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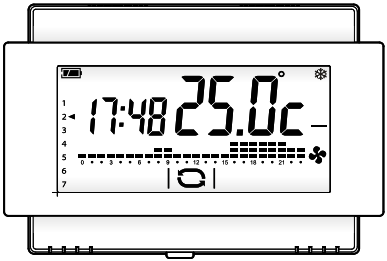
Bpt is a company of
CAMEGROUP

TH/500

24810740



Installer and user manual

www.bpt.it

CE

EN English

General Notes

- Read the instructions carefully before beginning the installation and carry out the actions as specified by the manufacturer.
- The installation, programming, commissioning and maintenance of the product must only be carried out by qualified technicians, properly trained in compliance with the regulations in force, including health and safety measures and the disposal of packaging.
- The installer must ensure that the information for the user, where there is any, is provided and delivered.
- Before carrying out any cleaning or maintenance operation, disconnect the devices from the power supply.
- The equipment must only be used for the purpose for which it was expressly designed.
- The manufacturer declines all liability for any damage as a result of improper, incorrect or unreasonable use.
- Warning: danger of explosion if the batteries are replaced with others of the wrong type.
- Once batteries are dead they must not be thrown away with unsorted waste but collected separately and sent for suitable recycling.

DISPOSAL - Make sure the packaging material is not disposed of in the environment, but rather disposed of in compliance with the laws in effect in the country in which the product is being used.
At the end of the product's life cycle, make sure it is not disposed of in the environment. The equipment must be disposed of in compliance with current laws and its components recycled where possible. The components that should be recycled are marked with the material's ID marker.
EC Declaration - BPT S.p.A. a Socio Unico declares that this device complies with directives 2004/108/EC and 2006/95/EC. Originals upon request.

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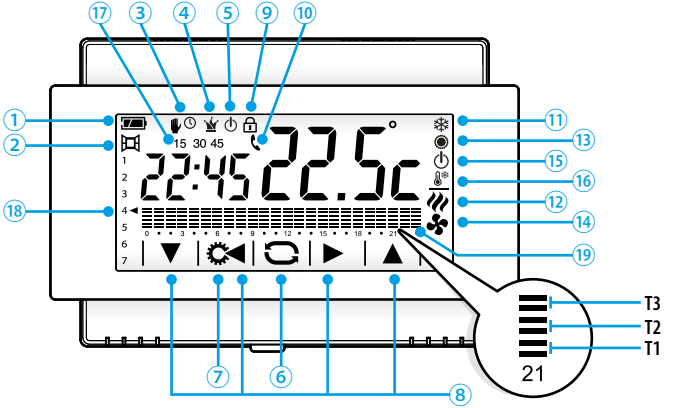
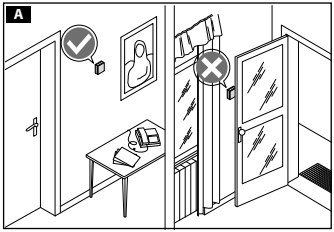
Description of device

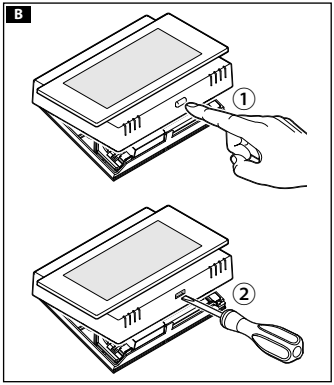


①		Battery charge status (only on battery-powered version)	⑩		Remote activation in progress (only on battery-powered version)
②		Window contact active (only on battery-powered version)	⑪		System in heating mode
③		Thermal zone in Manual Mode	⑫		Boiler in operation
③		Thermal zone in timed Manual mode	⑬		System in cooling mode
④		Thermal zone in All-purpose mode	⑭		Cooler in operation
⑤		Thermal zone excluded from control	⑮		System off
⑥		Button to change thermal zone mode	⑯		System in frost-protection mode
⑦		Button to access device set-up	⑰		Delay set for thermal set-up
⑧		Navigation buttons	⑱		Days of the week; the arrow indicates the day displayed on the diagram
⑨		Screen lock on	⑲		T1, T2. T3 hours/temperature diagram

Installation

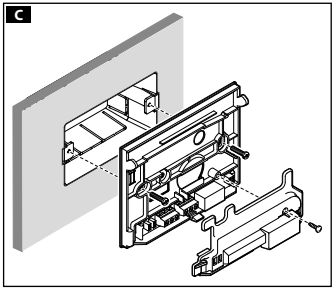


Install the unit in a position which is suitable for correct room temperature measurement, for example on an internal wall. Avoid installation in alcoves, behind doors or curtains, or near heat sources.



