2

3

(DI) ON pulse.
Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position.

1

2

3

(SW) Symmetrical recycler: ON start.
Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between **ON** and **OFF** as long as power is applied. The ratio is 1:1 (time off = time on).

1

2

3

(SP) Symmetrical recycler: OFF start.
Apply power to timer. First transfer of contact occurs after preset time has elapsed. The timer now cycles between **OFF** and **ON** as long as power is applied. The ratio is 1:1 (time off = time on).

1

2

3

(BE) OFF delay: timing on START release (external start).
Power must be applied at all times to timer. On closure of normally open control **Signal Switch**, the output contact transfers and remains in that position. When the **Signal Switch** is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position.

1

2

3

(DE) ON pulse: timing on START pulse.
Power must be applied at all times to timer. On momentary or maintained closure of a normally open control **Signal Switch**, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.

1

2

3

(EE) OFF pulse: timing on START release.
Power must be applied at all times to timer. On opening a normally open control **Signal Switch**, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.

1

2

3

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

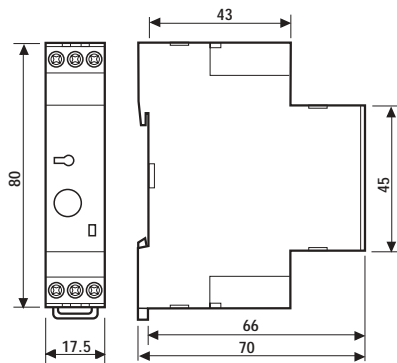
1

2

3

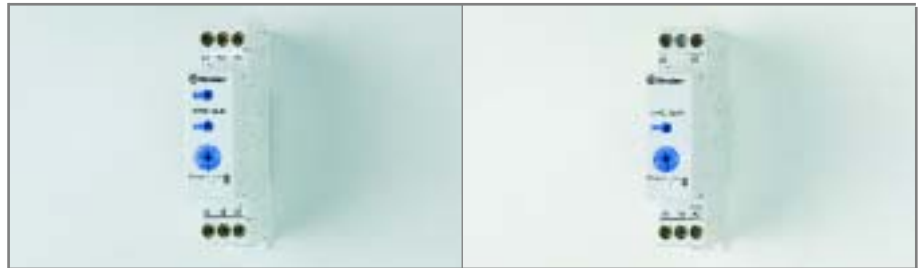
Depressing the **External Reset Switch** terminates the interval time. To re-start, it is necessary to depress the Start switch again. Example: ON pulse function.

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



82.01

82.11



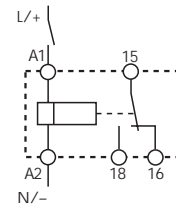
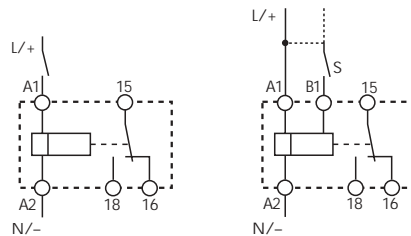
- Multi-function
- Multi-voltage
- 35 mm rail (EN50022) mounting

- Mono-function
- Multi-voltage
- 35 mm rail (EN50022) mounting

AI: ON Delay
DI: ON Pulse
SW: Symmetrical recycler

BE: OFF Delay

AI: ON Delay

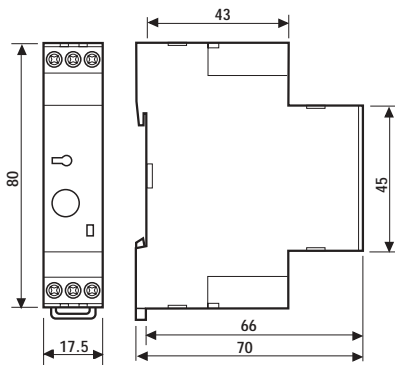


wiring diagram (without external START) wiring diagram (with external START -S)

wiring diagram (without external START)

| Contact specifications | | | |
|---|---------------|---|--|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) |
| 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/HP | 0.125/0.2 | 0.125/0.2 |
| 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 | V AC(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 | 10·10 ³ | 10·10 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
- Four functions
- Six time scales, from 0.05s to 10h
- 35 mm rail (EN 50022) mount

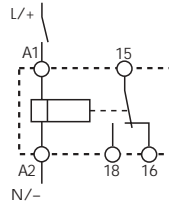


82.21



- Mono-function
- Multi-voltage
- 35 mm rail (EN50022) mounting

DI: ON Pulse



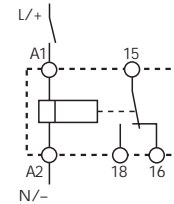
wiring diagram
(without external START)

82.31



- Mono-function
- Multi-voltage
- 35 mm rail (EN50022) mounting

SW: Symmetrical recycler



wiring diagram
(without external START)

Contact specifications

| | | | |
|---|---------------|-------------|-------------|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) |
| 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/HP | 0.125/0.2 | 0.125/0.2 |
| 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 | V AC(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 |

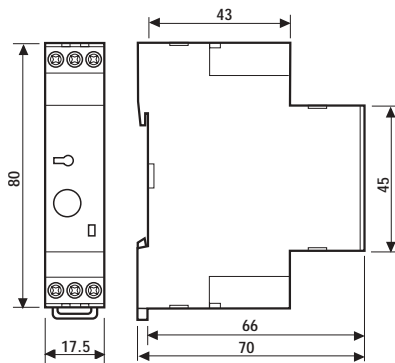
Technical data

| | | | |
|--------------------------------------|--------|---|--|
| 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 | 10·10 ³ | 10·10 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
- Four functions
- Six time scales, from 0.05s to 10h
- 35 mm rail (EN 50022) mount

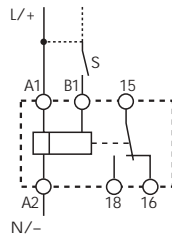


82.41



- Mono-function
- Multi-voltage
- 35 mm rail (EN50022) mounting

BE: OFF Delay



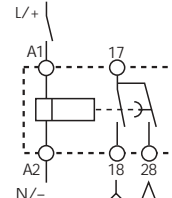
wiring diagram
(with external START -S-)

82.82



- Mono-function
- Multi-voltage
- 35 mm rail (EN50022) mounting

SD: Star- Delta



wiring diagram
(without external START)

| Contact specifications | | | |
|---|---------------|--|--|
| Contact configuration | | 1 CO (SPDT) | 2 NO (DPST-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/HP | 0.125/0.2 | 0.125/0.2 |
| 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 | V AC(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 | 10·10 ³ | 10·10 ³ |
| Ambient temperature range | °C | -20...+50 | -20...+50 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | GOST | |

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 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 = OFF delay: timing on START release (external start) (BE)
- 8 = Star - delta (SD)

Supply voltage

240 = $\begin{cases} 24...48 \text{ V DC} \\ 24...240 \text{ V AC} \end{cases}$

Supply version

0 = AC (50/60 Hz)/DC

No. of poles

1 = 1 CO (SPDT) for types 0, 1, 2, 3, 4
2 = 2 NO (DPST - NO) for star - delta

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|--|--------------------|--------------|
| ELECTROSTATIC DISCHARGE - contact discharge - air discharge | EN 61000-4-2 | 8 kV 8 kV |
| 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 - differential mode | EN 61000-4-5 | 4 kV — |
| RADIO-FREQUENCY COMMON MODE (0.15 ÷ 80 MHz) on Supply terminals | EN 61000-4-6 | 10 V |
| RADIATED AND CONDUCTED EMISSION | EN 55022 | class B |

OTHER DATA

| | | |
|---|-----------------|----------------|
| CURRENT ABSORPTION on external control (B1) | 1mA | |
| POWER LOST IN THE ENVIRONMENT | | |
| - without contact current | W | 5 |
| - with rated current | W | 6 |
| MAX WIRE SIZE | solid cable | flexible cable |
| | mm ² | 1x4 / 2x2.5 |
| | AWG | 1x12 / 2x14 |
| TORQUE | Nm | 1 |

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 | OFF delay: timing on START release (external start) | • | | • | • | • | • | • |
| | 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 | OFF delay: timing on START release (external start) | • | | • | • | • | • | |
| 82.82 | SD | Star - delta | | • | • | • | • | | |

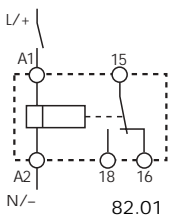
NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

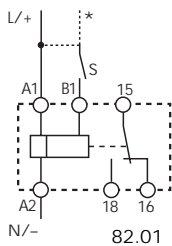
| | LED | Relay type | Supply voltage | NO contact position | Contact | |
|-------------------------------|-----|-------------------------|----------------|---------------------|---------|---------|
| | | | | | open | closed |
| U = Supply Voltage | | 82.01 82.11 82.21 | YES | open | 15 - 18 | 15 - 16 |
| S = START | | 82.31 82.41 | YES | closed | 15 - 16 | 15 - 18 |
| C = Relay contact (NO) | | 82.82 | YES | closed (λ) | 17 - 28 | 17 - 18 |
| | | | YES | closed (Δ) | 17 - 18 | 17 - 28 |

Wiring diagram

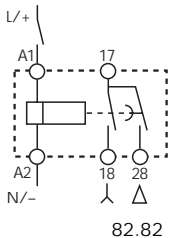
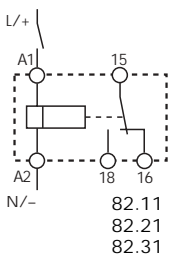
Multi-function without external START



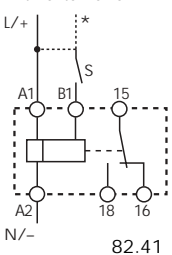
with external START (S)



Mono-function without external START



with external START

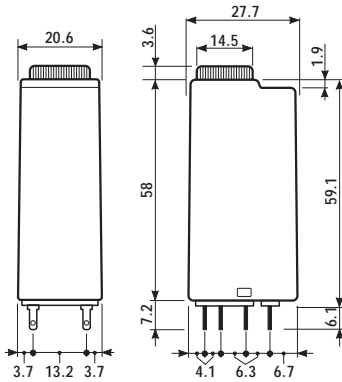


| Type | Timing Diagram | Description |
|--------------|----------------|--|
| 82.01 | | (AI) ON delay. Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed. |
| | | (DI) ON pulse. Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position. |
| | | (SW) Symmetrical recycler: ON start. Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between ON and OFF as long as power is applied. The ratio is 1:1 (time off = time on). |
| | | (BE) OFF delay: timing on START release (external start). Power must be applied at all times to timer. On closure of normally open control Signal Switch , the output contact transfers and remains in that position. When the Signal Switch is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position. |

| | | |
|--------------|--|--|
| 82.11 | | (AI) ON delay. Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed. |
| 82.21 | | (DI) ON pulse. Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position. |
| 82.31 | | (SW) Symmetrical recycler: ON start. Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between ON and OFF as long as power is applied. The ratio is 1:1 (time off = time on). |
| 82.82 | | (SD) Star - delta. Apply power to relay. Closure of the star contact (λ) occurs immediately. After preset time has elapsed the star contact (λ) returns to the original position. After a fixed time of ~60 ms the delta contact (Δ) closes and remains in that position. |
| 82.41 | | (BE) OFF delay: timing on START release (external start). Power must be applied at all times to timer. On closure of normally open control Signal Switch , the output contact transfers and remains in that position. When the Signal Switch is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position. |

* 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

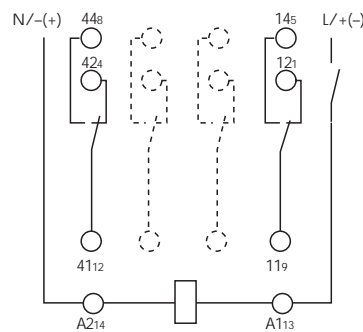


85.32



- 2 Pole, 10A
- DC supply not polarized
- Plug-in for use with 94 series sockets

AI: ON Delay
DI: ON Pulse



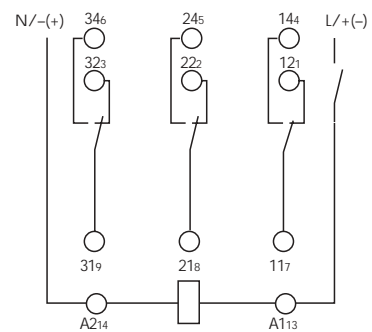
wiring diagram

85.33



- 3 Pole, 10A
- DC supply not polarized
- Plug-in for use with 94 series sockets

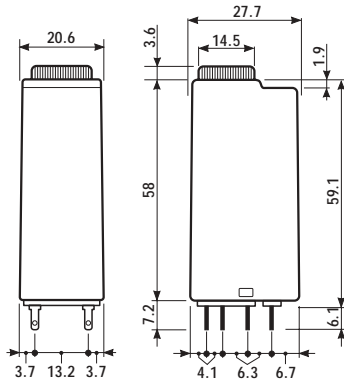
AI: ON Delay
DI: ON Pulse



wiring diagram

| Contact specifications | | | |
|---|---------------|---|--|
| Contact configuration | | 2 CO (DPDT) | 3 CO (3PDT) |
| 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/HP | 0.37/0.6 | 0.37/0.6 |
| 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 (not polarized) | 12 - 24 - 48 - 110...125 (not polarized) |
| Rated power AC/DC | V AC(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

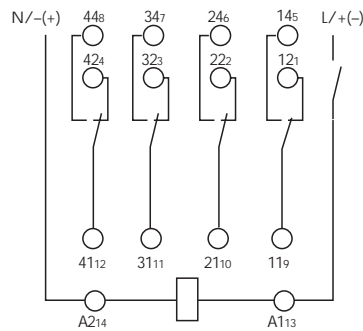


85.34



- 4 Pole, 5A
- DC supply not polarized
- Plug-in for use with 94 series sockets

AI: ON Delay
DI: ON Pulse



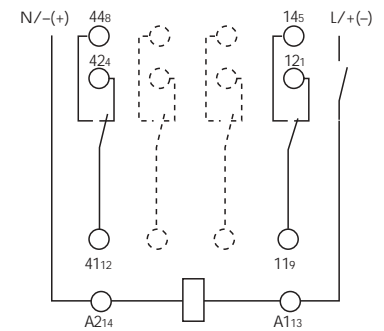
wiring diagram

85.52



- 2 Pole, 10A
- DC supply not polarized
- Plug-in for use with 94 series sockets

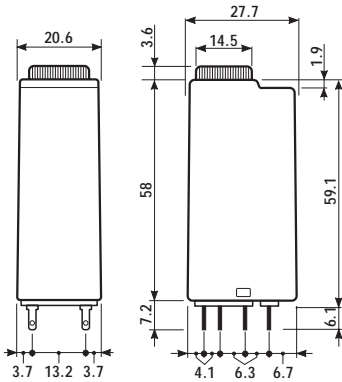
SW: Symmetrical recycler: ON start
SP: Symmetrical recycler: OFF start



wiring diagram

| Contact specifications | | | |
|---|---------------|---|--|
| Contact configuration | | 4 CO (4PDT) | 2 CO (DPDT) |
| 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/HP | 0.125/0.2 | 0.37/0.6 |
| 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 (not polarized) | 12 - 24 - 48 - 110...125 (not polarized) |
| Rated power AC/DC | V AC(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

85.54

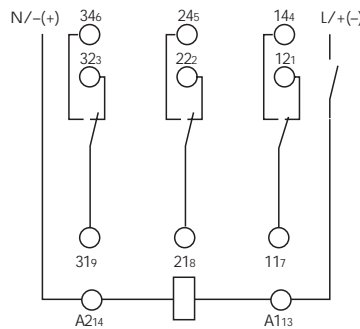


- 3 Pole, 10A
- DC supply not polarized
- Plug-in for use with 94 series sockets

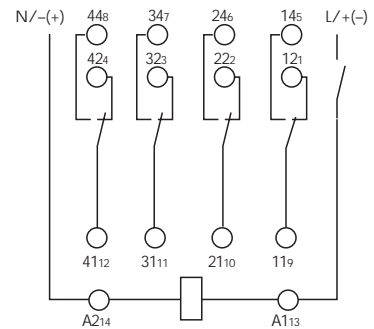
- 4 Pole, 5A
- DC supply not polarized
- Plug-in for use with 94 series sockets

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

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



wiring diagram



wiring diagram

| Contact specifications | | | |
|---|---------------|---|--|
| Contact configuration | | 3 CO (3PDT) | 4 CO (4PDT) |
| 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/HP | 0.37/0.6 | 0.125/0.2 |
| 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 (not polarized) | 12 - 24 - 48 - 110...125 (not polarized) |
| Rated power AC/DC | V AC(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 (4PDT), 24 V AC/DC supply voltage with AI - DI functions.

