



T82N

ELECTRONIC TIMER



User Manual

22/02 - Code: ISTR_M_T82N-_E_02_--

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PREFACE



This manual contains the information necessary for the product to be installed correctly and also instructions for its maintenance and use; we therefore recommend that the utmost attention is paid to the following instructions and to save it.

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Whenever a failure or a malfunction of the device may cause dangerous situations for persons, thing or animals, please remember that the plant has to be equipped with additional devices which will guarantee safety.

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1. INSTRUMENT DESCRIPTION

1.1 General description

The **T82N** model is a microprocessor-based digital timer with Δt time setting in analog mode.

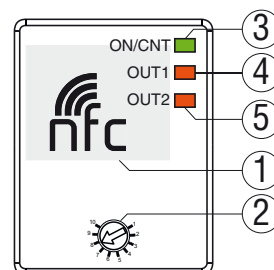
The operating parameters programming takes place through an **NFC communication interface** embedded in the instrument.

The instrument offers the possibility to program: **up to 3 delay times** (or Set Times), **6 operating modes** for **Out1** output, **10 operating modes** for **Out2** output, **4 time scales** (allowing timings from 9999 hours max. to 0.01 s min.)

Counting and outputs status are signalled by **2 LEDs**.

The instrument has also **2 digital voltage inputs** that can be used **for count enabling (CNT EN)** and **Reset (RES)** commands and can have **up to 2 relay outputs**.

1.2 Front panel description



- 1. NFC active area;**
- 2. S.t1 time setting trimmer:** The time can be set from a minimum established by the time programmed at parameter $S_{L\Delta t}$ to a maximum established by the time programmed at parameter $S_{H\Delta t}$;
- 3. LED ON/CNT:** Indicates: instrument powered ON (lit) count in progress (flashing with a 1 s frequency);
- 4. LED Out1:** Indicates the Out1 output status: ON (lit);
- 5. LED Out2:** Indicates the Out2 output status ON (lit).

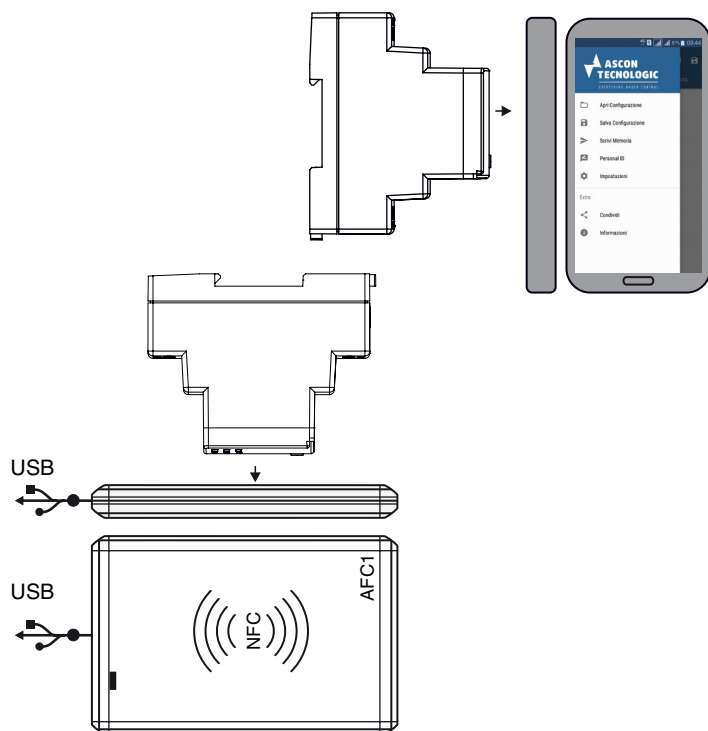
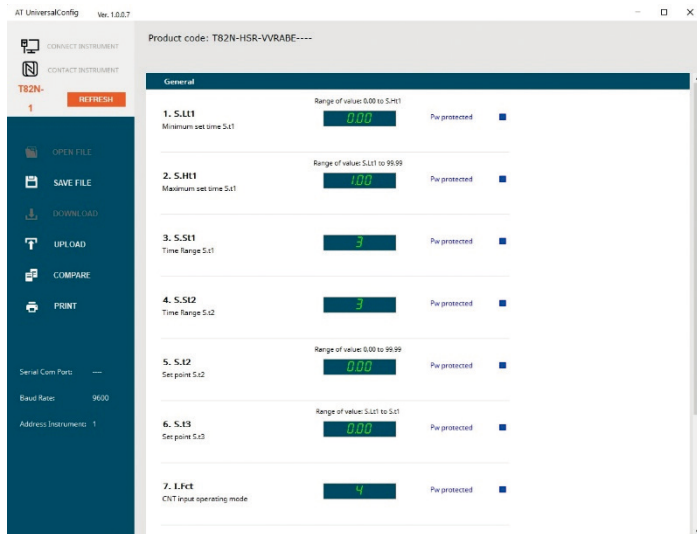
2. PROGRAMMING

2.1 Parameters configuration with AFC1

The instrument can be programmed through the embedded **NFC** communication interface.

