

Instructions manual

Timer-Thermostat 02910
Installer Manual

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1. Timer-Thermostat 02910

Wall-mounting, battery-powered timer-thermostat with interface with capacitive keys and equipped with user-friendly functions to facilitate energy saving.

Designed to control heating and air-conditioning via C, NC, NO relay output.

Equipped with multi-function input for remote control (reduction, activation, summer/winter switching).

Can be connected, via circuit board 02915, to the energy probe 02960 (not supplied) for viewing consumption/generation of electricity and corresponding historical data.

If the device is used in combination with the energy probe 02960 a built-in buzzer is available.

2. Field of application

The appliance is designed to control room temperature by acting on the control circuit of the burner or circulation pump (heating) or on the control circuit of the air conditioner (air conditioning), ensuring an ideal temperature.

The graphical user interface, thanks to special views, facilitates system management helping the user to operate while maintaining a state of energy saving.

Consultation of the energy consumption (or generation) carried out by connecting to the energy probe 02960, lets you monitor up to 3 separate phases (with common neutral), for a maximum of 10kW per phase. The device will not activate/deactivate loads, depending on the powers read (only monitoring with audible alarm, if any).

3. Installation

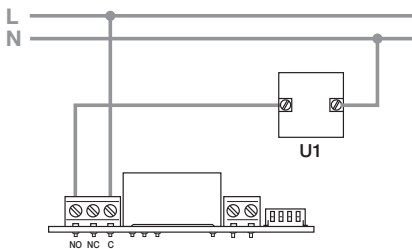
The appliance must be installed on a wall at a height of 1.5 m off the floor in a suitable position for correctly detecting the ambient temperature. It must not be installed in niches, behind doors and curtains or in areas affected by sources of heat or atmospheric factors.

The timer-thermostat is a wall-mounting device that can be installed directly on a wall or on 2 and 3 module back boxes.

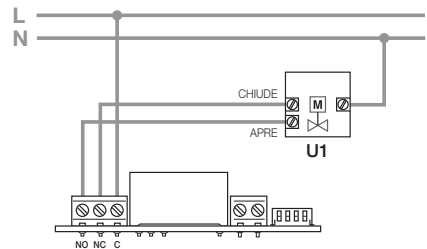
It should be used in dry, dust-free places at a temperature between 0°C and +40°C.

4. Connections

4.1 Relay connection



Circulation pumps, burners, solenoid valves



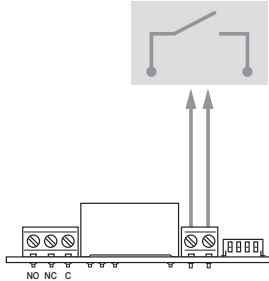
Motorized valves

4.2 Multi-function input

Depending on how it is configured, the multi-function input can be used to activate various functions of the timer-thermostat (see par. 7.8 and 7.9).

It is on when the two terminals of the figure are closed by a dry contact; vice versa if they are open, the input is off. The contact must be SELV and free of potential.

The typical wiring diagram is the following:



FUNCTIONS

- Remote nighttime reduction
- Remote ON
- Summer/Winter switching

Fig. 1: Connecting the multi-function input

Activation type	dry contact
Type of conductor	1 single wire or 1 multi-wire cable conductor MAX. 1.5 mm ²
Length of the conductor	max. 100 m between the 2 terminals

4.3 Energy Probe 02960

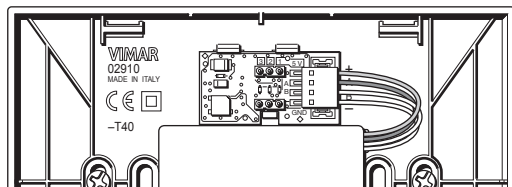
For the timer-thermostat to be able to communicate with the energy probe 02960 it is necessary to use the circuit board 02915 that is to be installed on the wall base.

Connect the circuit board 02915 and energy probe 02960 using a UTP CAT5E cable or better; the RJ9 phone connector for connecting to the probe must be wired in such a way as to have one pair of wires between terminals 1 and 4 (outer pair) and the other between pins 2 and 3 (inner pair).

Take care to keep consistent connections at the terminals.

For example:

- 5V → orange
- A → blue
- B → white-blue
- GND → white-orange



4.3.1 Measurement of 2 or 3 phases

The energy probe 02960 comes with a single current probe (for measuring the consumption/production of a single phase); to measure more than one phase it is essential to have more current probes 01457 (one for each additional phase to be measured). **Once connected, you must enable the new channel (the new phase to be measured) using the menu described in par. 8.10.1.**

4.3.2 Saving the consumption data log

In order for the energy probe to save the consumption data log properly, the latter must receive the time setting from the timer-thermostat; then the clock must be correctly set (see par. 7.3). The energy probe can save the consumption data log for a very long time (up to 3 years), provided that its power supply is not interrupted for more than 7 consecutive days (at each start the time must be reset by the timer-thermostat).

If the probe should remain switched off for over a week, the entire switch-off period would be reduced in any case to a week (at most) with a loss of consistency in the log view; in this case, to avoid inconsistent readings, you may want to reset its data log.

Here are some typical examples of installation of the energy probe:

