| Default	Param	Description	Opt1		Opt2	
YES	P15 SCOM	Enables/Disables user to Set-point temperature adjustment in Comfort mode	no	Disables	YES	Enables
YES	P16 SbSt	Enables/Disables user to Set-point temperature adjustment in Boost mode	no	Disables	YES	Enables
YES	P17 SrEd	Enables/Disables user to Set-point temperature adjustment in Economy mode	no	Disables	YES	Enables
no	P18 SAFr	Enables/Disables user to Set-point temperature adjustment in Antifrost mode	no	Disables	YES	Enables
no	P19 Entc	External NTC sensor configuration	no	Not connected	rOO	Connected 'Room temp.'
			FLH	'Floor temperature' connected shows temperature on display by pressing 📖	FLS	'Floor temperature' connected does not show temperature on display
no	P20 L inF	Lower limit floor temperature (°C)	no 10 .. 30			
no	P21 LSUP	Upper limit floor temperature (°C)	no 20 .. 50			
no	P22 OPWM	PWM Adjustment of receiver output	no	ON/OFF	YES	PWM
no	P23 EOrM	Extends setting of **P22, P24, P25, P26, P27 and P28** parameters to all connected receiver channels (DLP--- series)	no	Not active	YES	Active
0.2	P24 HYSt	Hysteresis (°C)	0.1 .. 5.0			
2.0	P25 bP	PWM Proportional band (°C)	1.0 .. 8.0			
60	P26 t int	Additional time (minutes)	0 .. 180			
30	P27 PCYC	Duration of each PWM cycle (minutes)	15 .. 60			
3	P28 PM In	PWM output switch-on minimum duration (minutes)	0 .. 15			
1.5	P29 dSPI	Second stage integration Delta Set-point (°C)	0.0 .. 20.0			

End

TR D01B

CE

seitron

WIRELESS DIGITAL THERMOSTAT

- Operating frequency 868.150 MHz
- Wide back-lit display
- Heating/Cooling selection can be managed by the thermostat or on the receiver
- User enabling/disabling/limit to adjusting the Set-point temperatures
- Possibility of controlling a second stage
- Internal sensor and input for remote sensor
- Indication of discharged battery
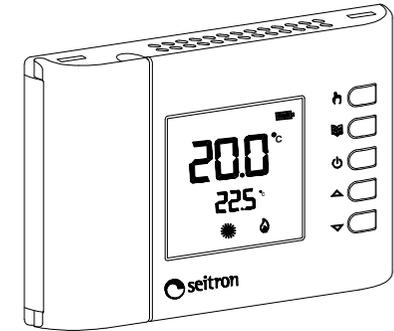
OVERVIEW

This device is a radio-controlled display thermostat to control the room temperature with possibility of choosing from different adjustment modes and relative set-point temperatures: Comfort, Economy, Off/Antifrost, etc.

The thermostat is default configured to operate in Comfort, Economy and Antifrost modes; it can be adapted to the different installation requirements by modifying configuration, and final user intervention can be limited, with the aim of maximising wellbeing in the environment and energy saving.

The thermostat can be used in both heating and cooling systems. In heating mode it is able to drive a second stage in addition to the main one, becoming an efficient solution in rooms with two heating systems.

The thermostat has a wide blue back-lit display and is suitable for floor heating systems where it gives the possibility of installing an external temperature probe on the floor, thus, enabling its temperature control.
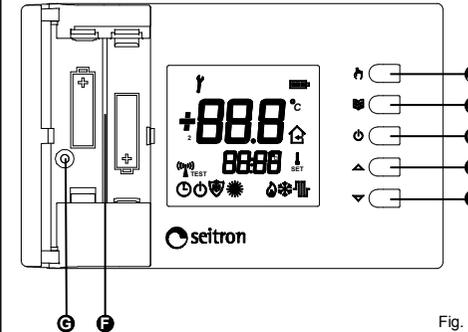
DESCRIPTION OF CONTROLS

Fig. 1

KEY:

A Mode Key: allows changing adjustment mode between comfort, economy and other configured modes.

B Menu Key: allows displaying the set-point temperature and the temperature of the external probe (when used and adequately configured).

C On/Off Key: switches the thermostat on/off.

D Increase key: Modifies the set-point temperatures and the configuration parameters (by increasing value).

E Decrease key: Modifies the set-point temperatures and the configuration parameters (by decreasing value).