The transmission of the parameters configuration to the instrument then takes place via the **AFC1** device and a **PC** with the *AT Universal Config* configuration software **or** via the **NFC** interface of a **smartphone** with the dedicated *ATConf* APP.

To configure the instrument with the **NFC**, it is not necessary to power the timer, but simply put its front panel on the symbol (📶) of the **AFC1** device surface (which is powered directly by the **USB** port connected to the **PC**) or on the part of the smartphone where the **NFC** interface is located (for this consult the smartphone user manual) then send the parameters to the instrument's memory.



3. USAGE WARNINGS

3.1 Allowed Usage



The instrument has been projected as measure and control device, built according to EN61812-1 for the altitudes operation below 2000 ms.

Using the instrument for applications not expressly permitted by the above mentioned rule must adopt all the necessary protective measures.

The instrument **must not be used in dangerous environments** (flammable or explosive) without adequate protections.



The installer must ensure that the EMC rules are respected, also after the instrument installation, if necessary using proper filters.

4. INSTALLATION WARNINGS

4.1 Mechanical Mounting

The instrument is designed for mounting inside a switch-board with fixing on a standard DIN guide.

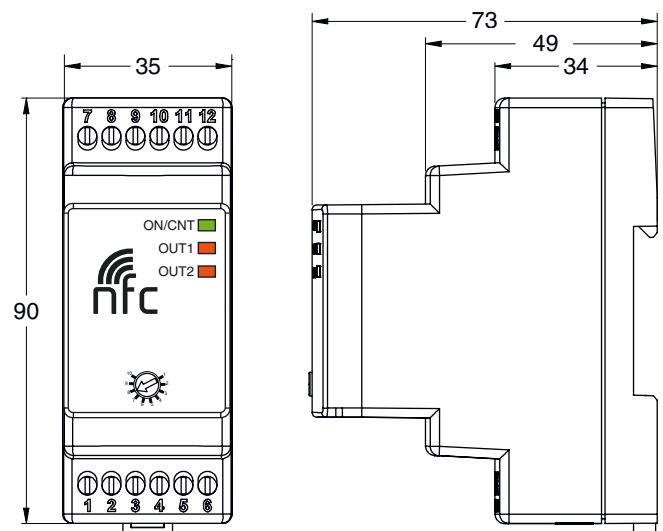
Avoid placing the instrument in environments with very high levels of humidity that may create condensation or dirt that could lead to the introduction of conductive parts or substances into the instrument.

Ensure adequate ventilation to the instrument and avoid installation in containers that house devices which may overheat or which may cause the instrument to function at a temperature higher than the one permitted and declared.

Connect the instrument as far away as possible from sources of electromagnetic disturbances such as motors, power relays, relays, solenoid valves, etc..

4.2 Mechanical dimensions [mm]

4.2.1 Instrument dimensions




4.3 Electrical connections

Carry out the electrical wiring by connecting only one wire to each terminal, according to the following diagram, checking that power supply is the same as indicated on the instrument and the load current absorption is no higher than the maximum electricity current permitted.

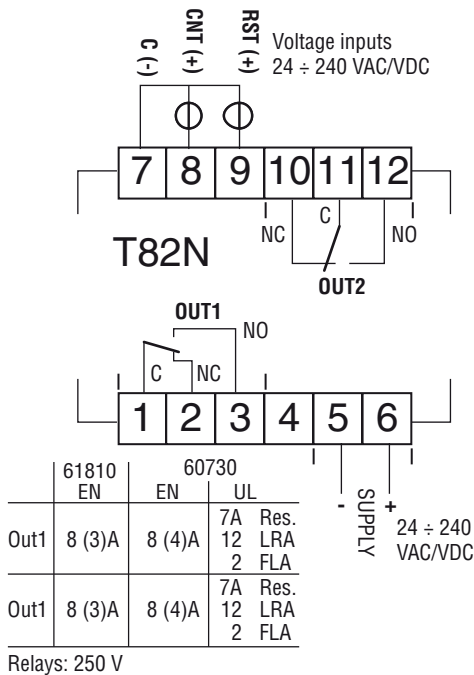
As the instrument is built-in equipment with permanent connection inside housing, it is not equipped with either switches or internal devices to protect against current overloads: the installation will include an overload protection and a two-phase circuit-breaker, placed as near as possible to the instrument and located in a position that can easily be reached by the user and marked as **instrument disconnecting device** which interrupts the power supply to the equipment.

