Easy thermostat

GW 10 763
GW 14 763

Technical Manual

Summary

1 Introduction

This manual describes the functions of the devices named GW1x763 “**Easy thermostat**” and how to use the ETS configuration software to change the settings and configurations.

2 Application

The Easy thermostat allows you to manage the temperature in the area it is installed in. The temperature is regulated by the KNX/EIB actuators which are managed by the Home Automation KNX/EIB bus and control the heating or air conditioning elements, including the fan coils. When combined with the wall Easy Timer Thermostat (GW 10 761 - GW 14 761), from which it receives the operation type and mode via the bus, it is possible to create multi-zone thermal regulation systems. The set-point values used by the thermostat are set locally.
The device manages two operating modes, HEATING and AIR CONDITIONING, and controls both systems whilst providing 4 different operating modes for each operating mode (ECONOMY/PRECOMFORT/COMFORT/OFF), each with its own customisable setpoint.
The device is always able to autonomously manage the temperature in the environment it is installed in, using control algorithms (two points or PI) or the use of fan coils, depending on the type of system built.
The thermostat is only able to manage the heating and air conditioning system if it is a 4-pipe configuration as it is designed to manage one actuator for the heating system and another for the air-conditioning system;
This manual refers solely to the configuration using the ETS software.
Please refer to the INSTALLATION AND USER MANUAL supplied with the product for instructions on how to use the internal menu and the various local key functions.

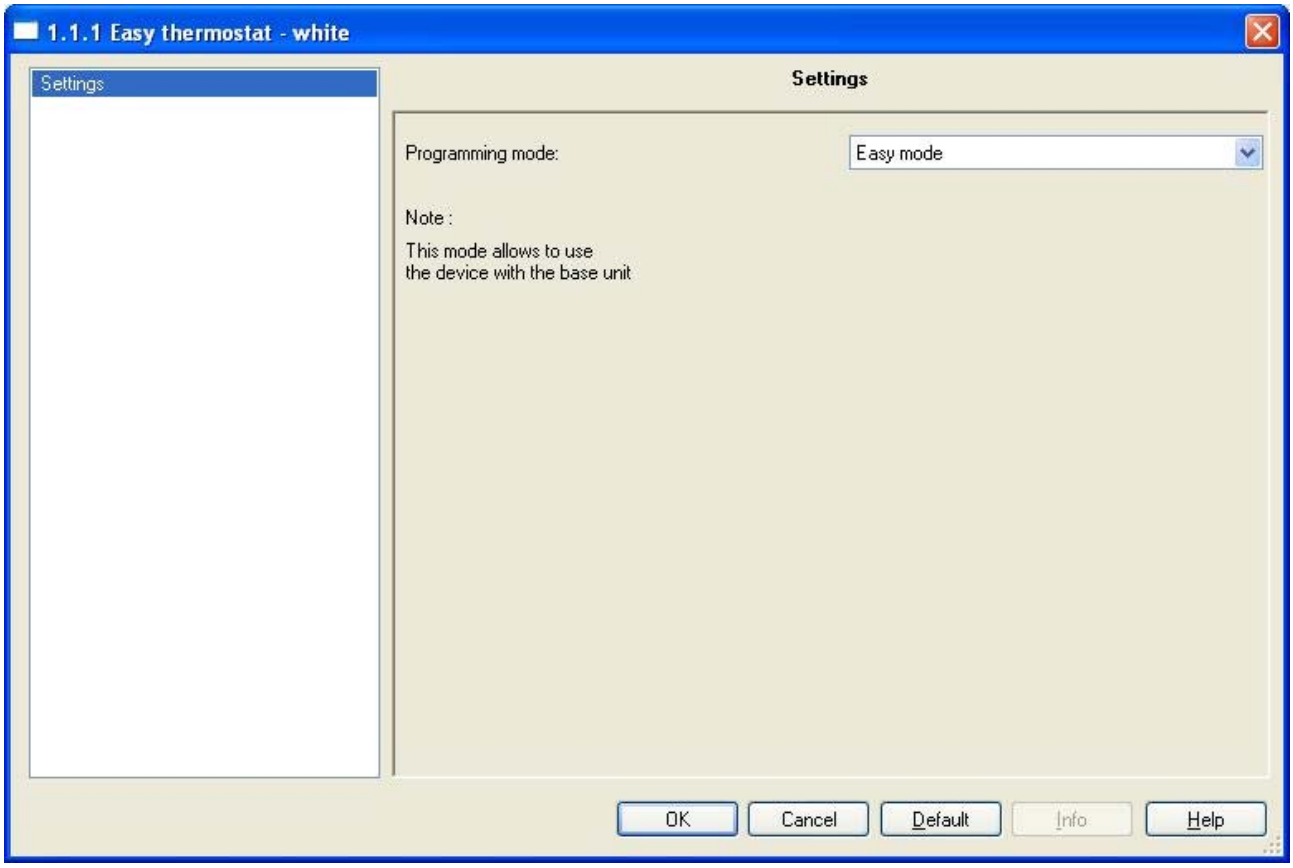
2.1 Limits to the associations

Maximum number of group addresses:	110
Maximum number of logical associations:	110

This means that it could be possible to define maximum 110 group addresses and realize maximum 110 associations between group addresses and communication objects.

3 *"Settings"* menu

Here it is possible to configure the programming mode between ETS mode (S-Mode) and Easy mode by the Easy controller software (Kit GW90837, Kit GW90838, GW90840) see Diag 3.1.



Diag. 3.1

3.1 Parameters

➢ *3.1.1 Programming mode*

This parameter determines the programming mode of the device:

- ***ETS mode***

Select this value if you want to configure the device with ETS (S-Mode); all the configuration parameters are now visible.

- ***Easy mode***

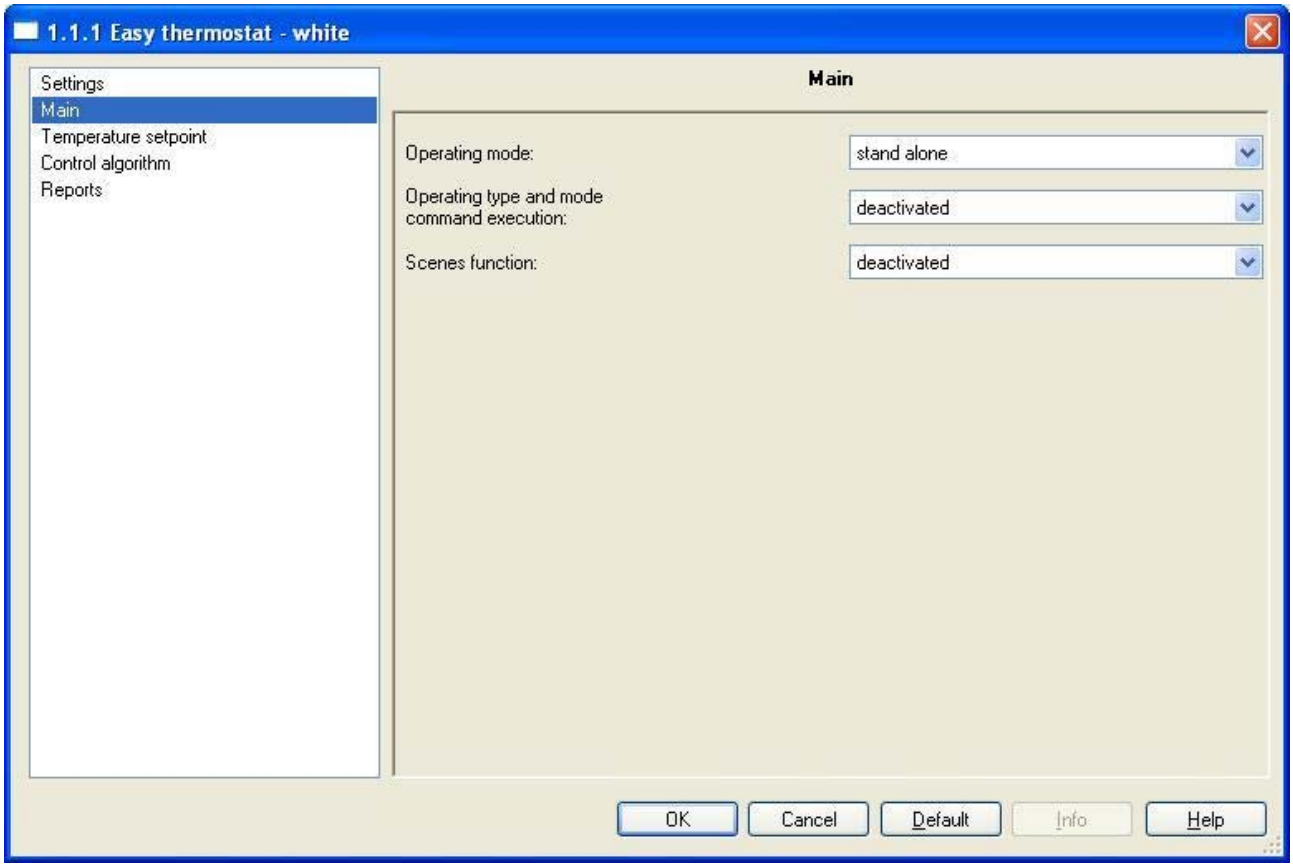
Select this value if you want to configure the device with the Easy controller software.
Remember to download the application program with this value selected before using the device by the Easy controller software if you have already used the device in an ETS project.