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

Series

Type

3 = Functions: AI (ON Delay) - DI (ON Pulse)

5 = Functions: SW - SP (Symmetrical Recycler)

No. of poles

2 = 2 CO (DPDT) - 10 A

3 = 3 CO (3PDT) - 10 A

4 = 4 CO (4PDT) - 5 A

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

Supply version

0 = AC (50/60 Hz)/DC

8 = AC (50/60 Hz) for 230 V only

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|--|--------------------|--------------|
| ELECTROSTATIC DISCHARGE - contact discharge - air discharge | EN 61000-4-2 | n.a. 8 kV |
| 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 - differential mode | EN 61000-4-5 | 4 kV 2 kV |
| 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 IN THE ENVIRONMENT | 2 CO (DPDT) | 3 CO (3PDT) | 4 CO (4PDT) |
|-------------------------------|-------------|-------------|-------------|
| - without contact current W | 1.6 | 1.6 | 1.6 |
| - with rated current W | 3.7 | 4.7 | 3.3 |

TIME SCALES

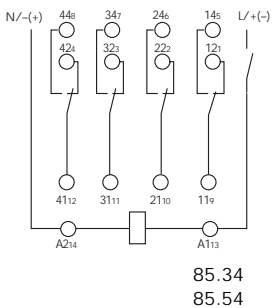
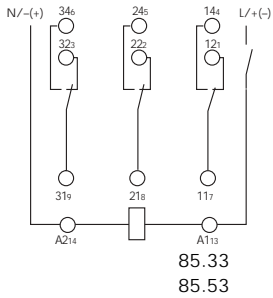
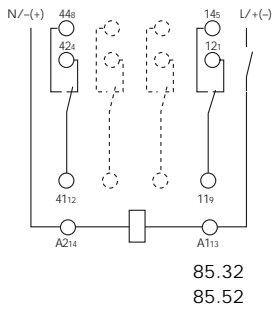
| (0.1...1) s | (1...10) s | (10...60) s | (1...10) min | (10...60) min | (1...10) h |
|-------------|------------|-------------|--------------|---------------|------------|
| | | | | | |

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

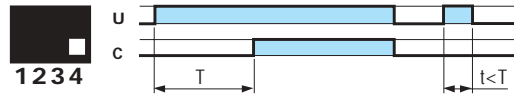
FUNCTIONS

| | green | LED | red | Supply voltage | NO contact position |
|-------------------------------|-------|-----|-----|----------------|---------------------|
| U = Supply voltage | | | | NO | open |
| C = Relay contact (NO) | | | | YES | open |
| | | | | YES | closed |

Wiring diagram



Types: 85.32, 85.33, 85.34



(AI) ON delay.

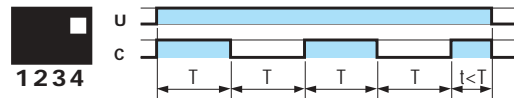
Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed.



(DI) ON pulse.

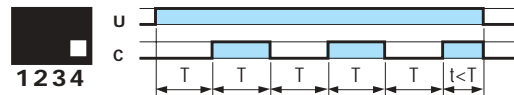
Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position.

Types: 85.52, 85.53, 85.54



(SW) Symmetrical recycler: ON start.

Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between **ON** and **OFF** as long as power is applied. The ratio is 1:1 (time off = time on).



(SP) Symmetrical recycler: OFF start.

Apply power to timer. First transfer of contact occurs after preset time has elapsed. The timer now cycles between **OFF** and **ON** as long as power is applied. The ratio is 1:1 (time off = time on).



94.04

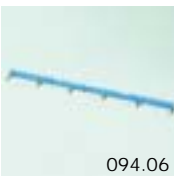
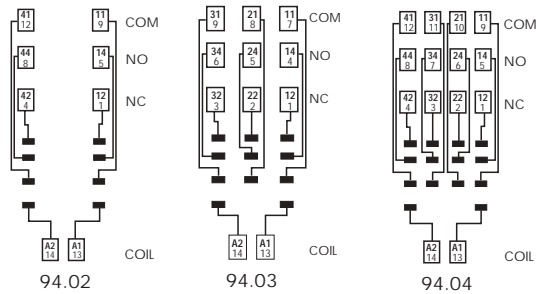
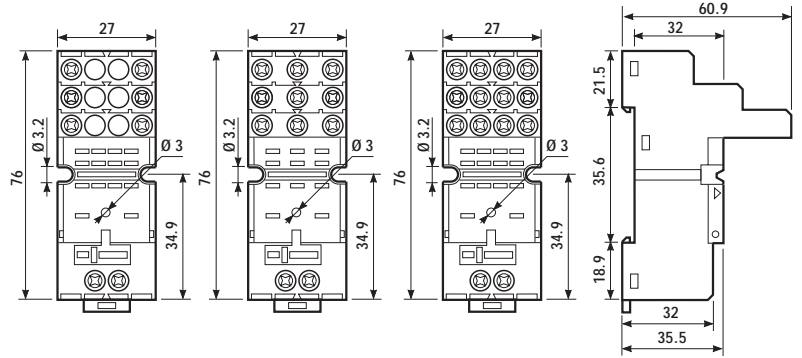
Approvals
(according to type):



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

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

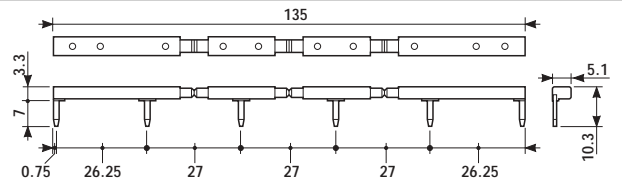
| Timer type | 85.32, 85.52 | 85.33, 85.53 | 85.34, 85.54 | |
|---|--------------|--------------|--------------|---------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.02 | 94.03 | 94.04 |
| | BLACK* | 94.02.0 | 94.03.0 | 94.04.0 |
| Retaining clip (supplied with timer) | 094.81 | 094.81 | 094.81 | |
| Identification tag | 094.00.4 | 094.00.4 | 094.00.4 | |
| 6 way jumper link for 94.02, 94.03 and 94.04 sockets | 094.06 | 094.06 | 094.06 | |



094.06

- RATED VALUES: 10 A - 250 V

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



*Available on request



94.74

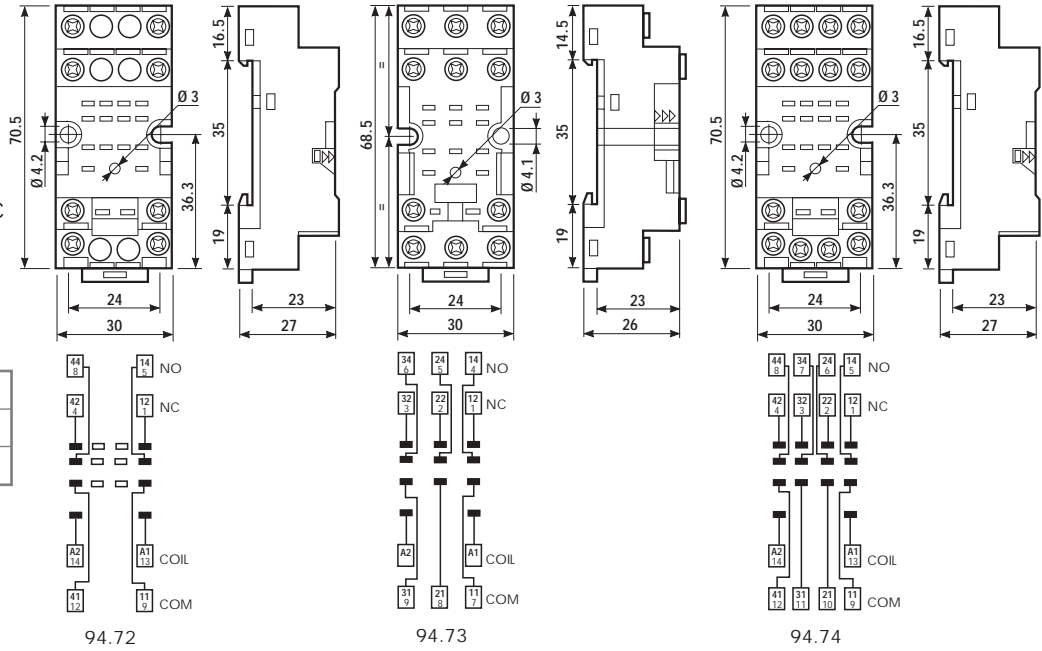
Approvals
(according to type):



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

| | solid wire | flexible 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 | |
|---|--------------|--------------|--------------|---------|
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.72 | 94.73 | 94.74 |
| | BLACK* | 94.72.0 | 94.73.0 | 94.74.0 |
| Retaining clip (supplied with timer) | 094.81 | 094.81 | 094.81 | |



94.82

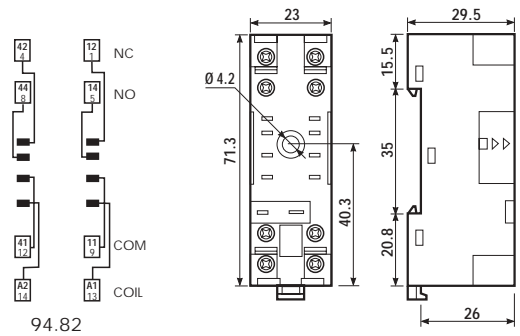
Approvals
(according to type):



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

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

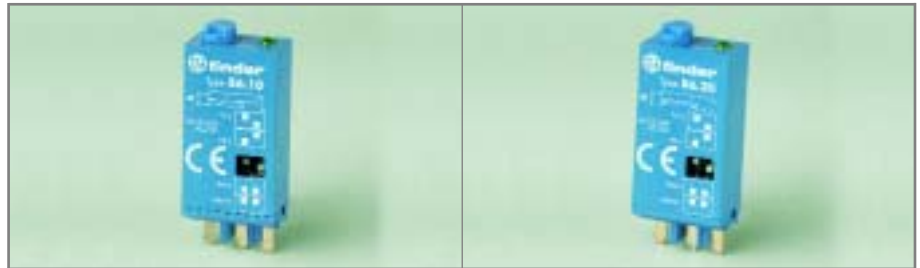
| Timer type | 85.32, 85.52 | 85.33, 85.53 | 85.34, 85.54 |
|---|--------------|--------------|--------------|
| Screw terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 94.82 | — |
| | BLACK* | 94.82.0 | — |
| Retaining clip (supplied with timer) | 094.81 | — | — |



- Mono or Multifunction timer modules
- Timer module for 90, 92, 94, 95 series sockets
- LED indicator

86.10

86.20

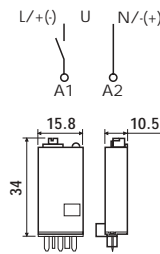


- Monofunction
- Plug-in for use with 92.03 - 94.02 - 94.03 - 94.04 - 95.03 - 95.05 sockets

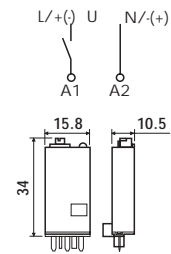
- Monofunction
- Plug-in for use with 92.03 - 94.02 - 94.03 - 94.04 - 95.03 - 95.05 sockets

A1: ON Delay

D1: ON Pulse



wiring diagram



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 | see 40, 41, 44, 55 and 62 series relays | see 40, 41, 44, 55 and 62 series relays |
| Single phase motor rating (230 VAC) | kW/HP | | |
| Breaking capacity in DC1: | 30/110/220V A | | |
| Minimum switching load | mW(V/mA) | | |
| Standard contact material | | | |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 12...24 | 12...24 |
| | V DC | 12...24 (not polarized) | 12...24 (not polarized) |
| Rated power AC/DC | mW | 150 | 150 |
| Operating range | AC | $(0.8...1.1)U_N$ | $(0.8...1.1)U_N$ |
| | DC | $(0.8...1.1)U_N$ | $(0.8...1.1)U_N$ |
| Technical data | | | |
| Specified time range | | (1.5...15)s,(6...60)s,(0.8...8)min,(6.4...64)min | (1.5...15)s,(6...60)s,(0.8...8)min,(6.4...64)min |
| Repeatability | % | ± 1 | ± 1 |
| Recovery time | ms | ≤ 150 | ≤ 150 |
| Minimum control impulse | ms | — | — |
| Setting accuracy-full range | % | ± 5 | ± 5 |
| Electrical life at rated load in AC1 | cycles | see 40, 41, 44, 55 and 62 series relays | see 40, 41, 44, 55 and 62 series relays |
| Ambient temperature range | °C | -20...+50 | -20...+50 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | | |

86.60

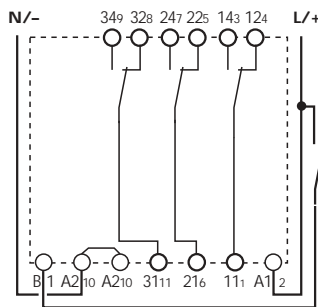
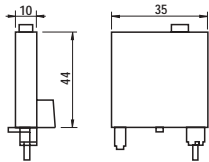
- Mono or Multifunction timer modules
- Timer module for 90, 92, 94, 95 series sockets
- LED indicator



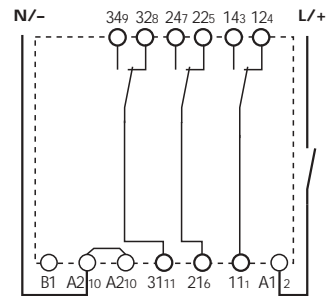
- Time scale: from 15ms to 10 h
- Multi-function
- Plug-in for use with 90.72 and 90.73 sockets

- BE:** OFF Delay
- DE:** ON Pulse
- EE:** OFF Pulse
- FE:** ON Delay + OFF Pulse

- AI:** ON Delay
- DI:** ON Pulse
- SW:** Symmetrical recycler: ON start
- SP:** Symmetrical recycler: OFF start



wiring diagram
(with external START in B1)



wiring diagram
(without external START in B1)

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/HP |
| 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 multi-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 ————

1 = Mono-function (AI)
2 = Mono-function (DI)
6 = Multi-function (AI, DI, SW, SP, BE, DE, EE, FE)

No. of poles ————

see 40, 41, 44, 55, 60 and 62 series relays

Supply voltage

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 | 40.31/41.31 | 95.03 | 86.10/86.20 |
| 1 | 40.61/41.61 | 95.05 | 86.10/86.20 |
| 2 | 40.52/41.52/44.52/44.62 | 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

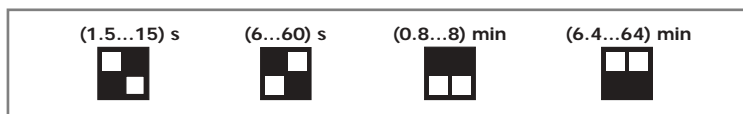
| TYPE OF TEST | REFERENCE STANDARD | 86.10/20 | 86.60 |
|--|--------------------|--------------|--------------|
| ELECTROSTATIC DISCHARGE - contact discharge - air discharge | EN 61000-4-2 | n.a. 8 kV | 4 kV 8 kV |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 | 10 V/m | 10 V/m |
| FAST TRANSIENTS (burst) (5-50 ns, 5 kHz) on Supply terminals | EN 61000-4-4 | 2 kV | 2 kV |
| SURGES (1.2/50 µs) on Supply terminals - common mode - differential mode | EN 61000-4-5 | 2 kV — | 2 kV 1 kV |
| RADIO-FREQUENCY COMMON MODE (0.15 ÷ 80 MHz) on Supply terminals | EN 61000-4-6 | 10 V | 10 V |
| RADIATED AND CONDUCTED EMISSION | EN 55022 | class B | class B |

OTHER DATA

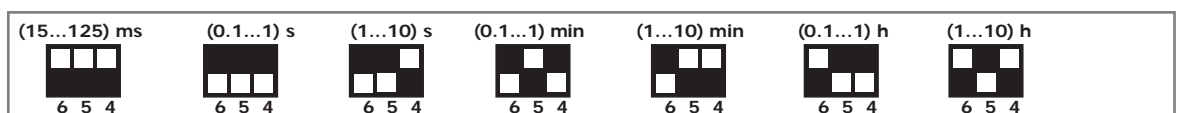
| | 86.10, 86.20 | 86.60 |
|---|--------------------------------------|------------------------|
| CURRENT ABSORPTION on external control (B1) | — | 1 |
| POWER LOST IN THE ENVIRONMENT | | |
| - without contact current | 0.2 | 0.1 (12 V) - 1 (230 V) |
| - with rated current | see 40, 41, 44, 55, 62 series relays | see 60 series relays |

TIME SCALES

Type 86.10
Type 86.20



Type 86.60

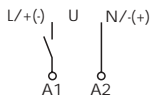


NOTE: time scales and functions must be set before energising the timer.

