CE

KNX

Termostato T+H KNX - da incasso

▶ ***KNX T+H thermostat - flush-mounting***

Thermostat T+H KNX - à encastrer

Termostato T+H KNX - de empotrar

Thermostat T+H KNX - für den Unterputz

GW 10 795H GW 12 795H GW 14 795H

MANUALE DI PROGRAMMAZIONE

PROGRAMMING MANUAL - MANUEL DE PROGRAMMATION

MANUAL DE PROGRAMACIÓN - PROGRAMMIERHANDBUCH

CONTENTS

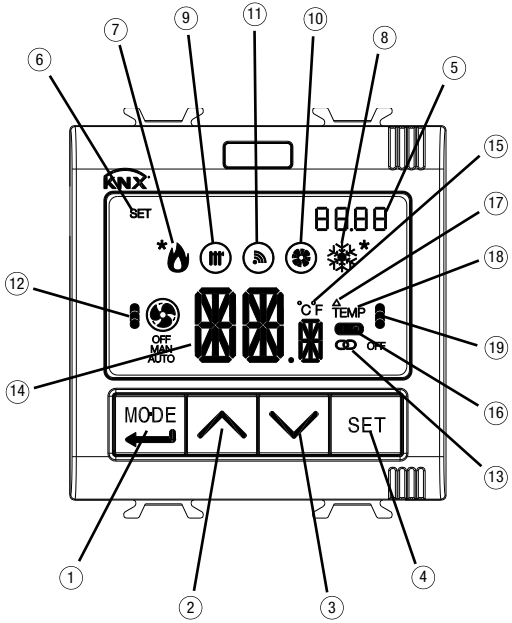
ENGLISH

Briefly

This manual explains the steps for setting the thermostat parameters. All the information concerning the technical data of the product, the connection diagrams, the descriptions of the commands, and the instructions for correct assembly are contained in the installation manual supplied with the product and which can also be downloaded from the website www.gewiss.com.

Position of the commands

The thermostat is equipped with a backlit LCD display and four command push-buttons that can always be accessed.



ATTENTION!
If the display backlighting is enabled, only the screen will light up when any one of the 4 front button keys is pressed for the first time; press the keys again to implement the required command.

Description of the commands

COMMAND PUSH-BUTTONS — **Symbol**

① Select operating mode / Confirm
② Adjust temperature (+) / Visualise pages
③ Adjust temperature (-) / Visualise pages
④ Parameter setting

INFORMATION ON THE DISPLAY

⑤ Clock / KNX temperature adjustment probe visualised / Value shown on the humidity page (Hr = relative humidity; HA = specific humidity; tr = dew point temperature)

⑥ Settings menu / Set the values to send to the KNX temperature adjustment probe

⑦ Heating activation - 1st stage (flame) or 2nd stage (flame+asterisk)
if the flame flashes: no/incorrect reception of heating solenoid valve (1st stage) alert
if the asterisk flashes: no/incorrect reception of heating solenoid valve (2nd stage) alert

⑧ Cooling activation - 1st stage (snowflake) or 2nd stage (snowflake+asterisk).
On the humidity page, the asterisk indicates a comfortable environment
if the snowflake flashes: no/incorrect reception of cooling solenoid valve (1st stage) alert
if the asterisk flashes: no/incorrect reception of cooling solenoid valve (2nd stage) alert

⑨ Type of operation: heating (winter)
if it flashes: floor temperature alarm in progress

⑩ Type of operation: cooling (summer)

⑪ Remote command enabling
if it flashes: operation on basis of a remote command

⑫ Fan coil operating mode
- speed OFF
- speed 1 (automatic / manual)
- speed 2 (automatic / manual)
- speed 3 (automatic / manual)

if the fan flashes: no/incorrect reception of fan coil speed alert
if the segments flash: the speed set (manually or by algorithm) is waiting to be activated

⑬ Thermostat in Slave operation

⑭ Temperature measured / Temperature, relative humidity, specific humidity, dew point temperature measured by the KNX temperature adjustment probe / Setpoint on KNX temperature adjustment probe input
if it flashes: manual forcing of the setpoint, or end of humidity probe monitoring time

⑮ Temperature measurement unit

⑯ Indication of auxiliary input status (I = contact closed, O = contact open)