F Battery compartment

G Screw housing for fixing the thermostat body to the wall plate.

DISPLAY INDICATIONS

The meaning of the symbols appearing on the display is given below:

| Symbol	Meaning
🔋	Indication of battery charge status.
🪫	Batteries discharged; replace batteries.
☀	Temperature adjustment in Comfort mode.
🌙	Temperature adjustment in Economy mode.
⏻	Thermostat off, OFF mode.
❄	Active antifrost mode, the timer thermostat adjusts to antifrost temperature.
🔥	Output on in heating mode.
❄	Output on in cooling mode.
🕐	Temperature adjustment in "auto" mode.
〽	Temperature adjustment in "boost" mode.
((•))	The thermostat is transmitting a radio control.
🏠	Floor temperature display.
🔧	The thermostat is under configuration.
TEST	The thermostat is in 'Test' mode, meaning it transmits a self-learning control of the radio address on the receiver every 2 seconds.
2	Active second stage heating.
⌁ SET	T set-point display.
	Small digits, at bottom: Set-point temperature or mode time-out.
	Large digits: Room temperature display.

INSTALLATION
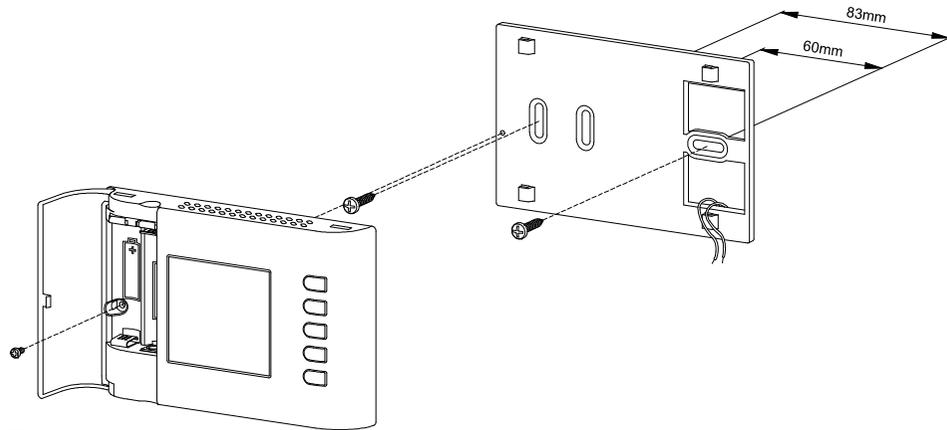
Fig. 2

⚠ WARNING
- **Ensure the transmitted radio signals are correctly received by the receiving unit before installing the thermostat.**
- **Install the thermostat at about 1.5 m from the floor, away from heat sources, draught and particularly cold walls (heat bridges), for room temperature to happen correctly. These notes must be applied to position the remote sensor when this is used to acquire the room temperature.**
- **A remote sensor must be connected using wires having at least 1.5 mm² section and no longer than 15 metres. Do not use the same channelling for sensor signal and mains voltage.**
- **The installation and electrical connection of the thermostat must be carried out by qualified personnel and in compliance with current regulations.**

Follow the operations below to install the thermostat:

1. Release the plate attached to the thermostat base by pushing it to the left, in this way releasing the teeth indicated in Fig. 3.

2. Correctly insert the batteries (respecting polarity) in the battery compartment (❻ of Fig. 1), do not use discharged batteries, use alkaline batteries.

3. Find the best installation position (see the "RADIO SYSTEM CONFIGURATION" paragraph) and fix the plate to the wall using the two seats for screws having 60 mm or 85 mm interaxial.

4. Pass the wires through the rectangular opening in the wall plate (Fig. 2) following the connection diagram of Fig. 5, to electrically connect the eventual remote probe. Eventually remove jumper **JP1** (Fig. 4) by reading the "INSTALLER CONFIGURATION" paragraph.

5. Connect the thermostat base to the wall plate by making the base holes coincide with the wall plate teeth and subsequently force the base to the right side, until the plate's plastic tooth clicks.

6. Temporary remove the batteries and fix the thermostat body to the wall plate using the supplied screw found inside the battery compartment; re-insert the batteries respecting the correct polarity.