It is also recommended that the supply of all the electrical circuits connected to the instrument must be properly protected, using devices (ex. fuses) proportionate to the circulating currents.

It is strongly recommended that cables with proper insulation, according to the working voltages and temperatures, be used. If the iprobes cables are shielded, the protection shield must to be connected to ground at one side only.

 Moreover, check that the parameters set are the desired ones and the application works correctly **before connecting the outputs to the actuators** in order to avoid malfunctions in the plant that could cause damage to people, things or animals.

4.3.1 Electrical connection diagram



5. OPERATING MODE

5.1 Counting commands operation

Counting is enabled and disabled using the the digital inputs **CNT** and **RST**.

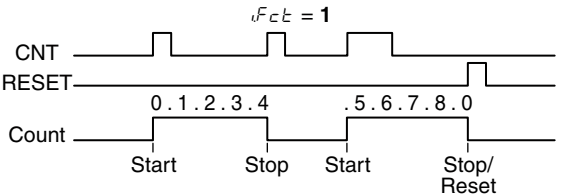
The operating mode of **CNT** input is established by Fct parameter while the **RST** input always acts as a **Reset**, i.e. **blocks** and **resets** the count when it is activated and also has priority over the other commands (while **RST** is active, the count cannot start).

The counting **Start** signal can therefore be given by the **CNT** count enable digital input.

The operating mode of **CNT** input can be programmed using the Fct parameter to operate in different modes:

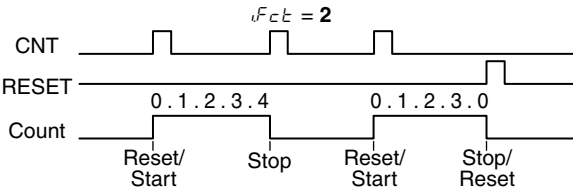
$\text{Fct} = 1$ - Bistable Start/Stop

By activating the **CNT** input the count starts and it is therefore possible to deactivate the input. Activating **CNT** again, the count stops on the value reached (without disabling the output if this was activated), the next **CNT** impulse resumes the count from the point it stopped and so on until the count finishes or a **Reset** command is detected.



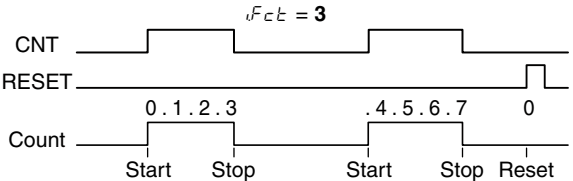
$\text{Fct} = 2$ - Bistable Reset-Start/Stop

At the 1st impulse on the **CNT** input the timer is reset and started, at the 2nd impulse, if given before the end of the count, the count is stopped (disabling the output if active) and the 3rd impulse starts a new cycle, otherwise, if the 2nd impulse should arrive after the end of the count it starts directly a new cycle.



$\text{Fct} = 3$ - Monostable Start/Stop

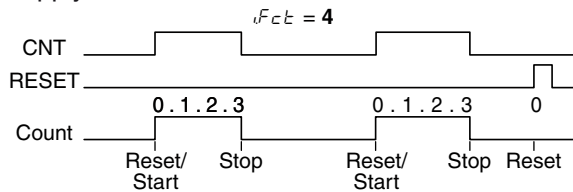
Activating the **CNT** input and keeping it active, the count is started; the count stops on the value reached when the input is disabled (without disabling the output if active); re-activating the **CNT** input, the count restarts from the value reached and so on until the **Reset** signal is detected.



$\nu F_{CLK} = 4$ - Monostable Reset-Start/Stop

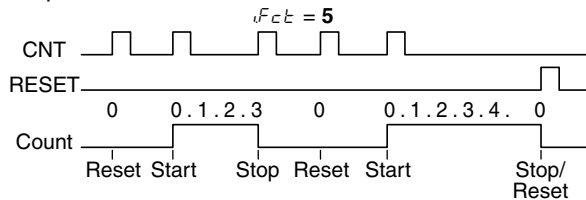
Activating the **CNT** input and keeping it active, the timer resets and starts counting, disabling the **CNT** input the count stops disabling the output if active.

This operating mode is similar to the one of the traditional timers in which counting is enabled when the instrument is powered while the **Reset** occurs when power supply is removed.