FUNCTIONS

| | LED | | Supply voltage | NO contact position |
|-------------------------------|--------------------|--------|----------------|---------------------|
| | green (86.60 only) | yellow | | |
| U = Supply Voltage | | | NO | open |
| S = START | | | YES | open |
| C = Relay Contact (NO) | | | YES | closed |

Wiring diagram



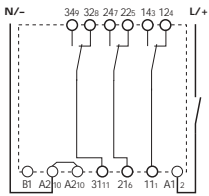
Type 86.10

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

(DI) ON pulse.
Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position.

Type 86.60

without external START



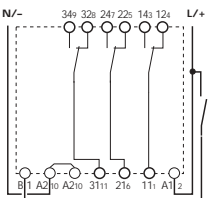
(AI) ON delay.
Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed.

(DI) ON pulse.
Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position.

(SW) Symmetrical recycler: ON start.
Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between **ON** and **OFF** as long as power is applied. The ratio is 1:1 (time off = time on).

(SP) Symmetrical recycler: OFF start.
Apply power to timer. First transfer of contact occurs after preset time has elapsed. The timer now cycles between **OFF** and **ON** as long as power is applied. The ratio is 1:1 (time off = time on).

with external START



(BE) OFF delay: timing on START release (external start).
Power must be applied at all times to timer. On closure of normally open control **Signal Switch**, the output contact transfers and remains in that position. When the **Signal Switch** is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position.

(DE) ON pulse: timing on START pulse.
Power must be applied at all times to timer. On momentary or maintained closure of a normally open control **Signal Switch**, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.

(EE) OFF pulse: timing on START release.
Power must be applied at all times to timer. On opening a normally open control **Signal Switch**, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.

(FE) On pulse + OFF pulse: timing on Start pulse and on START release.
Power must be applied at all times to timer. On opening or closing of a normally open **Signal Switch**, the output contact occurs. After the desired time has elapsed, the contact returns to the original position.



95.05

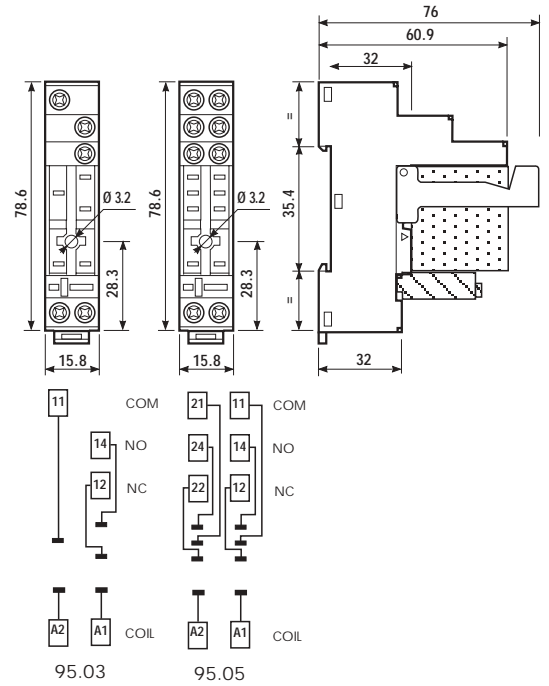
Approvals
(according to type):



- 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
- MAX WIRE SIZE:

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

| Relay type | 40.31 | 40.51, 40.52, 40.61 |
|---|--------------|---------------------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 95.03 |
| | BLACK* | 95.03.0 |
| Retaining and release clip (supplied with socket) | 095.01 | 095.01 |
| Identification tag | 095.00.4 | 095.00.4 |
| Timer modules | 86.10, 86.20 | 86.10, 86.20 |
| 8-way jumper link for 95.03 and 95.05 sockets | 095.18 | 095.18 |



94.04

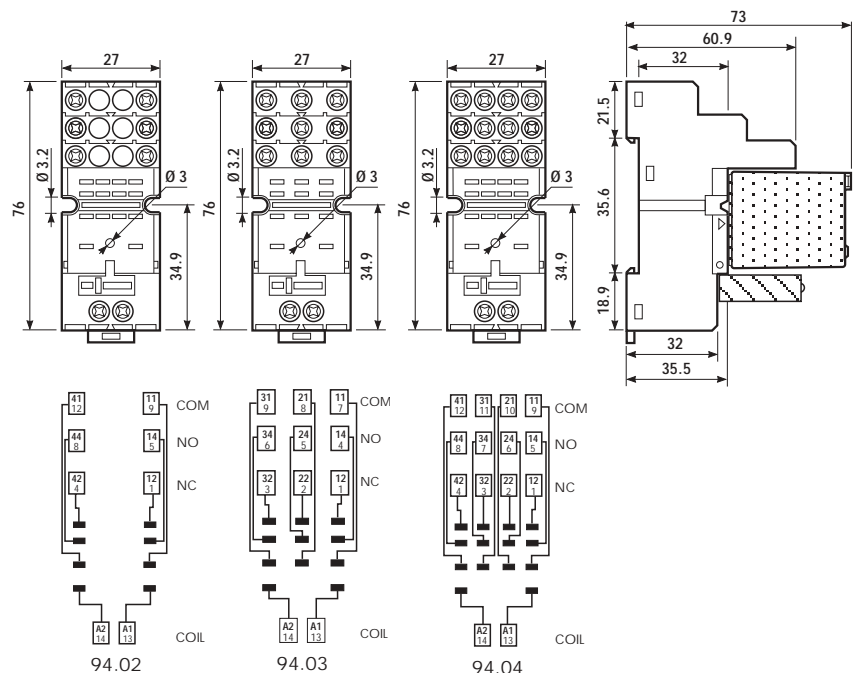
Approvals
(according to type):



- 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
- MAX WIRE SIZE: mm² - AWG

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

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



* Available on request



92.03

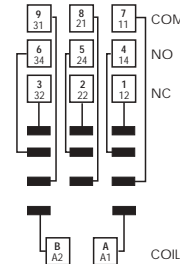
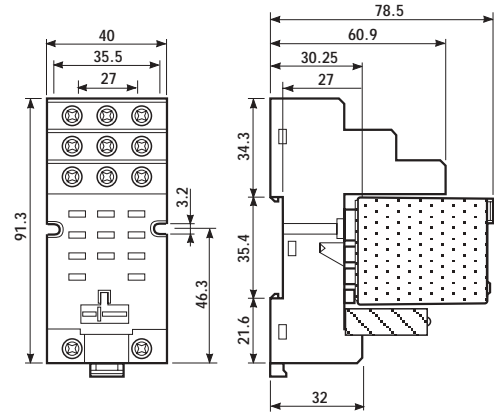
| Relay type | 62.32 | 62.33 |
|---|--------------|--------------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 92.03 92.03 |
| | BLACK* | 92.03.10 |
| Retaining clip (supplied with socket) | 092.71 | 092.71 |
| Timer modules | 86.10, 86.20 | 86.10, 86.20 |

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
- MAX WIRE SIZE:

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



92.03



90.73

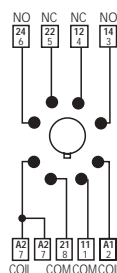
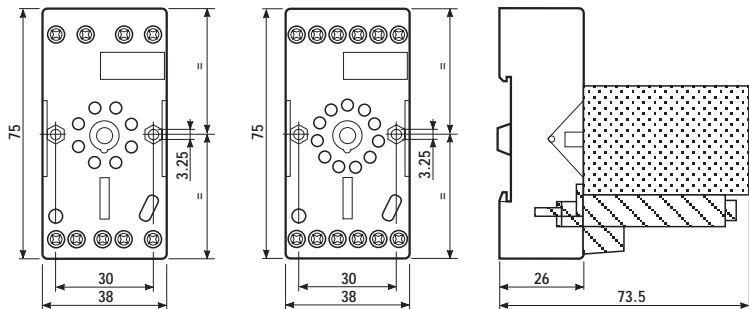
| Relay type | 60.12 | 60.13 |
|---|--------|-----------------|
| Clamp terminal socket: panel or 35 mm rail (EN 50022) mount | BLUE | 90.72 90.73 |
| | BLACK* | 90.72.0 90.73.0 |
| Retaining clip (supplied with socket) | 090.33 | 090.33 |
| Timer module | 86.60 | 86.60 |

Approvals
(according to type):

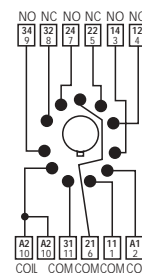


- Double ground terminal (A2).
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- MAX WIRE SIZE:

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

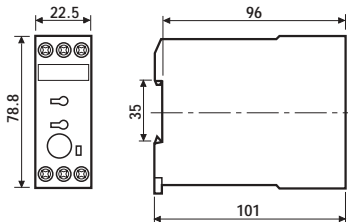


90.72

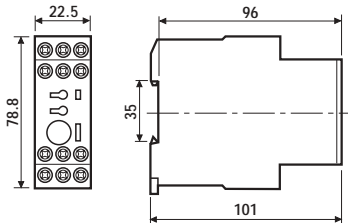


90.73

- 22.5 mm wide
- Monofunction and multifunction 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



87.01.0.240



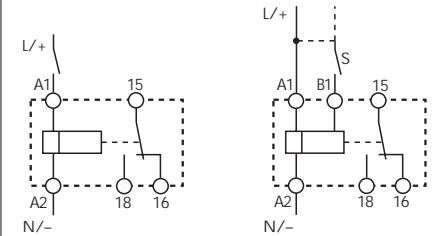
87.02.0.240

87.01



- Multi-function
- 1 pole
- 35 mm rail (EN50022) mounting

- | | |
|---------------------------------|-----------------------------|
| AI: ON Delay | BE: OFF Delay |
| DI: ON Pulse | CE: ON and OFF Delay |
| GI: Fixed Pulse delayed | DE: ON Pulse |
| SW: Symmetrical recycler | EE: OFF Pulse |



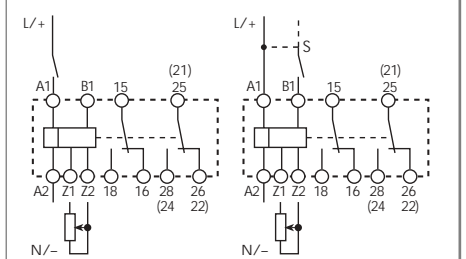
wiring diagram (without external START) wiring diagram (with external START -S)

87.02



- Multi-function
- Timing can be regulated using ext. Potentiometer
- 2 timed contacts or 1 timed + 1 instantaneous contact
- 35 mm rail (EN50022) mounting

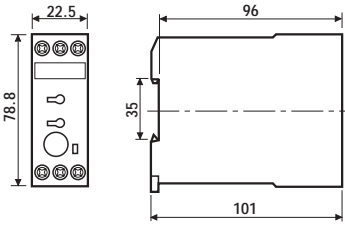
- | | |
|---------------------------------|-----------------------------|
| AI: ON Delay | BE: OFF Delay |
| DI: ON Pulse | CE: ON and OFF Delay |
| GI: Fixed Pulse delayed | DE: ON Pulse |
| SW: Symmetrical recycler | EE: OFF Pulse |



wiring diagram (without external START) wiring diagram (with external START -S)

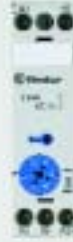
| Contact specifications | | 87.01 | 87.02 |
|---|---------------|-----------------------------|----------------------------|
| Contact configuration | | 1 CO (SPDT) | 2 CO (DPDT) |
| Rated current/Maximum peak current | A | 8/30 | 8/30 |
| Rated voltage/Maximum switching voltage | V AC | 250/400 | 250/400 |
| 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/HP | 0.185/0.3 | 0.185/0.3 |
| 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 | | 87.01 | 87.02 |
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...48 | 24...48 |
| Rated power AC/DC | V AC(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 | | 87.01 | 87.02 |
| Specified time range | | See page 112 | See page 112 |
| 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) | | CE GOST | GL cUL |

- 22.5 mm wide
- Monofunction and multifunction 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



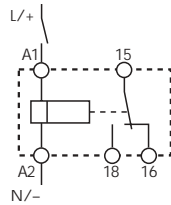
87.11.0.240
87.21.0.240

87.11



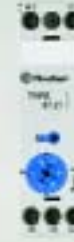
- Mono-function
- 35 mm rail (EN50022) mounting

AI: ON Delay



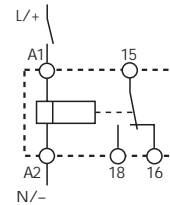
wiring diagram
(without external START)

87.21



- Mono-function
- 35 mm rail (EN50022) mounting

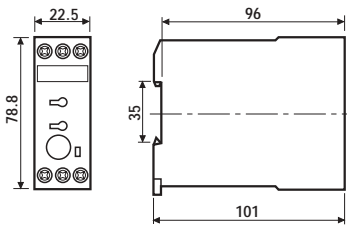
DI: ON Pulse



wiring diagram
(without external START)

| Contact specifications | | | |
|---|---------------|-----------------------------|----------------------------|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) |
| 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/HP | 0.185/0.3 | 0.185/0.3 |
| 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 | V AC(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 112 | See page 112 |
| 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) | | | |

- 22.5 mm wide
- Monofunction and multifunction 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



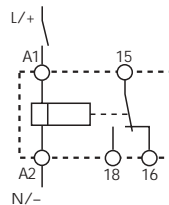
87.31.0.240
87.41.0.240

87.31



- Mono-function
- 35 mm rail (EN50022) mounting

SW: Symmetrical recycler



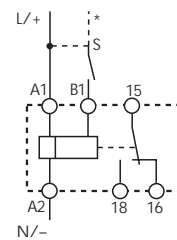
wiring diagram
(without external START)

87.41



- Mono-function
- 35 mm rail (EN50022) mounting

BE: OFF Delay



wiring diagram
(with external START -S)

| Contact specifications | | | |
|--|---------------|-----------------------------|----------------------------|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) |
| 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) | | 400 | 400 |
| Single phase motor rating (230 VAC) | | kW/HP | 0.185/0.3 |
| 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) |
| 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 | V AC(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 112 | See page 112 |
| 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) | | | |

- 22.5 mm wide
- Monofunction and multifunction 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

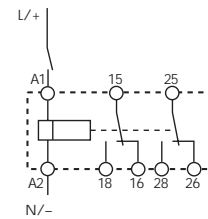
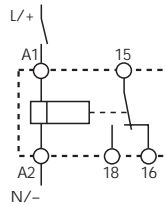


- 1 pole
- Mono-function
- 35 mm rail (EN50022) mounting

- 2 pole
- Mono-function
- 35 mm rail (EN50022) mounting

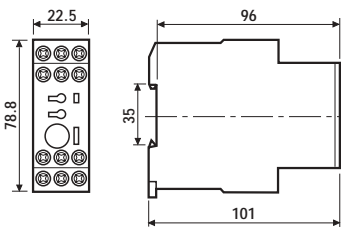
BI: True OFF Delay

BI: True OFF Delay



wiring diagram
(without external START)

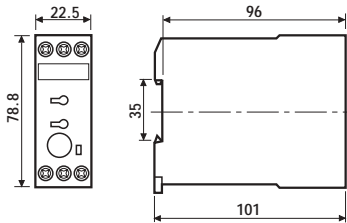
wiring diagram
(without external START)



