

SMARTimer, digital timer 16 A

84
SERIES



Timers and
lighting controls



Automatic
car-washes



Labelling
machines



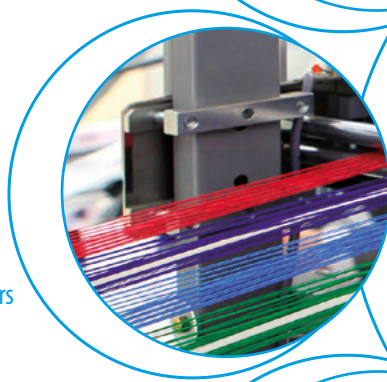
Punches,
cleaners, planers
and sanders



Industrial
furnaces and
ovens



Discotheques,
swimming pools
and fountains



Multi-function SMARTimer

Type 84.02

- 1 CO (16 A) + 1 CO (16 A)
- 2 in 1: two independent channels
- Two supply version available: 12...24 V AC/DC and 110...240 V AC/DC (not polarized)
- Two programming modes: "Smart" mode via smartphone with NFC communication or "Classic" mode via the joystick
- Wide backlit display for easy reading all information during the programming phase and during normal operation
- Flexibility: possible to create new specific functions, mixing the 25 available functions on each channel
- High precision and possibility of choice in time set-up:
 - Time units: 0.1 seconds, seconds, minutes, hours
 - Set-time to 4 digits, anywhere between 000.1 second and 9999 hours
- Large display allows easy viewing: set time, current time, timing in progress, input command state, output state
- Two independent Start inputs - one per channel
- One common Reset input (select to apply to either, or both, channels)
- One common Pause input (select to apply to either, or both, channels)
- PIN to protect access to programming session
- Up or Down timing modes
- Type 84.02.0.024.0000: it's possible to directly connect timer input to proximity sensors (both PNP and NPN)
- 35 mm rail (EN 60715) mount

Screw terminal



For outline drawing see page 5

Contact specification

| | | |
|---|-----------|-------------|
| Contact configuration | | 2 CO (DPDT) |
| Rated current/Maximum peak current | A | 16/30 |
| Rated voltage/ Maximum switching voltage | V AC | 250/400 |
| Rated load AC1 | VA | 4000 |
| Rated load AC15 (230 V AC) | VA | 1000 |
| Single phase motor rating (230 V AC) | kW | 0.55 |
| Breaking capacity DC1: 30/110/220 V | A | 16/0.3/0.12 |
| Minimum switching load | mW (V/mA) | 300 (5/5) |
| Standard contact material | | AgNi |

Supply specification

| | | | |
|-----------------------------------|--------------------|---------|-----------|
| Nominal voltage (U _N) | V DC/AC (50/60 Hz) | 12...24 | 110...240 |
| Rated power AC/DC | VA (50 Hz)/W | 2.2/1.2 | 4/1.6 |
| Operating range | V DC/AC | 10...30 | 90...264 |

Technical data

| | | |
|--------------------------------------|--------|-----------------------|
| Specified time range | | 0.1s...9999h |
| Repeatability | % | ± 0.05 |
| Recovery time | ms | 40* |
| Minimum control impulse | ms | 40 |
| Setting accuracy | % | ± 0.05 |
| Electrical life at rated load in AC1 | cycles | 100 · 10 ³ |
| Ambient temperature range | °C | −20...+50 |
| Protection category | | IP 20 |

Approvals (according to type)



* Applies where timer function is controlled by an input to B terminal(s). Where power-off is used to reset the timer, the recovery time can increase up to 500 ms, depending on supply voltage.