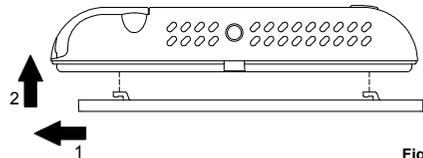7. Configure the thermostat: see "INSTALLER CONFIGURATION" paragraph.
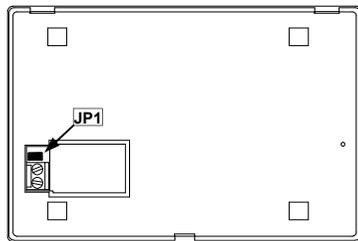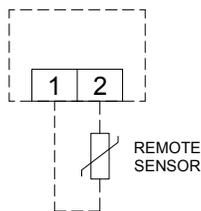

Fig. 3

Fig. 4

REMOTE SENSOR

Fig. 5

TR D01B 0001 SE 024066B8 290914

Table 1: Installer configuration
Summary of the configuration parameters

Default data	CON								
trA	**P01** HC_S	Heating/Cooling selection	**trA**	Transmitter	**rEC**	Receiver			
no	**P02** 2OUT	Second stage activation	**no**	Not active	**YES**	Active			
YES	**P03** MCOM	Comfort mode activation	**no**	Not active	**YES**	Active			
			tMO	Temporary activation, with time-out modifiable by the user	**tFI**	Temporary activation, with time-out <u>not</u> modifiable by the user			
no	**P04** MbSt	Boost mode activation	**no**	Not active	**YES**	Active			
			tMO	Temporary activation, with time-out modifiable by the user	**tFI**	Temporary activation, with time-out <u>not</u> modifiable by the user			
YES	**P05** MrEd	Economy mode activation	**no**	Not active	**YES**	Active			
			tMO	Temporary activation, with time-out modifiable by the user	**tFI**	Temporary activation, with time-out <u>not</u> modifiable by the user			
YES	**P06** MOFF	Antifrost/Off mode activation	**no**	Not active	**YES**	Active			
			tMO	Temporary activation, with time-out modifiable by the user	**tFI**	Temporary activation, with time-out <u>not</u> modifiable by the user			
no	**P07** MAUt	'Auto' mode activation	**no**	Not active	**YES**	Active			
			tMO	Temporary activation, with time-out modifiable by the user	**tFI**	Temporary activation, with time-out <u>not</u> modifiable by the user			
2.0	**P08** tOUt	Temporary modes time-out (in hours.minutes by 10 format)	**0.10 .. 24.00**						
COM	**P09** MdEF	Mode to which thermostat returns upon temporary mode time-out (displays active modes only - parameters P03-P07)	**COM**	Comfort	**rEd**	Economy	**OFF**	Switch-off	**AUt** Automatic
0.0	**P10** OFS	OFFSET Room temperature correction (°C)	**-10.0 .. +10.0**						
10.0	**P11** SPHL	Temperature Setpoint lower limite heating (°C)	**5.0 .. 35.0**						
30.0	**P12** SPHU	Temperature Setpoint upper limit heating (°C)	**5.0 .. 35.0**						
10.0	**P13** SPCL	Temperature Setpoint lower limite cooling (°C)	**5.0 .. 35.0**						
30.0	**P14** SPCU	Temperature Setpoint upper limit cooling (°C)	**5.0 .. 35.0**						

TR D01B 0001 SE 024066G8 290914

ANTIFROST TEMPERATURE

The antifrost temperature is default set at 6°C and the thermostat is configured so the antifrost temperature cannot be modified by the user. If wanting to modify it, set parameter **P18** on 'YES'; therefore, the antifrost temperature can be modified with thermostat off, using the keys '▽' or '△'.

TEMPERATURE ADJUSTMENT

The thermostat can drive the output on receiver, in ON/OFF or PWM mode.

The valve's drive in PWM mode allows proportional adjustment and, therefore, to adjust the room temperature with maximum comfort and saving.

However, different rooms require different settings to obtain precise adjustment.

The parameters responsible for adjustment quality are:
- **P25** Proportional band
- **P26** Integration time

The proportional band in °C is the difference between set-point and room temperature that ensures the valve is fully opened. The narrower the proportional band, the more reactive is the system upon varying of the room temperature. An excessively narrow proportional band setting can generate room temperature oscillations or system instability. An excessively large setting may lead to not reaching the set temperature on set-point, in the room. No additional action is had when the integration time is set at zero and the adjustment is of **P** (Proportional) type.