3.2 Communication objects

There are no communication objects enabled by the ***Settings*** menu.

4 *"Main"* menu

The ***Main*** menu lists all the parameters needed to configure the behaviour of the device in HVAC system (see Diag. 4.1); the structure and the options displayed in the ***Main*** menu change according to the settings for the various options.



Diag. 4.1

4.1 Parameters

➢ *4.1.1 Operating mode:*

This allows you to configure how the device is used; the settings are:

- ***slave***

The device is configured to manage the HVAC system using the master device as a timer-thermostat. With this configuration the device does not control the entire system, but only a part of it, called a zone, whilst a master device is installed which controls the operating types and HVAC modes; in this case the thermostat controls the ambient temperature where it is installed, whilst the master device manages the operating functions according to the settings configured by the operator. In this function mode the thermostat uses the set-point values that are set locally. It is possible to change the set temperature set-point (max variation ± 3 °C), whilst it is not possible to change the operation mode. The modified set-point will remain valid until the Master device sends a new operation mode.
With this setting, the ***HVAC mode input*** and ***Operating type input*** communication objects are now visible.

- ***stand alone***

The device is configured to autonomously manage the HVAC system, without the use of timer-thermostats that control the device functions; with this configuration you create a single ambient temperature control centre. The thermostat operation type and mode are set locally. The operation status does not depend on any other device. In Stand-alone mode it is possible to vary the set-point at will and enable the thermostat to receive remote commands from other devices, such as for instance a button or the EIB Easy GSM remote control module GW 90 861.

With this setting, the ***Operating type and mode command execution*** parameter appears, which will be analysed in paragraph ***4.1.2***.

➢ *4.1.2 Operating type and mode command execution:*

This enables the device to receive the HVAC mode and operating type setting commands from the bus; the settings are:

- ***deactivated***

It is not possible to modify the HVAC mode or operating type on the device by bus command; both parameters can only be set using the local keyboard.

- ***active***

It is also possible to modify the HVAC mode or operating type on the device by bus command; both parameters can however be set using the local keyboard.
With this setting, the ***HVAC mode input*** and ***Operating type input*** communication objects are now visible.

➢ *4.1.3 Scenes function:*

This is to enable the scene function and make the relative ***Scene*** communication object visible. The scene function sends two possible commands to the device:

- execute scene, that is a command to create a specific condition
- store scene, that is a command to memorise the current status (at the moment the command is received) of the HVAC mode, operating type and any indicated setpoint temporary forced positioning.

This function foresees 8 different scenes, so the device can memorise /reproduce 8 different operating modes and types. The settings are:

- ***deactivated***

The scene function is not enabled and consequently the communication object is not visible.

- ***active***

The scene function is enabled and is managed by the ***Scene*** communication object.

4.2 Communication objects

The ***Main*** menu makes the following communication objects visible (see Diag. 4.2.):

Number	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
0	HVAC mode input	Auto/Eco/Precom/Comf/Off	1 Byte	C	R	W	T	U		Low
1	Window status	1=open/0=closed	1 bit	C	-	W	-	-		Low
2	Scene	Execute/Store	1 Byte	C	-	W	-	-		Low
3	Operating type input	Heating/Air conditioning	1 bit	C	-	W	-	-		Low

Diag. 4.2

➢ 4.2.1 HVAC mode input

Here you can configure the remote control of the device operating mode (HVAC mode) by bus command. When this communication object receives a telegram with the operating mode information that is to be set, the device sets the operating mode according to the command received, indicated by a pilot light on the display.
If the device has been configured in stand alone mode, it is still possible to modify the operating mode using the local navigation menu on the device, which does nothing more than replicate the command reception event on the communication object in question to modify, with each pressing, the operating mode.
The enabled flags are C (communication), W (written by bus), R (read by bus), T (transmission) and U (actualize the value).
The standard format of the object is *20.102 DPT_HVACMode*, the size of the object is *1 byte* and the commands it receives are *operating mode* commands: *Economy/Precomfort/Comfort/Off.*

➢ 4.2.2 Window status

Here you can enable the remote control of the device OFF operating mode (or HVAC mode) by bus command, when a windows is open. When this object receives a telegram with a "1" logic value (window open), the device instantly switches to OFF mode, indicated by a pilot light on the display, given the enabling of this object has a higher priority than any other HVAC setting; vice versa, when this object receives a "0" logic value (windows closed), the device instantly disables the OFF operating mode and the new operating mode is enabled automatically by the device according to the last command received (HVAC mode or scene) or the HVAC mode installed before windows status activation.
The enabled flags are C (communication), W (written by bus).
The standard format of the object is *1.019 DPT_Window_Door*, the size of the object is *1 bit* and the commands it receives are *windows status open/close*.

➢ 4.2.3 Scene

Using this communication object, the device is able to receive the execute and store scene commands from the bus.
On receiving a store scene command, through a bus telegram to the communication object in question, please remember that the device memorises the HVAC mode, operating type and any temporary forced setpoint.
The enabled flags are C (communication), W (written by bus).
The standard format of the object is *18.001 DPT_SceneControl*, the size of the object is *1 byte* and the commands it receives are *execute/store scene*.