87.61.0.240
87.62.0.240

| Contact specifications | | 87.61 | 87.62 |
|---|---------------|-----------------------------|----------------------------|
| Contact configuration | | 1 CO (SPDT) | 2 CO (DPDT) |
| 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/HP | 0.125/0.3 | 0.125/0.3 |
| 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 | | 87.61 | 87.62 |
| Nominal voltage | V AC(50/60Hz) | 24...240 | 24...240 |
| | V DC | 24...240 | 24...240 |
| Rated power AC/DC | V AC(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 | | 87.61 | 87.62 |
| Specified time range | | See page 112 | See page 112 |
| 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) | | CE | GOST |

- 22.5 mm wide
- Monofunction and multifunction 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



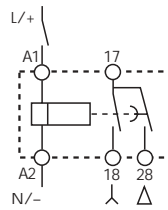
87.82.0.240
87.91.0.240

87.82



- 2 pole
- Mono-function: Star - Delta
- 35 mm rail (EN50022) mounting

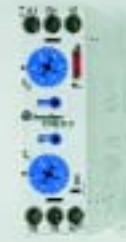
SD: Star - Delta



star - delta

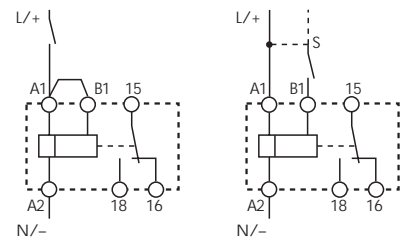
wiring diagram
(without external START)

87.91



- Multi-function
- 35 mm rail (EN50022) mounting

LI: Asymmetrical recycler ON start
PI: Asymmetrical recycler OFF start
LE: Asymmetrical recycler ON start (ext. start)
PE: Asymmetrical recycler OFF start (ext. start)



wiring diagram (without external START) wiring diagram (with external START -S-)

| Contact specifications | | | |
|---|---------------|-----------------------------|----------------------------|
| Contact configuration | | 2 NO (DPST-NO) | 1 CO (SPDT) |
| 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/HP | 0.185/0.3 | 0.185/0.3 |
| 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 | V AC(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 112 | See page 112 |
| 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) | | | |

ORDERING INFORMATION

Example: 87 series 8 A multi-function timer, 1 CO (SPDT) 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 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: pulse ON start (SW)
- 4 = OFF delay: timing on START release (external start) (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
- 240 = { 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 CO (SPDT)
- 2 = 2 CO (DPDT) for 87.02/62
- 2 = 2 NO (DPST-NO) for 82.82

TECHNICAL DATA

EMC SPECIFICATIONS

| TYPE OF TEST | REFERENCE STANDARD | |
|---|--|------------------------------|
| ELECTROSTATIC DISCHARGE | - contact discharge - air discharge | EN 61000-4-2 8 kV 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 6 kV |
| SURGES (1.2/50 µs) on Supply terminals | - common mode - differential mode | EN 61000-4-5 4 kV |
| RADIO-FREQUENCY COMMON MODE (0.15 ÷ 80 MHz) on Supply terminals | | EN 61000-4-6 10 V |
| RADIATED AND CONDUCTED EMISSION | | EN 55022 class B |

OTHER DATA

| | | | |
|---|--------------------------------|-----------------|--------------|
| CURRENT ABSORPTION on external control (B1) | 1mA | | |
| POWER LOST IN 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 | flexible cable | |
| | mm ² 1x4 / 2x2.5 | 1x4 / 2x1.5 | |
| | AWG 1x12 / 2x14 | 1x12 / 2x16 | |
| TORQUE | 1.2 Nm | | |

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 | OFF delay: timing on START release (internal start) | • | • | • | • | • | • | • | • | • | • |
| | CE | ON and OFF delay (external start) | • | • | • | • | • | • | • | • | • | • |
| | DI | ON pulse | • | • | • | • | • | • | • | • | • | • |
| | DE | ON pulse: timing on START pulse | • | • | • | • | • | • | • | • | • | • |
| | EE | OFF pulse: timing on START release | • | • | • | • | • | • | • | • | • | • |
| | 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 | OFF delay: timing on START release (internal start) | • | • | • | • | • | • | • | • | • | • |
| 87.61/ | BI | True OFF delay (power OFF) | | 0.15 | • | 0.07 | | • | | | | |
| 87.62 | | | | 2.5 | | 1.3 | | | | | | |
| 87.82 | SD | Star - delta (T _U = ~60 ms) | | | | • | | | | | | |
| 87.91 | LI | Asymmetrical recycler pulse start | • | • | • | • | • | • | • | • | • | • |
| | LE | Asymmetrical recycler pulse start (external start) | • | • | • | • | • | • | • | • | • | • |
| | PI | Asymmetrical recycler pause start | • | • | • | • | • | • | • | • | • | • |
| | PE | Asymmetrical recycler pause start (external start) | • | • | • | • | • | • | • | • | • | • |

FUNCTIONS

| |
|-------------------------------|
| U = Supply Voltage |
| S = START |
| C = Relay Contact (NO) |

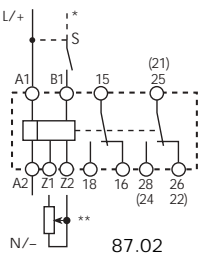
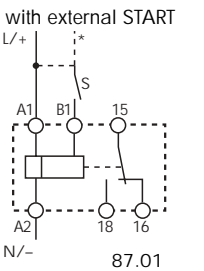
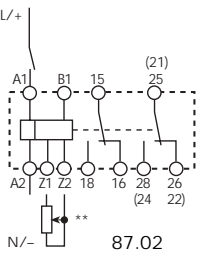
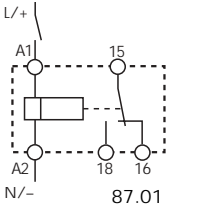
| LED** green | Timing | NO contact position | Timed | | Contact DIP switch | Instantaneous* | |
|----------------|-------------|------------------------|---------------------|---------------------|-----------------------|----------------|----------|
| | | | open | closed | | open | closed |
| | none | open | 15 - 18 25 - 28* | 15 - 16 25 - 26* | | 21 - 24* | 21 - 22* |
| | in progress | open | 15 - 18 25 - 28* | 15 - 16 25 - 26* | | 21 - 22* | 21 - 24* |
| | 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* | | 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.

Wiring diagram

Multi-function without external 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.: position the potentiometer on "zero".

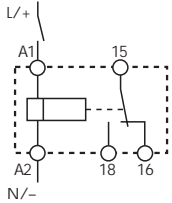
| | | |
|-----------------------------------|--|--|
| Type 87.01 87.02 | | <p>(AI) ON delay. Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed.</p> |
| | | <p>(DI) ON pulse. Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position.</p> |
| | | <p>(GI) Fixed pulse (0.5s) delayed. Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs after a fixed time of 0.5s.</p> |
| | | <p>(SW) Symmetrical recycler: ON start. Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between ON and OFF as long as power is applied. The ratio is 1:1 (time off = time on).</p> |
| | | <p>(BE) OFF delay: timing on START release (external start). Power must be applied at all times to timer. On closure of normally open control Signal Switch, the output contact transfers and remains in that position. When the Signal Switch is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position.</p> |
| | | <p>(CE) ON and OFF delay (external start). On closure of the normally open control Signal Switch, the desired delay begins. After the preset time has elapsed the output contact transfers and remains in that position. When the Signal Switch is reopened, the desired delay begins again. After the preset time has elapsed, the contact returns to the original position.</p> |
| | | <p>(DE) ON pulse: timing on START pulse. Power must be applied at all times to timer. On momentary or maintained closure of a normally open control Signal Switch, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.</p> |
| | | <p>(EE) OFF pulse: timing on START release. Power must be applied at all times to timer. On opening a normally open control Signal Switch, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.</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

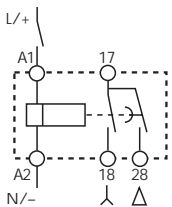
Wiring diagram

Monofunction

without external START

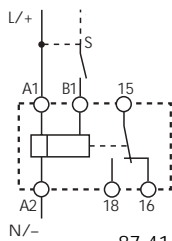


87.11
87.21
87.31
87.61



87.62

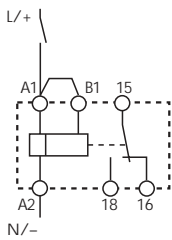
with external START (S)



87.41

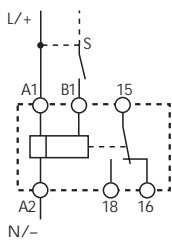
Asymmetrical recycler

without external START



87.91

with external START (S)

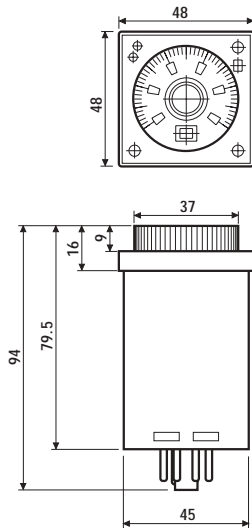


87.91

| Type | Timing Diagram | Description |
|----------------|----------------|--|
| 87.11 | | (AI) ON delay. Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed. |
| 87.21 | | (DI) ON pulse. Apply power to timer. Contact transfers immediately. After preset time has elapsed, contact returns to original position. |
| 87.31 | | (SW) Symmetrical recycler: ON start. Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between ON and OFF as long as power is applied. The ratio is 1:1 (time off = time on). |
| 87.61 87.62 | | (BI) True OFF delay (power OFF). Apply power to timer ($T_{min} = 300ms$). Contact transfers immediately. Reset occurs when power is removed after preset time elapsed. |
| 87.82 | | (SD) Star - delta. Apply power to timer. Closure of the star contact (Λ) occurs immediately. After preset time has elapsed the star contact (Λ) returns to the original position. After a fixed time of ~60 ms the delta contact (Δ) closed and remains in that position. |
| 87.41 | | (BE) OFF delay: timing on START release (external start). Power must be applied at all times to timer. On closure of normally open control Signal Switch , the output contact transfers and remains in that position. When the Signal Switch is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position. |

| | | |
|-------|------|---|
| 87.91 | | (LI) Asymmetrical recycler ON start. Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between ON and OFF as long as power is applied. The cycles are not equal (time off = time on). |
| | | (PI) Asymmetrical Recycler (pause starting). By applying operating voltage (U) to A1-A2 contacts stay in release condition. After preset time T1 has elapsed contacts transfer to operating condition, in order to transfer to release condition again after preset time T2 has elapsed. |
| | | (LE) Asymmetrical recycler ON start (external start). On closure of the normally open control Signal Switch the first transfer of contact occurs. The timer now cycles between ON and OFF. The cycles are not equal (time off = time on). |
| | | (PE) Asymmetrical Recycler (pause starting). Operating voltage (U) is applied to A1-A2. On closure of control switch (S) contacts stay in release condition. After preset time T1 has elapsed contacts transfer to operating condition, in order to transfer to release condition again after preset time T2 has elapsed. |

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

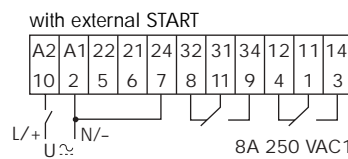


88.02

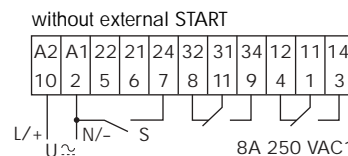


- Multi-function
- 11 pin
- Plug-in for use with 90.21 - 90.27 sockets

- AE:** ON Delay
- BE:** OFF Delay
- DE:** ON Pulse



- Ai:** ON Delay
- Hi:** ON Pulse
- SW:** Symmetrical recycle

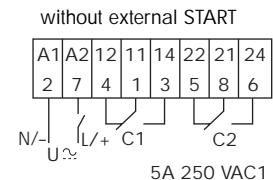


88.12



- Multi-function
- 8 pin, 2 timed contacts or 1 timed + 1 instantaneous contact
- Plug-in for use with 90.20 - 90.26 sockets

- A1a:** ON Delay (2 timed contacts)
- A1b:** ON Delay (1 timed + 1 instantaneous contact)
- D1a:** ON Pulse (2 timed contacts)
- D1b:** ON Pulse (1 timed + 1 instantaneous contact)



| Contact specifications | | | |
|---|---------------|---|---------------------|
| Contact configuration | | 2 CO (DPDT) | 2 CO (DPDT) |
| 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/HP | 0.3/0.4 | 0.125/0.2 |
| 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 |
| Supply specifications | | | |
| Nominal voltage | V AC(50/60Hz) | 24...230 | 24...230 |
| | V DC | 24...230 | 24...48 |
| Rated power AC/DC | V AC(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 8 A multi-function timer, 2 CO (DPDT) contact, with (24...230) V AC (50/60) Hz and (24...230) V DC supply.

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

Series

Type

0 = Functions AI, SW, AE, BE, DE, HI
1 = Functions Ala, Alb, Dla, DIb

No. of poles

2 = 2 CO (DPDT)

Supply voltage

230 = $\begin{cases} 24...230 \text{ V AC} \\ 24...48 \text{ V DC} \end{cases}$ (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 | 4 kV |
| | - air discharge | | 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 | 2 kV/5 kV |
| SURGES (1.2/50 µs) on Supply terminals | - common mode | EN 61000-4-5 | 2 kV |
| | - differential mode | | 1 kV |
| RADIO-FREQUENCY COMMON MODE (0.15 ÷ 80 MHz) on Supply terminals | | EN 61000-4-6 | 3 V |

TIME SCALES

(0.05s...5h) — 0.5 → s/min/h/h x 10

(0.05s...10h) — 1 → s/min/h/h x 10

(0.05s...50h) — 5 → s/min/h/h x 10

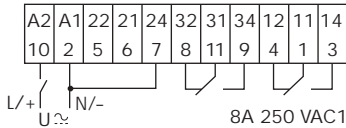
(0.05s...100h) — 10 → s/min/h/h x 10

FUNCTIONS

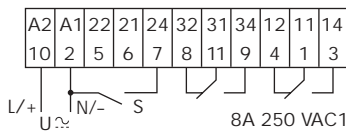
U = Supply Voltage
S = START
C = Relay Contact (NO)

Wiring diagram

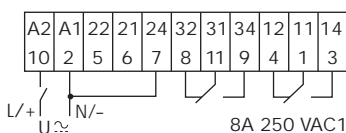
without external START



with external START



with external START

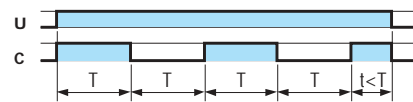


Type 88.02



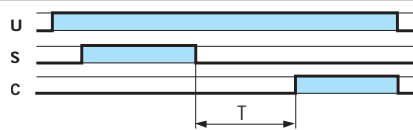
(AI) ON delay.

Apply power to timer. Contact transfers after preset time has elapsed. Reset occurs when power is removed.



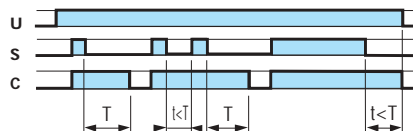
(SW) Symmetrical recycler: ON start.

Apply power to timer. First transfer of contact occurs as soon as power is applied. The timer now cycles between **ON** and **OFF** as long as power is applied. The ratio is 1:1 (time off = time on).



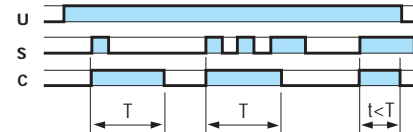
(AE) ON delay: timing on START release (external start).

Apply power to timer. On closure of normally open control **Signal Switch**, the contact transfers after preset time has elapsed. Reset occurs when power is removed.



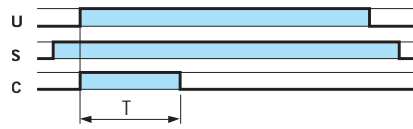
(BE) OFF delay: timing on START release (external start).

Power must be applied at all times to timer. On closure of normally open control **Signal Switch**, the output contact transfers and remains in that position. When the **Signal Switch** is reopened, the desired delay begins. After preset time has elapsed, the contact returns to the original position.



(DE) ON pulse: timing on START pulse.

Power must be applied at all times to timer. On momentary or maintained closure of a normally open control **Signal Switch**, the output contact transfers. After the desired time has elapsed, the contact returns to the original position.