Adjustment will be of **P + I** (Proportional + Integral) tpe by setting an integration time different from zero. The shorter the integral time the longer is the integral action, vice-versa, a long integral time generates a mild integral action. A mild or missing integral action may prevent the set temperature on set-point from being reached in the room. An excessively strong integral action may cause the room temperature to oscillate. These parameters may require modifying, depending on the room being worked on, in order to obtain the best adjustment.

SAMPLING TIME

The thermostat detects room temperature and transmits data every 3 minutes to receiver, in order to optimise batteries' duration.

Therefore, it is normal for the displayed temperature not to be immediately updated and that 3 minutes must be waited to see the output switch-on or off; alternatively, press key '⏻' or '�' to force an update.

DISPLAY BACK-LIGHTING

Switch-on of the display Switch-off is automatic after 20 seconds from last button pressure.

BATTERIES INSERTION/REPLACEMENT

The display permanently shows the batteries charge state by means of symbol '▮▮▮'. Batteries are charged to maximum if all three level indicators inside the symbol are on.

On the contrary, the batteries are discharged and must be replaced when the symbol appears completely empty '▭'.

If the batteries are excessively discharged, symbol '▭' flashes, to allow radio transmission.

Proceed as follows to replace:
1. Open the door accessing the battery compartment (Fig. 1).
2. Remove the batteries by eventually forcing using a tool.
3. Insert the new batteries respecting polarity; only use 1.5V alkaline AA type batteries.

COMPATIBILITY WITH NEW WAVE RADIO SYSTEM

The thermostat works with the New Wave radio receivers with the following limits on the firmware versions (FW):

DAPF84 (active antenna):	all
DAPF84 (repeater):	from FW. 021023A1 and subs.
DLP841M (8 channel module)	from FW. 020842A1 and subs.
DLP841M001 (8 channel module):	all
DLP8412 (8 channel module):	all
DLP241M (2 channel module):	from FW. 020843A1 and subs.
DLP241M001 (2 channel module):	all
DRPF84M001 (one channel module):	from FW. 021057A1 and subs.
DRPF84M011 (one channel receiver):	all

Subsequent firmware versions are identified with a higher number (excluding final A1).

TECHNICAL FEATURES

Power supply:	2 x 1.5V= alkaline AA type batteries
Duration of the batteries:	> 3 years
Frequency:	868.150 MHz
Modulation:	GFSK
Output power (ERP):	< 1 mW
Type of antenna:	Internal
Max. distance from receiver:	>300 m in free field
	>50 m in buildings (depending on the building and environment)

Room temperature (internal sensor)
|	
Regulation range:	5.0 .. 35.0°C
Hysteresis:	0.2°C configurable 0.1 .. 5.0 °C
Type of sensor:	NTC 4K7 Ohm ±1% @ 25°C
Resolution:	0.1°C
Range:	-9.9°C .. +50.0°C
Precision:	±1.0°C

Floor temperature (external sensor)
Regulation range:	
lower limit:	10 .. 30°C
upper limit:	35°C .. 50°C
Type of sensor:	NTC 4K7 ohm ±1% @ 25°C
Resolution:	0.1°C
Range:	-9.9°C .. +60.0°C
Precision:	±1.0°C
Maximum length of the wires to the remote sensor:	15 m
Antifrost:	OFF/0.5°C .. 25.0°C (Default 6.0°C)
Offset:	± 10.0°C. (Default 0.0°C)
Backlighting switch-off:	20 seconds from last pressing
Protection rating:	IP 30
Insulation class:	II (▣)
Number of manual cycles:	1,000
Operating temperature:	0°C .. +40°C
Storage temperature:	-10°C .. +50°C
Humidity limits:	20% .. 80% RH (non-condensing)
Enclosure: Material:	ABS+PC V0 self-extinguishing
Colour:	Signal White (RAL 9003)
Weight:	~ 229 gr

NORMATIVE REFERENCES

The product is conform with the following standards (EMC 2004/108/CE and LVD 2006/95/CE):
CEI-EN-60730-1 (2002)
CEI-EN-60730-2-7 (1998)
CEI-EN-60730-2-9 (1998)
ETSI EN 301 489-3 v1.4.1
ETSI EN 300 220-2 v2.1.1