➢ 4.2.4 Operating type input

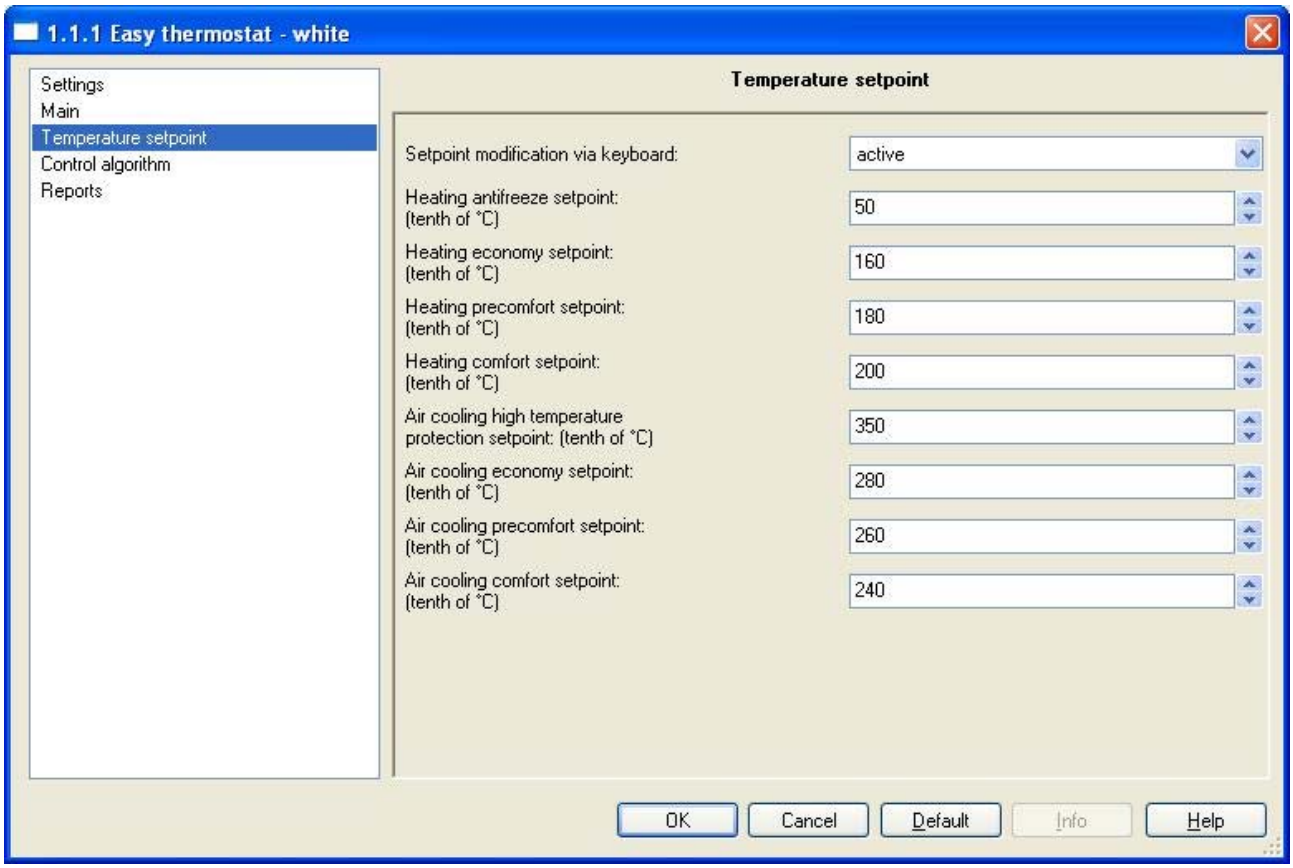
Here you can configure the remote control of the device function type by bus command. When this object receives a telegram with a "1" logic value, the device sets the operating type to HEATING, indicated by a pilot light on the display, maintaining the same operating mode as before; vice versa, when this object receives a telegram with a "0" logic value, the device sets the operating type to AIR CONDITIONING, indicated by a pilot light on the display, maintaining the same operating mode as before. In any case, it is however possible to modify the operating type using the local navigation menu on the device.
The enabled flags are C (communication), W (written by bus).
The standard format of the object is *1.100 DPT_Heat/Cool*, the size of the object is *1 bit* and the commands it receives are *operating type* commands: *Heating/Air conditioning*.

5 “Temperature setpoint” menu

The ***Temperature setpoint*** menu lists all the parameters needed to configure the setpoint values for the various HVAC modes and the two different operating types (see diag. 5.1).
Please remember that among the various setpoints belonging to the same function type, there is a setting value threshold determined from what seen below:

- $T_{antifreeze} \leq T_{economy} \leq T_{precomfort} \leq T_{comfort}$ in heating (“T” indicates the standard mode setpoint value)
- $T_{comfort} \leq T_{precomfort} \leq T_{economy} \leq T_{high\ temp.\ protect.}$ in air conditioning (“T” indicates the standard mode setpoint value)

Whilst a control is made over the modifications to setpoints from the local menu to make sure the threshold is not exceeded, the operator is requested to avoid setting setpoints for ETS parameters that do not comply with the above threshold as this could cause the device to malfunction.



Diag. 5.1

5.1 Parameters

➢ 5.1.1 Setpoint modification via keyboard

This allows you to enable the viewing of the device operating setpoints in the local navigation menu; the settings are:

- ***deactivated***

When you access the local navigation menu the parameters that allow you to modify the operating setpoints on the device are not visible (for further information on these parameters, please consult the INSTALLATION AND USER MANUAL).

- ***active***

When you access the local navigation menu the parameters that allow you to modify the operating setpoints on the device are visible (for further information on these parameters, please consult the INSTALLATION AND USER MANUAL).

➢ *5.1.2 Heating antifreeze setpoint: (tenth of °C)*

Here you can set the setpoint value for the OFF mode when it is HEATING operating mode; the values range from 20 (2 degrees centigrade) to 70 (7 degrees centigrade).
The restrictions listed before must be complied with when setting this value.
This value can in any case be modified by the operator using the setting in the local navigation menu on the device (if setpoint modification via keyboard is enabled).

➢ *5.1.3 Heating economy setpoint: (tenth of °C)*

Here you can set the setpoint value for the ECONOMY mode when it is HEATING operating mode; the values range from 50 (5 degrees centigrade) to 400 (40 degrees centigrade).
The restrictions listed before must be complied with when setting this value.
This value can in any case be modified by the operator using the setting in the local navigation menu on the device (if setpoint modification via keyboard is enabled).

The features, functions and restrictions listed above also apply to the ***Heating precomfort setpoint: (tenth of °C)***, ***Heating comfort setpoint: (tenth of °C)*** parameters for the HEATING operating type.

➢ *5.1.4 Air cooling high temperature protection setpoint: (tenth of °C)*

Here you can set the setpoint value for the OFF mode when it is AIR CONDITIONING operating mode; the values range from 300 (30 degrees centigrade) to 400 (40 degrees centigrade).
The restrictions listed before must be complied with when setting this value.
This value can in any case be modified by the operator using the setting in the local navigation menu on the device (if setpoint modification via keyboard is enabled).

➢ *5.1.5 Air cooling economy setpoint: (tenth of °C)*

Here you can set the setpoint value for the ECONOMY mode when it is AIR CONDITIONING operating mode; the values range from 50 (5 degrees centigrade) to 400 (40 degrees centigrade).
The restrictions listed before must be complied with when setting this value.
This value can in any case be modified by the operator using the setting in the local navigation menu on the device (if setpoint modification via keyboard is enabled).

The features, functions and restrictions listed above also apply to the ***Air cooling precomfort setpoint: (tenth of °C)***, ***Air cooling comfort setpoint: (tenth of °C)*** parameters for the AIR CONDITIONING operating type.

5.2 Communication objects

There are no communication objects enabled by the ***Temperature setpoint*** menu.