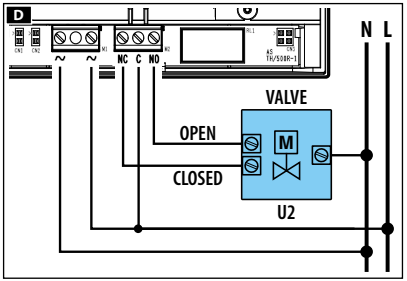
Wall-mounted installation

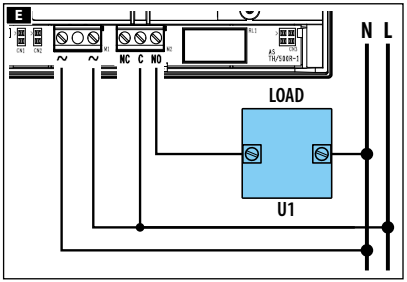
- Open the device by pressing the button on the bottom **B**, with your finger ① for the battery-powered model or with a small screwdriver ② for the model powered by mains electricity.

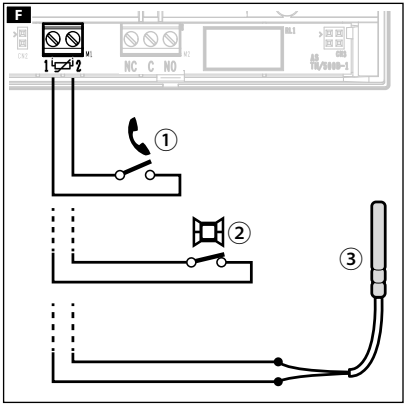


- Remove the terminal block cover and fasten the back of the unit either to the wall or inside the recessed back-box **C** using the screws and expansion plugs supplied.
- After making the electrical connections shown below, replace the terminal block cover.

WARNING. install the device on flat surfaces and do not over-tighten the screws.







Electrical connections.

The connections are made according to the type of equipment controlled by the programmable thermostat.

Figures **D** and **E** refer to the mains-powered programmable thermostat but are also valid for the battery-powered version, only for the part relating to the relay contacts.

Figure **F** illustrates possible uses of the terminals **1 2 present only on the battery-powered model.**

① Connection through remote activation (maximum distance 20 metres),

② Connection through magnetic contact (maximum distance 20 metres),

③ Connection by remote probe (OH/STI, OH/STE, maximum distance 10 metres),

KEY

Mains power supply wires

N = neutral – L = live

Relay contacts

NC = normally closed contact

C = common

NO = normally open contact

Loads

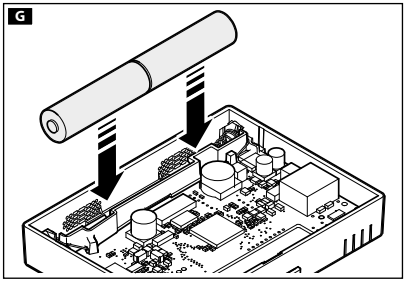
U1 = burner, circulation pump, solenoid valve, etc.

U2 = motorised valve

Inputs for remote control (only on battery-powered model)

1 2

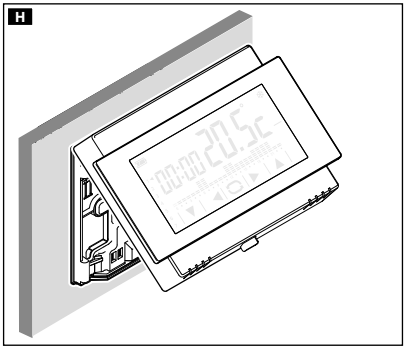
NOTE. Before connecting, refer to the technical documentation of the device to be controlled.



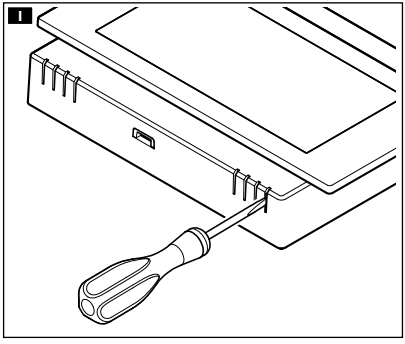
NOTE. In the mains-powered device, in the event of there being no power supplied, the relay remains in the state prior to the power outage.

Inserting/replacing batteries (only on battery-powered model)

Insert 2 AA 1.5V LR6 penlight **alkaline** batteries (not supplied with purchase) into the relative slot, respecting the polarities shown on the bottom of the housing **G**.
WARNING. Inserting the batteries the wrong way round could damage the unit.



Close the unit **H** making sure that the hooks are inserted into the slots.



Device reset

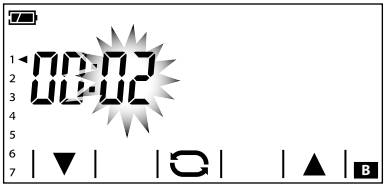
If necessary lightly press the button inside the opening shown in figure **I**; release the button as soon as the screen darkens and wait a few seconds before starting normal use of the device again.