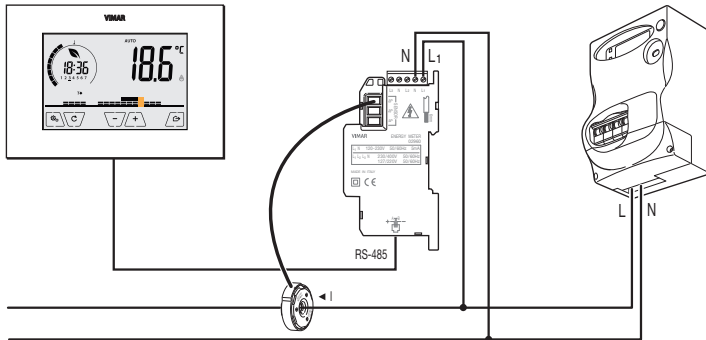


Fig. 2: Basic configuration, for measuring household absorption

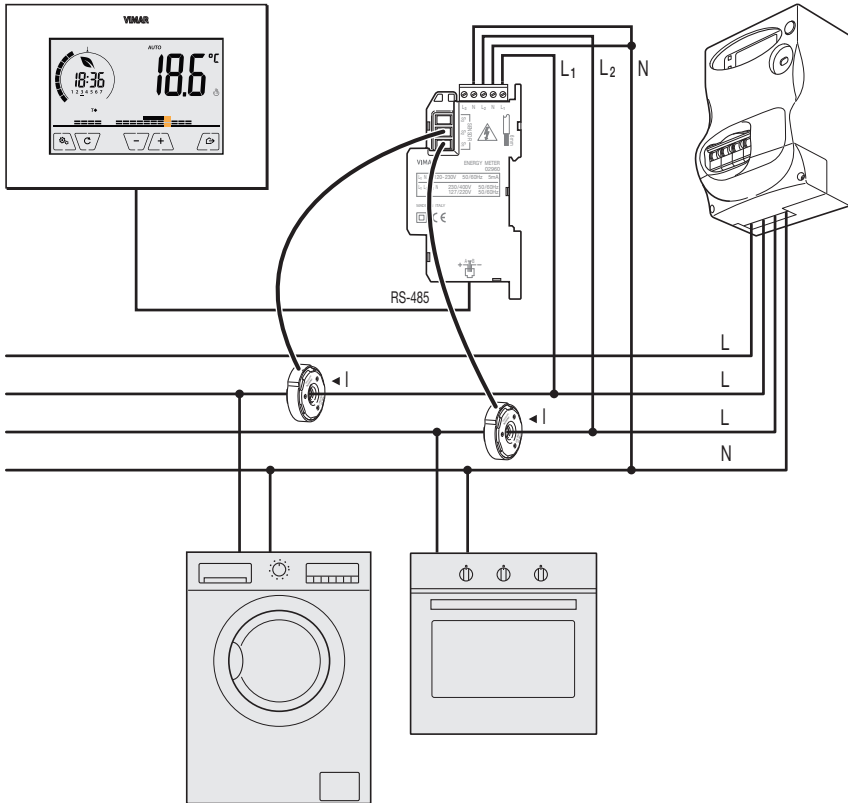


Fig. 3: Measurement of the total consumption of a system, also with (single-phase) loads distributed over multiple phases.

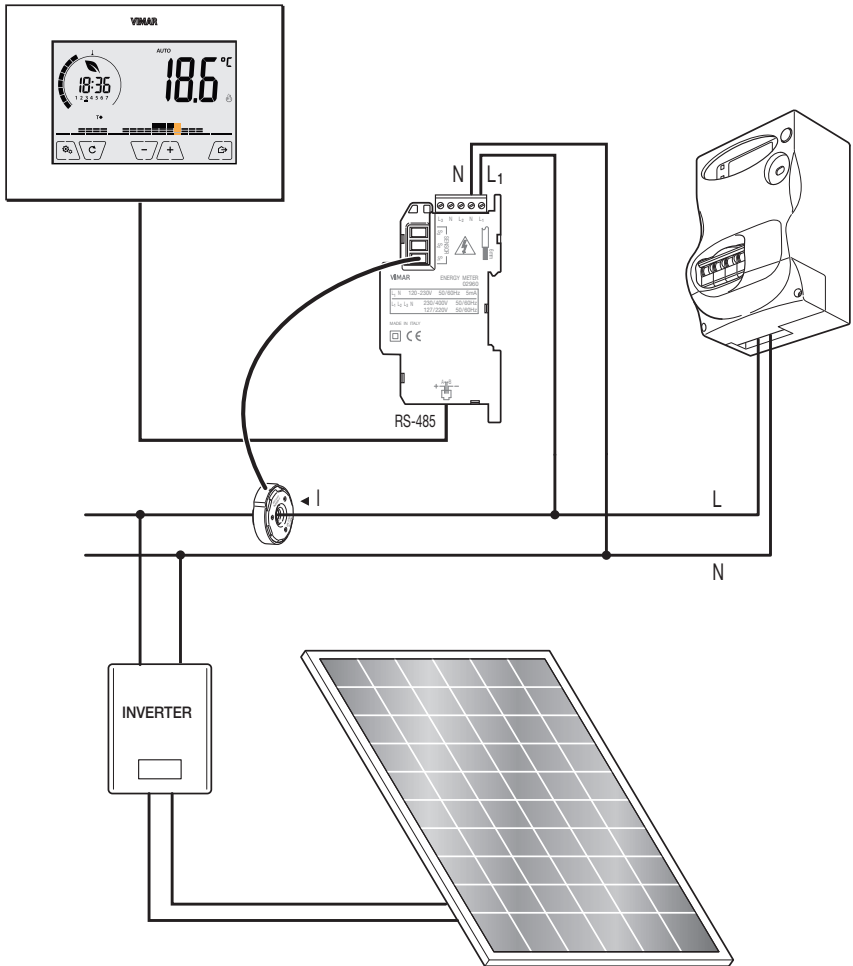


Fig. 4: Measurement of net consumption or generation with a photovoltaic system installed. In cases of generation via a photovoltaic panel (fed into the national grid), the probe will record a **NEGATIVE** value, which corresponds to energy generation (the opposite of consumption).

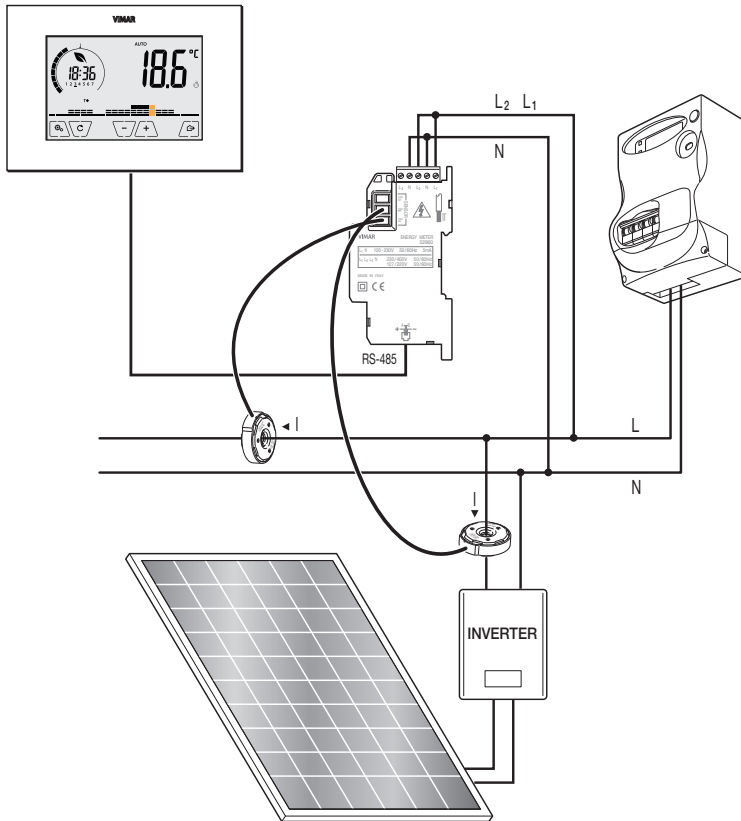
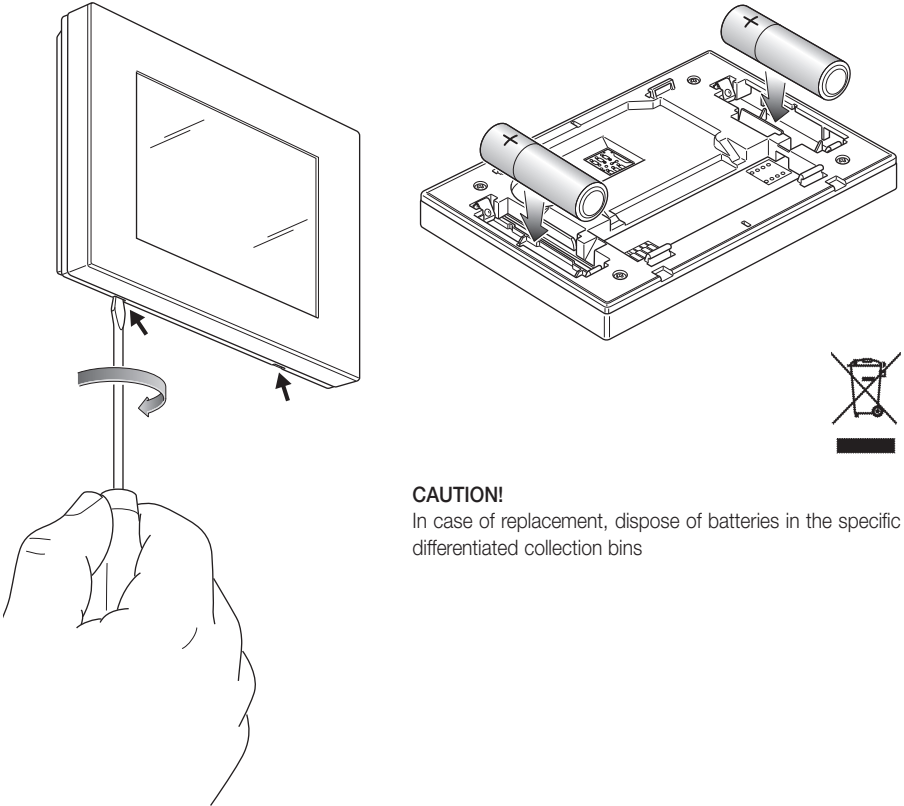