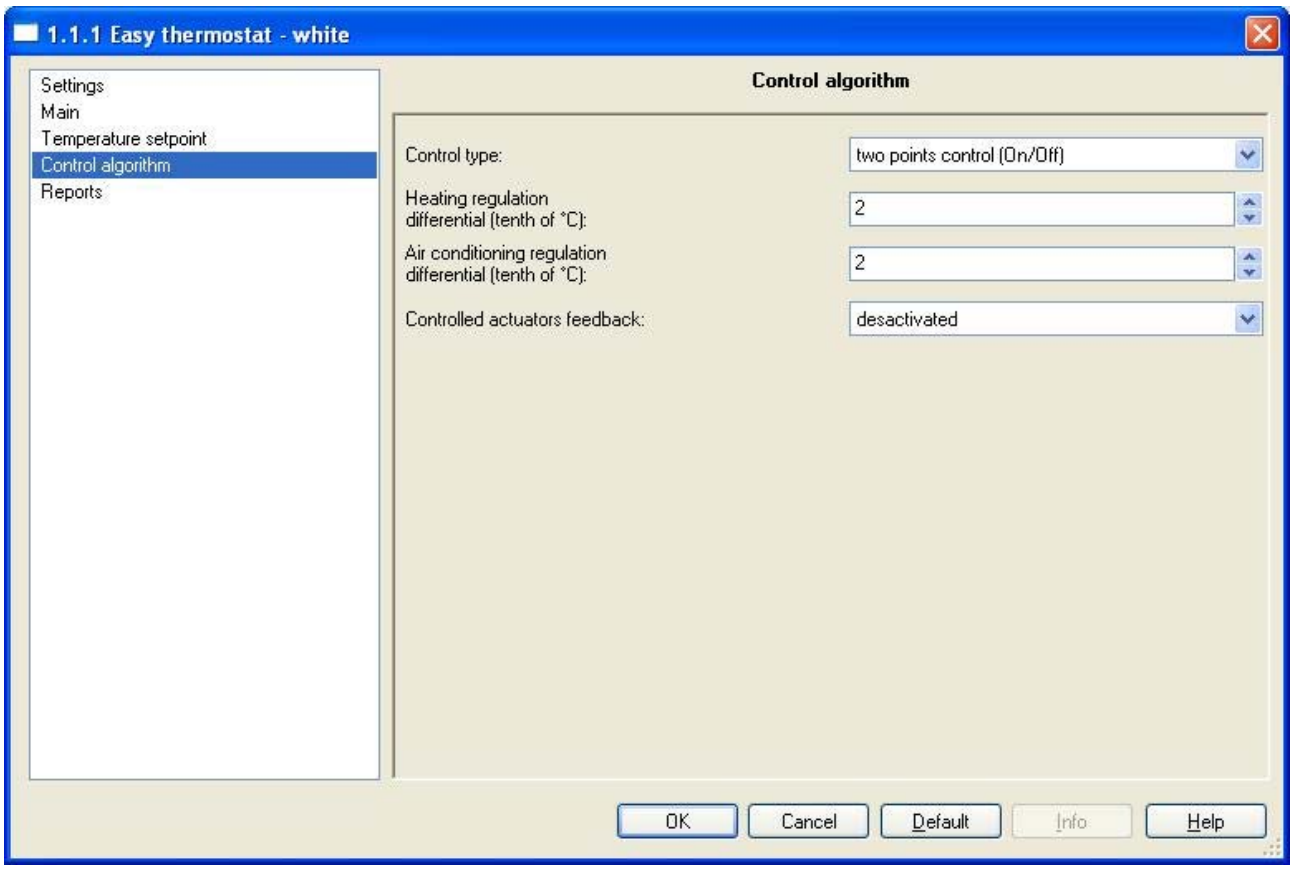
6 *"Control algorithm"* menu

The ***Control algorithm*** menu lists all the parameters used to set the control algorithms for the heating and air conditioning system; the structure and the options displayed in the ***Control algorithm*** menu change according to the settings for the ***Control type*** parameter.

6.1 Parameters

If the control type selected is ***two points control (On/Off)***, the menu is shown in diag. 6.1.

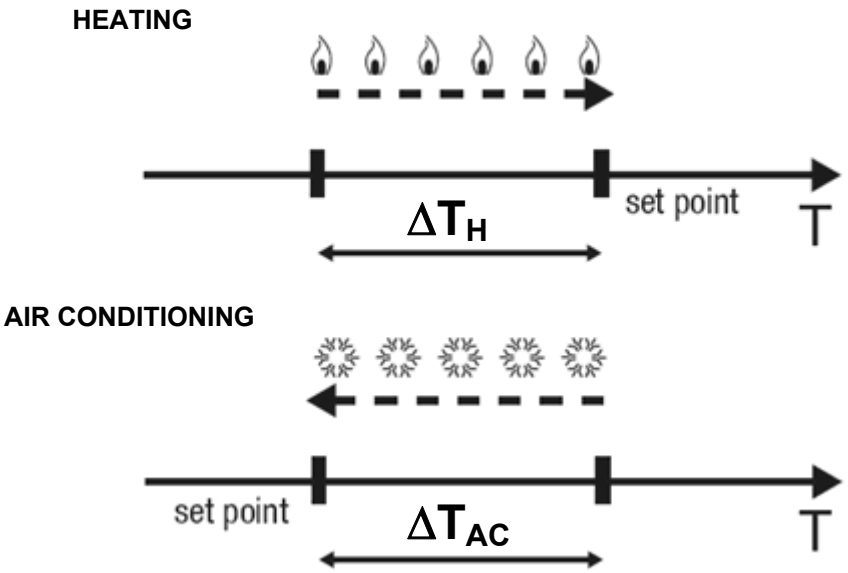
➢ *6.1.1 Control type: two points control (On/Off)*



Diag. 6.1

- ***two points control (On/Off)***

The algorithm used to control the heating system is the classic algorithm defined as a two points control. This control type turns the heating system ON and OFF according to a hysteresis cycle, that is there is no single threshold that discriminates the ON and OFF command but two are identified (see Diag. 6.2).



Diag. 6.2

You can see in this diagram that there are two thresholds which control the ON and OFF commands for the heating system and two for air conditioning system; for heating system, the first threshold consists in the "setpoint-$_{\Delta}T_H$" (where $_{\Delta}T_H$ identifies the heating regulation differential value) value, below which the device switches the system ON, the second consists in the indicated setpoint value, over which the device switches the system OFF.
For air conditioning system, the first threshold consists in the "setpoint+$_{\Delta}T_{AC}$" (where $_{\Delta}T_{AC}$ identifies the air conditioning regulation differential value) value, over which the device switches the system ON, the second consists in the indicated setpoint value, below which the device switches the system OFF.
With this setting, the ***Heating regulation differential (tenth of °C)*** and ***Air conditioning regulation differential (tenth of °C)*** parameters are visible.
In order to avoid continuous switchings that can damage the valves, the thermostat will wait for up to 2 minutes before sending the activation command to the actuator that controls the thermal regulation system.

➢ *6.1.2 Heating regulation differential (tenth of °C)*

Here you can set the heating regulation differential value which, subtracted from the indicated setpoint value, determines the threshold value below which the heating system is switched ON upon two points control.
The settings range from 2 (tenths of degrees centigrade) to 20 (tenths of degrees centigrade).

➢ *6.1.3 Air conditioning regulation differential (tenth of °C)*

Here you can set the air conditioning regulation differential value which, added from the indicated setpoint value, determines the threshold value over which the air conditioning system is switched ON upon two points control.
The settings range from 2 (tenths of degrees centigrade) to 20 (tenths of degrees centigrade).

➢ *6.1.4 Controlled actuators feedback:*

This allows you to enable the device so it can receive feedbacks from the actuators (loads) it controls; the settings are:

- ***deactivated***

The device is not able to receive feedback from the actuators (loads) that the command sent has actually been performed.

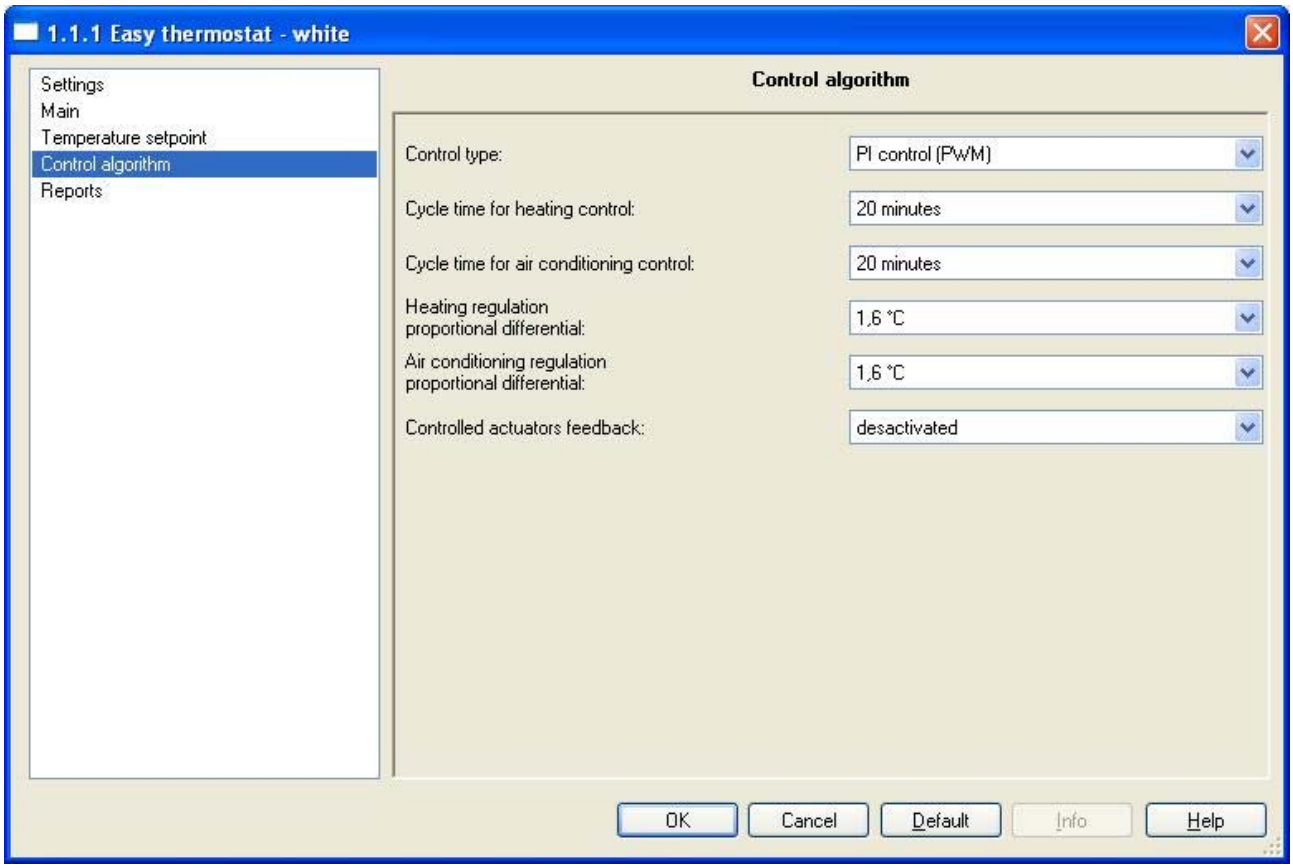
- ***active***

The device is able to receive feedback from the actuators (loads) that the command sent has actually been performed; if within one minute from sending a command to a load, the latter does not send confirmation of execution of the command to the thermostat, it will send the command again every

minute until it receives due confirmation from the load; the heating/air conditioning system pilot light will blink to signal this anomaly.
The ***Heating status feedback*** and the ***Air cooling status feedback*** communication objects are visible.