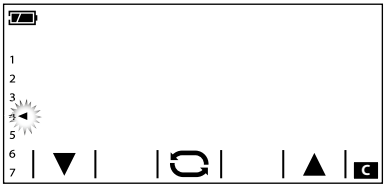
NOTE. This operation does NOT lead to any programming being deleted.

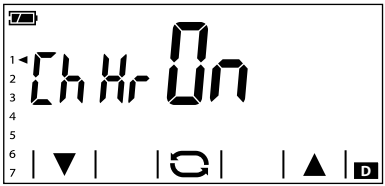
Operation of device

When first turned on, **A** the programmable thermostat is in automatic heating ❄ mode; the temperature detected is shown on the display. On the diagram the column corresponding to the current time is flashing and the arrow indicates the day of the week.

NOTE. When the device is in stand-by, the first touch on the screen switches on the back-lighting and does not carry out any command.







Setting date and time

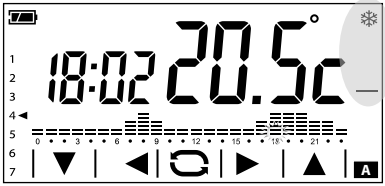
Touch the clock area **A** and keep touching it until the minutes start to flash **B**.

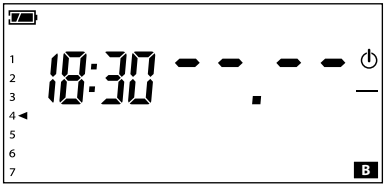
Use the ▼▲ arrows to set the desired value and the ⟲ button to move on to adjusting the time.
Press the ⟲ button to see and set the following, using the arrows:

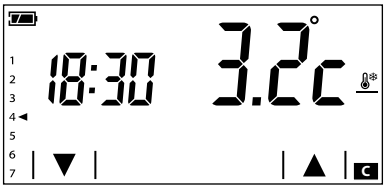
- Minutes
- Hour
- Year
- Month
- Day
- Day of the week (indicated by the arrow **C**)
- Format of time displayed (12 or 24 hr)
- Enable/disable automatic change to and from daylight savings time **D**.

Prolonged pressing of the ▼▲ buttons takes you to the desired value more quickly.

Note. If no button is pressed for a few seconds, the device goes back to the main screen and the values inserted are considered valid.







Changing the system's operating mode

Touch the area shown in figure **A** and continue touching until a beep indicates the mode is changed between:
❄ System in Heating mode
◉ System in Cooling mode
⏻ System off
🌡* System in Frost-protection mode

When the system is off (⏻), the image in figure **B** is displayed on the screen for a few seconds, to indicate that the programmable thermostat is off; Then the temperature detected will reappear.

When the system is put into frost-protection mode **C** (🌡*) the arrows let you set the minimum ambient temperature tolerated; Then the temperature detected with reappear.

Note.
Programmable frost-protection temperature: Minimum 3.0°C – Maximum 16.0°C.

Pre-set weekly temperature programming (automatic mode)

To allow immediate use of the device a standard set-up has been provided for it to operate in heating mode and another for cooling mode, where the fixed temperature levels are:

		Heating	Cooling
▬	T1	16 °C	24 °C
▬	T2	18 °C	26 °C
▬	T3	20 °C	28 °C

If the temperature trends programmed correspond to your requirements, the device is ready to work correctly straightaway.

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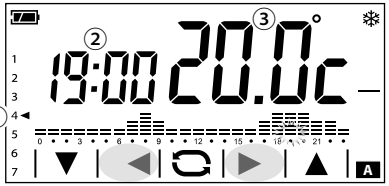

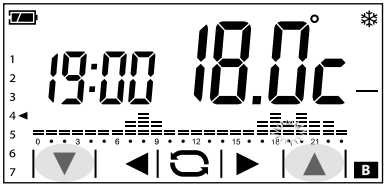

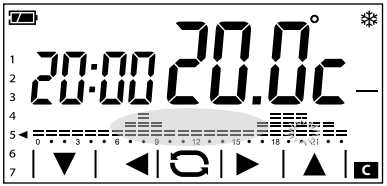

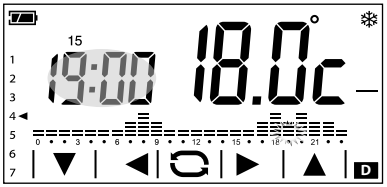

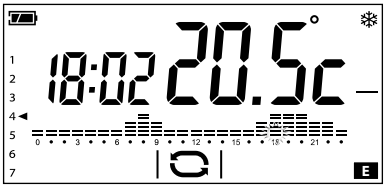

Customising weekly temperature programming

Use the ◀ and ▶ arrows to view the temperature set for the time selected on the display **A**.