DIMENSIONS
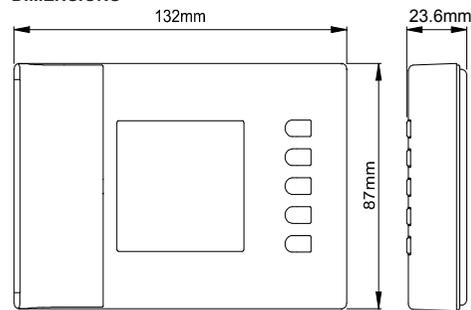
132mm
23.6mm
87mm

WARRANTY

TR D01B 0001 SE 024066F8 290914

START-UP

Open the battery compartment (**F** of Fig. 1) upon commissioning, and insert the batteries respecting the indicated polarity. The batteries must be 1.5V alkaline AA type.

Heating/Cooling Set-up

The thermostat is default set in heating mode.
Hold '☝' pressed for 10 minutes to modify the adjustment mode.
A. Cooling mode will be set if the thermostat was previously set on heating and the symbol '❄' will flash on display for 8 seconds.
B. Heating mode will be set if the thermostat was previously set on cooling and
the symbol '❄' will flash on display for 8 seconds.
Icon '❄' Flame on signals heating activation during normal operation, on the contrary
cooling activation is signalled by the Snow icon '❄'.
The heating/cooling mode setting cannot be modified if the thermostat is configured to operate with a timer thermostat in New Wave radio system, as the setting is defined on the timer thermostat or on the relay module.

Adjustment mode set-up

There are 4 modes to adjust the room temperature that can be chosen by pressing '☝'.

Comfort: the thermostat adjusts the room temperature in comfort mode; this is normally the chosen temperature during the day-time.

Economy: the thermostat adjusts the room temperature in economy mode; this is normally the chosen temperature during the night-time.

Auto: the thermostat adjusts the room temperature in comfort or economy mode, depending on the hourly program set on the associated timer thermostat.

Boost: the thermostat adjusts the room temperature in Boost mode, normally used to satisfy a temporary need, as adjustment is by means of a higher temperature than the set comfort temperature.

The thermostat is default configured for using only the Comfort and Economy modes.

The user can directly activate selection of the remaining modes, by modifying the installer parameters from **P03** at **P07** (see the 'INSTALLER CONFIGURATION' paragraph).
Pressing '☝' cyclically selects between the different activated adjustment modes:
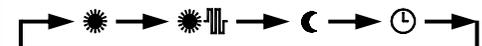
Once an adjustment mode is set, it remains so until the '☝' key is pressed again, however, each individual mode can be set as "temporary".
Time countdown starts on display as soon as the temporary mode is activated. The thermostat returns to the wanted default mode upon countdown time-out. The adjustment mode icon flashes during countdown, to indicate a temporary condition. Time can be modified using the '▽' and '△' keys, as wanted.
Configure the adjustment mode so count cannot be modified, if wanting to limit the times modification.
Energy saving is easy with the temporary modes e.g. set the 'Temporary economy" to be activated at night in a frequently used room. The thermostat automatically goes back to Comfort mode upon time-out after a few hours, guaranteeing comfort temperature in the morning.
Whereas, set the 'Temporary comfort' and the default OFF/ Antifrost mode, in a rarely used room. The Temporary comfort mode activates when the room is used and the thermostat adjusts the comfort temperature for the requested time, to then automatically switch-off.
See the 'INSTALLER CONFIGURATION' paragraph for further information on how to configure the adjustment modes.

Set-point Temperature

Fig. 2.

The display shows the room temperature detected on the top digits (**A** of Fig. 2), while the relative set-point temperature on the bottom digits (**B** of Fig. 2).
The display shows the set-point temperature on the large digits (**A**) by pressing the '☰' key or one of the '▽' or '△' keys, and icon '▮' switches on to indicate the set-point temperature is being displayed. The display also shows the icon relating to the adjustment mode to which the displayed set-point temperature refers.
Press '☰' to display the set-point temperature of the other adjustment modes settable by the user.
Press '▽' and '△' to modify the display set-point temperature.
Adequately configure parameters **P15**, **P16**, **P17** and **P18** to prevent the installer from modifying one or more set-points (see the 'INSTALLER CONFIGURATION' paragraph for further information).