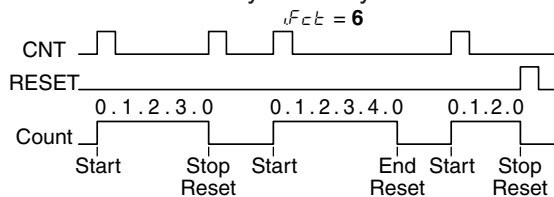
$\nu F_{CLK} = 5$ - Reset/Start/Stop

At 1st **CNT** impulse the timer is reset, at the 2nd the count starts, at the 3rd impulse the count stops disabling the output if active and so on.



$\nu F_{CLK} = 6$ - Bistable Start/Stop-Reset

At 1st **CNT** impulse the count is started, while at the 2nd impulse, if given before the end of the count, the count is stopped disabling the output if active and reset, otherwise, if the 2nd impulse should arrive after the end of the count it starts directly a new cycle.

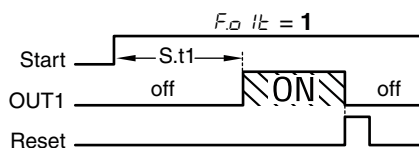


5.2 Out1 Operating mode

The Output 1 operation can be programmed in **6 different modes** with F_{OUT} parameter:

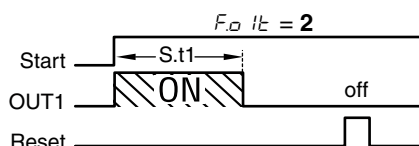
$F_{OUT} = 1$ - ON DELAY

Received the **Start** signal, instrument starts counting and, at the end of S_{t1} time, activates the **Out1** output. The output is disabled by the **Reset** signal.



$F_{OUT} = 2$ - Feed-through

Received the **Start** signal, the instrument starts counting and activates the **Out1** output; **Out1** is disabled when S_{t1} time has elapsed. The output can be reactivated only after a **Reset** and a new **Start** signal.

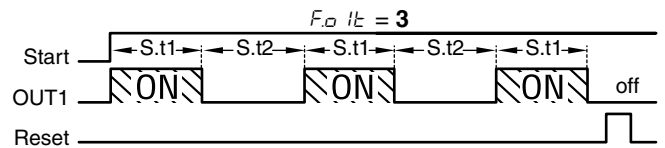


$F_{OUT} = 3$ - Asymmetrical oscillator with start ON

This operating mode requires the setting of both S_{t1} and S_{t2} Set times.

Received the **Start** signal, **Out1** is enabled for the S_{t1} time then disabled, reactivated when S_{t2} time has elapsed and so on until the **Stop/Reset** signal is detected.

S_{t1} : **Out1 ON time**, S_{t2} : **Out1 OFF time**.

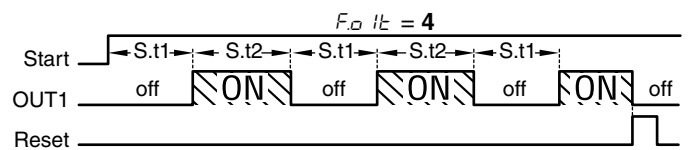


$F_{OUT} = 4$ - Asymmetrical oscillator with start OFF

This operating mode implies the setting of both S_{t1} and S_{t2} Set times.

Received the **Start** signal, **Out1** remains disabled for the S_{t1} time then is activated for the time set at S_{t2} and so on until the **Stop/Reset** signal is detected.

S_{t1} : **Out1 OFF time**, S_{t2} : **Out1 ON time**.

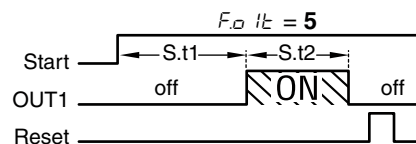


$F_{OUT} = 5$ - Asymmetrical oscillator with start OFF 1 cycle

This operating mode operates as $F_{OUT} = 4$ but executes **only 1 Start/Pause cycle**.

Received the **Start** signal, **Out1** remains disabled for the S_{t1} time then is activated for the time set at S_{t2} .

The cycle can be repeated only after a **Reset** signal and a new **Start** command.

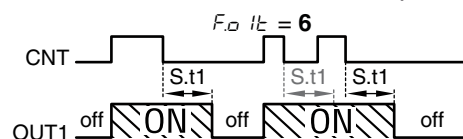


$F_{OUT} = 6$ - Delay in lack of excitation (or delay in de-excitation)

On the rising edge of the **CNT** input **Start** signal, **Out1** is energized. When the **CNT** signal is removed, **Out1** remains energized and starts the S_{t1} count elapsed which **Out1** is de-energized. If, during the S_{t1} count, a signal is detected on the **CNT** input, the time is reset and will be restarted when signal ceases.