① Day displayed
② Time selected
③ Programmed temperature

Use the ▼ and ▲ arrows to change the temperature set for the time selected **B**.

Once the temperature trend for the day has been set, move on to programming the next day by briefly touching the temperature/times diagram **C**.

Adding a delay

If you want to delay the programming set for a given time, do as follows. Select the desired time and press the area highlighted in figure **D** to delay the programming set by 15, 30 or 45 minutes.

Note. If no button is pressed for 5 seconds the adjusting arrows disappear and the main screen reappears showing the date and time in course and the temperature detected **E**.

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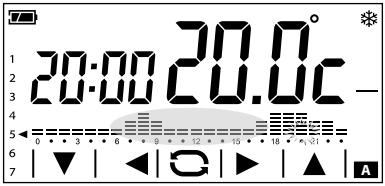

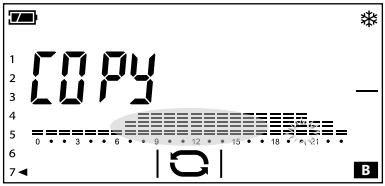

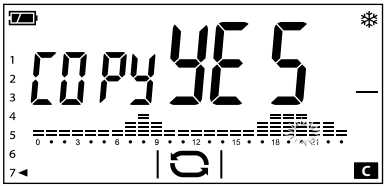

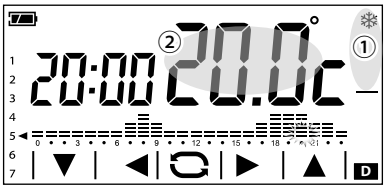

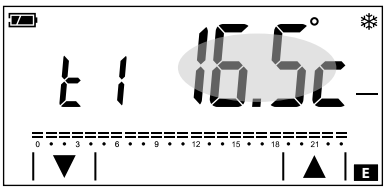

Copying the temperature trend from one day to other days

Brief touches on the part of the screen highlighted allow the daily temperature trend that you want to copy to be displayed. Keep touching the area highlighted in figure **A** until the screen in figure **B** appears.

Brief touches on the highlighted area of the screen allow the arrow that indicates the days of the work to be moved to the day you want to copy the temperature trend to.

Touch and keep touching the area highlighted until the screen in figure **C** appears. The programming for day 5◄ has been copied to day 7◄.

Customising T1, T2 and T3 temperature values.

Press and hold down area **D** ① to select the operating mode for which you want to change the levels.
❄ Heating
◉ Cooling

Touch and keep touching the highlighted area **D** ② until the screen in figure **E** appears. Use the ▼▲ arrows to set the desired value for temperature level T1.

Briefly press the area highlighted in figure **E** to display the screen to change temperature level T2 **F**.

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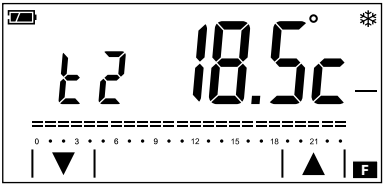
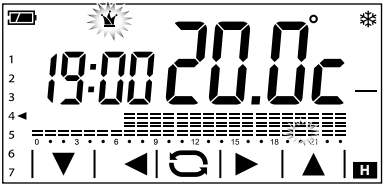


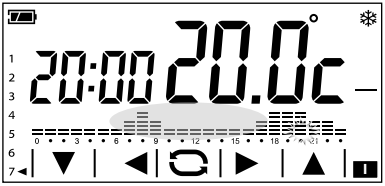
Proceed as described above to set temperature level T3.

Use of the all-purpose program

The all-purpose program can be used during midweek holidays, public holidays, etc. It can be started up at any time of the day in course and stay on until the end of that day, or be set up in advance for any day of the week.

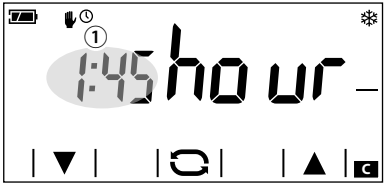


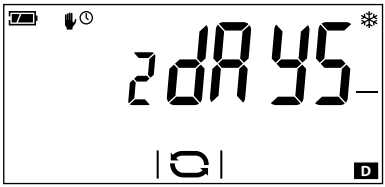
To activate this program, press the button **G** until the icon appears **H**.
The all-purpose program offers the temperature trend set for day 7◄ (factory settings), but can be customised at will.



To make the all-purpose program come on on a particular day of the week, just select the desired day by briefly pressing the area highlighted in figure **I** and activate all-purpose mode using the button.
The program will be activated on the day set and will stay in operation until midnight; at the end the device will go back into automatic mode.

Note. The All-purpose program can apply to only one day of the week; any pre-existing All-purpose settings are cancelled.