Fig. 5: Measurement of differentiable consumption and generation with a photovoltaic system installed. Observe the direction of installation of the current probe S2: in cases of generation via a photovoltaic panel, the probe will record a NEGATIVE value, that corresponds to energy generation (as opposed to consumption).

5. Inserting new / replacement batteries

When replacing batteries, remove the front panel by raising it with a screwdriver. Replace the batteries with Alkaline 1.5V "AA" batteries.






CAUTION!

In case of replacement, dispose of batteries in the specific differentiated collection bins

Fig. 6: Changing batteries

The battery charge status is shown as follows:

- no  icon → battery charged
- flashing  icon → battery almost flat (replace it)
- fixed on  icon → battery flat (the device will go OFF and it is no longer possible to switch to operation).

6. Display

The touchscreen display allows you to control the system using the following buttons and icons:

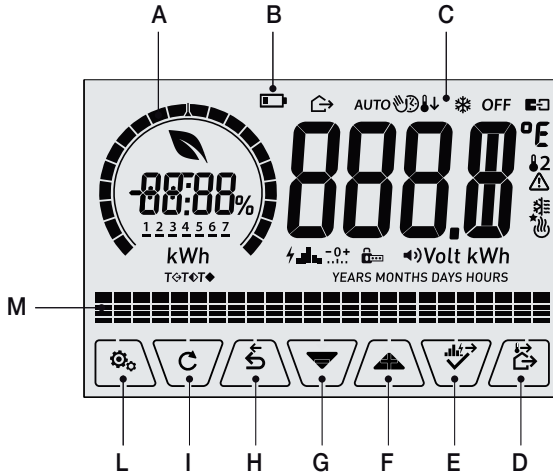


Fig. 7: Graphical interface and buttons

- A: Ring indicating consumption level and energy savings indicator
- B: Battery charge status
- C: Operating mode
- D: Away
- E: Confirm or energy log navigation
- F-G: Menu navigation and setting parameters
- H: Back
- I: Alternative viewing
- L: Settings menu
- M: AUTO programme temperature trends and consumption log

6.1 Functions of the buttons



: **increases** the numerical values. When it "disappears" from the display it means that the value cannot be increased any more.



: **decreases** the numerical values. When it "disappears" from the display it means that the value cannot be decreased any more.



: during navigation, it **scrolls the next item** through the available menus. If it "disappears" then you have arrived at the last of the items that can be scrolled.



: during navigation, it **scrolls the previous item** through the available menus. If it "disappears" then you have arrived at the last of the elements that can be scrolled.



: **confirms** the selected option (activates the submenu if there is one or displays the next parameter/digit).

After each confirmation, the display shows the ✓ icon for approximately 1 s. In addition, if the timer-thermostat is connected to the probe 02960 via the circuit board 02915, it will also be possible to enable its acoustic signal.



: **back (or cancel)** exits the current screen/menu and returns to the previous one without saving any changes. In menus with changes to multiple digits it lets you go back to change the previous digit.

N.B. The field/value being edited is highlighted by the field/value itself flashing.

IMPORTANT: In order to avoid any accidental modifications, first press and hold down the required icon displayed to enable the function.

6.2 Symbols

Depending on the different operating modes, the display shows the following icons:



: Calibration



: Entering the PIN



: Timed manual operation



: Away



: Manual



: Nighttime reduction



: Antifreeze

OFF

: Switched off (OFF)

AUTO

: Automatic operation



: Multi-function input ON



: Alarm



: Air conditioning



: Heating



: Power/Energy



: Energy consumption log



: Eco (saving)



: Buzzer (beep)



: Confirm

1 2 3 4 5 6 7 : Day of the week indicator

T↔

: Away temperature

T◊

: Economy temperature

T◆

: Comfort temperature

6.3 Locking the interface via PIN

The timer-thermostat lets you set a password which inhibits any change to the operating mode (eg switching from Manual to OFF), limits setting the temperature values and, more generally, blocks access to the configuration menu.

This feature is useful to prevent the thermostat being used by unauthorized persons: the device prompts you to enter the PIN, indicating a shutdown with the  icon.

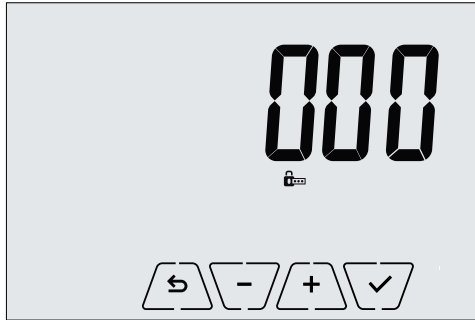



Fig. 8: Locking with PIN

6.4 Alternative views

During normal operation, i.e. when you are not navigating the menus, you can select the information to display on the left-hand side of the display.

If the right side always displays the measured temperature together with other data (which will be explained below), tapping in succession the  button on the left-hand side and in the program area will display the two following options:

6.4.1 Clock, daily program and Ecometer

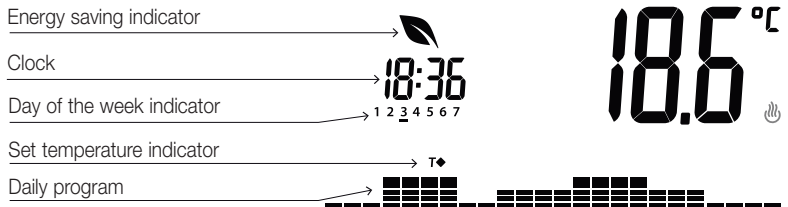





Fig. 9: Typical view of the time and daily program

This view is the default and gives an indication of the daily temperature control program along with the data on the current moment.