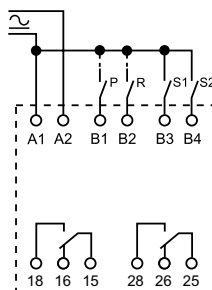
NEW 84.02



2in1

NFC

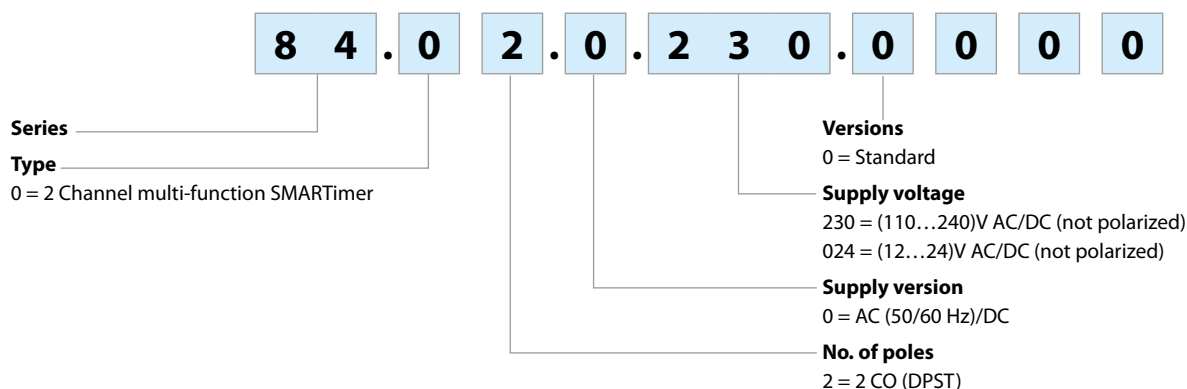
- 2 CO 16 A output contacts
- Digital Timer "Two in one": two totally independent programmable channels, in a single product



Wiring diagram

Ordering information

Example: 84 series, SMARTimer, 2 CO - 16 A, supply rated at (110...240)V AC/DC.



Technical data

Insulation

| | | | |
|---|----------------------------------|------|------|
| Dielectric strength | between input and output circuit | V AC | 4000 |
| | between open contacts | V AC | 1000 |
| | between input/output and display | V AC | 2000 |
| Insulation (1.2/50 µs) between input and output | | kV | 6 |

EMC specifications

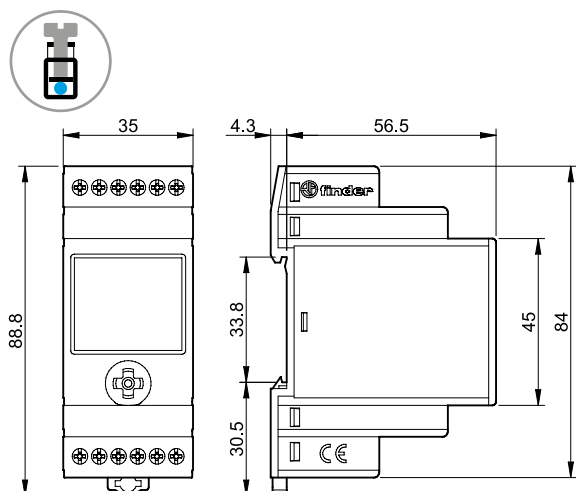
| Type of test | | Reference standard | 84.02.0.230 | 84.02.0.024 |
|---|---|--------------------|-------------|-------------|
| Electrostatic discharge | contact discharge | EN 61000-4-2 | 4 kV | 4 kV |
| | air discharge | EN 61000-4-2 | 8 kV | 8 kV |
| Radio-frequency electromagnetic field (80 ÷ 1000 MHz) | | EN 61000-4-3 | 10 V/m | 10 V/m |
| Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals | | EN 61000-4-4 | 4 kV | 4 kV |
| Surges (1.2/50 µs) on Supply terminals | common mode | EN 61000-4-5 | 4 kV | 2 kV |
| | differential mode | EN 61000-4-5 | 4 kV | 1.5 kV |
| | on start terminal (B1...B4) common mode | EN 61000-4-5 | 4 kV | 2 kV |
| | differential mode | EN 61000-4-5 | 3 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

| | | | | |
|---|-------------------------|-----------------|------------------------------------|-----------------|
| Current absorption on control terminals (B1...B4) | | | < 2.4 mA (0.230), < 5.5 mA (0.024) | |
| Power lost to the environment | without contact current | W | 1.6 | |
| | with rated current | W | 3.6 | |
| Screw torque | | Nm | 0.8 | |
| Max. wire size | | | solid cable | stranded cable |
| | | mm ² | 1 x 6 / 2 x 4 | 1 x 4 / 2 x 2.5 |
| | | AWG | 1 x 10 / 2 x 12 | 1 x 12 / 2 x 14 |