Manual mode

To activate this mode press button A until the icon appears B.

Use the ▼ ▲ arrows to set the desired zone temperature B; the value entered will remain valid until the operating mode or value set is changed.

Note. If no button is pressed for 5 seconds the device goes back to showing the temperature detected.

Timed manual mode

If you want to keep the temperature manual for a limited period, briefly press on area ① of figure B.

The appearance of the icon C indicates that timed manual mode has been activated; use the ▼ ▲ arrows to set the value in hours and minutes (in 15 minute portions) during which the mode will be active.

If you want to set an activation time for the timed manual mode that is greater than 24 hours, press on area ① of figure C and use the ▼ ▲ arrows to set the value in days during which the mode will be active.

If no button is pressed for 5 seconds the adjusting arrows disappear and the countdown begins D.

When the period set is over, the device will go back to operating in automatic mode. To stop timed manual mode just change mode by pressing the button.

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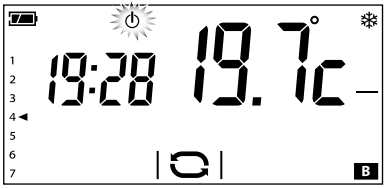

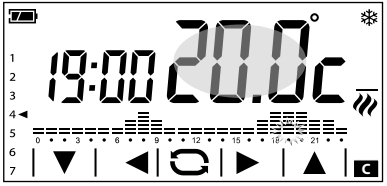

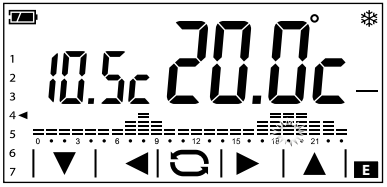

Exclusion from thermal control

To activate this mode press button A until the ⏻ icon appears B.
If the system is in "Heating" mode, the frost-protection function remains on.
The frost-protection temperature set is shown for a few seconds, then the current time and temperature detected are displayed.

If the system is in "Cooling" mode, the control will be totally excluded.

Other information that can be displayed on the main page

By briefly pressing on the area where the temperature detected is displayed C, the objective temperature (set point) is displayed in place of the time D.
Press again on the area where the temperature detected is displayed to return to the previous display mode.

Displaying the temperature detected by an external probe

If an external probe, set as secondary, is connected to the device, by briefly pressing on the area where the temperature detected is displayed C, the temperature detected by the external probe is displayed in place of the time E.
Press again on the area where the temperature detected by the main probe is displayed to return to the previous display mode.

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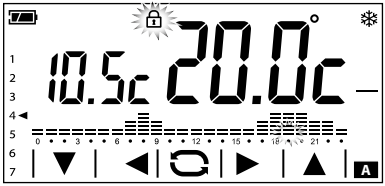
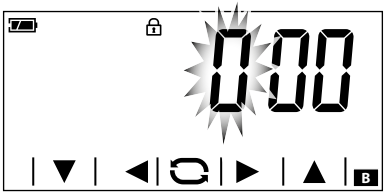




Unlocking the screen

If screen lock is enabled **A**, pressing on any sensitive area of the screen gives access to the window shown in figure **B**.

The first number flashes; use the ▼▲ arrows to choose the first digit of the code, and the ▶ arrow to move on to the next digit; once all the digits of the code have been entered, press the ⟲ button to confirm what has been entered and the screen unlocks; the unlocking is valid until the next time the screen times out.

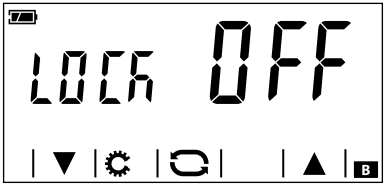
Configuration of general parameters of the device

When the device is in Manual mode ✋, holding down the ⚙ button **A** gives access to the device's configuration screens.

Note. After accessing the configuration screens, pressing the ⚙ button lets you display the parameters to be configured in sequence, the ↩ button lets you exit the configuration window and go back to the screen in figure A.

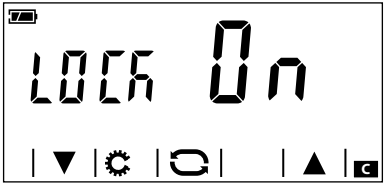
Enabling the screen lock

The factory settings do not provide any protection from changes for the device **B**.

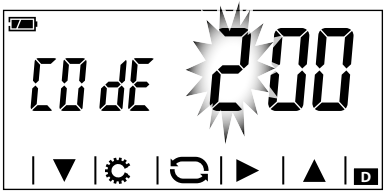


To leave this setting unchanged and move on to the next parameter, press the ⚙ button.

If you want to protect the device from unwanted changes to programming, use the ▼▲ arrows to enable the screen lock **C**.