The program area, represented by histograms, is divided into 24 sectors each of which represents the corresponding hour of the 24 hours in a day.

Each sector can be composed of 1, 2 or 3 dashes:

-  equivalent to "T away" (T↔)
-  equivalent to "T economy" (T◊)
-  equivalent to "T comfort" (T◆)

The **clock** shows the current time.

The **indicator of the day of the week** highlights the current day with a dash under the number associated with it (eg, 4 = Thursday).

The **set temperature indicator** highlights the current temperature being regulated thus replicating the information represented by the "dashes":

- T↔ = T away
- T◊ = T economy
- T◆ = T comfort

The **energy saving indicator** indicates whether, compared to a conventional average consumption, the set temperature setpoint enables you to achieve "savings" in consumption.

If the operating mode is not set on **AUTO**, the program area will not be active.

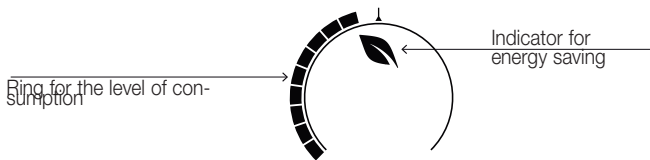


Fig. 10: Typical view of ecometer mode

The set of icons called "ECOMETER" provides a general indication of the expected consumption facilitating energy saving.

The consumption forecast is given by a comparison between the currently set temperature value and a conventional average consumption defined in the device.

- The **ring of the level of consumption** indicates the level of expected consumption; if the level is less than half then savings are expected with respect to the conventional average consumption, whereas if the level exceeds half then the expected consumption will be greater than average.
- The **energy saving indicator** indicates whether, compared to the conventional average consumption, the set temperature setpoint enables you to achieve "savings" in consumption.

6.4.3 Consulting the energy probe (if enabled)

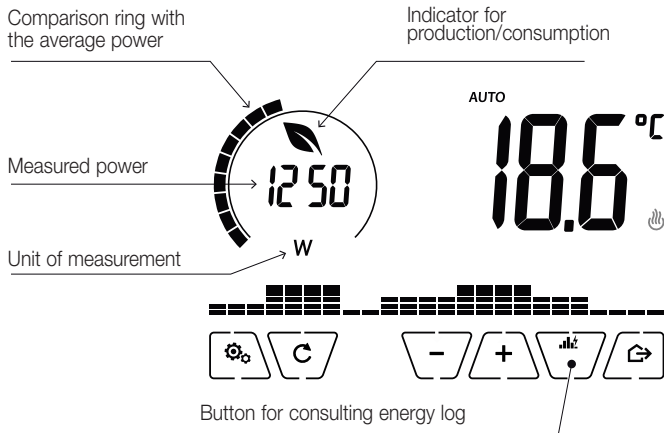


Fig. 11: Typical screen for consulting the energy probe

This option is used to consult data on the instantaneous power and energy consumed/generated by the system and measured instantly by the energy probe.

CAUTION: Proper operation and proper consultation require:

- The energy probe 02960 to be powered and functioning
- The energy probe 02960 is properly interconnected with the circuit board 02915
- The clock of the timer-thermostat to be set correctly

If these conditions are met, the indicator LED of the energy probe 02960 will flash "slowly" (1 flash every 2 seconds approximately).

The **measured power** is the value measured by the energy probe 02960; the value shown is the sum of the (active) powers of all the active channels of the probe (eg, all 3 channels could be active, or only channel 1 or channels 1 and 3, etc.).

The unit of measurement (W or kW) is displayed under the measured value.

- If the sum of the powers turns out to be **consumed** (i.e. absorbed by the energy supplier), the value is **positive** and the generation/consumption indicator is off.
- If the sum of the powers turns out to be **generated** (for example, the photovoltaic system is supplying power to the electricity grid), the value is **negative** and the generation/consumption indicator is on.

When consulting the power/energy data, the "consumption log" view provides a rough estimate of the consumption recorded in the last period. In particular, each horizontal group of dashes represents the year/month/day/hour depending on whether the word displayed is YEARS/MONTHS/DAYS/HOURS respectively.

The **current year/month/day/hour** is highlighted by the group of flashing dashes while the **previous** and the **next** are represented by groups of dashes shown respectively to the **left** and **right** of the flashing group.

The information provided is represented as follows:

— indicates consumption less than half the average consumption


▬▬▬ indicates consumption in line with the average

▬▬▬▬▬ indicates consumption 1.5 times higher than the average

The **circular ring** (only when consulting the instantaneous power) represents the current level of consumption compared to the maximum level recorded in the last 24 h (ring complete with all the dashes = maximum consumption); the number of dashes can therefore vary even if the power is the same since what is displayed depends on the consumption log.

Pressing and holding the **central area** (see fig.7), instead of the instantaneous power, displays the energy consumed (or generated) during the current day; in this case the **circular ring** represents the level of consumption of the current day compared to the last 30 days. If the dashes reach halfway around the ring it means that the consumption in the last 24 hours is in line with that of the last 30 days; vice versa, if the dashes exceed or are less than half of the ring it means that the current consumption is respectively higher or lower than the average of the last 30 days.

6.4.3.1 Consulting the energy log

Touching  displays the historical data on energy consumption measured and saved by the energy probe 02960.

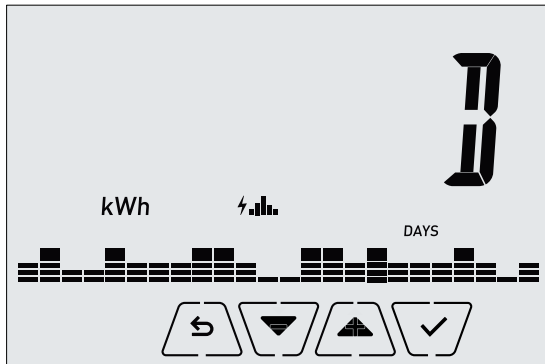


Fig. 12: Typical view of historical energy data consultation

Via  and  and confirming with  you set the range of historical consumption that you want to see:

- **rSEt** (historical data reset): this option lets you delete ALL the historical data saved by the energy probe; since this operation cannot be undone, an additional confirmation screen is displayed (**YES** to delete and **NO** not to delete).
- **h** (hourly consumption): enables you to scroll one by one through the hours prior to the current one; the indices range from "0h" (current hourly consumption) to "-23h" (hourly consumption of 23 hours ago).
- **D** (daily consumption): enables you to scroll one by one through the days prior to the current one; the indices range from "-0D" (current daily consumption) to "-30D" (daily consumption of 30 days ago).
- **M** (monthly consumption): enables you to scroll one by one through the months prior to the current one; the indices range from "-1M" (monthly consumption of the last month) to "-11M" (monthly consumption of 11 months ago).
N.B.: Monthly consumption (or generation) is considered to be the consumption (or generation) recorded in a fixed period of 30 days. The month "**-1M**" therefore represents the consumption recorded in the period from 30 days ago until yesterday. The month "**-2M**" represents the consumption recorded in the period from 60 days ago until 31 days ago, etc.
- **Y** (yearly consumption): enables you to scroll one by one through the years prior to the current one; the indices range from "**-1Y**" (yearly consumption of the last year) to "**-3Y**" (yearly consumption of 3 years ago).
N.B.: Yearly consumption (or generation) is considered to be the consumption (or generation) recorded in a fixed period of 365 days. The year "**-1Y**" therefore represents the consumption recorded in the period from 365 days ago until yesterday. The year "**-2Y**" represents the consumption recorded in the period from 730 days ago until 366 days ago, etc.