⑰ Thermal residual current device

⑱ Visualisation of temperature measured by KNX temperature adjustment probe

⑲ Thermostat mode
- Economy (in heating mode) - Comfort (in cooling mode)
- Pre-comfort (in heating mode and cooling mode)
- Comfort (in heating mode) - Economy (in cooling mode)
- Anti-freeze/High temperature protection

if the segments flash: the setpoint is temporarily forced
if OFF flashes: manual device switch-off (anti-freeze/high temperature protection)

Control modes

The thermostat can be set with 2 different control modes:

- **Slave:** operation depends on the device configured as the Master (e.g. the KNX flush-mounting timed thermostat GW1x794H), that sets the type, operating mode or setpoint of the thermostat on the basis of the ETS parameterisation. In the first case (modes), the thermostat uses the set-points configured via ETS. These can be modified locally and via the BUS if these options are enabled in the ETS configuration. The fixed temperature setpoint can be temporarily forced, but the operating mode cannot be altered. The forced setpoint will remain valid until the master device sends a new operating mode. In the second case (set-points), the thermostat uses the setpoint received from the master device (but which can always be altered locally).
- **Autonomous:** the thermostat type and operating mode can be set locally. Operation is not dependent on any other device. In the autonomous control mode, you can alter the setpoint as you wish, and enable the thermostat to receive remote mode-setting commands (OFF/Economy/Pre-comfort/Comfort) and type-setting commands (Heating/Cooling) from other devices such as a push-button or the GSM KNX remote control.

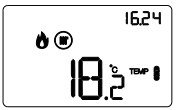
Operating modes

The thermostat has 4 different operating modes:

- ECONOMY
- PRE-COMFORT
- COMFORT
- OFF - ANTIFREEZE/HIGH TEMPERATURE PROTECTION

In the autonomous control mode, to switch from one HVAC mode (economy, pre-comfort, comfort, off) to another, use the MODE key: each time it is pressed, the corresponding setpoint is shown (flashing) for a moment.

In the slave control mode, no local modification of the HVAC mode is allowed; only the manual switch-off (if enabled) of the device is possible (HVAC OFF).

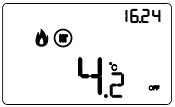


In the **economy, pre-comfort and comfort operating modes**, the thermostat always uses the corresponding temperature set-points.

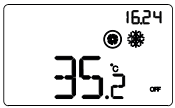
The display shows the detected room temperature and the TEMP, TEMP or TEMP symbol.

MEANING OF TEMP TEMP TEMP

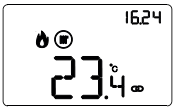
Symbol	Heating		Cooling	
	Setpoint	*Operating mode*	*Setpoint*	*Operating mode*
TEMP	TECONOMY	Economy	TCOMFORT	Comfort
TEMP	TPRE-COMFORT	Pre-comfort	TPRE-COMFORT	Pre-comfort
TEMP	TCOMFORT	Comfort	TECONOMY	Economy



The **anti-freeze function** is only active in heating mode, when the temperature adjustment system is switched OFF. In this case, the thermostat uses the fixed high temperature temperature setpoint, only reactivating the heating system if the room temperature falls below TANTIGELO (Tanti-freeze). The display shows the word OFF, along with the detected room temperature.

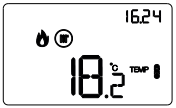


The **high temperature protection function** is only active in cooling mode, when the temperature adjustment system is switched OFF.
In this case, the thermostat uses the fixed high temperature protection setpoint, only reactivating the cooling system if the room temperature exceeds TPROTEZIONE ALTE TEMPERATURE (Thigh temperature protection).
The display shows the word OFF, along with the detected room temperature.

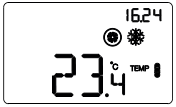


In the Slave control mode, the display shows the temperature and the ∞ symbol. The thermostat uses the operating mode or the setpoint value received from the master device via the BUS.