If the control type selected is ***PI control (PWM)***, the menu is shown in Diag. 6.3.

➢ *6.1.5 Control type: PI control (PWM)*

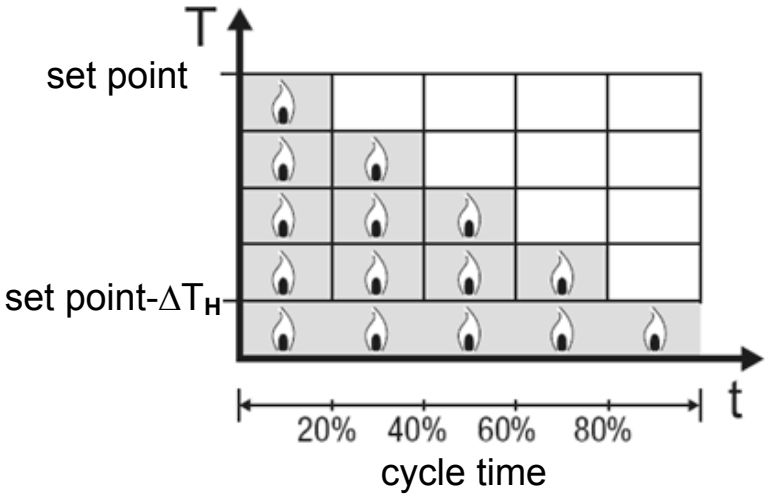


Diag. 6.3

- ***PI control (PWM)***

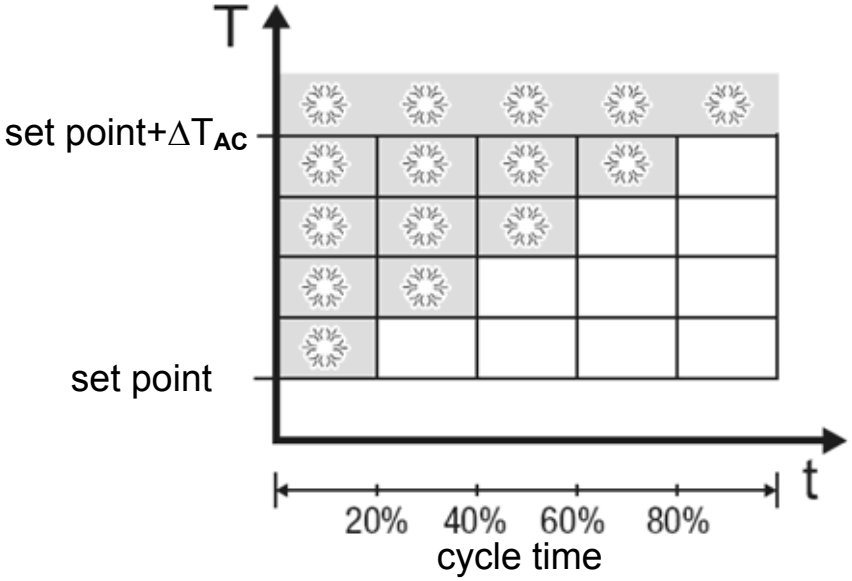
The algorithm used to control the heating system is the algorithm which allows you to reduce heat inertia times caused by a two points control, called a PMW control. This control type foresees the modulation of the pulse duty-cycle, represented by the heating (or air conditioning) system activation time, according to the difference between the indicated setpoint and the detected temperature (see Diag. 6.4 and Diag. 6.5).
The device keeps the heating (or air cooling) system ON for a percentage of time that depends on the difference between the measured temperature and the indicated setpoint; the setpoint and "setpoint-$_{\Delta}T_{H}$" values (for heating system) and "setpoint+$_{\Delta}T_{AC}$" and setpoint values (for air conditioning system) are indicated on the ordinate axis, that determines the proportional band limits within which the device constantly regulates the heating (or air conditioning) system, modulating the system's ON and OFF times. With this type of algorithm there is no hysteresis cycle on the heating element and therefore the inertia time (system heating and cooling time) introduced by the two points control is eliminated. This also leads to energy savings as the system does not stay ON for no reason and, once the desired temperature has been reached, it continues to supply amounts of heat just to compensate any dispersion of heat in the environment.

HEATING



Diag. 6.4

AIR CONDITIONING



Diag. 6.5

With this setting, the ***Cycle time for heating control***, ***Cycle time for air conditioning control***, ***Heating regulation proportional differential (tenth of °C)*** and ***Air conditioning regulation proportional differential (tenth of °C)*** parameters are visible.

➢ *6.1.6 Cycle time for heating control*

Here it is possible to set the time within which the device must perform PWM modulation. The settings are provided in the drop-down menu (an interval of from 5 to 60 minutes).
The settings are all multiples of 5 because, as you can see in Diag. 6.4, the duration of the heating system activation time is expressed as a percentage compared to the cycle time with a step of 20%. This means that, should the result of the control algorithm lead to a system activation time equal to 40% of the cycle time, if the value of the latter is 20 minutes, the device will activate the system for 8 minutes and then deactivate it until the end of the cycle time; at this point the PMW control algorithm is applied again and the activation time will be duly modified.

➢ *6.1.7 Cycle time for air conditioning control*

As the air conditioning parameter has the same characteristics and functions, with the only difference being that it refers to the AIR CONDITIONING operating mode, please refer to the paragraph *6.1.6* for further information.

➢ *6.1.8 Heating regulation proportional differential (tenth of °C)*

Here you can set the heating PMW regulation differential value which, subtracted from the indicated setpoint value, determines the lowest limit of the proportional band limits used to modulate the time when the heating system is switched ON upon PWM proportional control. The settings are provided in the drop-down menu (an interval of from 0.4°C to 3.2°C).

The settings are all multiples of 0.4 because, as you can see in Diag. 6.4, the proportional band is divided into four zones and the minimum resolution for the device is 0.1 °C. This value set for this option, divided by 4, determines the width of the proportional sub-band within which the device determines the system ON and OFF times.