Confirming the selection will then display the energy consumed or generated in **Wh** or **kWh**. Obviously, if the energy probe was installed at a time when there were not yet any data for the period of consultation, the historical energy data will be 0.

For example, if the probe was installed 20 days ago and we are consulting the term "-3 months" then the consumption is obviously 0 Wh.

7. Operating mode

The timer-thermostat 02910 is able to regulate the temperature according to the following operating modes:

- **Switched off (OFF):** switches the system off
- **Manual (ON):** lets you set the environment temperature set-point manually
- **AUTO:** lets you set a control program that compares the room temperature with the value set for each quarter of an hour of the current day; the user defines three levels of temperature distributed over 24 hours which can then be varied for each day of the week.
- **Timed manual:** starting from AUTO mode, this lets you activate MANUAL operation of the timer-thermostat for any period of time at the end of which the device will return to AUTO mode.
- **Away:** lets you set the set-point in order to achieve significant energy savings during periods when the user is away
- **Antifreeze:** used to set a minimum temperature level to avoid damage to pipework or prevent the temperature from falling below a safety level.

In addition, if the multi-function input of the timer-thermostat has been suitably configured, you can remotely activate the following modes:

- **Remote reduction:** lets you vary the set points of MANUAL adjustment to obtain energy savings.
- **Remote activation:** lets you activate the system remotely, setting AUTO operation.
- **Summer/Winter switching:** the multi-function input automatically switches the timer-thermostat onto air-conditioning mode (when on) or heating mode (when off).

The operating mode is selected via the **SETTINGS** menu or with the shortcut keys.

7.1 Switched off (OFF)

With this mode on, the timer-thermostat is turned off and you cannot make any adjustments; in this case, the **OFF** icon is displayed above the temperature indicator.

In this mode you cannot perform any operations other than activating the menus or changing the view mode.

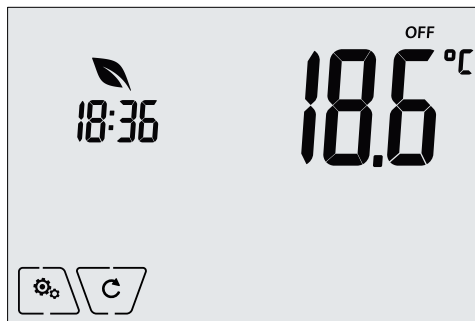



Fig. 13: Typical screen for OFF mode

For heating-only systems this mode is typically used in the summer.

7.2 Manual

In this mode the device operates as a simple thermostat and regulates the ambient temperature, taking it to the value set by the user.

When MANUAL mode is active, the  icon is displayed above the temperature indicator.

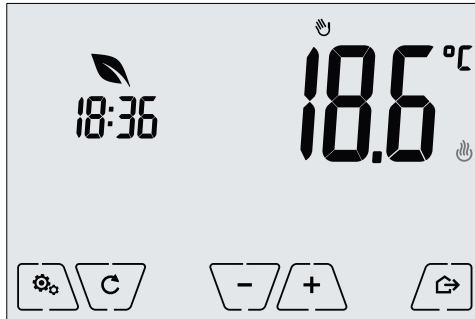




Fig. 14: Typical screen for Manual mode

The set point can always be changed via  or .

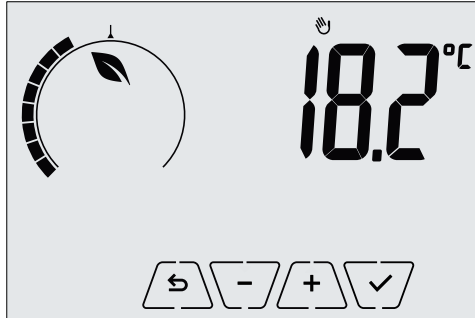




Fig. 15: Manual set point setting

The selection is confirmed by touching .

The  and  icons in the lower right corner indicate whether the system is operating in heating or air-conditioning mode respectively (icon illuminated = system on).

7.3 Auto

This is the typical mode of operation of the timer-thermostat.

The device automatically changes the ambient temperature according to the time of day and the day of the week, it minimizes user intervention thereby optimizing comfort and energy savings; three different temperatures can be set to cover the needs of normal use, user away or nighttime reduction in the environment.

For setting the automatic program, see par. 8.5.

When AUTO mode is active, the **AUTO** icon is displayed above the temperature indicator.

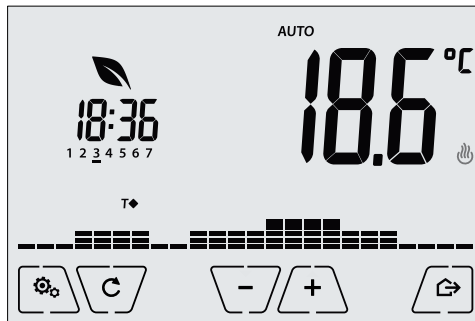







Fig. 16: Typical screen for Auto mode

By touching  and  you can temporarily change the ambient temperature, setting it to a different value to the one associated with the current time slot.


Confirming with  it then goes into TIMED MANUAL mode.

The  and  icons in the lower right corner indicate whether the system is operating in heating or air-conditioning mode respectively (icon illuminated = system on).

7.4 Timed manual

This mode allows you to exit the AUTO program (you enter MANUAL mode) for a certain time after which the timer-thermostat will return to AUTO mode.

For example: take the ambient temperature to 25°C for 2 hours and then resume the Auto program.

Activation is carried out starting from AUTO mode and is recognizable by the  icon displayed above the temperature indicator.

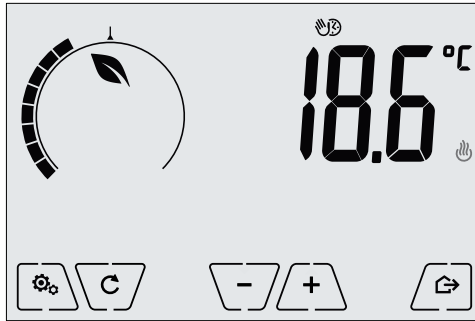




Fig. 17: Input screen in Timed Manual mode

Using  and  you set the temperature and confirm with .

The next screen, again using  and , lets you set the time for which the temperature you have just set is maintained.

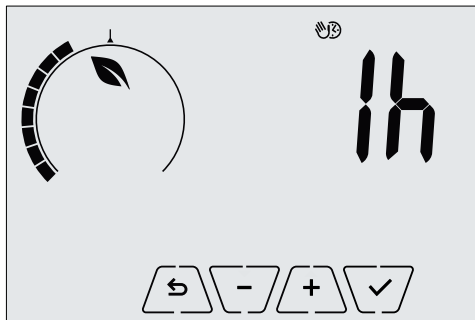



Fig. 18: Regulating the number of hours of Timed Manual mode


Finally confirm with .