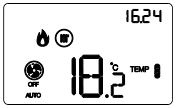
During operation, the activation of the heating or cooling mode is indicated in the following way:



Heating
The 🔥 symbol indicates that the activation command has been sent to the command actuator of the boiler or area solenoid valve (1st stage of the heating system[1]). If the load notifications have been activated via ETS, and the thermostat does not receive confirmation of effective implementation from the actuator, the 🔥 symbol will begin to flash. Subsequently, the thermostat sends the activation command every 60 seconds until it receives confirmation. The *🔥 symbol indicates that the 2nd stage of the heating system[1] has been activated.



Cooling
The ❄ symbol indicates that the activation command has been sent to the command actuator of the conditioner or area solenoid valve (1st stage of the cooling system[1]). If the load notifications have been activated via ETS, and the thermostat does not receive confirmation of effective implementation from the actuator, the ❄ symbol will begin to flash. Subsequently, the thermostat sends the activation command every 60 seconds until it receives confirmation. The ❄* symbol indicates that the 2nd stage of the cooling system[1] has been activated.



Operation with active fan coil control
If the fan coil control function has been activated in the setting of the parameters via ETS, the display will show the symbol.
In addition, you will be offered the page on which you can manually alter the fan coil speed or set the AUTO mode (whereby the fan coil speed is automatically adjusted on the basis of the difference between the setpoint fixed on the device and the detected temperature).

[1] Some temperature adjustment systems (e.g. floor-mounting ones) have a very high thermal inertia level, so it takes considerable time to bring the room temperature into line with the required setpoint; in order to reduce this inertia, another system with less inertia is often installed to help the main system to heat/cool the room when the difference between the setpoint and the detected temperature is particularly marked. This system, known as 2nd stage, helps to heat/cool the room during the initial phase, then it stops working when the difference between the setpoint and the temperature can be managed in a faster way.

Thermostat operation statuses

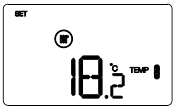
The thermostat has two distinct operation statuses:

- Normal operation
- Parameter setting

When it is switched on, the thermostat goes into “normal operation” status. Using the SET button key, you can switch from one status to the other (the switchover from “parameter setting” status to “normal operation” status also comes about automatically, 30 seconds after the last pressure on the button keys).

Normal operation

In normal operation conditions, the pages containing information about the thermostat are shown, along with the pages relating to any remote elements (e.g. KNX temperature adjustment probes) that may be present.

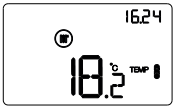


Choosing the page you want to see

To access the screen listing the pages that can be viewed (relating to the thermostat, humidity and remote elements), keep the SET button key pressed.

Use the ∧ or ∨ button key to scroll through the sequence (if there are no remote elements - P01, P02, P03, P04 - and no humidity section, the main thermostat page will be displayed). To confirm a page, press the MODE button key or wait for the 30-second time-out period to elapse.

Pages relating to the thermostat (control type: HVAC)

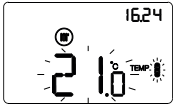


Choosing the HVAC mode (pre-comfort, comfort, economy or OFF)

If the visible page relates to the thermostat, and the control type has been set by ETS in HVAC mode, press the MODE button key to select the required HVAC mode (TEMP, TEMP, TEMP or OFF).

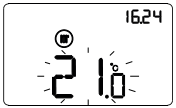
Each time the MODE button key is pressed, the setpoint of the selected HVAC mode is shown for a moment.

If the device is configured as a Slave, no local modification of the HVAC mode is allowed; manual HVAC switch-off (OFF) is permitted if this function is enabled via ETS.

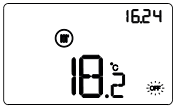


Forcing the setpoint manually
If the displayed page relates to the thermostat and any HVAC mode other than OFF is active, press the ▲ or ▼ button key to temporarily modify the setpoint of the active HVAC mode (within the adjustment limits set via ETS), then confirm with the MODE button key or wait for the 5-second time-out period to elapse. The use of forcing is indicated by the flashing of the ▪, ▪, ▪ symbols. It remains active until the active HVAC mode is modified

Pages relating to the thermostat (control type: setpoint)

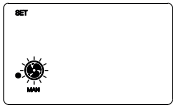


Forcing the setpoint manually
If the visible page relates to the thermostat, and the control type has been set by ETS in setpoint mode, press the ▲ or ▼ button key to temporarily force the setpoint itself (within the adjustment limits set via ETS).
The forcing remains active until the operating setpoint is modified, or until the thermostat is manually switched off.