➢ *6.1.9 Air conditioning regulation proportional differential (tenth of °C)*

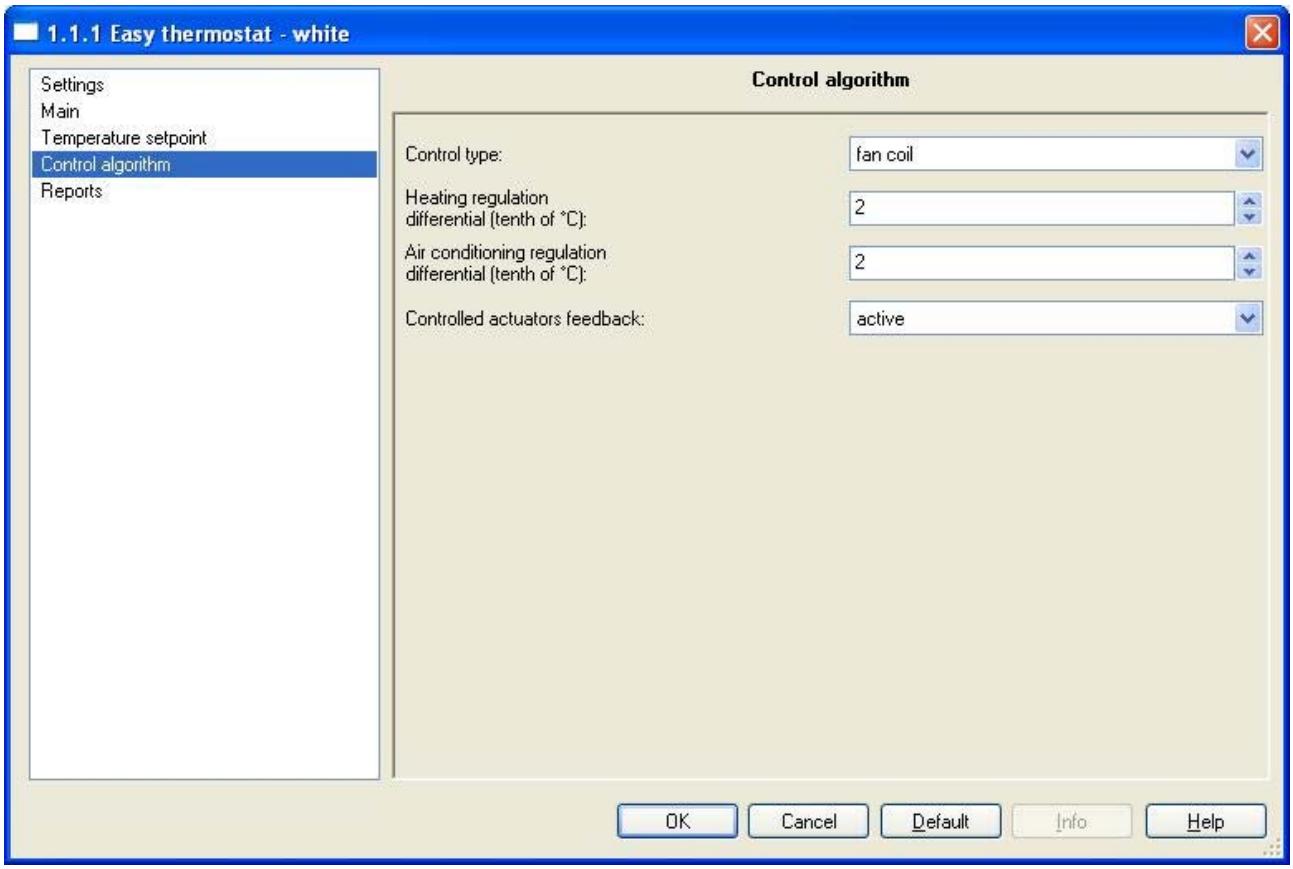
As the air conditioning parameter has the same characteristics and functions, with the only difference being that it refers to the AIR CONDITIONING operating mode, please refer to the paragraph *6.1.8* for further information.

➢ *6.1.10 Controlled actuators feedback:*

See chapter *6.1.4*.

If the control type selected is ***fan coil***, the menu is shown in Diag. 6.6.

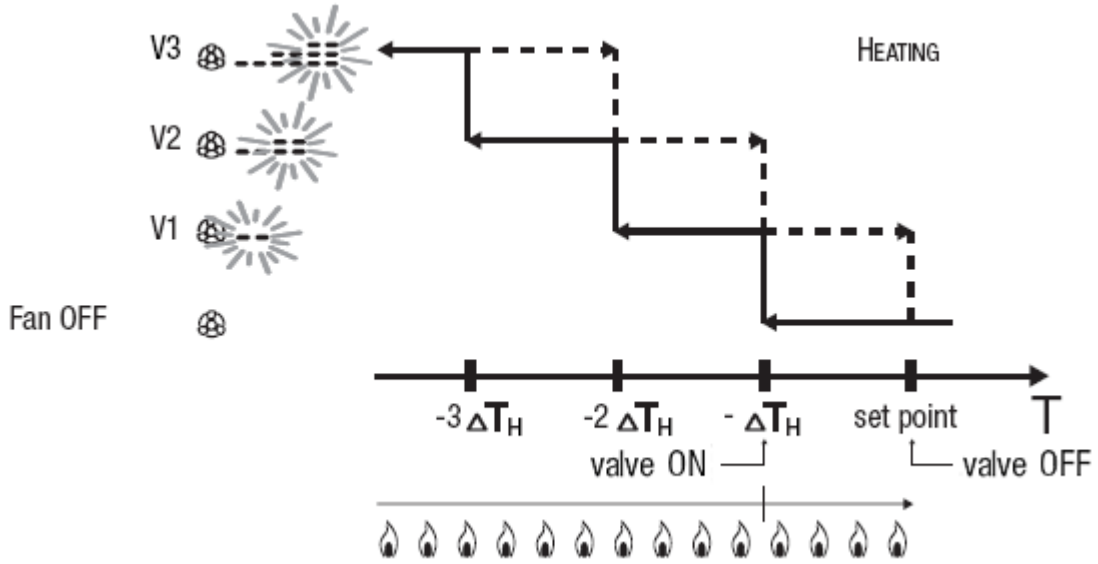
➢ *6.1.11 Control type: fan coil*



Diag. 6.6

- ***fan coil***

The control type applied if the fan coil control is enabled, is similar to the two points control analysed in the previous chapters; that is it activates/deactivates the fan coil speeds according to the difference in the configured setpoint and the measured temperature.
The actual difference between the 2 points algorithm is that, in this case, there is not one stage when the hysteresis cycle is performed to set the ON and OFF speed thresholds, but there are three; this means that each stage corresponds to a speed and when the difference between the measured temperature and the configured setpoint determines the activation of a specific speed, the other two must be deactivated before the new speed can be activated. There are two diagrams below which illustrate how the speeds to be activated are determined, according to the measured temperature for both the heating (Diag. 6.7), and air conditioning systems (Diag. 6.8).



Diag. 6.7

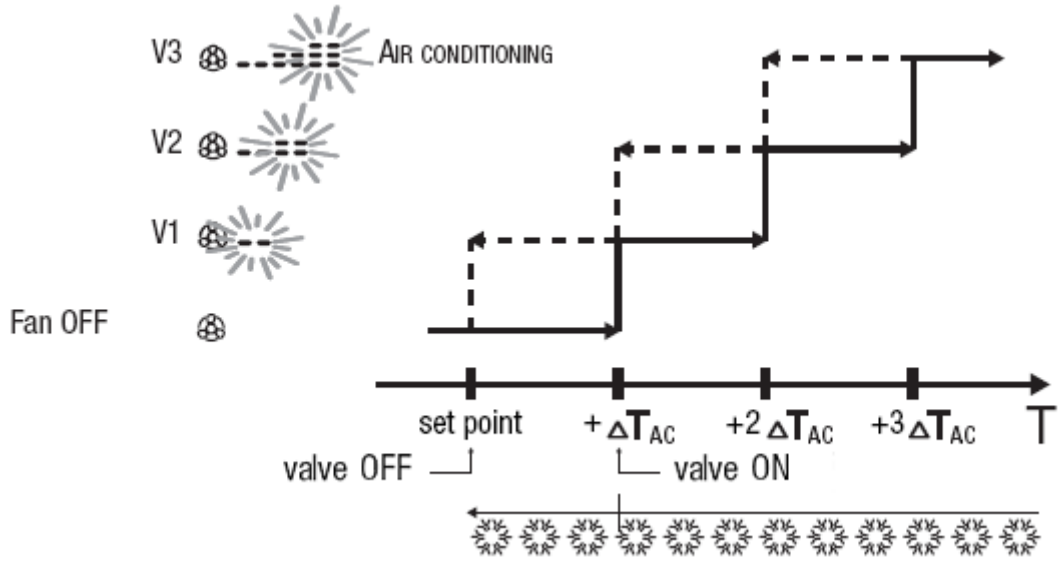
The diagram refers to the speed control of the fan coil with three function stages for the heating system. Looking at the graph, you can see that there is a hysteresis cycle for each stage, and two thresholds are associated to each speed that determine activation and deactivation. The thresholds are calculated by the values set for the heating regulation differential, and can be summarised as follows:

- Speed V1 (stage 1): the speed is activated when the value of the temperature is less than the "setpoint-$\mathbf{\Delta T_H}$" value and deactivated when the temperature reaches the configured setpoint value (remember that speed 1 is deactivated also when a higher speed is activated)

- Speed V2 (stage 2): the speed is activated when the value of the temperature is less than the "setpoint-2$\mathbf{\Delta T_H}$" value and deactivated when the temperature reaches the "setpoint-$\mathbf{\Delta T_H}$" value (remember that speed 2 is deactivated also when a speed V3 is activated)

- Speed V3 (stage 3): the speed is activated when the value of the temperature is less than the "setpoint-3$\mathbf{\Delta T_H}$" value and deactivated when the temperature reaches the "setpoint-2$\mathbf{\Delta T_H}$" value

You can see that, once the measured temperature is lower than the "setpoint-$\mathbf{\Delta T_H}$", value, further to activate the fan coil speed according to the algorithm analysed before, the thermostat also sends an open command to the solenoid value that controls the heating system; the solenoid valve is however closed when the measured temperature reaches the configured setpoint value.
The diagram concerning the air conditioning system can be seen in the diagram below.