Press the ⚙ button to access the window that lets you set the code (password) that must be entered to unlock the device.



The first number flashes **D**; use the ▼ arrows ▲ to enter the first digit of the code, and the ▶ arrow to move on to the next digit; pressing button ⚙ at any time means the code entered is considered valid and you move on to the next parameter to be configured.

Changing the calibration of the temperature detection probe

If the location of the device does not permit suitable detection of the temperature, it is possible to change the temperature detected by ±3 °C with increases of a tenth of a degree.

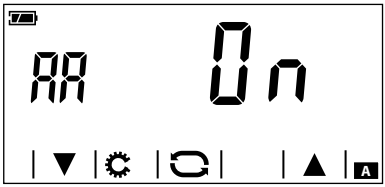
Use the ▼▲ arrows to change the data detected by the desired value and press the button to move on to the next parameter to be configured.

Enable / disable automatic advance

This function enables the device to **automatically adapt** the system start-up time in order to have the desired temperature at the time set.
The advance is calculated according to the difference between the temperature detected and the one set. It is possible to have an advance of up to a maximum of three hours prior to the time that has been set for the temperature to be reached.

Example of operation

If the device is programmed to have a temperature of 20 °C at 7.00 a.m. and **the automatic advance is not active**, at 7.00 a.m. the system will come on, without however guaranteeing 20 °C at 7.00 a.m.
If **automatic advance is on** the programmable thermostat will bring forward switching on the system so as to try to reach 20 °C at 7.00 a.m.; thanks to the auto-recognition mechanism, the programmable thermostat stores the thermal parameters of the room in order to be more accurate in subsequent days in terms of attaining the thermal objective set.



Use the ▼▲ arrows to activate (ON) or deactivate (OFF) the automatic advance and press the button to move on to the next parameter to be configured.

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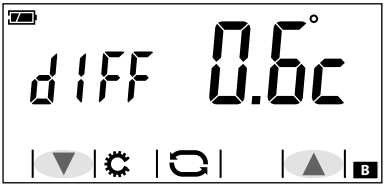
Setting the type of heat management algorithm

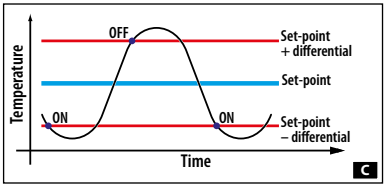
The device lets you choose the type of algorithm to apply for the management of the system between:

- **Differential**
- **Proportional Integral**



Differential Algorithm A

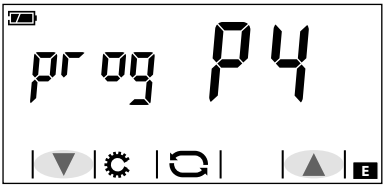
If, on screen **A**, using the ▼▲ arrows, the differential algorithm type has been chosen, press the ⚙ button to customise the value of the differential, using the ▼▲ arrows **B**.
Note. The range of adjustment goes from 0 to 1°C.



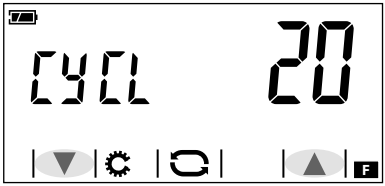
This function is useful for environments that are particularly hard to air condition, with extreme variations in external temperature and commands the switching on of the system as shown in figure **C**.

Proportional Integral Algorithm

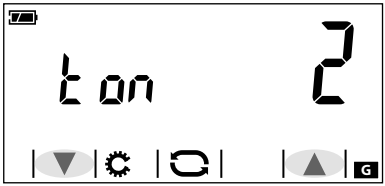
If, on screen **A**, using the ▼▲ arrows, the proportional integral algorithm type has been chosen, the screen in figure **D** is displayed.



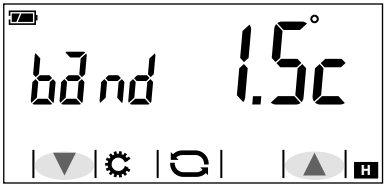
Press the ⚙ button to be able to access the screen in figure **E** which, using the ▼▲ arrows, lets you choose one of the 4 available programs (see table).
The first 3 (P1 - P2 - P3) cannot be changed.



Program P4 can be made up as required. Press the ⚙ button in figure **E** to be able to enter the duration of a cycle, using the ▼ ▲ arrows **F**.

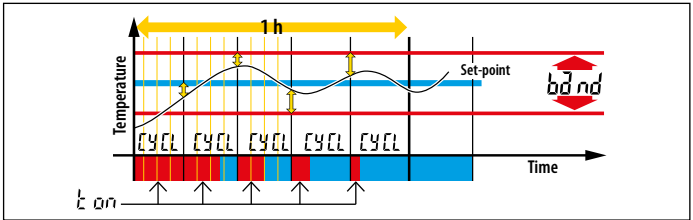


Press the ⚙ button in figure **F** to be able to enter the minimum on time, using the ▼ ▲ arrows **G**.