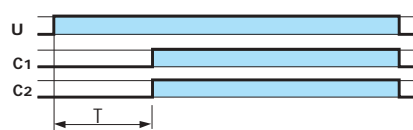
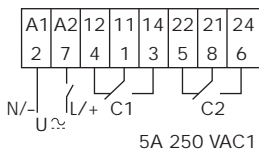


(HI) ON pulse.

Apply power to timer (U). Contacts transfer immediately. After preset time has elapsed, contacts returns to the original position. N.B. The Start it should be closed between n.2 and n. 7 terminals.

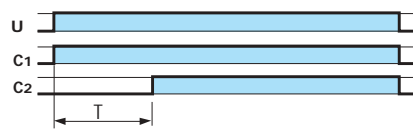
Type 88.12

without external START



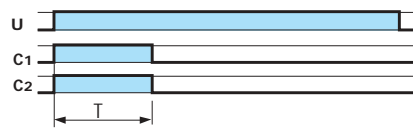
(A1a) ON Delay (2 timed contacts).

Apply power to timer (U). Contacts (C₁ and C₂) transfer after preset time has elapsed. Reset occurs when power is removed.



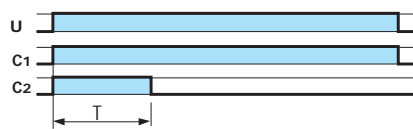
(A1b) ON Delay (1 timed contact + 1 instantaneous contact).

Apply power to timer (U). Contact (C₁) transfers immediately, and contact (C₂) transfer after preset time has elapsed. Reset occurs when power is removed.



(D1a) ON pulse (2 timed contacts).

Apply power to timer (U). Contacts (C₁ and C₂) transfer immediately. After preset time has elapsed, the contacts returns to original position.



(D1b) ON pulse (1 timed contact + 1 instantaneous contact).

Apply power to timer (U). Contacts (C₁ and C₂) transfer immediately. After preset time has elapsed, the contact (C₂) returns to original position. The contact C₁ returns to original position when power is removed.



90.21

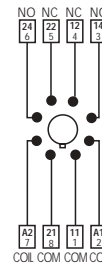
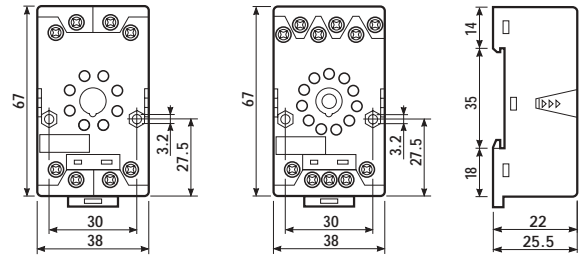
Approvals
(according to type):



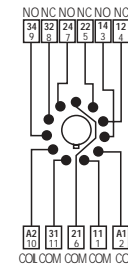
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.5 Nm
- MAX WIRE SIZE:

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

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



90.20



90.21



90.26

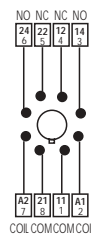
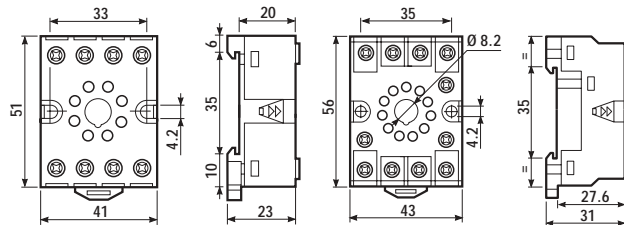
Approvals
(according to type):



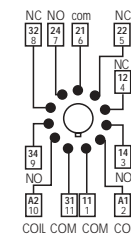
- RATED VALUES: 10 A - 250 V
- DIELECTRIC STRENGTH: ≥ 2 kV AC
- PROTECTION CATEGORY: IP 20
- AMBIENT TEMPERATURE: (-40...+70)°C
- TORQUE: 0.8 Nm
- MAX WIRE SIZE:

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

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



90.26



90.27



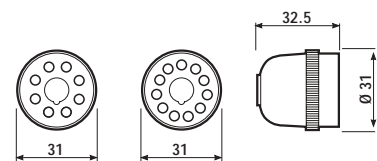
90.13.4

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 |
|--|---------|---------|
| Sockets 8-11 pin backwired with solder terminals | 90.12.4 | 90.13.4 |



90.12.4

90.13.4

* Available on request

- A range of light dependent relays with 1 or 2 NO (SPST or DPST) contacts
- Pole or flange mount versions available
- Double break (phase + neutral) type available (type 10.32)
- Sensitivity adjustment from 1...150 lux

| | 10.32 | 10.41 |
|---|--------------------------------------|------------------------------|
| | | |
| | - 2 NO, 16 A - Pole mount | - 1 NO, 12 A - Pole mount |
| | | |
| Contact specifications | | |
| Contact configuration | 2 NO (DPST - NO) | 1 NO (SPST - 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) |
| Standard contact material | AgSnO ₂ | AgSnO ₂ |
| 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) |
| Operating time: switching ON/OFF | ms 6/25 | 15/25 |
| Ambient temperature range | °C -30...+70 | -30...+70 |
| Protection category | IP 54 | IP 54 |
| Approvals: (according to type) | | |

ORDERING INFORMATION

Example: a 10 series light dependent relay with 1 NO (SPST-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 _____

Type _____
 3 = Pole mount - 2 NO (DPST-NO)
 4 = Pole mount - 1 NO (SPST-NO)

No. of poles _____
 1 = Single phase switch 1 NO (SPST-NO), 12 A
 2 = Double phase switch 2 NO (DPST-NO), 16 A

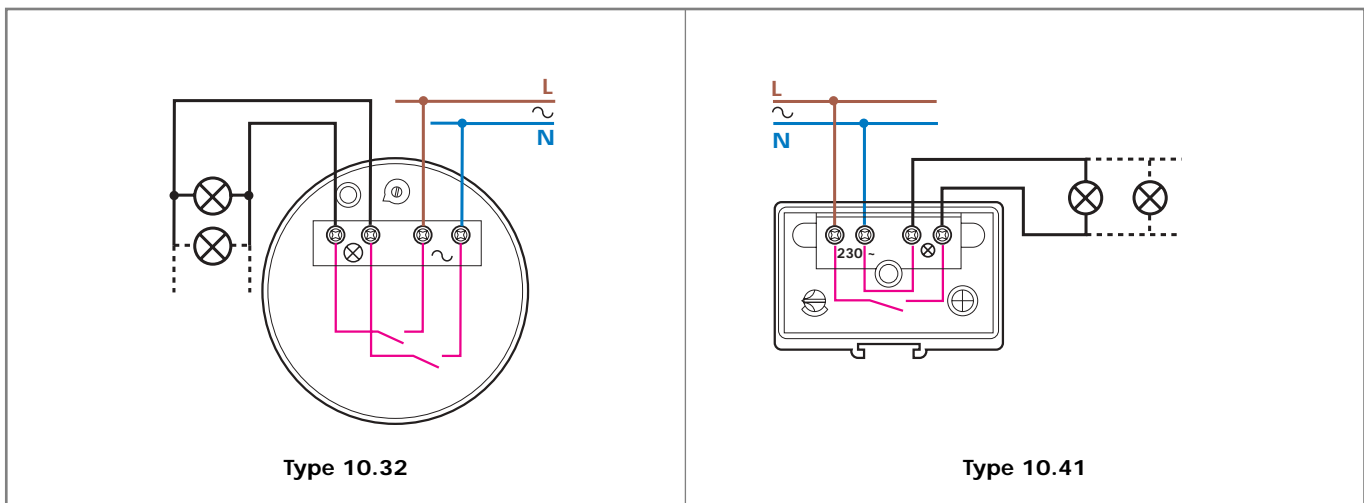
Supply voltage
 230 = 230 V

Supply version
 8 = AC (50/60 Hz)

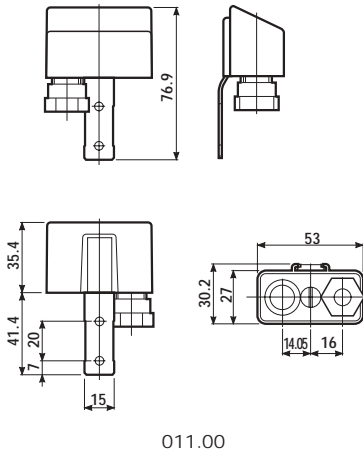
TECHNICAL DATA

| 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 | | solid cable | flexible cable | solid cable | flexible cable |
| | mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x6 / 2x4 | 1x6 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x10 / 2x12 | 1x10 / 2x14 |
| TORQUE | Nm | 1.2 | 1.2 | | |

WIRING DIAGRAMS

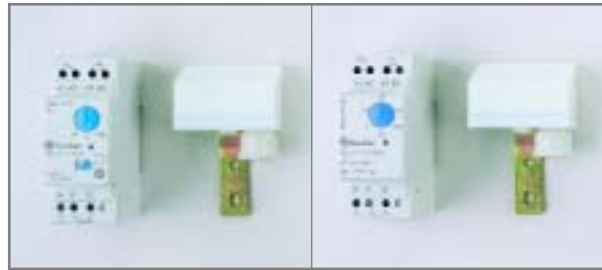


- Type 11.01 is suitable for use on staircases and in entrance halls
- Type 11.71: with 1 CO contact and with 12...24 VAC/DC voltage supply
- SELV separation between contact and supply circuit
- Supplied with separate sensitive photocell
- LED indication
- 35 mm rail (EN 50022) mount



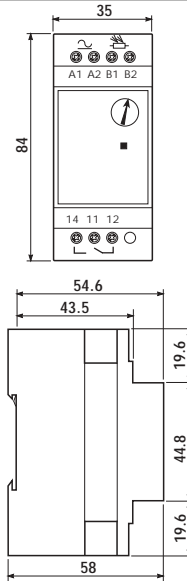
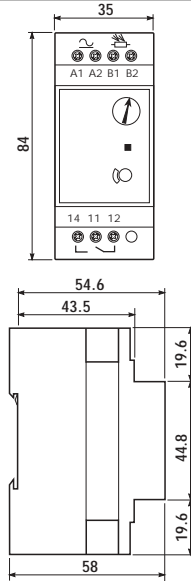
11.01

11.71



- 1 CO
- 35 mm rail (EN 50022)
- "zero hysteresis"

- 1 CO
- 35 mm rail (EN 50022)
- 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 | 2,000 (NO contact) |
| compensated fluorescent (230V) | W | 550 | 550 (NO contact) |
| uncompensated fluorescent (230V) | W | 1,000 | 1,000 (NO contact) |
| halogens (230V) | W | 2,000 | 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 | 230 | 110...125 230...240 |
| Rated power AC/DC | VA (50Hz)/W | 2/— | 1.3/0.8 |
| Operating range | DC/AC (50Hz) | — | (10...28) 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) |
| Operating time: switching ON/OFF | ms | 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 NO (SPST-NO) - 16 A contact and 35 mm (EN 50022) rail mounting, with 230 V AC supply.

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

| | | |
|---|-------|---|
| Series _____ | _____ | Supply voltage |
| Type _____ | _____ | 024 = 12...24 V AC/DC for 11.71 only |
| 0 = 35 mm rail (EN 50022) mounting, "zero hysteresis" | | 125 = 110...125 V AC for 11.71 only |
| 7 = 35 mm rail (EN 50022) mounting | | 230 = 230...240 V AC for 11.71 only |
| No. of poles _____ | _____ | 230 = 230 V AC for 11.01 only |
| 1 = 1 CO | | 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 IN THE ENVIRONMENT | - without contact current W | 1.3 | 0.8 | | |
| | - with rated current W | 3.1 | 2 | | |
| MAX WIRE SIZE | | solid cable | flexible cable | solid cable | flexible cable |
| | mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x6 / 2x4 | 1x6 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x10 / 2x12 | 1x10 / 2x14 |
| TORQUE | Nm | 0.8 | 0.8 | | |

WIRING DIAGRAMS

Type 11.01
LED indication:
Blinking green = power ON, relay OFF
Continuous green = power ON, relay ON
Red = control

Type 11.71
RED LED indication:
Slow blinking = power ON, relay OFF
Fast blinking = power ON, timing in progress
Continuous blinking = power ON, relay ON

**"ZERO HYSTERESIS"
MODULAR LIGHT DEPENDENT RELAYS**

ON/OFF threshold

Switch OFF level = Switch ON level.

Type 11.01

**TRADITIONAL
MODULAR LIGHT DEPENDENT RELAYS**

OFF threshold

ON threshold

Generally a "traditional" light dependent relay works with positive hysteresis to prevent malfunctioning or tripping, hence switch-off is delayed meaning a waste of energy (T).

- Two types available:
 type 12.01 - mechanical daily time switch
 type 12.21 - digital weekly time switch
- 35.8 mm wide
- 35 mm rail (EN 50022) mount

| | 12.01 | 12.21 | 12.22 |
|---|---|---|---|
| | | | |
| | - mechanical daily time switch - 1 CO - 35 mm rail (EN 50022) | - digital weekly time switch - 1 CO - 35 mm rail (EN 50022) | - digital weekly time switch - 2 CO - 35 mm rail (EN 50022) |
| | | | |
| | | | |
| 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) 230 | V AC (50/60Hz) 230 |
| | V DC — | V DC — | V DC — |
| Rated power AC/DC | VA (50Hz)/W 2/— | VA (50Hz)/W 2/— | VA (50Hz)/W 2/— |
| Operating range | AC (50Hz) (0.85...1.1)U _N | AC (50Hz) (0.85...1.1)U _N | AC (50Hz) (0.85...1.1)U _N |
| | DC — | DC — | 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 -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 (SPDT) - 16 A, supply voltage 230 V AC.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | . | 0 | 1 | . | 8 | . | 2 | 3 | 0 | . | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Series —————
Type —————
 0 = Daily
 2 = Weekly
No. of poles —————
 1 = 1 CO (SPDT), 16 A

Supply voltage
 230 = 230 V
Supply version
 8 = AC (50/60 Hz)

TECHNICAL DATA




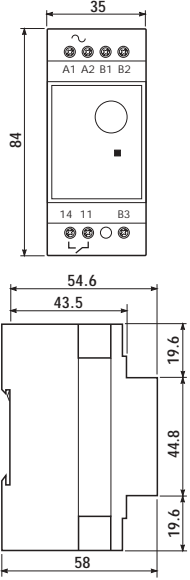
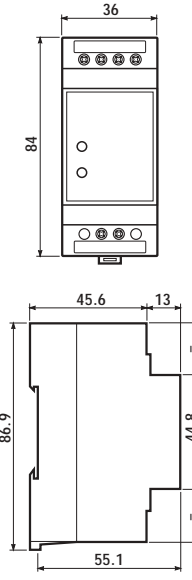
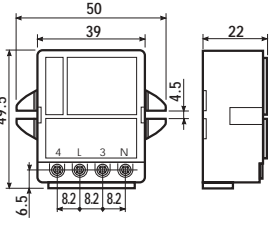




| INSULATION | | 12.01 | 12.21 | | |
|-------------------------------|-----------------|--------------------------------------|-----------------------------------|-------------|----------------|
| DIELECTRIC STRENGTH | | | | | |
| - between open contacts | V | 1,000 | 1,000 | | |
| OTHER DATA | | 12.01 | 12.21 | | |
| 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 | flexible cable | solid cable | flexible cable |
| | mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x6 / 2x4 | 1x6 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x10 / 2x12 | 1x10 / 2x14 |
| TORQUE | Nm | 1.2 | 1.2 | | |

WIRING DIAGRAMS

Type 12.01
 SELECTOR SWITCH:
 Permanently OFF (0)
 Automatic (AUTO)
 Permanently ON (I)