Note: This functioning mode operates in this way **regardless** the νF_{CLK} parameter setting. **Out2** output (if used) in this operating mode **can only operate** in

$F_{OUT} = 1$ or 2 modes. In $F_{OUT} = 2$ mode **OUT2** output is activated when the **CNT** input is enabled and then deactivated when **CNT** input is disabled.



5.3 Out2 Operating mode

The Output 2 operation can be programmed in **10 different modes** with F_{out} parameter:

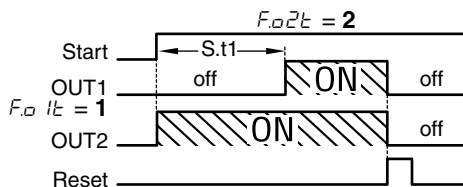
$F_{out} = 0F$ - **Out2 Output disabled**

$F_{out} = 1$ - **Out2 works like Out1**

Out2 output operates exactly like **Out1** output in order to have a double output contact.

$F_{out} = 2$ - **Out2 output works as an instant contact (ON during count)**

Out2 is activated during the counting phase and remains active until the **Reset** command is received.

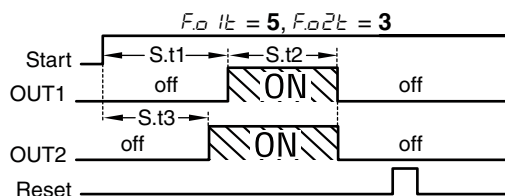
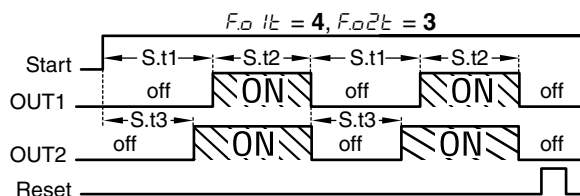
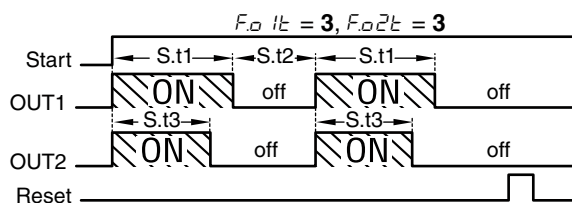
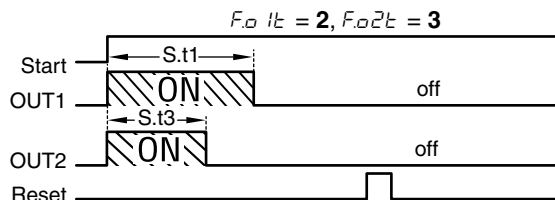
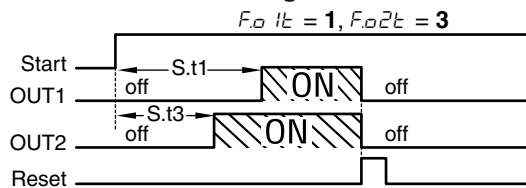


$F_{out} = 3$ - **Out2 works as Out1 (with S_{t1} time) but with an absolute S_{t3} time**

This operating mode requires the setting of S_{t1} and S_{t3} Set times. S_{t3} has the same time range and cannot be longer than S_{t1} .

Received the **Start** command, instrument starts counting and operates on **Out2** output in the same mode it operates on **Out1** (as F_{out}).

If $F_{out} = 1, 4, 5$, **Out2** operates with **ON delay** function and S_{t3} of Set time, when instead $F_{out} = 2, 3$ **Out2** operates with **Feed-through** function and S_{t3} of Set time.

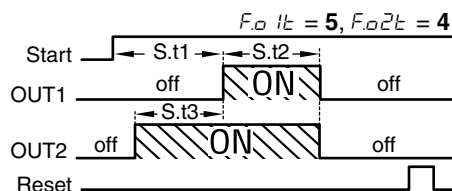
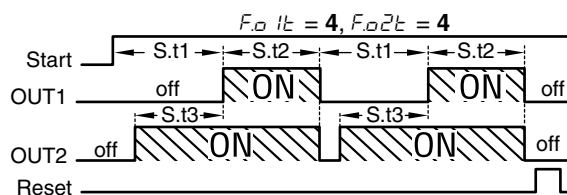
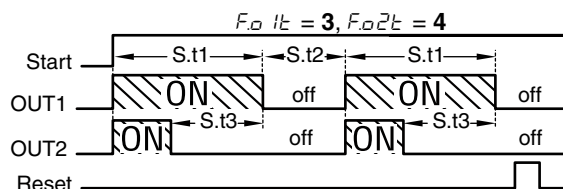
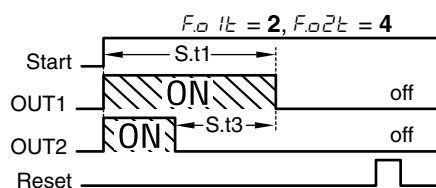
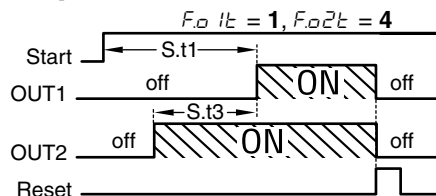