Diag. 6.8

The diagram refers to the speed control of the fan coil with three function stages for the air conditioning system. Looking at the graph, you can see that there is a hysteresis cycle for each stage, and two thresholds are associated to each speed that determine activation and deactivation. The thresholds are calculated by the value set for the air conditioning regulation differential, and can be summarised as follows:

- Speed V1 (stage 1): the speed is activated when the value of the temperature is greater than the "setpoint+$\mathbf{\Delta T_{AC}}$" value and deactivated when the temperature reaches the configured setpoint value (remember that speed 1 is deactivated also when a higher speed is activated)

- Speed V2 (stage 2): the speed is activated when the value of the temperature is greater than the "setpoint+2$\mathbf{\Delta T_{AC}}$" value and deactivated when the temperature reaches the "setpoint+$\mathbf{\Delta T_{AC}}$" value (remember that speed 2 is deactivated also when a speed V3 is activated)

- Speed V3 (stage 3): the speed is activated when the value of the temperature is greater than the "setpoint+3$\mathbf{\Delta T_{AC}}$" value and deactivated when the temperature reaches the "setpoint+2$\mathbf{\Delta T_{AC}}$" value

You can see that, once the measured temperature is higher than the "setpoint+$\mathbf{\Delta T_{AC}}$" value, further to activate the fan coil speed according to the algorithm analysed before, the thermostat also sends an open command to the solenoid value that controls the air conditioning system; the solenoid valve is however closed when the measured temperature reaches the configured setpoint value.

The functions described are applied when the fan coil operating mode is set to AUTO, whilst if it is in MANUAL mode and the operator sets a specific speed, the speed activation command is set when the measured temperature is lower than the "setpoint-$\mathbf{\Delta T_H}$" value in heating mode, and lower that the "setpoint+$\mathbf{\Delta T_{AC}}$" value in air conditioning mode.

In order to avoid continuous switchings that can damage the valves, the thermostat will wait for up to 2 minutes before sending the activation command to the actuator that controls the thermal regulation system.

➢ *6.1.12 Heating regulation differential (tenth of °C):*

Here you can set the heating fan coil speed regulation differential ($\mathbf{\Delta T_H}$), used to calculate the correct speed of the fan coil. The settings range from 2 (tenths of degrees centigrade) to 20 (tenths of degrees centigrade).

➢ *6.1.13 Air conditioning regulation differential (tenth of °C):*

Here you can set the air conditioning fan coil speed regulation differential ($\mathbf{\Delta T_{AC}}$), used to calculate the correct speed of the fan coil. The settings range from 2 (tenths of degrees centigrade) to 20 (tenths of degrees centigrade).

➢ *6.1.14 Controlled actuators feedback:*

See chapter *6.1.4*. In this case, the communication objects visible are ***V1 fan status feedback***, ***V2 fan status feedback***, ***V3 fan status feedback***, ***Heating status feedback*** and ***Air cooling status feedback***

It is recommended to use the actuators feedback.

The device software has a logic interlock function that allows you to activate a different fan coil speed from that currently activated only if the correct feedback has been received by the latter that the speed has been deactivated; until the thermostat receives feedback that the enabled speed has been deactivated, it will not send activation commands for the new speed, to prevent a series of fan coil windings being powered at the same time which would break the fan coil.

6.2 Communication objects

The ***Control algorithm*** menu makes the following communication objects visible (see Diag. 6.9.):

Number	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
7	Heating status feedback	On/Off status	1 bit	C	-	W	-	-	1 bit DPT_Switch	Low
8	Heating switching	On/Off	1 bit	C	R	-	T	-	1 bit DPT_Switch	Low
9	Air cooling status feedback	On/Off status	1 bit	C	-	W	-	-	1 bit DPT_Switch	Low
10	Air cooling switching	On/Off	1 bit	C	R	-	T	-	1 bit DPT_Switch	Low
11	V1 fan status feedback	On/Off status	1 bit	C	-	W	-	-	1 bit DPT_Switch	Low
12	Fan V1 switch	On/Off	1 bit	C	R	-	T	-	1 bit DPT_Switch	Low
13	V2 fan status feedback	On/Off status	1 bit	C	-	W	-	-	1 bit DPT_Switch	Low
14	Fan V2 switch	On/Off	1 bit	C	R	-	T	-	1 bit DPT_Switch	Low
15	V3 fan status feedback	On/Off status	1 bit	C	-	W	-	-	1 bit DPT_Switch	Low
16	Fan V3 switch	On/Off	1 bit	C	R	-	T	-	1 bit DPT_Switch	Low

Diag. 6.9

➢ 6.2.1 Heating status feedback

This allows the device to be informed on the status of the actuator that manages the heating system controlled by the thermostat; once the command has been sent to this actuator, if the device does not receive confirmation within one minute that the load has executed the command by bus telegram to the communication object in question, it will instantly send the command again every minute until it receives due confirmation from the load. The heating/air conditioning system pilot light will blink to signal this anomaly (according to which is displayed on the screen). If a feedback is received by the actuator that does not copy the command sent, the device will instantly send another command and trigger the above described control.
The enabled flags are C (communication), W (written by bus) .
The standard format of the object is *1.001 DPT_Switch*, the size of the object is *1 bit* and the commands it receives are the *heating system actuator status On/Off*.

➢ 6.2.2 Air cooling status feedback

The same applies as indicated in the previous paragraph, but in relation to the air conditioning system actuator (please refer to ***6.2.1*** for further details).

➢ 6.2.3 Heating switching

This allows the device to send ON/OFF commands to the actuator that manages the heating system controlled by the thermostat; according to the control algorithm set, the device calculates when it has to intervene on the heating system to regulate the ambient temperature and therefore sends a telegram with a “1” logic value to activate the system, and “0” logic value to deactivate the same system.
The enabled flags are C (communication), R (read by bus) and T (transmission) .
The standard format of the object is *1.001 DPT_Switch*, the size of the object is *1 bit* and the commands it sends are *heating system On/Off*.

➢ 6.2.4 Cooling switching

The same applies as indicated in the previous paragraph, but in relation to the air conditioning system actuator (please refer to ***6.2.3*** for further details).

➢ 6.2.5 Fan V1 switch

This allows the device to send ON/OFF commands to the actuator that manages speed one on the fan coil. The device calculates the speed to activate on the fan coil to regulate the ambient temperature and sends a telegram with a “1” logic value to activate speed one and a “0” logic value to deactivate the same speed.
The enabled flags are C (communication), R (read by bus) and T (transmission) .
The standard format of the object is *1.001 DPT_Switch*, the size of the object is *1 bit* and the commands it sends are *fan coil speed one ON/OFF*.

➢ *6.2.6 V1 fan status feedback*

This allows the device to be informed on the status of the actuator that manages the speed 1 on the fan coil; once the command has been sent to this actuator, if the device does not receive confirmation within one minute that the speed has been activated by bus telegram to the communication object in question, it will instantly send the command again every minute until it receives due confirmation. The fan coil control pilot light will blink to signal this anomaly. If a feedback is received by the actuator that does not copy the command sent, the device will instantly send another command and trigger the above described control.
The enabled flags are C (communication), W (written by bus) .
The standard format of the object is *1.001 DPT_Switch*, the size of the object is *1 bit* and the commands it receives are *fan coil speed 1 status: On/Off*.

➢ *6.2.7 Fan V2 switch*

The same applies as indicated in the previous paragraph, but in relation to fan coil speed two.
For further details see ***6.2.5***.