Type 12.21

- 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), types 13.01/21
- 35 mm rail (EN 50022) or flange mount

| | 13.01 | 13.21 | 13.71 |
|--|---|---|---|
| |  |  |  |
| | <ul style="list-style-type: none"> - step or monostable relay - 1 NO - 35 mm rail (EN 50022) | <ul style="list-style-type: none"> - 1 NO - 35 mm rail (EN 50022) | <ul style="list-style-type: none"> - 1 NO - Panel mount - Screw terminals |
| |  |  |  |
| Contact specifications | | | |
| Contact configuration | 1 NO (SPST - NO) | 1 NO (SPST - NO) | 1 NO (SPST - NO) |
| Rated current/Max. peak current A | 16/30 (100 A - 5 ms) | 16/30 (100 A - 5 ms) | 10/20 (100 A - 5 ms) |
| Rated voltage/Max. switching voltage V AC | 250/400 | 250/400 | 230/— |
| Rated load in AC1 VA | 4,000 | 4,000 | 2,300 |
| Rated load in AC15 (230 VAC) VA | 750 | 750 | 450 |
| Nominal lamp rating: incandescence (230V) W | 2,000 | 2,000 | 1,000 |
| compensated fluorescent (230V) W | 750 | 750 | 350 |
| uncompensated fluorescent (230V) W | 1,000 | 1,000 | 500 |
| halogens (230V) W | 2,000 | 2,000 | 1,000 |
| Minimum switching load mW(V/mA) | 1,000 (10/10) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | AgSnO ₂ | AgSnO ₂ | AgSnO ₂ |
| Supply specifications | | | |
| Nominal voltage | V AC (50/60Hz) | 110...125 230...240 | 12 - 24 |
| | V DC | — | 12 - 24 |
| Rated power AC/DC | V AC (50Hz)/W | 2.5/— | 2.5/2.5 |
| Operating range | AC (50Hz) | 88...137 184...264 | (0.8...1.1)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 | 100 · 10 ³ |
| Maximum impuls duration | continuous | continuous | continuous |
| Dielectric strenght between: | open contacts V AC | 1,000 | 1,000 |
| | supply contacts V AC | 4,000 | 4,000 |
| Ambient temperature range | °C | -10...+60 | -10...+60 |
| Protection category | IP 20 | IP 20 | IP 20 |
| Approvals: (according to type) |  |  |   |

ORDERING INFORMATION

Example: a 13 series, electronic step or monostable relay, 35 mm rail (EN 50022) mount and 1 NO (SPST-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 20022) mount
 2 = 35 mm rail (EN 20022) mount
 7 = Panel mount

No. of poles ————
 1 = Single phase switch 1 NO (SPST-NO)

Supply voltage
 012 = 12 V AC/DC (13.21 only)
 024 = 24 V AC/DC (13.21 only)
 125 = 110...125 V AC (13.01 only)
 230 = 230...240 V AC (13.01 only)
 230 = 230 V AC (solo 13.71)

Supply version
 0 = AC (50/60 Hz)/DC (for 13.21.0.012 and 13.21.0.024 only)
 8 = AC (50/60 Hz)

TECHNICAL DATA

| | 13.01 | 13.21 | 13.71 | | |
|---|------------------------|---------------------------|---------------------|------------------------|---------------|
| INSULATION | | | | | |
| DIELECTRIC STRENGTH | | | | | |
| - between control circuit and supply V AC | 4,000 | — | — | | |
| - between control circuit and contacts V AC | 4,000 | 4,000 | — | | |
| - between supply and contacts V AC | 4,000 | 4,000 | — | | |
| - between open contacts V AC | 1,000 | 1,000 | 1,000 | | |
| OTHER DATA | | | | | |
| POWER LOST IN THE ENVIRONMENT | | | | | |
| - without contact current W | 2.2 | 1.5 | 0.5 | | |
| - with rated current W | 3.5 | 3.5 | 2.9 | | |
| MAX WIRE SIZE | solid cable (13.01/21) | flexible cable (13.01/21) | solid cable (13.71) | flexible cable (13.71) | |
| | mm ² | 1x6 / 2x4 | 1x6 / 2x2.5 | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x10 / 2x14 | 1x12 / 2x14 | 1x14 / 2x14 |
| TORQUE | Nm | 0.8 | | | |

WIRING DIAGRAMS

Type 13.01 - Bistable (step) wiring diagram

Type 13.01 - Monostable wiring diagram

Type 13.21 - Versions 12/24 V (AC/DC)
 Relay suitable for powering by SELV supply voltage.

Type 13.71 3 wire connection

Type 13.71 4 wire connection

- 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 |
|---|---|---|
| | | |
| | - Multi-function - 1 NO - 35 mm rail (EN 50022) | - For 3 or 4 wiring system - 1 NO - 35 mm rail (EN 50022) |
| | | |
| Contact specifications | | |
| Contact configuration | 1 NO (SPST - NO) | 1 NO (SPST - NO) |
| Rated current/Max. peak current | A 16/30 (100 A - 5 ms) | A 16/30 (100 A - 5 ms) |
| Rated voltage/Max. switching voltage | V AC 230/— | V AC 230/— |
| Rated load in AC1 | VA 3,700 | VA 3,700 |
| Rated load in AC15 (230 VAC) | VA 750 | VA 750 |
| Nominal lamp rating: incandescence (230V) | W 2,000 | W 2,000 |
| compensated fluorescent (230V) | W 750 | W 750 |
| uncompensated fluorescent (230V) | W 1,000 | W 1,000 |
| halogens (230V) | W 2,000 | W 2,000 |
| Minimum switching load | mW(V/mA) 1,000 (10/10) | mW(V/mA) 1,000 (10/10) |
| Standard contact material | AgSnO ₂ | AgSnO ₂ |
| Supply specifications | | |
| Nominal voltage | V AC (50/60Hz) 230 | V AC (50/60Hz) 230 |
| | V DC — | V DC — |
| Rated power AC/DC | VA (50Hz)/W 2/— | VA (50Hz)/W 1.5/— |
| Operating range | AC (50Hz) (0.8...1.1)U _N | AC (50Hz) (0.8...1.15)U _N |
| | DC — | DC — |
| Technical data | | |
| Electrical life at rated load in AC1 | cycles 100 · 10 ³ | cycles 100 · 10 ³ |
| Delay setting | min 0.5...20 | min 0.5...20 |
| Max no. of illuminated push-button (≤1mA) | 15 | 30 |
| Maximum impulse duration | continuous | continuous |
| Ambient temperature range | °C -10...+50 | °C -10...+60 |
| Protection category | IP 20 | IP 20 |
| Approvals: (according to type) | | |

ORDERING INFORMATION

Example: a 14 series single module relay with a single phase switch 1 NO (SPST-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

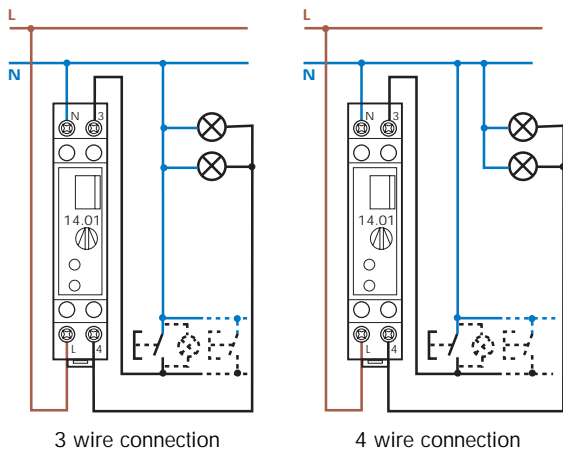
14.71

| | | | | | |
|--|-----------------|-------------|----------------|-------------|----------------|
| 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 | flexible cable | solid cable | flexible cable |
| | mm ² | 1x6 / 2x4 | 1x4 / 2x2.5 | 1x6 / 2x4 | 1x4 / 2x2.5 |
| | AWG | 1x10 / 2x12 | 1x12 / 2x14 | 1x10 / 2x12 | 1x12 / 2x14 |
| TORQUE | Nm | 0.8 | 0.8 | | |

WIRING DIAGRAMS

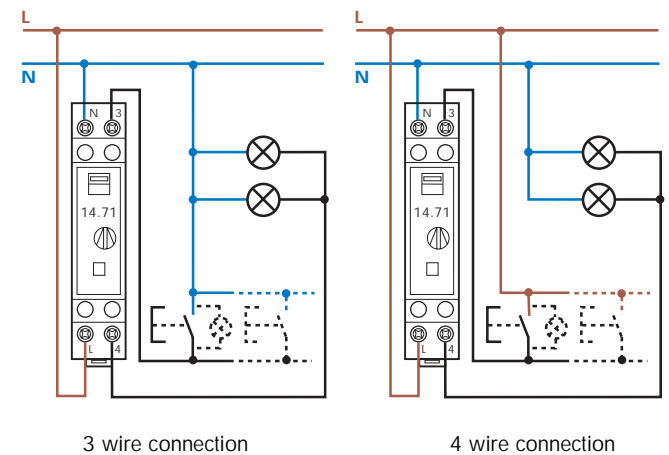
Type 14.01

LED indication:
red = relay ON
green = power ON



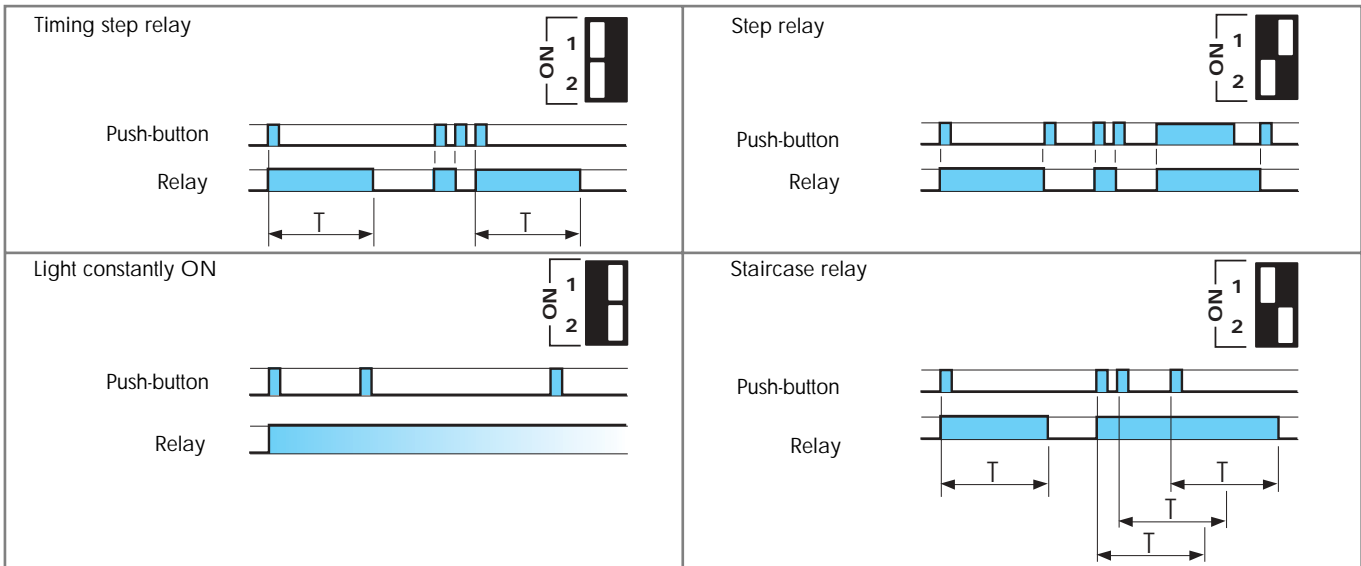
Type 14.71

LED indication:
red = relay ON

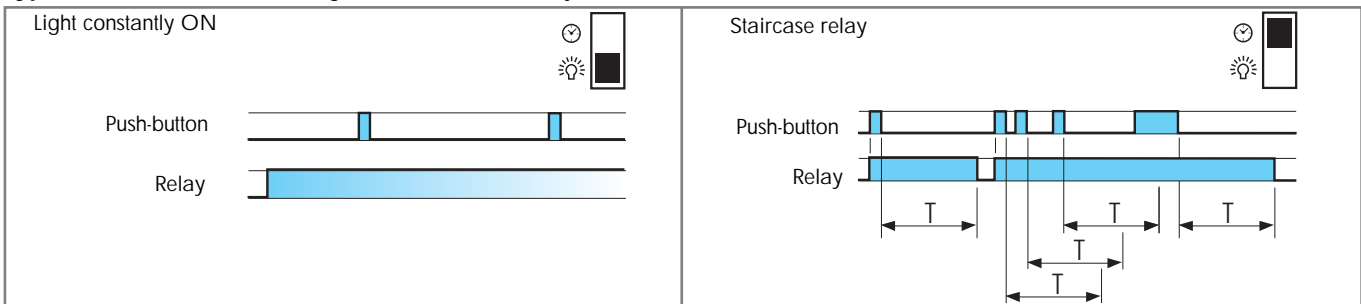


FUNCTIONS

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 DIP 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.

- 3 functions:
 - Auto (works as a monostable relay)
 - Off (relay permanently OFF)
 - On (relay permanently ON)
- Galvanic separation of supply terminals and contact terminals
- LED indicator
- 35 mm rail (EN 50022) mount

| | 19.11 | 19.21 |
|--|--|--|
| | | |
| | - One module (17.4 mm) wide - 1 CO - 35 mm rail (EN 50022) | - One module (11.2 mm) wide - 1 CO - 35 mm rail (EN 50022) |
| | | |

| Contact specifications | | | |
|---|----------------|---------------------------|---------------------------|
| Contact configuration | | 1 CO (SPDT) | 1 CO (SPDT) |
| Rated current/Max. peak current | A | 10/30 | 10/15 |
| 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 | 750 | 500 |
| Single phase motor rating (230 VAC) | kW/HP | 0.44/0.6 | 0.44/0.6 |
| Breaking capacity | A | 10/0.3/0.12 | 10/0.3/0.12 |
| Minimum switching load | mW (V/mA) | 1,000 (10/10) | 1,000 (10/10) |
| Standard contact material | | AgSnO ₂ | AgCdO |
| Supply specifications | | | |
| Nominal voltage | V AC (50/60Hz) | 24 | 24 |
| | V DC | 24 | 24 |
| Rated power AC/DC | V AC (50Hz)/W | 0.8/0.65 | 0.6/0.4 |
| Operating range | V AC (50Hz)/W | (0.8...1.1)U _N | (0.8...1.1)U _N |
| | V DC | (0.8...1.1)U _N | (0.8...1.1)U _N |
| Technical data | | | |
| Mechanical life | cycles | 10 · 10 ⁶ | 10 · 10 ⁶ |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ | 100 · 10 ³ |
| Insulation between coil and contacts (1.2/50µs) | kV | 6 | 6 |
| Dielectric strength between open contacts | V AC | 1,000 | 1,000 |
| Ambient temperature range | °C | -10...+50 | -10...+50 |
| Protection category | | IP 20 | IP 20 |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

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

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

Series

Type

1 = 35 mm rail (EN 50022) mount, 17.5 mm
2 = 35 mm rail (EN 50022) mount, 11.2 mm

No. of poles

1 = 1 CO (SPDT)

Supply voltage

024 = 24 V

Supply version

0 = AC (50/60 Hz)/DC

TECHNICAL DATA

CONTACT SPECIFICATIONS

19.11

19.21

| NOMINAL RATE LAMPS | | 19.11 | 19.21 |
|------------------------------------|---|-------|-------|
| - 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 |

INSULATION

19.11

19.21

| DIELECTRIC STRENGTH | | 19.11 | 19.21 |
|-------------------------------|------|-------|-------|
| - between supply and contacts | V AC | 4,000 | 4,000 |
| - between open contacts | V AC | 1,000 | 1,000 |

OTHER DATA

19.11

19.21

| POWER LOST IN THE ENVIRONMENT | | 19.11 | 19.21 |
|-------------------------------|---|-------|-------|
| - without contact current | W | 0.7 | 0.4 |
| - with rated current | W | 2.1 | 1.8 |

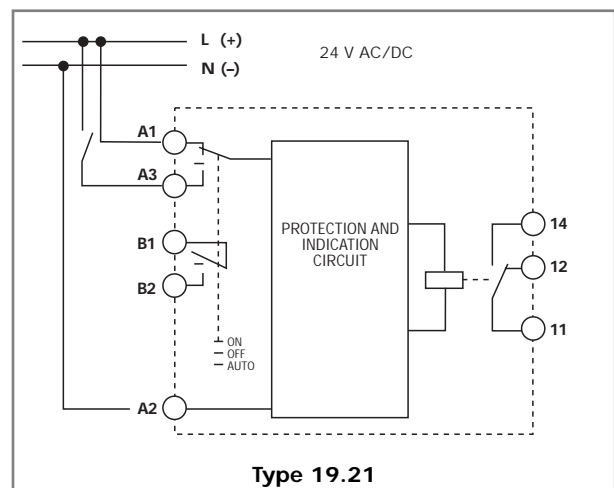
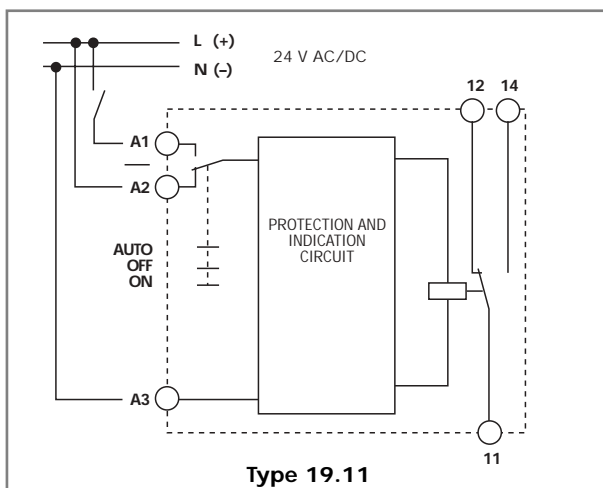
| LOWER CLAMP - MAX WIRE SIZE | 19.11 | | 19.21 | |
|-----------------------------|-------------|----------------|-------------|----------------|
| | solid cable | flexible cable | solid cable | flexible cable |
| mm ² | 1x6 / 2x4 | 1x4 / 2x2.5 | 1x6 / 2x2.5 | 1x4 / 2x1.5 |
| AWG | 1x10 / 2x12 | 1x12 / 2x14 | 1x10 / 2x14 | 1x12 / 2x16 |

| UPPER CLAMP - MAX WIRE SIZE | 19.11 | | 19.21 | |
|-----------------------------|-------------|----------------|-------------|----------------|
| | solid cable | flexible cable | solid cable | flexible cable |
| mm ² | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 | 1x6 / 2x2.5 | 1x4 / 2x1.5 |
| AWG | 1x12 / 2x14 | 1x14 / 2x14 | 1x10 / 2x14 | 1x12 / 2x16 |

| TORQUE | Nm | 19.11 | 19.21 |
|--------|----|-------|-------|
| | | 0.8 | 0.5 |

NOTE: on type 19.21 the max switching voltage between B₁ and B₂ terminal is 24 V AC/DC (300mA).