$F_{out} = 4$ - **Out2 works as Out1 (with S_{t1} time) but with a relative S_{t3} time in advance**

This operating mode requires the setting of S_{t1} and S_{t3} Set times. S_{t3} has the same time range and cannot be longer than S_{t1} .

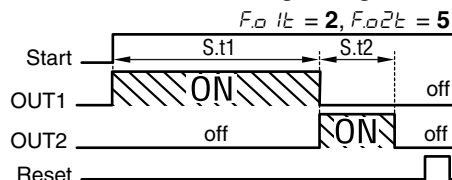
Received the **Start** command, instrument starts counting and operates on **Out2** output in the same mode it operates on **Out1** (as F_{out}).

If $F_{out} = 1, 4, 5$, **Out2** operates with **ON delay** function and $[S_{t1} - S_{t3}]$ of Set time, when instead $F_{out} = 2, 3$, **Out2** operates with **Feed-through** function and $[S_{t1} - S_{t3}]$ of Set time.



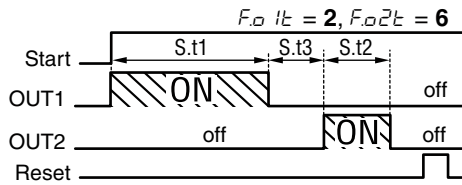
$F_{out} = 5$ - **Activation at count end for the S_{t2} time**

Out2 output thus configured can be used when an end-of-count signal is required to activate an external acoustic or luminous signalling device.



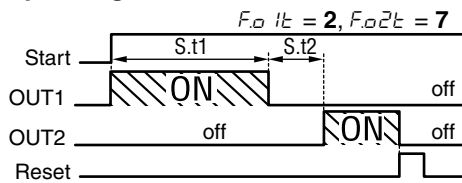
$F_{o2t} = 6$ - Activation at S_{t1} count end with S_{t3} delay for S_{t2} time

Out2 thus configured is activated, as for $F_{o2t} = 5$, when S_{t1} count has elapsed for the time S_{t2} but with a settable delay S_{t3} . This function is intended to be used with $F_{o1t} = 2$ only.



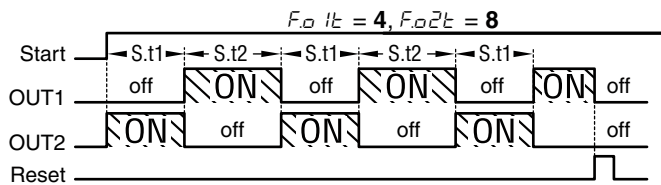
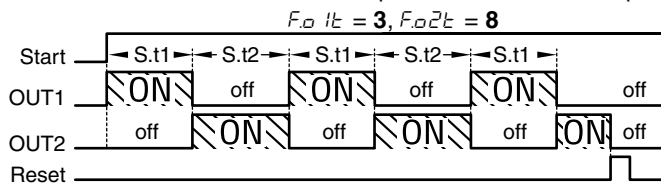
$F_{o2t} = 7$ - Activation at the end of S_{t1} count with delay S_{t2}

Out2 thus configured is activated when S_{t1} count has elapsed with a settable delay S_{t2} . This function is intended to be used with $F_{o1t} = 2$ only and can be used to create a **star-delta starter** where the time S_{t1} is the **Star operating time** while S_{t2} is the **Star-Delta transfer time**.