At the end of the set time the timer-thermostat goes back into AUTO mode, the  icon switches off and **AUTO** reappears.

7.5 Away

This mode is useful to achieve energy savings quickly and effectively whenever the user leaves the regulated room.

In "Away" mode the system makes the adjustment according to the "away temperature" setpoint T_0 .

The Away mode can only be activated by touching .

The display will show the "away temperature" setpoint for approximately 2 seconds:

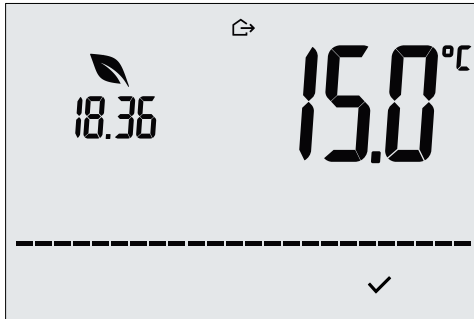


Fig. 19: Input in away mode showing the away temperature

Mode activation is identified by the  icon:

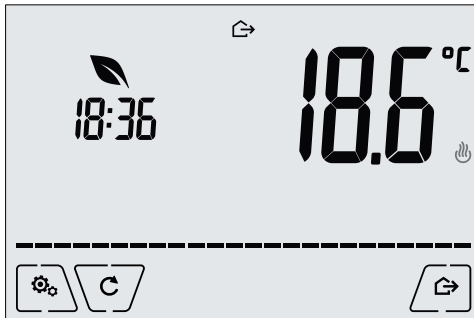


Fig. 20: Away Mode

To exit and return to the initial mode touch the  button again:

7.6 Antifreeze

This mode, which can only be activated when the system is operating in heating mode, lets you set a minimum temperature value (T_{a} setpoint) to avoid damage to the pipework or to keep it from falling below a certain safety level when you are away for lengthy periods in the winter.

The "antifreeze" mode is activated directly from the Settings menu.

Once activated, antifreeze mode is identified by the ❄️ icon above the temperature indicator.



Fig. 21: Antifreeze mode

7.7 Remote reduction

Remote reduction is a useful way to "centralize" energy saving if there are multiple 02910 thermostats in different rooms of the same house.

Example: Before going to bed, using a simple switch, all the thermostats in the house are set onto "reduction" at the same time.

This mode comes into operation when the multi-function input is activated only if this has been suitably configured; the multifunction input is activated solely when the timer-thermostat, before the activation, is in Manual mode (otherwise the multi-function input is ignored).

In "Remote reduction" mode, the device regulates the temperature to a value equal to $T_{\text{comfort}} - dTr$; in this condition, the display and the relevant buttons must not be used (this is because the device is controlled by remote).

The "Remote reduction" mode is identified by the 🏠 and ↓ icons located simultaneously above the temperature indicator.



Fig. 22: Input in Remote reduction mode

7.8 Remote auto

This mode is typically used in applications where you want to remotely enable or disable temperature control of a room and limit the functions that can be performed by the user.

This mode comes into operation when the multi-function input is activated (see par. 4.2) only if it has been suitably configured.

In this condition, the display and the relevant buttons must not be used.

The "Remote auto" mode is identified by the  and **AUTO** icons located simultaneously above the temperature indicator.

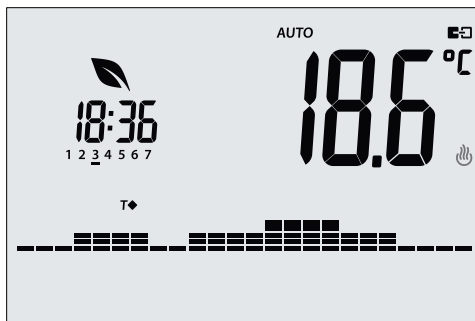













Fig. 23: Typical screen in Remote auto mode

8. Settings menu

From the settings menu you can configure all the features of the timer-thermostat.

On the main screen tap the  icon.



From the main menu, using  and  will display the following (flashing) symbols in succession, which provide access to the corresponding submenus:

1.  **AUTO**  **OFF** operating mode setting
2. **18:36**
1 2 3 4 5 6 7 setting the time and day of the week
3.   air-conditioning/heating setting
4. **°C °F** unit of measurement setting
5.  daily program setting
6. **T--** temperature setpoint setting
7. **-.0+** calibration setting
8. **In** and  multi-function input setting
9. **Out** OnOff/PID temperature control algorithm setting
10.  energy probe setting
11.  buzzer (beep) setting
12. **Info** device info
13.  lock/unlock PIN setting

Touching  opens the submenu and then the flashing highlights the parameters of the submenu.

8.1 Operating mode setting






This menu is used to select the operating mode of the device:

-  Manual
- **AUTO** Automatic
- **OFF** Off
-  Antifreeze (only if the thermostat is set on "heating")

Using  and  select the desired mode and confirm with .

8.2 Setting the time and day of the week



This menu lets you set the time and day of the week.

Using , ,  and  set the hour, confirm with  and similarly set the minutes and then the day of the week.

The days of the week are represented by numbers from 1 to 7 and indicate the days from Monday to Sunday.

8.3 Heating/air-conditioning setting



This menu lets you set the operation of the device depending on the season (winter/summer):

-  heating
-  air-conditioning

Using  and  select the desired operation and confirm with .

8.4 Unit of measurement setting

This menu lets you set the unit of measurement used for the temperature (°C or °F)

Using  and  select the desired unit of measurement and confirm with .

8.5 Daily program setting




This menu lets you set or modify the time and daily program for the ambient temperature.

The program lets you associate each quarter hour of the day (and in a different way, for each of the 7 days) with one of the 3 temperatures "T comfort", "T away" and "T economy".

For example: During the night, set "T economy", for the morning and evening set "T comfort" and in the middle of the day set "T away" (when no one is in the environment and to obtain savings due to a lower consumption).

8.5.1 Selecting the day of the week

As soon as you enter the menu, the display shows a flashing dash for the day to which the current programming refers (for example: 1234567 = Tuesday).

Using  and  select the day of the week to program and confirm with .

8.5.2 Temperature selection

After confirming the day to program, the display shows the screen for setting the temperatures associated with the different times of the day.

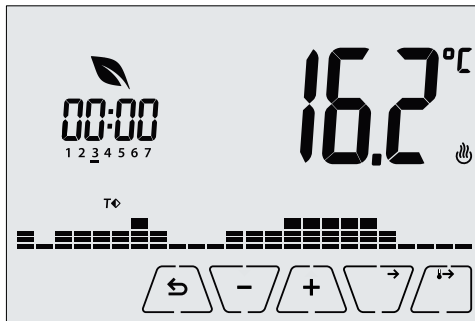










Fig. 24: Setting the time and daily program

Using  and  select the temperature to be associated with the current time (which is shown on the clock on the left). This temperature, highlighted by the blinking, can be selected from:

- T**  : away temperature (T away)
- T**  : economy temperature (T economy)
- T**  : comfort temperature (T comfort)


The "dashes" blinking indicate the time slot that you are setting (there are 24 groups of 3 dashes and each group corresponds to one hour of the 24 in the day). The selected temperature will be applied beginning at the time indicated on the left for all of the next quarter of an hour.