CONTROLLING A SECOND STAGE

The thermostat can be configured to drive two heating systems, useful in rooms with two heating systems: one main and one secondary (second stage), e.g. a bathroom with floor radiant main heating and one towel rail warmer as secondary system.
In a view to energy saving, the thermostat uses the main heating system and, only when required, the second stage. It will only switch-on the towel rail warmer when the room temperature is below the wanted set-point by a specified value (Δ set-point) in parameter **P29**, in this way operating as integration of the main floor heating.
Furthermore, the second stage can be forced on together with the main heating in 'Boost' adjustment mode. Both heating systems will be switched on to reach the set-point temperature, by setting the adjustment mode in Boost.
By setting the adjustment mode in Economy, the second stage always remains off, as it is a saving mode.
Configure parameter **P02** on 'Yes' and customise the integration set-point Δ on parameter **P129, if wanting the thermostat to drive the second stage.**
Configured to drive the second stage, the thermostat will transmit to two different receivers or to two channels of the same receiver.
The main channel is normally acquired by activating the 'test' function by simultaneously pressing the '▽' and '☝' keys.
The second stage channel is acquired by activating the second stage 'test' function: once the main channel's 'test' function is activated ('▽' and '☝'), press '☰', the small digits will show the writing "2OUt". Then proceed with self-leaning of the second stage channel on the receiver.

EXTERNAL NTC SENSOR

The thermostat has one input for connecting an external NTC sensor (optional) and an internal sensor.
The external sensor can be used to detect the room temperature if the thermostat is to be installed in an unsuitable position for room temperature detection. Alternatively, the external sensor can be configured to measure the floor temperature, useful in floor heating systems.
With external sensor on floor, the thermostat can consider a minimum and maximum floor temperature limit during the room temperature adjustment. For example, a lower limit can be set in heating to which the floor must not drop in order to avoid feeling a cold floor, while a maximum limit can be set, beyond which the floor must not go, to guarantee maximum wellbeing. The thermostat gives priority to the temperature limits within which the floor must remain.
The thermostat signals by flashing the '◀' symbol on display,

TR D01B 0001 SE 024066C8 290914

when it is adjusting to maintain within the floor temperature limits.

By pressing ' 📖 ', the thermostat can be configured so that the measured floor temperature can be shown on display (see the 'INSTALLER CONFIGURATION' paragraph for further information).

RADIO SYSTEM CONFIGURATION

Check the receiver to be coupled with the thermostat is compatible from the "COMPATIBILITY WITH NEW WAVE RADIO SYSTEM" paragraph.

Check the receiver correctly receives the wireless thermostat's signals before installing the latter in the wanted position. The operation is carried out by activating the 'Test' function by simultaneously pressing '▽' and '✋'.

The thermostat displays the writing '**TEST**' and continuously transmits switch-on and off controls to the receiver, with a 2 second pause between them, in 'Test' mode; the symbol ' (((•))) ' on the display switches on every time the thermostat transmits a radio control.

The 'Test' mode can be ended at any time by pressing '⏻'.

However, the 'Test' mode automatically ends after approx. 17 minutes.

The 'Test' mode must be used to self-learn the thermostat address on the receiver and, subsequently, the relative output's relay in the receiver, must continuously switch-on and off every 2 seconds; the relative LED also indicates the status. If so, the thermostat correctly communicates with the receiver.

Ensure the two devices still correctly communicate when positioning the thermostat in the wanted area.

The output relay always remains on or off if the thermostat is positioned too far from the receiver: if so, we recommend finding a better position, maybe closer to the receiver, and ensure it is not near metal screens or reinforced concrete walls that might weaken radio transmission.

The signal quality can be monitored in the receiver (see the relative documentation for further information).

ASSOCIATION WITH A TIMER THERMOSTAT

It is possible for the thermostats to adjust the room temperature based on the hourly program set on the timer thermostat, in a New Wave radio system consisting of a more channel receiver module, a timer thermostat and more simple thermostats.

This can be obtained by associating the outputs controlled by the thermostats on the receiver, to the timer thermostat ones. A timer thermostat and the thermostats associated to it, in this way form an 'area'.

For example, a day area and a night area can be created in a home, with adjustment on more rooms based on the different programmable hourly bands on two timer thermostats.