$F_{o2t} = 8$ - Counting operation negated with respect to **Out1**

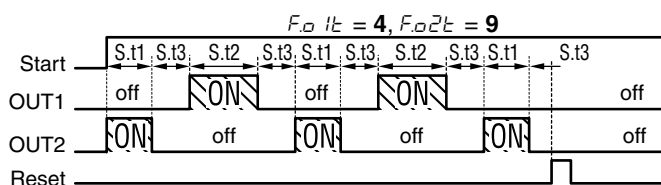
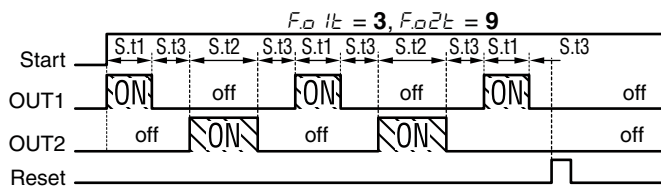
Out2 output thus configured is activated, during the count, with the opposite logic to **Out1**. This function is intended to be used with $F_{o1t} = 3$ or 4 only (oscillator mode functioning) in order to obtain the alternated operation of the two outputs.



$F_{o2t} = 9$ - Counting operation negated with respect to **Out1** but with an S_{t3} dead time

As in $F_{o2t} = 8$, while counting **Out2** output is activated with the opposite logic to **Out1**, but with an S_{t3} intermediate settable dead time.

Also in this case, this function is intended to be used with $F_{o1t} = 3$ or 4 only (oscillator mode functioning) in order to obtain the alternated operation of the two outputs, but with a dead time between the activations.

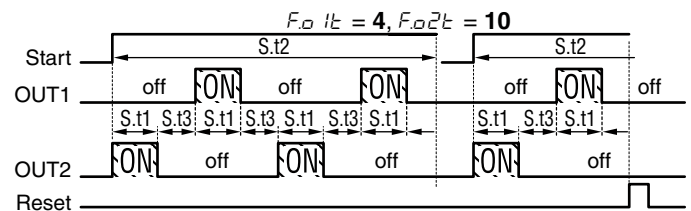
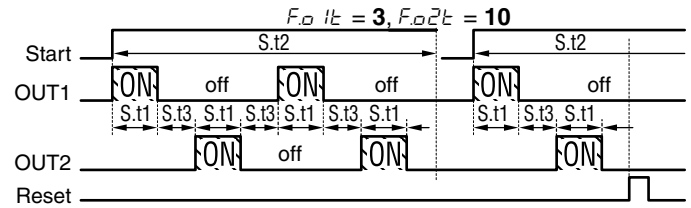


$F_{o2t} = 10$ - Symmetrical denied operation with respect to **Out1** with dead time S_{t3}

As in $F_{o2t} = 9$ mode, while counting **Out2** output is activated with the opposite logic to **Out1**, with an S_{t3} intermediate settable dead time, but with the same active time of S_{t1} .

Also in this case, this function is intended to be used with $F_{o1t} = 3$ or 4 only (oscillator mode functioning) in order to obtain the alternated operation of the two outputs with a dead time between the activations, but with the possibility to establish the total duration of the cycle through the time S_{t2} (for example for a washing, cleaning, polishing or similar treatment cycle).

Note: The total time is established to be S_{t2} as it has an independent time scale with respect to S_{t1} and S_{t3} which have the same time scale. For these applications S_{t2} probably needs to be set in **hours** while S_{t1} and S_{t3} could be in **minutes**.



6. ACCESSORIES

6.1 Parameters configuration with AFC1

The instrument can only be programmed via the **NFC** wireless interface. The parameters configuration takes place on a **PC** with the **AT UniversalConfig** program while the transfer of the configuration to the timer uses the interface device **AFC1**. Parameter programming can also be performed on a common **Android smartphone** using the dedicated **AT Conf App**; the subsequent transmission of the configuration to the timer can take advantage of the **NFC** interface inserted in quite all the cell phones.



Note: For more information, consult the AFC1 manual or that of the smartphone used.

7. PROGRAMMABLE PARAMETERS TABLE

Here below is a description of all the parameters available on the instrument. Some of them may not be present, either due to the fact they depend on the type of instrument or because they are automatically disabled as unnecessary.