Outline drawings

84.02
Screw terminal



Two programming modes

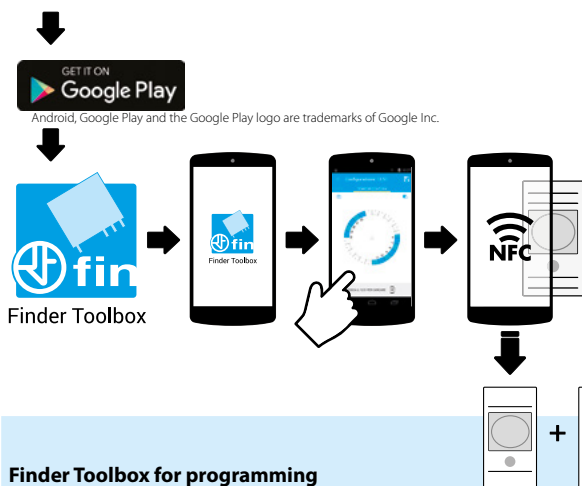
“Smart”

Mode via smartphones with NFC communication using Finder toolbox Android App.



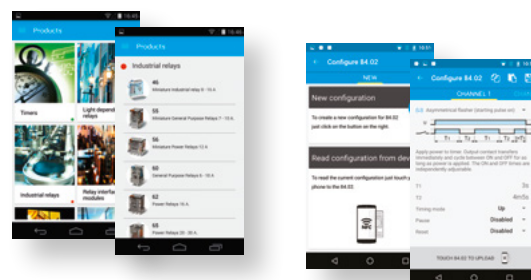
“Classic”

Mode via the joystick



Finder Toolbox for programming

Once the App FINDER Toolbox is downloaded and installed, you can read an existing program, or program your device with maximum flexibility, changing the smallest details and saving your program directly to your smartphone.
At this point you simply touch the time switch with the smartphone to transfer the data.

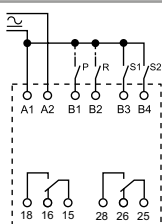


Finder Toolbox for reference

Finder Toolbox provides all technical data sheets and news from Finder.

Functions

Wiring diagram

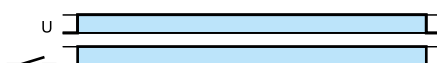


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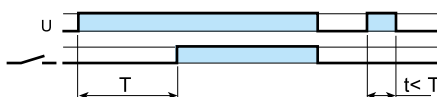
(OFF) Relay OFF.

The output contact stays permanently open.



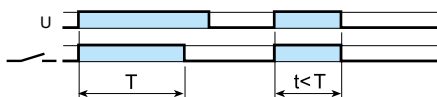
(ON) Relay ON.

The output contact stays permanently closed.



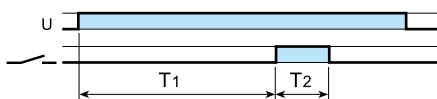
(AI) On-delay.

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



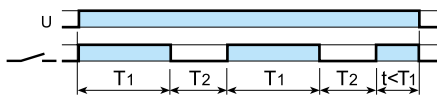
(DI) Interval.

Apply power to timer. Output contact transfers immediately. After the preset time has elapsed, contact resets.



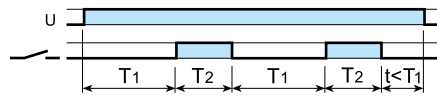
(GI) Pulse delayed.

Apply power to timer. Output contact transfers after time T1 has elapsed. Reset occurs after T2 time.



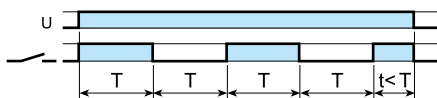
(LI) Asymmetrical flasher (starting pulse on).

Apply power to timer. Output contact transfers immediately and cycle between ON and OFF for as long as power is applied. The ON and OFF times are independently adjustable.



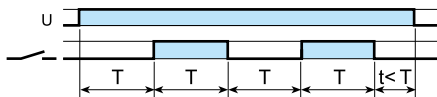
(PI) Asymmetrical flasher (starting pulse off).

Apply power to timer. Output contact transfers after time T1 has elapsed and cycle between OFF and ON for as long as power is applied. The ON and OFF times are independently adjustable.



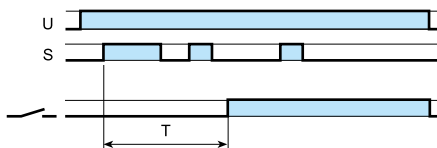
(SW) Symmetrical flasher (starting pulse on).

Apply power to timer. Output contact transfers immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).



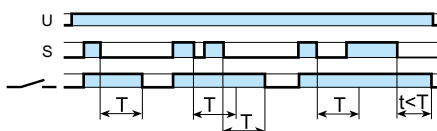
(SP) Symmetrical flasher (starting pulse off).