Press the ⚙ button in figure **G** to be able to enter the value of the proportional band, using the ▼▲ arrows **H**.

Press the ⚙ button to move on to the next parameter to be configured.



Prog.	Cycle duration (minutes)	Minimum ON time (minutes)	Proportional Range	Type of system
P1	10	1	1.5 °C	Base for gas burner, convector heaters, zone valves, aluminium radiators
P2	5	1	1.5 °C	Electric radiators
P3	20	2	1.5 °C	Radiant or underfloor systems, cooling
P4	from 5 to 40	from 1 to 5	from 1 °C to 3 °C	

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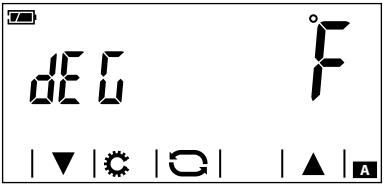
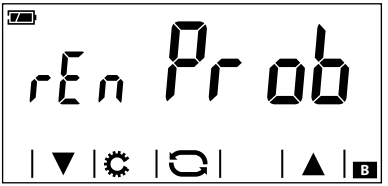
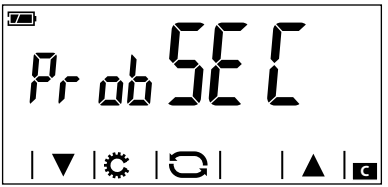






Setting the unit of measurement for the temperature

Choose the unit of measurement for the temperature using the ▼▲ arrows **A**.

Press the ⚙ button to move on to the next parameter to be configured.

Use of terminals 1 2 (only on battery-powered model)

Choose the function associated with the terminals 1 2 using the ▼▲ arrows **B** from:

Prob = compatible remote probe

= telephone contact

= window contact

Choice of main probe (only on battery-powered model)

If you have chosen to connect to the terminals 1 2 an external probe (Prob), pressing the ⚙ button will make the screen in figure **C** appear.

Using the ▼▲ arrows you can choose the function that the external probe must carry out:

SEC = Secondary probe

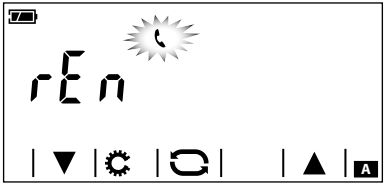
Pri = Main probe

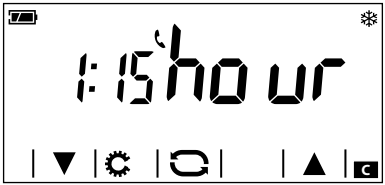
Note. If the external probe is set as the main probe, the temperature it detects is shown on the display and used as a reference for the operation of the heating/cooling system. The temperature detected by the device's internal probe cannot be seen on the display.

Remote activation via phone (only on battery-powered model)

By connecting a suitable telephone interface to the terminals 1 2 you can carry out two types of activation from your phone:

1. **Remote activation of the timed Manual program:** to activate this program the input (terminals 1 2) must be closed for at least 2 secs and not more than 5 secs. WARNING: timed manual mode can be disabled in advance by closing the input (terminals 1 2) for at least 2 secs and not more than 5 secs.
2. **Remote activation of Manual program:** to activate this program it is necessary to close and keep closed the input (terminals 1 2); reopening the input causes deactivation of the manual program and takes the device back to its previous conditions.





Compiling the timed manual program remotely

If you have chosen to connect to the terminals 1 2 a suitable telephone interface **A** ( ), pressing the button brings up the screen in figure **B**.

Using the ▼▲ arrows the reference temperature for the two types of remote activation can be set.

Note. A reference temperature must be set for the Heating mode ❄ and one for the Cooling mode ◉.

Pressing the button brings up the screen in figure **C**.
Using the ▼▲ arrows the duration (in hours) of the timed manual program can be set remotely.

Press the button to move on to the next parameter to be configured.

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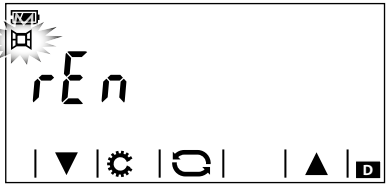
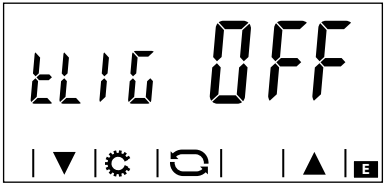


Window contact (only on battery-powered model)

If you have chosen to connect to the terminals 1 2 a window contact **D** ( ), you can set it so that the thermal zone is turned off thirty seconds after the window in which the contact is fitted is opened.