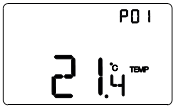
Manual switch-off
If the visible page relates to the thermostat, and the control type has been set by ETS in setpoint mode, press the MODE button key to switch the device off manually (OFF).
Press the MODE button key again to reactivate the device; when the button key is pressed, the active setpoint will be shown for a few moments. This operation is only possible if the function is enabled via ETS.

Pages relating to the thermostat (control type: HVAC or setpoint)



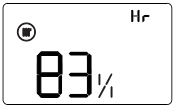
Choosing the fan coil speed
If the displayed page relates to the thermostat, and the control type is setpoint or any HVAC mode other than OFF, press the SET ▲ or SET ▼ button key simultaneously to access the selection page (the control algorithm of heating/cooling operation must be set on "fan coil" from ETS).
Use the ▲ or ▼ button key to select the required fan coil setting (AUTO, MAN, MAN, MAN), then confirm with the MODE button key or wait for the 30-second time-out period to elapse.

Pages relating to the remote elements

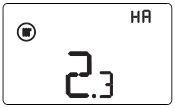


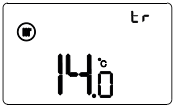
Viewing the remote elements
If the visible page relates to a remote element, press the MODE button key to alternate the visualisation of the detected temperature and the setpoint; if one of these two figures is not available, nothing will happen when the MODE button key is pressed.

Pages relating to the humidity section



View the humidity parameters
If the page displayed relates to the humidity section, press the ∧ or ∨ button key to view the relative humidity value Hr, specific humidity HA and dew point temperature tr.



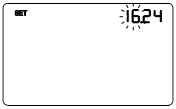


To return to the screen listing the pages that can be viewed, keep the SET button key pressed.
Use the ∧ or ∨ button key to scroll through the sequence. To confirm a page, press the MODE button key or wait for the 30-second time-out period to elapse.

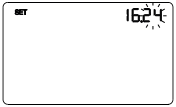
Parameter setting

To set the operating parameters of the thermostat, humidity, and any remote elements (e.g. KNX temperature adjustment probes), press the SET button key.
To quit the parameter setting procedure without saving the modifications made on the current page, just press the SET button key again or wait 30 seconds from the last pressure on the button keys. The parameters that can be modified will depend on the page you are viewing in normal operation status: if the visible page relates to the thermostat, the Set menu concerning the thermostat will be shown; if the visible page is that of a general remote element, the Set menu concerning the selected element will be shown; if the visible page relates to the humidity section, the Set menu concerning the selected humidity threshold will be shown.
The parameters relating to the thermostat and humidity are collected into three functional groups: general parameters, operating parameters, and control parameters. Each group can be enabled or disabled for visualisation and/or local modification, by setting the ETS parameter "Local parameter modification" of the "General" menu.

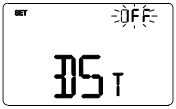
General parameters



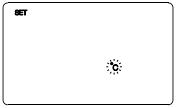
Setting the hour
When the hour figures are flashing, set the hour using the ∧ ∨ button keys.
To confirm the set value and move on to the next parameter, press the MODE button key within 30 seconds.



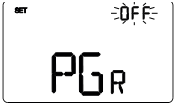
Setting the minutes
When the minute figures are flashing, set the minutes using the ∧ ∨ button keys.
To confirm the set value and move on to the next parameter, press the MODE button key within 30 seconds.



Setting GMT / daylight-saving time
Use the ∧ or ∨ button key to choose either GMT or daylight-saving time (OFF = GMT; ON = daylight-saving time). This screen is only visible if the parameter has been enabled from ETS. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



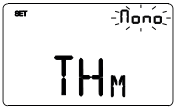
Setting the temperature measurement unit
When the °C or °F temperature symbol begins flashing, select the temperature measurement unit by means of the ▲ ▼ button keys. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



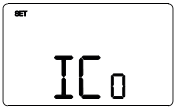
Returning to the main page
Use the ▲ or ▼ button key to set the main page that the device must automatically visualise at the end of a period of inactivity by the user (OFF = function disabled; THER = main thermostat page; P01, P02, P03, P04 = pages relating to the remote elements, if these are enabled; Hr = pages relating to humidity, if enabled).
If this function is enabled, press the MODE button key to access the page for setting the duration of the inactivity period. Use the ▲ or ▼ button key to set the gap (5 - 120 seconds). To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

Back-lighting colour
Use the ▲ or ▼ button key to modify the colour of the display back-lighting. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

NB: if red/blue is chosen, the thermostat background will be white during the idle phase (heating and cooling valves deactivated) of normal operation, turning red when the heating system is activated or blue when the cooling system is activated.