WIRING DIAGRAMS



ACCESSORIES

Sheet of marker tags for 19.21 only (40 tags)

019.40

- 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 (EN 50022) | - Double phase switch - 35 mm rail (EN 50022) | - Double phase switch 1 NC + 1 NO - 35 mm rail (EN 50022) |
| | | | |
| | | | |
| Contact specifications | | | |
| Number of contacts | 1 | 2 | 1 NC (SPST-NC)+ 1 NO (SPST-NO) |
| Rated current/Max. peak current | A 16/30 | A 16/30 | A 16/30 |
| Rated voltage/Max. switching voltage | V AC 250/400 | V AC 250/400 | V AC 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 |
| Nominal lamp rating: incandescence (230V) | W 2,000 | W 2,000 | W 2,000 |
| compensated fluorescent (230V) | W 750 | W 750 | W 750 |
| uncompensated fluorescent (230V) | W 1,000 | W 1,000 | W 1,000 |
| halogens (230V) | W 2,000 | W 2,000 | W 2,000 |
| 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 | 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 |
| Rated power AC/DC | VA (50Hz)/W | 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 | (0.9...1.1)U _N |
| 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 20 series 35 mm rail (EN 50022) mount relay with double phase switch, 2 NO (DPST-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

20.21

20.22, 20.23, 20.24, 20.26, 20.28

| POWER LOST IN THE ENVIRONMENT | | | | | |
|-------------------------------|-----------------|-------------|----------------|----------------|----------------|
| - without contact current | W | 5 | | 5 | |
| - with rated current | W | 6.3 | | 7.6 | |
| | | COIL CLAMPS | | CONTACT CLAMPS | |
| MAX WIRE SIZE | | solid cable | flexible cable | solid cable | flexible cable |
| | mm ² | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 | 1x6 / 2x4 | 1x4 / 2x2.5 |
| | AWG | 1x12 / 2x14 | 1x14 / 2x14 | 1x10 / 2x12 | 1x12 / 2x14 |
| 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 | Absorption 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 | Absorption I at U _N |
|--------------------------------|--------------|------------------|------------------|--------------|--------------------------------|
| | | U _{min} | U _{max} | | |
| V | | V | V | Ω | mA |
| 12 | 9.012 | 10.8 | 13.2 | 27 | 440 |
| 24 | 9.012 | 21.6 | 26.4 | 105 | 230 |
| 48 | 9.012 | 43.2 | 52.8 | 440 | 110 |
| 110 | 9.012 | 99 | 121 | 2,330 | 47 |

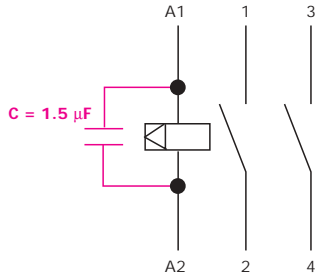
| TYPE | Number of steps | SEQUENCES | | | |
|-------|-----------------|-----------|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 20.21 | 2 | | | | |
| 20.22 | 2 | | | | |
| 20.23 | 2 | | | | |
| 20.24 | 4 | | | | |
| 20.26 | 3 | | | | |
| 20.28 | 4 | | | | |

ACCESSORIES

THE CAPACITOR

For use with illuminated push-button

A capacitor ($C = 1.5 \mu\text{F}$) is available if using a maximum of 10 illuminated push-buttons (1.5 mA max, 230 V AC) in the switching input circuit. This capacitor has to be connected in parallel to the coil of the relay (see diagram).



Type 026.00

Technical data for 20 series relay capacitor.

Sealed version, 7.5 cm insulated and flexible terminals.

CODE 02600

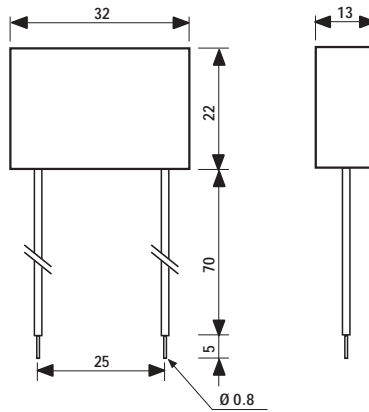
MATERIAL: Metallized polypropylene

CAPACITOR TOLERANCE: $\leq 10\%$

RATED VOLTAGE: 250 V AC

MAX TEMPERATURE: $+ 85^\circ\text{C}$




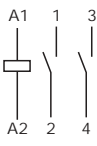
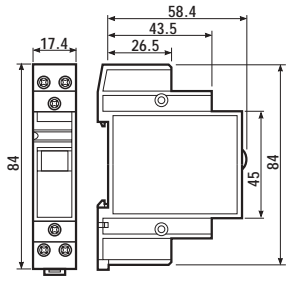
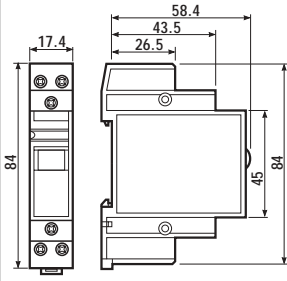

DIELECTRIC STRENGTH: 1.6 kV, 50 Hz, 60s, $25 \pm 5^\circ\text{C}$



Sheet of marker tags (24 tags)

020.24

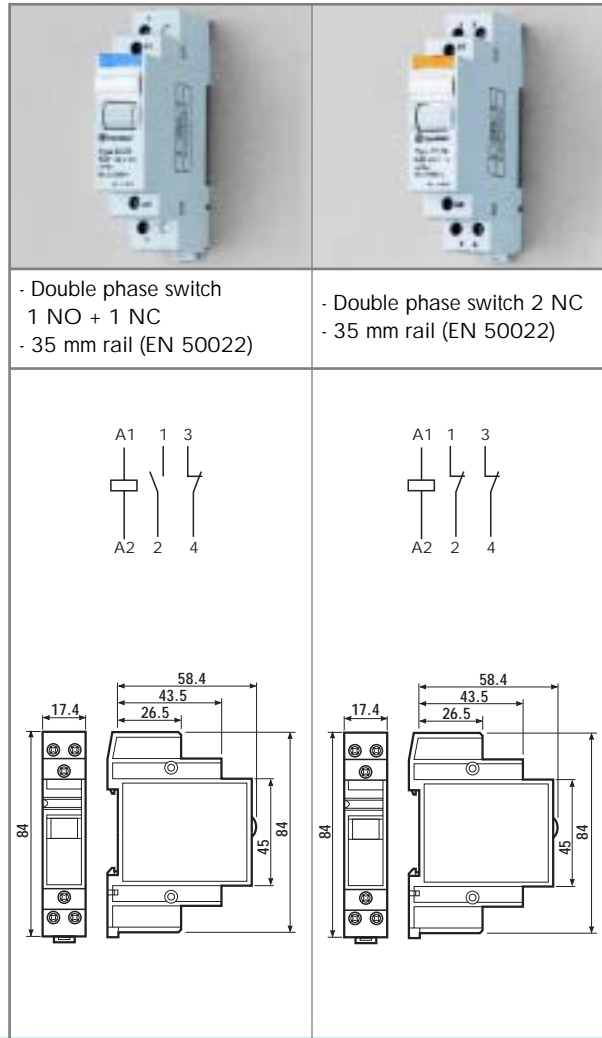
- One module (17.4mm) wide
- Test button
- Identification label
- AC and DC coils
- 35 mm rail (EN 50022) mount

| | 22.21 | 22.22 |
|--|---|---|
| |  |  |
| | - Single phase switch 1 NO - 35 mm rail (EN 50022) | - Double phase switch 2 NO - 35 mm rail (EN 50022) |
| |  |  |
| |  |  |
| Contact specifications | | |
| Contact configuration | 1 NO | 2 NO |
| 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/HP | — | — |
| 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 |
| 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 |
| | DC | (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) |  | |

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

22.23

22.24



- Double phase switch
1 NO + 1 NC
- 35 mm rail (EN 50022)

- Double phase switch 2 NC
- 35 mm rail (EN 50022)

| 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/HP | — | — |
| 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 | $500 \cdot 10^3$ | $500 \cdot 10^3$ |
| Electrical life at rated load in AC1 | cycles | $50 \cdot 10^3$ | $50 \cdot 10^3$ |
| 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 (EN 50022) mount relay with 1 NO (SPST-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 (SPST-NO)

2 = 2 NO (DPST-NO)

3 = 1 NO (SPST-NO) + 1 NC (SPST-NC)

4 = 2 NC (DPST-NC)

Contact material

0 = AgNi standard

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 IN THE ENVIRONMENT | | | | | |
| - without contact current | W | 1.2 | | 1.2 | |
| - with rated current | W | 3.2 | | 5.2 | |
| | | COIL CLAMPS | | CONTACT CLAMPS | |
| MAX WIRE SIZE | | solid cable | flexible cable | solid cable | flexible cable |
| | mm ² | 1x4 / 2x2.5 | 1x2.5 / 2x2.5 | 1x6 / 2x6 | 1x6 / 2x4 |
| | AWG | 1x12 / 2x14 | 1x14 / 2x14 | 1x10 / 2x10 | 1x10 / 2x12 |
| 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 | Absorption 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 | Absorption 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 |

ACCESSORIES

| | |
|--------------------------------|--------|
| 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 | 2 | 1 NC + 1 NO |
| Rated current/Max. peak current | A 10/20 | A 10/20 | A 10/20 |
| Rated voltage/Max. switching voltage | V AC 250/400 | V AC 250/400 | V AC 250/400 |
| Rated load in AC1 | VA 2,500 | VA 2,500 | VA 2,500 |
| Rated load in AC15 (230 VAC) | VA 500 | VA 500 | VA 500 |
| Nominal lamp rating: incandescence (230V) | W 800 | W 800 | W 800 |
| compensated fluorescent (230V) | W 360 | W 360 | W 360 |
| uncompensated fluorescent (230V) | W 500 | W 500 | W 500 |
| halogens (230V) | W 800 | W 800 | W 800 |
| 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 | AgNi | AgNi | AgNi |
| Coil specifications | | | |
| Nominal voltage | V AC (50Hz) 12 · 24 · 48 · 110 · 230 | V AC (50Hz) 12 · 24 · 48 · 110 · 230 | V AC (50Hz) 12 · 24 · 48 · 110 · 230 |
| | V DC — | V DC — | V DC — |
| Rated power AC/DC | VA (50Hz)/W 4.5/— | VA (50Hz)/W 4.5/— | VA (50Hz)/W 4.5/— |
| Operating range | AC (50Hz) (0.8...1.1)U _N | AC (50Hz) (0.8...1.1)U _N | AC (50Hz) (0.8...1.1)U _N |
| | DC — | DC — | DC — |
| Technical data | | | |
| Mechanical life | cycles 300 · 10 ³ | cycles 300 · 10 ³ | cycles 300 · 10 ³ |
| Electrical life at rated load in AC1 | cycles 100 · 10 ³ | cycles 100 · 10 ³ | cycles 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 | kV 4 | kV 4 |
| Ambient temperature range | °C -40...+40 | °C -40...+40 | °C -40...+40 |
| Protection category | IP 20 | IP 20 | IP 20 |
| Approvals: (according to type) | | | |

ORDERING INFORMATION

Example: a 26 series screw terminal mount relay with double phase switch 2 NO (DPST-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 IN THE ENVIRONMENT | | 26.01 | | 26.02, 26.03, 26.04, 26.06, 26.08 | |
|-------------------------------|-----------------|-------------|----------------|-----------------------------------|----------------|
| - without contact current | W | 4 | | 4 | |
| - with rated current | W | 5 | | 6 | |
| MAX WIRE SIZE | | 26.01 | | 26.02, 26.03, 26.04, 26.06, 26.08 | |
| | | solid cable | flexible cable | solid cable | flexible 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 |
| TORQUE | Nm | 0.8 | | 0.8 | |

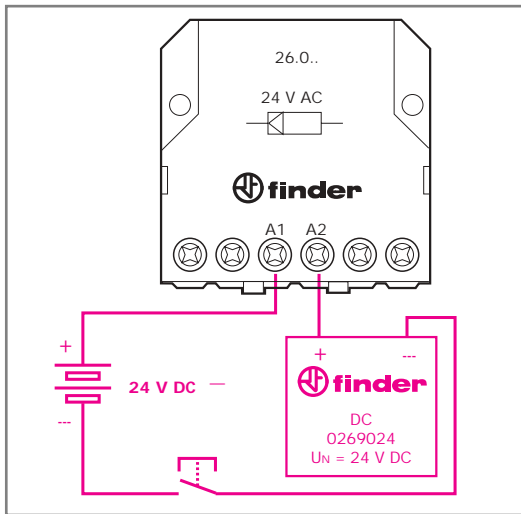
COIL SPECIFICATIONS

AC VERSION DATA

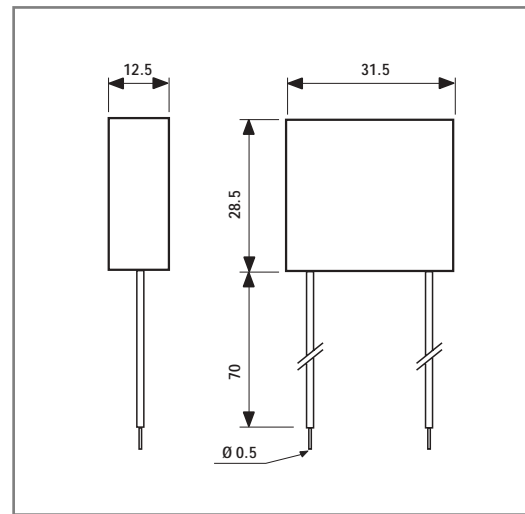
| Nominal voltage U_N V | Coil code | Operating range | | Resistance R | Absorption I at U_N (50Hz) mA |
|-------------------------------|--------------|-----------------|----------------|-----------------|---------------------------------------|
| | | U_{min} V | U_{max} V | | |
| 12 | 8.012 | 9.6 | 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



026.9.012 Adaptor for 12 V DC
026.9.024 Adaptor for 24 V DC



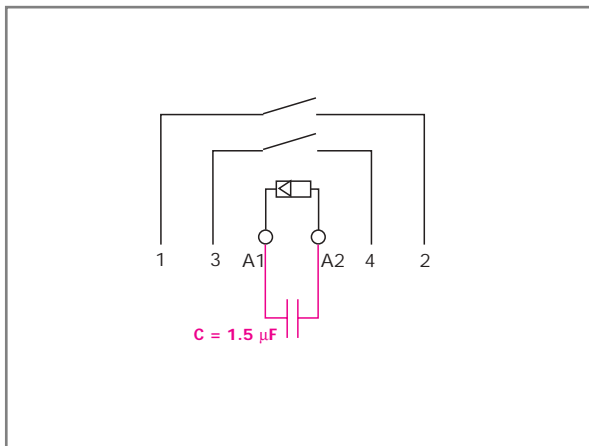
Technical data for the 26 series relay adaptor

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

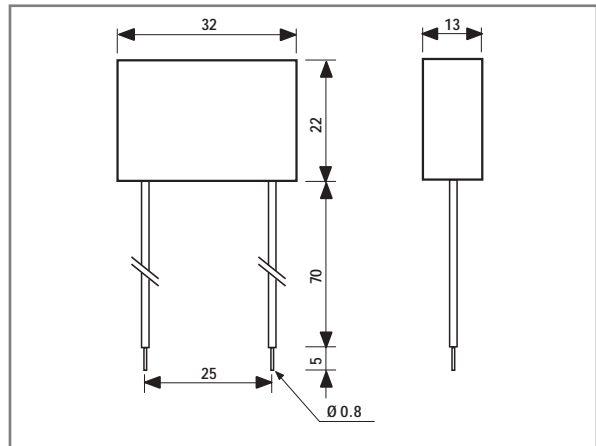
NOMINAL VOLTAGE: 24 V DC
 MAX TEMPERATURE: + 40 °C
 OPERATING RANGE: (0.9...1.1)U_N



THE CAPACITOR

For use with illuminated push-buttons

A capacitor (C = 1.5 µF) is available if using a maximum of 10 illuminated push-buttons (1.5 mA max, 230 V AC) in the switching input circuit. This capacitor has to be connected in parallel to the coil of the relay (see diagram).