On touching , the temperature selected for the current time is assigned to the next quarter of an hour too; in this case the temperature symbol is the same but the current time, shown by the clock, is moved forward by 15 minutes.

Using  and  you can move respectively between the hours of the day and move forwards or backwards 15 minutes at a time.

During the movement, as well as the clock, also the "dashes" indicate the time of day in which you are working. In addition, below the numbers associated with the days of the week, you will see an icon that identifies the temperature set for that specific time.

The  and  buttons permit changing the set temperature.

Programming ends when the temperatures have been set for all the hours of the day and the clock displays the time 23:45; then tap  to confirm.

Finally, using  and , select one of the following options shown in the numeric field of the display:

COPY : to copy the entire time program for the current day to the next day (useful for replicating working days or holidays).

Go to : to move on to program the next day without making a copy of the day you have just set (useful when switching between programming working days and holidays).






End : to finish programming.



Touch  to confirm the selected option.

8.6 Temperature setting

This menu lets you set the temperatures and hystereses necessary for defining the temperature control set-point used in the different operating modes.

In particular, you can have setpoints for:

1. **T0** and  : Away temperature (T away) *
2. **T1** and  : Economy temperature (T economy) *
3. **T2** and  : Comfort temperature (T comfort) *
4. **dT** : hysteresis of the device (only if in OnOff adjustment mode)
5. **dTr** and  : thermal delta in remote reduction mode
6. **To** and  : "antifreeze" mode temperature (only if in "heating" mode)

* **CAUTION:** Depending on the mode the timer-thermostat is in (heating or air-conditioning), setting these setpoints acts only on the value associated with the current mode highlighted by the  or  icon (for example, T.comfort of heating mode).

After then changing the setpoints of the current mode in succession, change the mode (see 8.3) and set all the setpoints corresponding to it.



8.6.1 Away temperature

The menu, via  and  , lets you increase/decrease the value of the away temperature T_0 and T_{\diamond} .

The away temperature is an intermediate temperature geared to obtain substantial energy savings during periods when the user is away.

The away temperature differs depending on whether you are in the heating or air-conditioning mode.

8.6.2 Economy temperature

The menu, via  and  , lets you increase/decrease the value of the economy temperature T_1 and T_{\diamond} .

The Economy temperature allows energy savings if applied during the nighttime (when it is pointless and costly to maintain the same setting as the daytime hours).

The economy temperature differs depending on whether you are in the heating or air-conditioning mode.



8.6.3 Comfort temperature

The menu, via  and  , lets you increase/decrease the value of the comfort temperature T_2 and T_{\diamond} .

The Comfort temperature can be defined as the "comfort temperature" that you want to reach during the hours when people are present in the rooms of the dwelling.

The comfort temperature differs depending on whether you are in the heating or air-conditioning mode.

8.6.4 Hysteresis of the device



The menu, via  and  , lets you set the temperature range of the heating/air-conditioning system between "ON" and "OFF".

This value can also be changed via the submenu for ON/OFF operation.

The parameter cannot be changed if the timer-thermostat is set as PID operation.

For example: Heating, with setpoint on 20.0°C, dT : 0.5°C → → → 20.5 (off), 19.9 (on)




8.6.5 Thermal delta in nighttime reduction mode

The menu, via  and  , lets you set the difference between the remote reduction temperature and Tcomfort temperature.

The remote reduction mode can only be activated via the multi-function input.

The hysteresis is a temperature increase/decrease that is applied to the Tcomfort temperature when the multifunction input is activated). The value of the thermal delta is identical in both heating and air conditioning with the only difference being that in the former case it determines a decrease in the set point while in the latter case it determines an increase.



8.6.6 Antifreeze temperature

The menu, via  and  , lets you increase/decrease the value of the antifreeze temperature T_0 and .

Antifreeze mode is used to set a minimum temperature level to avoid damage to the pipework or keep the room temperature from falling below a safety level.

8.7 Calibration setting

This menu lets you "calibrate" the temperature read by the timer-thermostat.



Using  and  , you can add or subtract (at intervals of 0.1°) a fixed amount from the temperature detected by the timer-thermostat to make it equal, for example, to that of a sample thermometer.


CAUTION: For correct calibration it is recommended to wait until the timer-thermostat has been on for at least 1 hour in a room at constant temperature.


Tap  to confirm your choice.

8.8 Multi-function input setting

This menu is used to set the operating mode of the multi-function input.

Via  and  you can select the following options:



- **OFF**: the state of the multi-function input is ignored by the device.
- **AUTO (Remote auto)**: the multi-function input (when enabled) activates the timer-thermostat in "Auto" mode. In this situation the user cannot carry out any operations on the device other than consult the main screen; with the multi-function input disabled, the default mode is "Antifreeze" (or OFF if on air-conditioning) and the user can manage the timer-thermostat completely.
-  **(remote reduction)**: the multi-function input (when enabled) forces a reduction in temperature (which can be set via the submenu associated with that selection) with respect to "Tcomfort". In this situation the user cannot carry out any operations on the device other than consult the main screen; with the multi-function input disabled, the timer-thermostat goes back into the previously set operating mode and the user can manage the device completely.


- 
(summer/winter switching): the multi-function input automatically switches the timer-thermostat onto air-conditioning mode (when on) or heating mode (when off).
This option is useful for centralized systems in which the air-conditioning or heating mode is performed at the level of the entire building and impacts on many sub-environments.


Tap  to confirm your choice.

8.9 OnOff/PID temperature control algorithm setting

This menu lets you select the way in which the ambient temperature will be controlled

Via  and  you can select the following options:

- 
(OnOff control): this is the traditional "threshold" control so that, on exceeding the set temperature increased by ΔT (vice versa for air-conditioning), the heating is switched off to then be turned back on when the room temperature drops below the set temperature.
 The ΔT value can be set directly via the submenu that follows this selection.

- 
(P.I.D. control): this is an evolved algorithm that is able to keep the temperature in the environment more stable, increasing comfort; this algorithm switches the system on and off appropriately so there will be a gradual increase or decrease in the thermal (or refrigerating) power of the system itself. To take full advantage of its performance it needs to be suitably calibrated according to the type of environment and heating system; in the light of this, the following parameters must be set via the submenus that follow this selection:

- T_b (breadth of adjustment range)**: starting from the set temperature, T_b is the temperature range in which the heating power goes from 0% to 100%.

For example: with the temperature (for heating) set to 20.0°C and $T_b=4.0$ °C, the thermostat activates the heating system on 100% when $T_{ambient}$ is ≤ 16.0 °C; as this temperature increases, the system power is consequently lowered down to 0% when the ambient temperature reaches 20°C.


The value of T_b must be set consistently with the thermal capacity of the system; in general, it is recommended to use small values of T_b for environments with a good level of thermal insulation and vice versa.