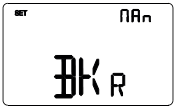


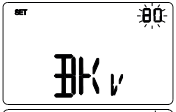
Icons theme
Use the ▲ or ▼ button key to modify the colour themes for representing the various icons shown on the display (MONO = single-colour theme; TH1, TH2, TH3, TH4, TH5 = colour themes) when the backlighting is active. The screen is only visible if the back-lighting colour is white. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

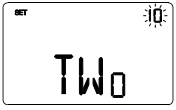


Single-colour theme for icon colour
Use the ▲ or ▼ button key to modify the colour of the icons within a single-colour theme. This parameter is only visible if the icon theme is single-colour and the back-lighting is active. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

Back-lighting timing
Use the ▲ or ▼ button key to set the minimum duration of the inactivity time of the user before the back-lighting is automatically deactivated (the gap can be set from 10 to 180 seconds). This parameter is only visible if the back-lighting is active. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



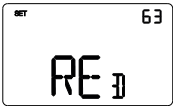




Back-lighting intensity
Use the ▲ or ▼ button key to choose how to manage the back-lighting intensity (MAN = fixed value; SENS = light sensitive sensor). This parameter is only visible if the back-lighting is active. If the type of management is MAN, use the ▲ or ▼ button key to choose the required percentage of light intensity (the gap can be set from 30 to 100%).
If the type of management is SENS, use the ▲ or ▼ button key to increase (+10%), decrease (-10%) or leave unaltered (0%) the intensity value detected by the built-in light-sensitive sensor.
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

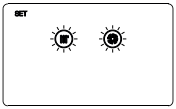
If the local modification function has been enabled from the ETS menu for the General Parameters group only, press the MODE button key to return to the start of the parameter configuration menu. Otherwise, continue with the configuration of the next group of parameters.

Operating parameters



White balancing

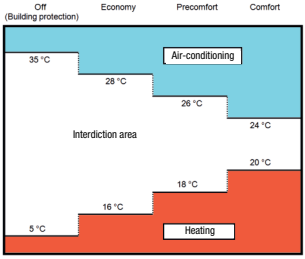
Use the button keys ▲ or ▼ to set the weight of the red (RED), green (GRE) and blue (BLU) component in the backlighting of the display (value can be set between 1 and 63). The regulation only applies to the white colour of the screen. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Heating / cooling selection

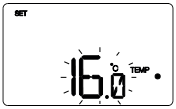
Use the ▲ or ▼ button key to select the operating type (☀ = heating; ❄ = cooling; ☀ ❄ = auto). The auto function is visible if the interdiction area[1] has been enabled via the relative ETS parameter, or if the device is operating as a Slave. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

[1] The operating mode of the device (heating or cooling) can be managed manually or autonomously (by the device itself). The manual method is via the local navigation menu or BUS commands that allow you to switch from one type to another, modifying the specific parameter. The automatic mode is based on the principle of an interdiction area - i.e. the temperature gap between the setpoints of the HVAC heating and cooling modes, allowing the automatic switchover from one type of operation to the other.



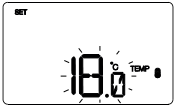
The figure shows that as long as the detected temperature is below the heating setpoint, the operating mode is “heating”; if the detected value is higher than the cooling setpoint, then the operating mode is “cooling”. If the detected value is within the interdiction area, the operating mode remains as before. The heating -> cooling switchover point corresponds to the setpoint of the HVAC mode relating to cooling; the cooling -> heating switchover point corresponds to the setpoint of the HVAC mode relating to heating.