Type 026.00

Technical data for 26 series relay capacitor.

Sealed version, 7.5 cm insulated and flexible terminals.

CODE 02600

MATERIAL: Metallized polypropylene
 CAPACITOR TOLERANCE: ≤10%
 RATED VOLTAGE: 250 V AC
 MAX TEMPERATURE: + 85 °C
 DIELECTRIC STRENGTH: 1.6 kV, 50 Hz, 60s, 25 ± 5 °C

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 "no-remanence" 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 IP50.

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 sealed relays (option 0001 - IP67) 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 | UE | 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, that 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.

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. If reversing motor direction, always allow an intermediate break > 300 ms, 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 (AC1 category) 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 - On 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.

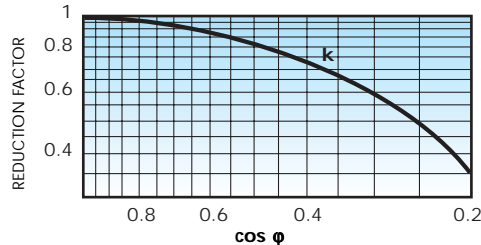


TABLE 1 - Utilisation categories according to EN60947-4-1 and EN 60947-5-1

| Load Current | Category | Application Category |
|--------------|------------------|---|
| AC 1 | AC/1 ~ AC/3 ~ | Resistive or slightly Inductive AC loads. |
| AC 3 | AC/3 ~ | Starting and stopping of Squirrel-cage motors. Reversing direction of rotation only after stopping motor. |
| AC 4 | AC/3 ~ | 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/1 ~ | Control of small electromagnetic loads (<72 VA), power contactors, magnetic solenoid valves, and electromagnets. |
| AC 15 | AC/1 ~ | 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 current at the same voltage 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 mΩ.

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 | <ul style="list-style-type: none"> - Silver-nickel base with a galvanic hard gold plating of 5 μm typical thickness - Gold is not attacked from industrial atmospheres - With small loads, contact resistance is lower and more consistent compared to other materials. <p>NOTE: 5 μm hard gold plating is completely different from 0.2 μm gold flashing, which allows only protection in storing, but no better performance in use.</p> | <p>Wide range applications:</p> <ul style="list-style-type: none"> - Small load range (where gold plating erodes very little) from 50 mW (5V 2mA) up to 1.5 W/24 V (resistive load). - Middle load range where gold plating erodes after several operations and the property of basic AgNi becomes dominant. <p>NOTE: for switching lower loads, typically 1mW (0.1V 1mA), (for example in measuring instruments), it is recommended to connect 2 contacts in parallel.</p> |
| AgNi | <ul style="list-style-type: none"> - Standard contact material for most relay applications. - High wear resistance - Medium resistance to welding | <ul style="list-style-type: none"> - Resistive and slightly inductive loads - Rated current up to 12 A - Inrush current up to 25 A |
| AgCdO | <ul style="list-style-type: none"> - High wear resistance with higher AC loads - Good resistance to welding | <ul style="list-style-type: none"> - Inductive and motor loads - Rated current up to 30 A - Inrush current up to 50 A |
| AgSnO ₂ | <ul style="list-style-type: none"> - Excellent resistance to welding - Low material transfer in DC loads | <ul style="list-style-type: none"> - 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 SPECIFICATIONS

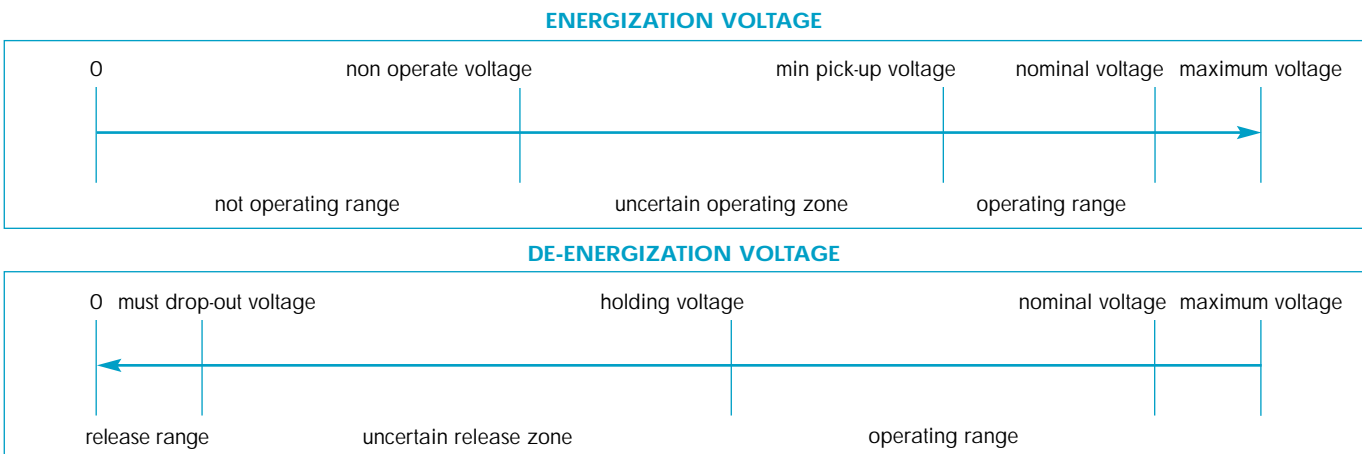
NOMINAL VOLTAGE - The nominal value of coil voltage for which the relay has been designed, and for which operation is intended. The operating and use characteristics are referred to the rated voltage.

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 ABSORPTION - The average value of coil current, when energised 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 60038 | | 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 μ s 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 μ s 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 μ s), 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.

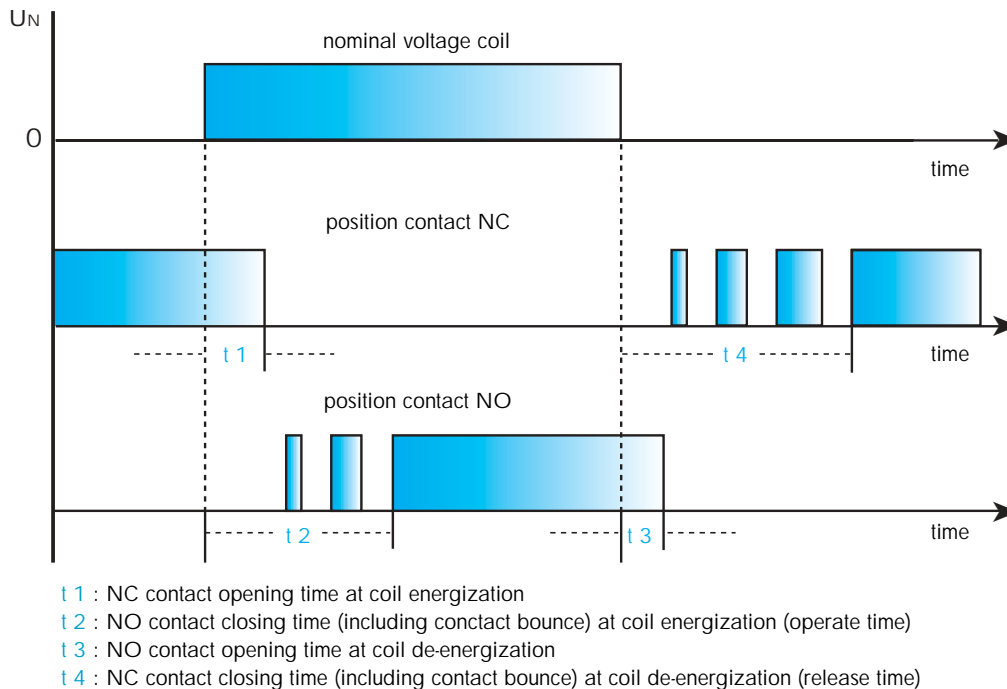
DUTY FACTOR (DF) - During cyclic operation, DF is the ratio between the energised time and one period. For continuous duty, DF = 1.

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.

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 \varnothing and greater. Not protected against water.

IP 40 = Protected against solid foreign objects of 1 mm \varnothing 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 IN 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.

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.

OPERATING 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 it is the minimum time interval that can be programmed.

BACK-UP POWER - The time when the switch won't loose neither the programs nor the time.

MAXIMUM IMPULSE DURATION - For step relays and staircase switches, this is the maximum command pulse duration permitted.

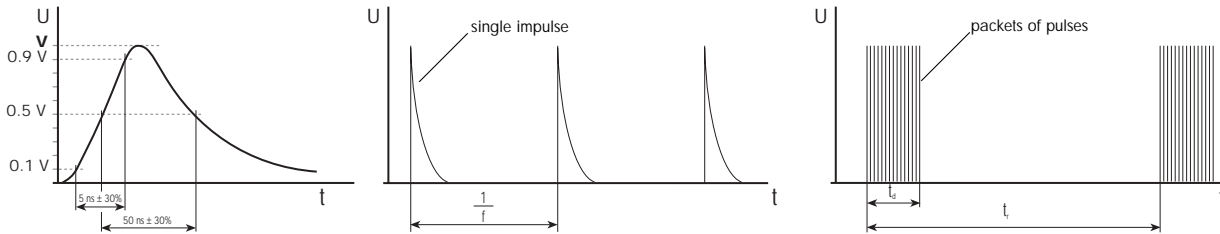
MAX NO. OF ILLUMINATED PUSH-BUTTON - For step relays and staircase switches, this is the maximum illuminated push-buttons (with current absorption < 1mA) that can be connected without causing problems.

EMC (ElectroMagnetic Compatibility) SPECIFICATIONS

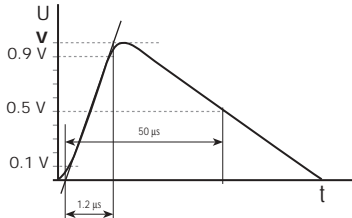
| TYPE OF TEST | REFERENCE STANDARD |
|--|--------------------------|
| ELECTROSTATIC DISCHARGE | EN 61000-4-2 |
| RADIO-FREQUENCY ELECTROMAGNETIC FIELD (80 ÷ 1000 MHz) | EN 61000-4-3 |
| FAST TRANSIENTS (burst) (5-50 ns, 5 kHz) | EN 61000-4-4 |
| SURGES (1.2/50 µs) | EN 61000-4-5 |
| RADIO-FREQUENCY 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:

- 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.



- 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!

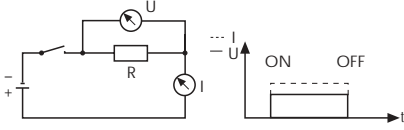
It is therefore necessary to consider Finder products as not being indestructible under all circumstances. The user should pay attention to the disturbances in electrical systems and reduce as much as possible these disturbances. For example, employ arc suppression circuits on the contacts of switches, 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.

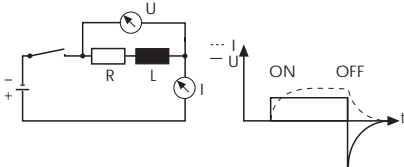
| 99.01 | | 99.02 | | 99.80 | |
|---------|------------------------|---------|---------------|---------|--------------|
| | | | | | |
| Sockets | Relays | Sockets | Relays | Sockets | Relays |
| 90.20 | 60.12 | 94.02 | 55.32 | 94.84.1 | 55.32, 55.34 |
| 90.21 | 60.13 | 94.03 | 55.33 | | |
| 94.73 | 55.33 | 94.04 | 55.32/34 | | |
| 94.74 | 55.34 | 95.03 | 40.31 - 41.31 | | |
| 94.82 | 55.32 | 95.05 | 40.51/52/61 | | |
| 95.63 | 40.31 | | 41.52, 41.61 | | |
| 95.75 | 40.51/52/61 - 41.52/61 | | 44.52, 44.62 | | |
| | 44.52/62 | 92.03 | 62.32, 62.33 | | |
| 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 |
| NO - REMANENCE | | | |
| 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 (illus. 1).



Voltage-current characteristic when switching a relay coil (illus. 2).



Switching Relay Coils.

When switching an ohmic resistor current follows voltage directly (illus.1).

When switching relay coils a typical voltage-current characteristic, which is divergent to one of an ohmic resistor, can be seen in (illus. 2).

First a magnetic field must be built up when energizing a relay coil (represented as inductance L and resistor R in illus.2). Due to counter-electromotive forces current follows voltage delayed. When de-energizing the coil, the current flow is interrupted and the magnetic field collapses which induces a voltage that counteracts with the


supply voltage. Negative cut-off voltage peaks can reach values approximately 15 times higher than the supply voltage. These peaks can either disturb or destroy electronic devices. To counteract against this effect relay coils should be suppressed with a Diode, a Varistor or a RC Module depending on the operating voltage (see functional description of Modules below).


(The above description is based on a DC coil. The above description is also valid for AC coils. When switching AC relay coils the current at make is approximately 1.3 to 1.7 times the nominal current depending on coil size.)

| 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 negative cut-off voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A1). The drop-out time increases by an approximate factor of 3. If an increase of the drop-out time is not wanted 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 negative cut-off voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A2). The drop-out time increases by an approximate factor of 3. If an increase of the drop-out time is not wanted 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 cut-off voltage peaks of the relay coil are limited by the Varistor to approximately 2.5 times the nominal voltage of the module. When using DC coils it is essential that positive is connected to terminal A1. The relay drop-out time increases only 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 negative cut-off voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A1). The drop-out time increases by an approximate factor of 3. If an increase of the drop-out time is not wanted 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 negative cut-off voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A2). The drop-out time increases by an approximate factor of 3. If an increase of the drop-out time is not wanted use a Varistor or RC module.</p> |
| | | <p>RC MODULE RC circuit modules are used for AC and DC coils. The cut-off voltage peaks of the relay are limited by the RC module to approximately 2.5 times the nominal voltage of the modules. The relay drop-out time increases only insignificantly.</p> |
| | | <p>NO - REMANENCE Bypass modules are advisable, if the relay coils do not drop-out between 110 - 240 V AC. Failure to drop-out can be caused by residual currents from AC proximity switches or inductance couplings caused through long parallel lying AC control lines.</p> |




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