- t_b (system cycle time)**: this is the time in which a cycle of regulation is completed; the shorter this time, the better the regulation but the temperature control system is under greater stress.

8.10 Energy probe setting








When the energy probe is connected to the device, the menu is accessible and allows you to enable or disable the measurement of each phase or configure the "power threshold" alarm.

There are the following submenus:

- If "**P1**" or "**P2**" or "**P3**" blink it is possible to enter the submenu for configuring phases 1, 2 and 3 of the energy probe.
- If the  and "**kW**" icons blink it is possible to enter the "power threshold" alarm submenu.

8.10.1 Configuring a phase to be measured

To measure the power/voltage of phases 2 and 3 (or 1 if previously disabled) you need to enable them via this submenu and for each one of them set the calibration value of its current probe 01457.


- With  confirm the selection of "**P1**", "**P2**", "**P3**", using  and  you can enable or disable the respective phase by selecting **ON** or **OFF** and confirming with .
- After the above setting, if the channel is enabled, the display will prompt you to enter the 3-digit number printed on the label applied to each probe 01457 (for example, 12B); using ,  and confirming with  enter the 3 digits one at a time.

Note: If the channel (1 or 2 or 3) is disabled, the probe will ignore the voltage/power value measured by that channel; so even if physically there is a power other than 0 which runs through the disabled phase, the probe will still display the value 0.

8.10.2 Configuring the "power threshold" alarm

The menu lets you set an overall power level (i.e. the sum of all 3 channels) read by the energy probe and on exceeding which the timer-thermostat will emit an audible "alarm" warning. This feature is useful to warn the user of exceeding a defined consumption threshold and give her the chance to intervene by turning off the source of excessive consumption. This will help to avoid potential disconnection of the residual current device or to optimize power consumption according to need.

The alarm lasts as long as the measured power remains above the alarm level and stops when it falls back below that level.




Confirm with .

8.11 Buzzer (beep) setting

This menu is available only if the timer-thermostat is connected to the circuit board 02915 and the energy probe 02960 connected to it is working (vice versa the menu will not be displayed).

This menu lets you enable/disable the device's buzzer; if it is disabled there will no longer be any sound when you touch the buttons or in cases of confirmation/error.

Whereas, in the event of an alarm, the sound signal will always be guaranteed.

Using  and  select "**ON**" or "**OFF**" and confirm with .

8.12 Info about the device

This menu lets you view information related to the thermostat and reset the device.

Via  and  you can select:

- **h**: displays the number of hours that the timer-thermostat relay has been on (the same as the number of hours of operation of the system).
The counter can be reset, for example at changes in season to differentiate between heating and air-conditioning, by pressing and holding the middle of the display.
- **U1 U2 U3**: displays the software version of the device.
- **U**: displays the voltage measured in the phases of the energy probe 02960; U1, U2 and U3 indicate the voltages (RMS) read in the respective phases 1,2,3.
- **P**: displays the active power measured in the phases of the energy probe 02960; P1, P2 and P3 indicate the powers read in the respective phases 1,2,3.
This view lets you see the consumption or production of each single phase rather than the sum of all three as a single value.

8.13 Lock/unlock PIN setting

This menu lets you add/change the password to inhibit use of the timer-thermostat.

Using  and  set the three digits of the PIN one at a time and then confirm each set digit with .

If you wish to have free access to the thermostat (so without it prompting you for a password) it is sufficient to set the PIN to "000".

9. Parameters table

Function	Parameters	Value range	Resolution	Default value
Multi-function input	IN selection	[Off, Reduction, Activation, Heating/Air-Con.]	-	Off
Nighttime Reduction	δ_R (red. offset)	[1,...,6]°C	0.1°C	4°C
Temperature control mode	Selection TempCtrl	[Heat., Air-con.]	-	Heating
Control algorithm	Algorithm	[ON/OFF, PID]	-	ON/OFF
Hysteresis (ON/OFF)	δ_T (Differential)	[0.1,...,1]°C	0.1°C	0.2°C
Proportional band (PID)	Band	[0.5,...,5]°C	0.1°C	1°C
Adjustment period (PID)	Period	[10,...,30] minutes	1 min	20 min
Unit of measurement (temperature)	Temperature unit	[°C, °F]	-	°C
Temperature offset	T_E (Offset temp.)	[0,...,±3]°C	0.1°C	0°C
Energy probe	Enable/Disable IN1	[ON, OFF]	-	ON
	Enable/Disable IN2	[ON, OFF]	-	OFF
	Enable/Disable IN3	[ON, OFF]	-	OFF
	Calibration IN1	[0x000,...,0xFFFF]	0x001	0x400
	Calibration IN2	[0x000,...,0xFFFF]	0x001	0x400
	Calibration IN3	[0x000,...,0xFFFF]	0x001	0x400
	Enable/Disable Alarm	[ON, OFF]	-	ON
	Alarm threshold	[3..10] kW	0.1 kW	4.2kW
Clock	Hours	[00,...,23]	1 h	00
	Minutes	[00,...,59]	1 min	00
	Day of the week	[Mon, Tue, Wed, Thu, Fri, Sat, Sun]	-	-
Audible warnings ¹	Enable audio feedback	[ON, OFF]	-	ON
PIN number	Pin	[000,...,999]	1	000
Reset to default parameters	rSEt	-	-	-

Temperature set-point	T ₀ (Away-Heat.)	[T _G , 10..35]°C	0.1°C	15°C
	T ₁ (Economy-Heat.)	[10,..,35]°C	0.1°C	18°C
	T ₂ (Comfort-Heat.)	[10,..,35]°C	0.1°C	20°C
	T ₀ (Away-Aircon.)	[10,..,35,OFF]°C	0.1°C	28°C
	T ₁ (Economy-Aircon.)	[10,..,35]°C	0.1°C	26°C
	T ₂ (Comfort-Aircon.)	[10,..,35]°C	0.1°C	23°C
	T _M (Manual-Heat.)	[10,..,35]°C	0.1°C	18°C
	T _M (Manual-Aircon.)	[10,..,35]°C	0.1°C	26°C
	T _G (Antifreeze)	[4,..,10]°C	0.1°C	5°C
Programs	Heating Prog.	[T ₀ ,T ₁ ,T ₂] (Heating) for each interval of time (24hx2x7d)	-	-
	Air Con. Prog.	[T ₀ ,T ₁ ,T ₂] (Aircon.) for each interval of time (24hx2x7d)	-	-

¹ The sound feedback is effective only when the energy probe is connected, after installing the optional interface.

10. Alarms

The system is able to generate and report alarm conditions related to monitoring the consumption of electricity.

For a description of the notifications, see respectively paragraph 8.10.2.

11. Cleaning the device

The device, featuring a display with capacitive buttons, requires you to be gentle during the cleaning phase. Avoid using aggressive products. Clean the display with a special cloth for cleaning lenses.

12. Installation rules

Installation should be carried out in compliance with the current regulations regarding the installation of electrical systems in the country where the products are installed.

13. Regulatory compliance

LV directive.

EMC directive.

Standards EN 60730-2-7, EN 60730-2-9.



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