The associated channels receive information from the timer thermostat of which adjustment mode to use and, therefore, which temperature to adjust, comfort or economy, off or antifrost. If the timer thermostat is adjusting at a Comfort temperature, the associated thermostats adjust according to their Comfort set-point; whereas, if the timer thermostat is adjusting at a economy temperature, the associated thermostats adjust with their economy temperature. Similarly, if the timer thermostat is off with antifrost function at 5°C, the associated thermostats also adjust the antifrost temperature 5°C.

The display thermostat can also have the output associated to a timer thermostat and, when set in 'Auto' mode, the receiver adjusts with the adjustment mode received from the timer thermostat.

The **P01** parameter must be set at '**rEC**', when wanting to use the thermostat in association with a timer thermostat.

See the receiver instructions for the association procedure.

INSTALLER CONFIGURATION

The installer configuration allows defining the thermostat operation to adjust it to the different types of rooms and systems.

Hold '△' and '📖' simultaneously pressed for a few seconds until the "key" symbol and the writing "COn" (configuration) appear on the display, to access configuration.

Pressing '✋' from now, scrolls the different installer parameters identified with '**P**' and by the parameter number, from **P01** to **P29**.

Configuration end is indicated with the wording '**End**'. Press '✋' again to save configuration and the thermostat switches to normal operation. Exit the configuration menu without saving the changes at any moment by pressing '⏻'.

The large display digits show the parameter's number and the small ones the parameter's title, while scrolling the parameters. By pressing '📖' or '▽' or '△' in this phase, the large display digits show the current parameter setting.

Use keys '▽' or '△' to modify the selected parameter's configuration; the value is quickly increased or decreased by holding the keys'▽' or '△' pressed.

The 'test' procedure is automatically activated after configuration end and saving. During this test, the thermostat communicates information on the output configuration to the receiver, which the latter saves in a versatile manner and is used to adjust the temperature in the wanted area.

It is important, therefore, to run self-learning on the receiver before modifying configuration; and it is important to check the receiver correctly receives the 'test' controls at the end of configuration.

Remove the jumper (**JP1**) indicated in Fig. 4 to prevent configuration access to unauthorised users; the display shows an error message if configuration access is attempted.

Reset installer configuration

Reset installer configuration in order to bring all parameters to default values by accessing configuration and, when the display shows '**Con**', simultaneously press '▽' or '△' for a few seconds until the screen goes back to normal display.

Description of configuration parameters

The installer configuration parameters are shown in table 1 and explained below.

⚠ ATTENTION

Some installer parameters may not be displayed as only current configuration required parameters are proposed (the way of configuring a parameter, may exclude one or more subsequent parameters).

P01 (HC_S): allows using the thermostat (trA) or receiver (rEC) heating/cooling mode.

This parameter must only be modified to ' rEC ' (receiver) when wanting to use the thermostat in association with a timer thermostat in a New Wave radio system or the external heating/cooling selection input of the New Wave relay modules.

The heating/cooling setting must be left on the thermostat (parameter setting on ' trA '), if wanting to use the special function 'second stage'.

P02 (2OUt): allows activating (YES) or deactivating (no) the second stage control. See the "CONTROLLING A SECOND STAGE" paragraph.

P03-P07 (MCOM - comfort mode, MbSt - boost mode, MrEd - economy mode, MOFF - switch-off mode, MAUt - automatic mode): these five parameters allow customising the room temperature's adjustment mode, selectable using the ' ✋ ' key and the thermostat switch-off.

Each adjustment mode can be configured with the following values:

no: adjustment mode not active, it cannot be recalled using the '✋' key.

YES: adjustment mode active, it can be recalled using the '✋' key.

tMO: active adjustment mode can be recalled using the '✋' key, but it temporary: the thermostat goes back to default adjustment mode (settable by means of parameter **P09**)

upon countdown time-out (settable by means of parameter **P08**). The user can modify time-out by means of keys '▽' or '△'.

tFI: active adjustment mode, can be recalled using the ' ✋ ' key, but is temporary: the thermostat goes back to default adjustment mode (settable by means of parameter **P09**) upon countdown time-out (settable by means of parameter **P08**). The user cannot modify time-out.

P08 (tOUt): time-out of the temporary adjustment modes. Countdown starts from the value set in this parameter, as soon as temporary adjustment mode is recalled.

Time can be set from 10 minutes to 24 hours, with 10 minute steps. Time-out is displayed in 'hours.minutes by 10' format, e.g. 2.3 means 2 hours and 30 minutes.

P09 (MdEF): default adjustment mode.