➢ *6.2.8 V2 fan status feedback*

The same characteristics and function apply as indicated in the previous paragraph, the different being that it refers to the actuator that controls speed 2 on the fan coil (see ***6.2.6***).

➢ *6.2.9 Fan V3 switch*

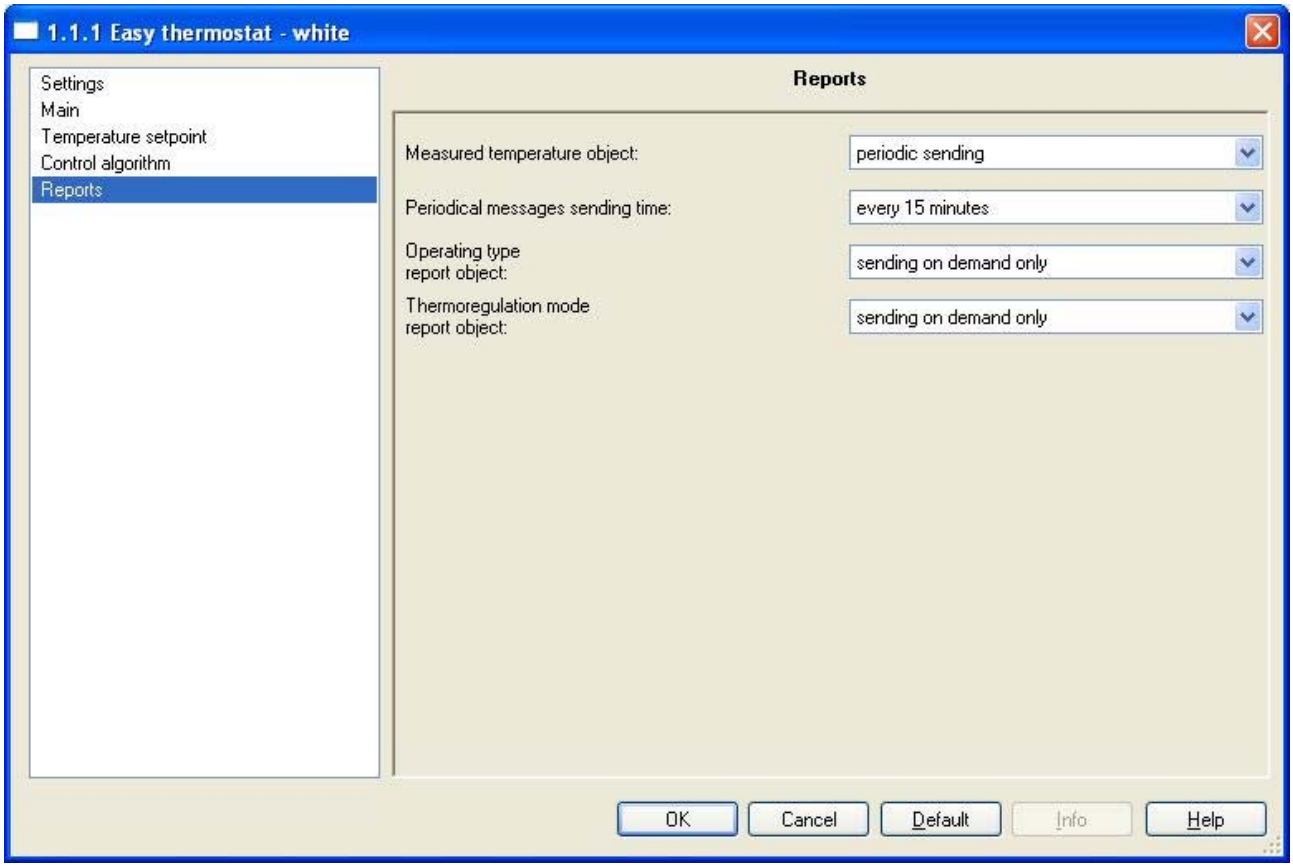
The same applies as indicated in the previous paragraph, but in relation to fan coil speed three.
For further details see ***6.2.5***.

➢ *6.2.10 V3 fan status feedback*

The same characteristics and function apply as indicated in the previous paragraph, the different being that it refers to the actuator that controls speed 3 on the fan coil (see ***6.2.6***).

7 *"Reports"* menu

The ***Reports*** menu lists all the parameters needed to configure the send feedback settings that the device sends by bus telegram (see Diag. 7.1).



Diag. 7.1

7.1 Parameters

➢ 7.1.1 Measured temperature object

This allows you to set the conditions for sending the measured temperature value through the ***Measured temperature output*** communication object; the settings are:

- ***sending on demand only***

The temperature value is not sent spontaneously by the device, but only upon receiving a status read request, when the device sends a response telegram to the applicant with the relative measured temperature value, which is that displayed on the screen. The ***Periodical massages sending time*** option is not visible.

- ***sending on variation only (1/2 °C)***

The temperature value is sent spontaneously by the device, but only if the variation in temperature compared to the last sent value is equal to at least 0.5 degrees centigrade. The ***Periodical massages sending time*** option is not visible.

- ***periodic sending***

The temperature value is sent periodically by the device, according to set intervals. The ***Periodical massages sending time*** option is also visible and is used to set the interval at which the measured temperature value should be sent (see Chapter ***7.1.2***).

➢ *7.1.2 Periodical massages sending time*

Here you can set the interval at which the measured temperature telegrams are sent; the settings are provided in the drop-down menu and range from “Every minute” to “Every 255 minutes”.

➢ *7.1.3 Operating type report object*

Here you can configure the send conditions for the operating type feedbacks (heating or air conditioning) through the ***Operating type feedback*** communication object.
The settings are:

- ***sending on demand only***

The feedbacks of the operating type enabled on the device are not sent spontaneously by the device through the ***Operating type feedback*** communication object, but only upon receiving a status read request, when the device sends a response telegram to the applicant with the relative information on the operating type set for the device.

- ***sending on variation only***

The feedbacks for the operating type enabled on the device are sent spontaneously by the device through the ***Operating type feedback*** communication object every time there is a variation in operating mode.

➢ *7.1.4 Thermoregulation mode report object*

Here you can configure the send conditions for the operating mode feedbacks through the ***Thermoregulation mode feedback*** communication object.
The settings are:

- ***sending on demand only***

The feedbacks of the operating mode are not sent spontaneously by the device with a telegram through the ***HVAC mode feedback*** communication object, but only upon receiving a status read request, when the device sends a response telegram to the applicant with the relative information on the operating mode set for the device.

- ***sending on variation only***

The operating mode feedbacks are sent spontaneously by the device through the ***HVAC mode feedback*** communication object every time there is a variation in operating mode status.

7.2 Communication objects

The ***Reports*** menu makes the following communication objects visible (see Diag. 7.2):

Number	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
4	HVAC mode feedback	Auto/Eco/Precom/Comf/Off	1 Byte	C	R	-	T	-		Low
5	Operating type feedback	Heating/Air conditioning	1 bit	C	R	-	T	-		Low
6	Measured temperature output	Value °C	2 Byte	C	R	-	T	-		Low

Diag. 7.2

➢ 7.2.1 HVAC mode feedback

This allows the device to notify the operating mode set by bus telegram.
The sending of such feedback depends on the settings entered for the ***Thermoregulation mode report object*** option.
The enabled flags are C (communication), R (read by bus) and T (transmission) .
The standard format of the object is *20.102 DPT_HVACMode*, the size of the object is *1 byte* and the commands it sends are *HVAC mode: Economy/Precomfort/Comfort/Off.*

➢ 7.2.2 Operating type feedback

This allows the device to notify the operating type set by bus command.
The sending of such feedback depends on the settings entered for the ***Operating type report object*** option.
The enabled flags are C (communication), R (read by bus) and T (transmission) .
The standard format of the object is *1.100 DPT_Heat/Cool*, the size of the object is *1 bit* and the commands it sends are *operating type: Heating/Air conditioning*.

➢ 7.2.3 Measured temperature output

The device uses this communication object to notify the measured temperature value, that is the one displayed on the screen measured by the internal sensor.
The sending of such feedback depends on the settings entered for the ***Measured temperature object*** option.
The enabled flags are C (communication), R (read by bus) and T (transmission) .
The standard format of the object is *9.001 DPT_Value_Temp*, the size of the object is *2 byte* and the commands it sends are *measured temperature values expressed in degrees centigrade (rounded off to a tenth of a degree)*.