If the displayed page relates to the thermostat (type of operation: heating)



Setpoint setting TEMP ●

When the TEMP ● symbol appears, the temperature value begins flashing. Adjust the value of TEMP ● (Teconomy) / with the aid of the ▲ ▼ button keys. To confirm the set value, press the MODE button key within 30 seconds.



Setpoint setting TEMP ▮

When the TEMP ▮ symbol appears, the temperature value begins flashing. Adjust the value of TEMP ▮ (TPRE-COMFORT) with the aid of the ▲ ▼ button keys. To confirm the set value, press the MODE button key within 30 seconds.

Setpoint setting TEMP ▮

When the TEMP ▮ symbol appears, the temperature value begins flashing. Adjust the value of TEMP ▮ (TCOMFORT) with the aid of the ▲ ▼ button keys.

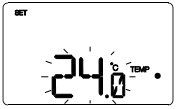
To confirm the set value, press the MODE button key within 30 seconds.

Setting the anti-freeze temperature value

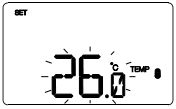
When the OFF symbol appears, the temperature value begins flashing. Adjust the value of the anti-freeze temperature using the ▲ ▼ button keys.

To confirm the set value, press the MODE button key within 30 seconds.

If the displayed page relates to the thermostat (type of operation: cooling)



Setpoint setting TEMP ●
When the TEMP ● symbol appears, the temperature value begins flashing. Adjust the value of TEMP ● (TCOMFORT) with the aid of the ▲ ▼ button keys. To confirm the set value, press the MODE button key within 30 seconds.



Setpoint setting TEMP ●
When the TEMP ● symbol appears, the temperature value begins flashing. Adjust the value of TEMP ● (TPRE-COMFORT) with the aid of the ▲ ▼ button keys. To confirm the set value, press the MODE button key within 30 seconds.

Setpoint setting TEMP ●
When the TEMP ● symbol appears, the temperature value begins flashing. Adjust the value of TEMP ● (Teconomy) with the aid of the ▲ ▼ button keys. To confirm the set value, press the MODE button key within 30 seconds.

Setting the high temperature protection value
When the OFF symbol appears, the temperature value begins flashing. Adjust the value of the high temperature protection using the ▲ ▼ button keys.
To confirm the set value, press the MODE button key within 30 seconds.

If the operating type is “auto”, the setpoint setting pages visualised are those relating to the operating type active in that moment (heating or cooling).

ATTENTION!
The setpoint values are subject to the following limitations:

- HEATING
  TANTIGELO (Tanti-freeze) ≤ TEMP ● ≤ TEMP ● ≤ TEMP ●
- COOLING
  TEMP ● ≤ TEMP ● ≤ TEMP ● ≤ TPROTEZIONE ALTE TEMPERATURE
  (Thigh temperature protection)

If the displayed page relates to humidity

Enabling the humidity thresholds (from 1..5)
Use the ▲ ▼ button keys to enable (ON) or disable (OFF) the relative humidity thresholds (up to 5, if enabled in ETS).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

Enabling the dew point alarm threshold
Use the ▲ ▼ button keys to enable (ON) or disable (OFF) the dew point alarm threshold (if enabled in ETS).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

Humidity thresholds (from 1..5)
Use the ▲ ▼ button keys to modify the value of the relative humidity thresholds (up to 5, if enabled in ETS). The gap that can be set varies from 1% to 100%. To confirm the set value and move on to the next parameter, press the MODE button key within 30 seconds.

Signalling limit of the dew point alarm
Use the ▲ ▼ button keys to modify the value associated with the signalling limit of the dew point alarm threshold (if enabled in ETS). The gap that can be set varies from 1% to 100%.
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

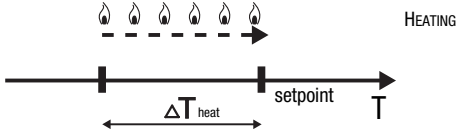
If the local modification function has been enabled from the ETS menu for the General Parameters and Operating Parameters groups only, press the MODE button key to return to the start of the parameter configuration menu. Otherwise, continue with the configuration of the next group of parameters.