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 on = time off).



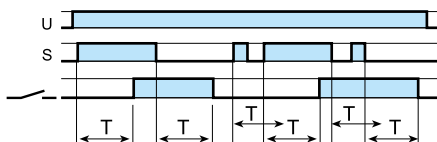
(AE) On-delay with control signal.

Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which the output contact transfers and remains so until the power is removed.



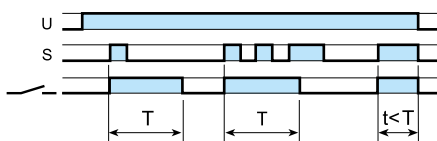
(BE) Off-delay with control signal.

Power is permanently applied to the timer. The output contact transfers immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which the output contact resets.



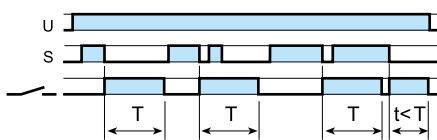
(CE) On- and off-delay with control signal

Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which the output contact transfers. Opening the Signal switch initiates the same preset delay, after which the output contact resets.



(DE) Interval with control signal on

Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contact transfers, and remain so for the duration of the preset delay, after which it resets.

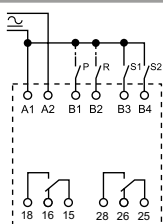


(EE) Interval with control signal off

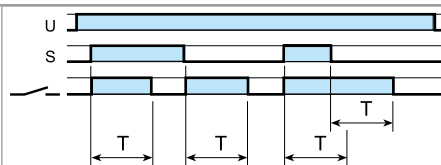
Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contact transfers, and remain so for the duration of the preset delay, after which it resets.

Functions

Wiring diagram

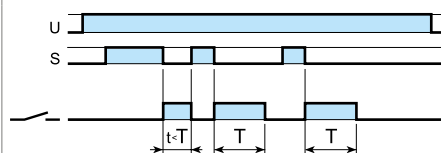


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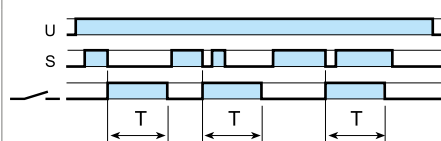
(FE) Interval with control signal on and off.

Power is permanently applied to the timer. Both the opening and the closing of the Signal Switch (S) initiates the transfer of the output contact (or extends the time). In both instances the contact resets after the preset delay has elapsed.



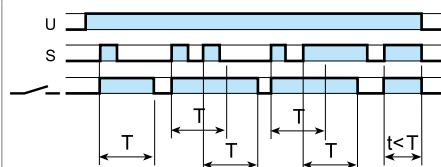
(EEa) Interval with control signal off (retriggerable)

Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contact transfers, and remain so for the duration of the preset delay, after which it resets.



(EEb) Interval with control signal off.

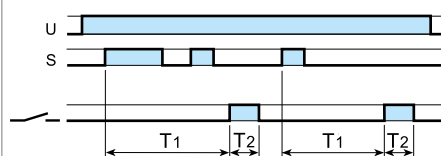
Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contact transfers, and remain so for the duration of the preset delay, after which it resets.



(WD) Watchdog

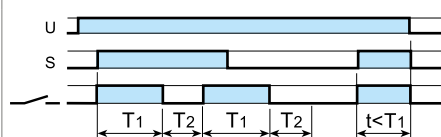
(retriggerable interval with control signal on).

Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contact transfers, and remain so for the duration of the preset delay, after which it resets; subsequent closures of Signal Switch during the delay will extend the time. If the closure of the Signal Switch (S) is longer than the preset time (T) then the output contact resets.



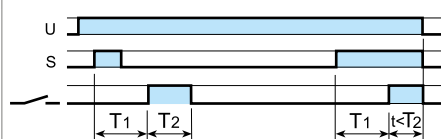
(GE) Pulse delayed with control signal on.

Power is permanently applied to the timer. Closing the Signal Switch (S) initiates T1 delay, after which the output contact transfers. Reset occurs after T2 time.



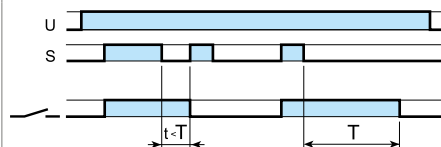
(LE) Asymmetrical flasher (starting pulse on) with control signal.