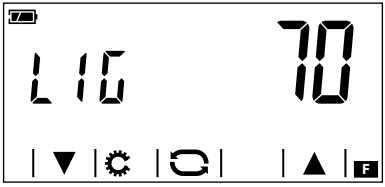
Note. When the window is closed again, the thermal zone goes back to the mode prior to its activation.

Press the button to move on to the next parameter to be configured.



Back-lighting of display (only on mains-powered model)

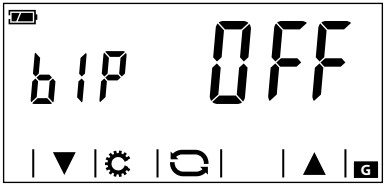
Using the ▼▲ arrows **E**, choose whether the back-lighting should always be on (ON) or only when the display is touched.
Press the button to move on to the next parameter to be configured.



Adjusting display brightness

Change the screen brightness using the ▼ ▲ arrows **F**.
00= Back-lighting always off.

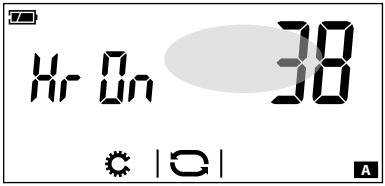
Press the button to move on to the next parameter to be configured.

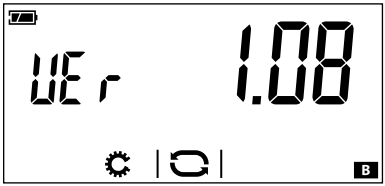


Buttons beep

Choose whether to activate/deactivate the buttons beep using the ▼▲ arrows **G**.

Press the button to move on to the next parameter to be configured.





Hours of activity counter

The screen in figure **A** shows the device's hours of activity.
To reset the counter to zero, press it for a long time in the area highlighted in the figure.
Press the ☼ button to move on to the next parameter to be configured.

Firmware version

The screen in figure **B** shows the number of the firmware version installed on the device.

Press the ☼ button to move on to the next parameter to be configured.

Replacing batteries (only on battery-powered model)

The flashing icon on the display **C** indicates that the batteries must be replaced within about 1 month.
Note: To save the remaining energy, the display's back-lighting is deactivated.

The icons and batt indicate that the battery charge is not enough to manage the thermal zone, which is therefore excluded from control **D**.

WARNING. Failure to replace the batteries in time may cause damage to the heating system (anti-freeze protection is no longer guaranteed).

Note.
In all models of the device, the temporary lack of power caused by a mains power outage or replacing the battery, does NOT lead to any programming being deleted.

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Technical features

Battery-powered TH500

- **Power supply**: 2 alkaline LR6 penlight AA 1.5V batteries (not supplied).
- **Battery life**: More than 1 year.
- **Time available for replacement of batteries**: 1 minute
- **Relay**: max. voltage 250 V, max. current 5A with resistive load (2A with inductive load).
- **Type of action**: 1B-U.
- **Available contacts**: 1 NA-NC switch contact.
  Available inputs: 1 input for remote control 1 ⏦ 2 or for connection of external probe (maximum cable length 10 metres).
- **Temperature range of external probe**: from –30 °C to +60°C.
- **Accuracy of internal probe**: ≤ ±0.3°C.
- **Resolution temperature reading**: 0.1°C.
- **Accuracy of clock**: maximum error ±1 sec/day.
- **Range of adjustment**: from +3°C to +35°C.
- **Protection rating**: IP30.
- **Operating temperature**: from 0 °C to +40 °C.
- **Maximum operating relative humidity**: 93% (without condensation).
- **Dimensions**: 140x92x24.5 mm
- **Room temperature measurement interval**: 15 seconds.
- **Electrical insulation**: Class II, reinforced between accessible parts and terminals,
- **Maximum control unit temperature:** T40

Mains-powered TH500

- **Power supply**: 230 Vac 50/60Hz
- **Consumption**: 16mA.
- **Autonomous life without power supply**: about 10 hrs.
- **Relay**: max. voltage 250 V, max. current 5A with resistive load (2A with inductive load).
- **Type of action**: 1B-U.
- **Available contacts**: 1 NA-NC switch contact.
- **Accuracy of internal probe**: ≤ ±0.5 °C.
- **Resolution temperature reading**: 0.1°C.
- **Accuracy of clock**: maximum error ±1 sec/day.
- **Range of adjustment**: from +3°C to +35°C.
- **Protection rating**: IP30.
- **Operating temperature**: from 0 °C to +40 °C.
- **Maximum operating relative humidity**: 93% (without condensation).
- **Dimensions**: 140x92x24.5 mm
- **Room temperature measurement interval**: 15 seconds.
- **Electrical insulation**: Class II, reinforced between accessible parts and terminals,
- **Maximum control unit temperature:** T40

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