Control parameters
The screens that can be visualised will depend on the type of control logic of the temperature adjustment system that was set via ETS (with the "Heating control algorithm" and the "Cooling control algorithm" parameters of the "Load control" menu):

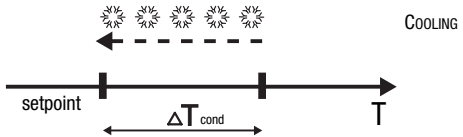
- two points ON-OFF
- two points 0%-100%
- PWM proportional-integral
- continuous proportional-integral
- fan coil with ON-OFF speed control
- fan coil with continuous speed control

TWO POINTS ON-OFF
The operating principle manages the temperature adjustment system with two thresholds (hysteresis cycle), used to distinguish the ON or OFF status of the system.

In heating mode, when the detected temperature is lower than the "setpoint - ΔT_{heat}" value, the device activates the heating system by sending the relative command to the actuator that manages it; when the detected temperature reaches the fixed setpoint value, the device deactivates the heating system.



In cooling mode, when the measured temperature is higher than the "setpoint + ΔT_{cond}" value, the device activates the cooling system by sending the relative command to the actuator that manages it; when the measured temperature reaches the fixed setpoint value, the device deactivates the cooling system.

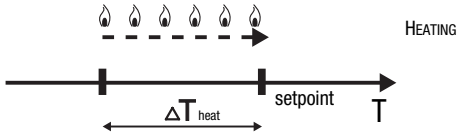


To avoid continuous solenoid valve switchovers, after an OFF-ON-OFF sequence the next ON command can only be sent after at least 2 minutes have elapsed.

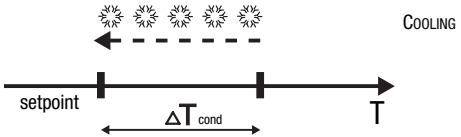
TWO POINTS 0%-100%

The operating principle is similar to that of the two points ON-OFF, but with the difference that the communication objects for temperature adjustment management are of 1 byte.

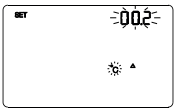
In heating mode, when the detected temperature is lower than the "setpoint - ΔT_{heat}" value, the device activates the heating system by sending the relative percentage command to the actuator that manages it; when the detected temperature reaches the fixed setpoint value, the device deactivates the heating system.



In cooling mode, when the detected temperature is higher than the "setpoint + ΔT_{cond}" value, the device activates the cooling system by sending the relative percentage command to the actuator that manages it; when the measured temperature reaches the fixed setpoint value, the device deactivates the cooling system.



To avoid the continuous switching of the solenoid valve, after a 0%-100%-0% sequence, the next 100% command can only be sent after at least 2 minutes have elapsed.



Setting the adjustment differential

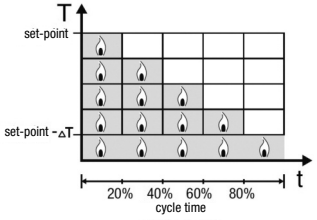
Use the ▲▼ button keys to set the value of the adjustment differential of the two-point control algorithm (the gap can be set from 0.1°C to 2.0°C).

To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

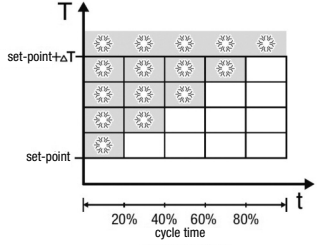
PWM PROPORTIONAL-INTEGRAL

The PWM control algorithm, used to control the temperature adjustment system, allows you to drastically reduce the times subject to thermal inertia and introduced by the two-point control. This type of control involves the modulation of the impulse duty-cycle, represented by the temperature adjustment system activation time, on the basis of the difference between the fixed setpoint and the temperature effectively detected. Two components are needed to calculate the output function: the proportional component and the integral component, used to improve the response in order to reach the temperature at the fixed setpoint. Once the proportional band has been defined (from setpoint to setpoint - ΔT for heating mode, from setpoint to setpoint + ΔT for cooling mode), its width determines the extent of the system response: if it is too narrow, the system will be more reactive but with swings; if it is too wide, the system will be slower. The ideal situation is one where the band is as narrow as possible, without swings. The integration time is the parameter that determines the action of the integral component. The longer the integration time, the slower the modification of the output and hence the slower the system response. If the time is too short, the threshold value will be exceeded, and the function will swing around the setpoint.