Power is permanently applied to the timer. Closing Signal Switch (S) causes the output contact to transfer immediately and cycle between ON and OFF, until opened.



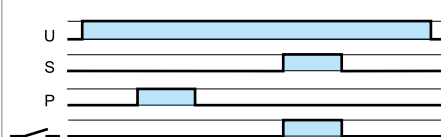
(PE) Asymmetrical flasher (starting pulse off) with control signal.

Power is permanently applied to the timer. Closing the Signal Switch (S) initiates delay T1 after which the output contact transfers and continues to cycle between OFF and ON, until the Signal Switch is opened.



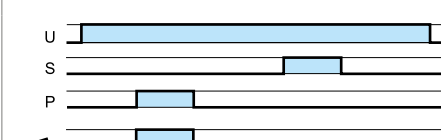
(IT) Timing step.

Closing the Signal Switch (S) the output contact transfers and remains so after S opening, for the duration of the preset delay, after which it resets. During the timing period it is possible to immediate open the contact with a further impulse on S.



(SS) Monostable controlled by Signal switch.

The output contact follows the status of Signal Switch (S).

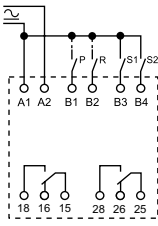
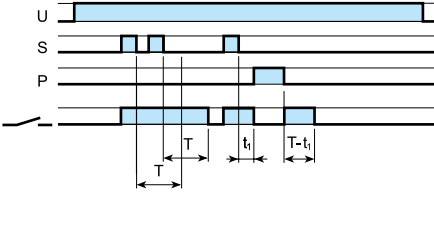


(PS) Monostable controlled by Pause switch.

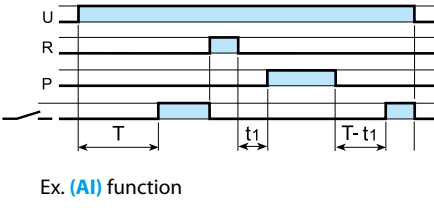
The output contact follows the status of Pause Switch (P).

Functions

Wiring diagram

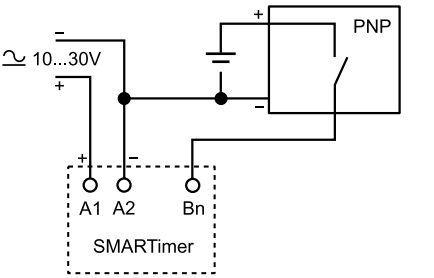
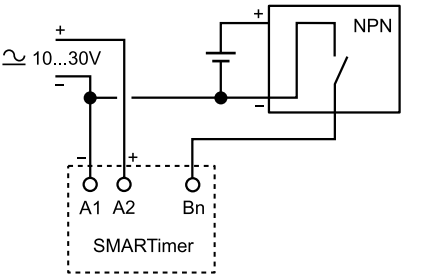
| | | | |
|--|-----------------------------|---|--|
|  | Type 84.02 |  | <p>(SHp) "Shower" (off-delay with control signal and pause signal).</p> <p>Power is permanently applied to the timer. The output contact transfers immediately on closure of the Signal Switch (S). Opening the signal switch initiates the preset delay, after which the output contact resets. Closure of the Pause Switch (P) will immediately halt the timing process, but the elapsed time will be retained. During the pause, the output contact will be open. On opening of the Pause Switch, timing resumes from the retained value and the output contact will take the previous condition.</p> |
|--|-----------------------------|---|--|

PAUSE and RESET options

| | |
|--|--|
|  <p>Ex. (AI) function</p> | <p>(P) PAUSE option*</p> <p>Closure of the pause switch will immediately halt the timing process, but the elapsed time will be retained. The current state of the output contacts will be maintained. On opening of the pause switch, timing resumes from the retained value.</p> <p>(R) RESET option*</p> <p>For each and every function and time range, the timer is immediately reset when the reset switch is closed.</p> <p>* Select to apply to either, or both, channels.</p> |
|--|--|

Interfacing the SMARTimer with proximity PNP-NPN sensors

Wiring diagram

| | | |
|-------------------------|---|--|
| <p>With PNP sensors</p> |  | |
| <p>With NPN sensors</p> |  | <p>It is possible to directly connect the output of proximity sensors (either PNP or NPN types) to the inputs of the 24V version of the SMARTimer.</p> |