Mode to which thermostat returns upon temporary mode time-out. One of the following can be chosen: Comfort, Economy, OFF/Antifrost or Auto as long as (**P03-P07**)have been activated as active, in previous parameters.

P10 (OFS): room temperature offset.

The detected room temperature can be correct by ±10.0 °C with the offset, in order to correct any systematic reading errors due to thermostat positioning in unsuitable areas for detecting the room temperature.

By default the device is set with 0.0 °C offset.

P11 (SPHL) and **P12** (SPHU): these two parameters configure the temperature range within which the set-point temperature can be set when the thermostat is in heating mode. **P11** is the lower limit and can be freely configured from 5.0 .. 35.0 °C, while **P12** is the higher limit that can be configured in a range from the lower limit, chosen in **P11**, up to 35.0°C.

Therefore, the maximum range is 5 .. 35 °C and can be easily reduced based on installation requirements.

P13 (SPCL) and **P14** (SPCU): these two parameters configure the temperature range within which the set-point temperature can be set when the thermostat is in cooling mode, with the same logic of previous two points.

The set-point temperature limits are re-defined upon changing of the cooling/heating setting. In the event the cooling/heating selection is on the receiver (**P01=rEC**), these two parameters will not be used and the settings of parameters **P11** and **P12** are always used.

P15-P18 (SCOM - comfort mode, - SbSt - boost mode, SrEd - economy mode, SAFr - antifrost mode): allows choosing whether the relative set-point temperature, of each adjustment mode, can be modified by the user by means of keys '▽' or '△' or blocked so user action is limited.

P19 (Entc): external NTC sensor configuration, the parameter can be set with the following values:

'**no**': No external sensor connected.

'**rOO**': External sensor connected to detect room temperature.

'**FLH**': External sensor connected to detect floor temperature, but is not shown on display.

'**FLS**': External sensor connected to detect floor temperature, that can be shown on display.

P20 (LinF) floor temperature lower limit and **P21** (LSUP) floor temperature upper limit.

A minimum and maximum floor temperature can be set in these parameters, in the event the external sensor is connected and configured to detect the floor temperature.

The floor temperature lower limit can be set in the range 10 .. 30 °C, while the upper limit in the range 20 .. 50°C.

The limits can be disabled by configuring the limit below the minimum value, until "no" appears.

The device is default set with limits disabled.

P22 (OPWM): output PWM adjustment, allows choosing whether the receiver output must be driven in ON/OFF or PWM (Pulse Width Modulation) mode.

Customisable hysteresis adjustment on parameter **P24** will be had with ON/OFF adjustment, while a proportional adjustment will be had with PWM adjustment (YES) that can be adapted to the different room with proportional band, additional time and cycle time parameters.

P23 (EOrM): extends drive mode of output to other channels; this parameter is only significant if the thermostat is coupled with a more channel receiver (DLP ---).

If this parameter is set on 'YES', all receiver channels will be configured with ON/OFF or PWM setting chosen in parameter **P22** and relative parameters from **P24** to **P28** hysteresis, proportional band, additional time and cycle time. The thermostat can, in this way, be used to configure the output drive mode on the channel on which self-learning was made and on the other channels available on the receiver also. The receiver hysteresis can, for example, be changed in this mode or make an output become PWM, even if the channel will then be driven by a simple, not configurable, thermostat.

P24 (HYSt): hysteresis, it represents the hysteresis width used when an ON/OFF adjustment (no) is chosen in **P22** or when the thermostat limits the floor temperature.

P25 (BP): PWM proportional band, it is used for proportional adjustment when the output is configured in **P22**, for being driven with PWM (YES).

P26 (t int): additional time in minutes, it is used for proportional adjustment when the output is configured in **P22**, for being driven with PWM. The additional action is not had if set at zero.

P27 (PCYC): PWM cycle time, it is the duration of each PWM cycle in minutes, meaning every how many minutes is the variable width impulse repeated.

P28 (PM In): minimum time of PWM ON, meaning the minimum PWM impulse width or the minimum output switch-on time. This parameter must be set with the actuator's opening time, in the event an electro-thermal actuator is connected, otherwise switch-ons for lower times respect to opening time, do not generate significant output actions.

P29 (dSPI): this parameter allows setting the integration set-point Δ of the second stage (see the 'Controlling a second stage' paragraph for further information).