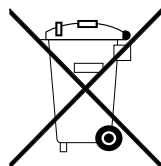
Parameter	Description	Range	Default	Note
1	S_{L1} S_{L1} min. Set time	0 ÷ S.Ht1	0	
2	S_{H1} S_{L1} max. Set time	S.Lt1 ÷ 9999	10.00	
3	S_{S1} S_{L1} Time range	1 Hours (9999 h); 2 Hours - Minutes (99 h 59 min); 3 Minutes - Seconds (99 min 59 s); 4 Seconds - Hundreds of seconds (99 s 99 1/100 s).	4	
4	S_{S2} S_{L2} Time range		4	
5	S_{L2} S_{L2} Set time	S.Lt2 ÷ S.Ht2	0.00	
6	S_{L3} S_{L3} Set time	S.Lt1 ÷ S.Ht1	0.00	
7	F_{C1} CNT input operating mode	1 Bistable START/STOP; 2 Bistable RESET-START/STOP; 3 Monostable START/STOP; 4 Monostable RESET-START/STOP; 5 Bistable RESET/START/STOP; 6 Bistable START/STOP-RESET.	4	
8	F_{O1} OUT1 output operating mode	1 On delay; 2 Feed-through; 3 Asymmetrical oscillator with start ON; 4 Asymmetrical oscillator with start OFF; 5 Asymmetrical oscillator with start OFF (one cycle only); 6 Delay in lack of excitation (or delay in de-excitation).	1	
9	F_{O2} OUT2 output operating mode	oF No function; 1 Out2 operates as Out1; 2 Instantaneous Contact Output (ON during count); 3 Out2 operates as Out1, but with absolute Set time S_{L3} ; 4 Out2 operates as Out1, but with relative Set time S_{L3} in advance; 5 Activation at the end of the count for the time S_{L2} (buzzer like); 6 Activation at S_{L1} count end with S_{L3} delay for S_{L2} time; 7 Activation at S_{L1} count end with S_{L2} delay; 8 Counting operation negated with respect to Out1; 9 Counting operation negated with respect to Out1 but with an S_{L3} dead time; 10 Symmetrical denied operation with respect to Out1 with S_{L3} dead time.	oF	
10	LPP Password parameters protection	oF Password disabled; 1 ÷ 9999	oF	

8. PROBLEMS AND MAINTENANCE

8.1 Cleaning

It is recommended to clean the instrument only with a cloth wetted with water or with a detergent neither abrasive nor containing solvents.

8.2 Disposal



The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.

9. WARRANTY AND REPAIRS

The instrument is under warranty against construction vices or defected material, noticed within 18 months from delivery date. The warranty is limited to the repairs or to the substitution of the instrument. The eventual opening of the housing, the violation of the instrument or the wrong use and installation of the product means the automatic decay of the warranty. In case of defected instrument, noticed in warranty period or out of warranty, do contact our sales department to obtain the shipment authorisation.

The defected product must be shipped to Ascon Tecnologic with the detailed description of the failures found and without any fees or charge for Ascon Tecnologic, safe different agreements.

10. TECHNICAL DATA

10.1 Electrical data

Power supply: 24 ÷ 240 VAC ±10%;

AC frequency: 50/60 Hz;

Power consumption: About 3 VA;

Inputs: 2 voltage **digital inputs** 24 ÷ 240 AC/VDC;

Outputs: Up to 2 relay outputs:

	EN 61810	EN 60730	UL 60730
Out1 - SPDT - 8A - 1/2 HP 250V	8 (3) A	10 (4) A	10 A Res., 12 LRA
Out2 - SPDT - 8A - 1/2 HP 250V	8 (3) A	10 (4) A	10 A Res., 12 LRA

Relay output Electrical life: 100000 operations;

Overvoltage category: II;

Protection class: Class II;

Insulation: Reinforced insulation between low voltage parts (power supply and relay outputs) and front panel; Main insulation between power supply and relay outputs; Main insulation between relay outputs; No insulation between power supply terminals and inputs.

10.2 Mechanical characteristics

Housing: Self-extinguishing plastic, UL 94 V0;

Heat and fire resistance category: D;

Ball Pressure Test as described in EN60730: accessible parts 75°C; support live parts 125°C;

Dimensions: 30 x 90 mm, depth 67 mm;

Weight: About 120 g;

Mounting: Rear panel on Omega DIN rail;

Connections: Inputs, Power supply and Outputs:

Screw terminals for 0.2 ÷ 2.5 mm²/AWG 24 ÷ 14 cables;

Pollution degree: 2;

Operating temperature: 0 ÷ 50°C;

Operating humidity: < 95 RH% with no condensation;

Storage temperature: -25 ÷ +60°C.

10.3 Functional features

Time range: 4 programmable timing scales:

9999 h,

99 h 59 min,

99 min 59 s,

99 s 99 hundreds of second;

Input delay: 15 ms max.;

Compliance:

Directive LV 2014/35/EU (EN 60730-1, EN 60730-2-7, EN61812-1, UL 508);

Directive EMC 2014/30/EU (EN55011: class B; EN61000-4-2: 8 kV air, 4 kV cont.; EN61000-4-3: 10V/m; EN61000-4-4: 2 kV supply and relay outputs, 1 kV inputs; EN61000-4-5: supply 2 kV com. mode, 1 kV\diff. mode; EN61000-4-6: 3V).

11. HOW TO ORDER