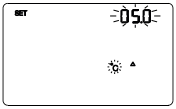
HEATING



AIR-CONDITIONING

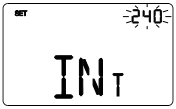


The device keeps the temperature adjustment system switched on for a cycle time percentage that depends on the output function of the proportional-integral control; the device continually adjusts the system, modulating the system ON-OFF times with a duty-cycle that depends on the value of the output function (calculated at each time gap equal to the cycle time). The cycle time is reinitialised every time the reference setpoint is modified.
With this type of algorithm, there is no longer a hysteresis cycle on the heating/cooling element, so the inertia times introduced by the two-point control are eliminated. This produces energy savings because the system does not remain switched on when it is not needed and, once the required temperature has been reached, it continues to provide a limited contribution to compensate for the environmental heat dispersion.



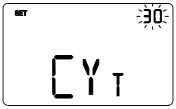
Setting the proportional band

Use the ⌃⌄ button keys to set the value of the proportional band of the proportional-integral control algorithm (the gap can be set from 1°C to 10°C).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the integration time

Use the ⌃⌄ button keys to set the value of the integration time of the proportional-integral control algorithm (the gap can be set from 1 to 250 seconds, OFF).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the cycle time

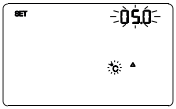
Use the ⌃⌄ button keys to set the value of the cycle time for the proportional-integral control algorithm (the possible values are: 5, 10, 15, 20, 30, 40, 50, 60 minutes).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

CONTINUOUS PROPORTIONAL-INTEGRAL

The operating principle is similar to that of the PWM proportional-integral, but with the difference that the communication objects for temperature adjustment management are of 1 byte.
This type of control involves the continuous control of the difference between the fixed setpoint and the temperature effectively detected. Two components are needed to calculate the output

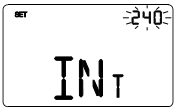
function: the proportional component and the integral component, used to improve the response in order to reach the temperature at the fixed setpoint. Once the proportional band has been defined (from setpoint to setpoint - ΔT for heating mode, from setpoint to setpoint + ΔT for cooling mode), its width determines the extent of the system response: if it is too narrow, the system will be more reactive but with swings; if it is too wide, the system will be slower. The ideal situation is one where the band is as narrow as possible, without swings. The integration time is the parameter that determines the action of the integral component. The longer the integration time, the slower the modification of the output and hence the slower the system response. If the time is too short, the threshold value will be exceeded, and the function will swing around the setpoint.

The device continually adjusts the temperature adjustment system, sending percentage activation values to the solenoid valve. With this type of algorithm, there is no longer a hysteresis cycle on the heating/cooling element, so the inertia times introduced by the two-point control are eliminated. This produces energy savings because the system does not remain switched on when it is not needed and, once the required temperature has been reached, it continues to provide a limited contribution to compensate for the environmental heat dispersion.



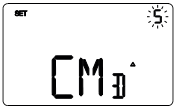
Setting the proportional band

Use the ▲▼ button keys to set the value of the proportional band of the proportional-integral control algorithm (the gap can be set from 1°C to 10°C).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the integration time

Use the ▲▼ button keys to set the value of the integration time of the proportional-integral control algorithm (the gap can be set from 1 to 250 seconds, OFF).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting a command sending variation

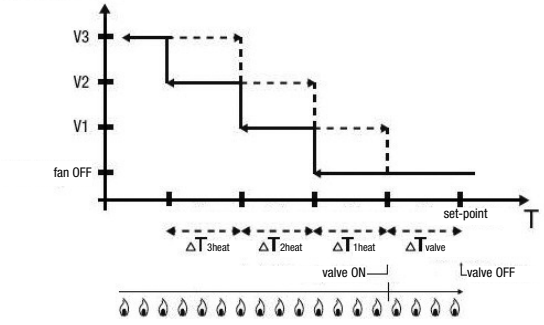
Use the ▲▼ button keys to set the minimum percentage value for sending the command of the continuous proportional control algorithm (the possible values are: 1, 2, 3, 4, 5, 10, 20%). To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

FAN COIL WITH ON-OFF SPEED CONTROL

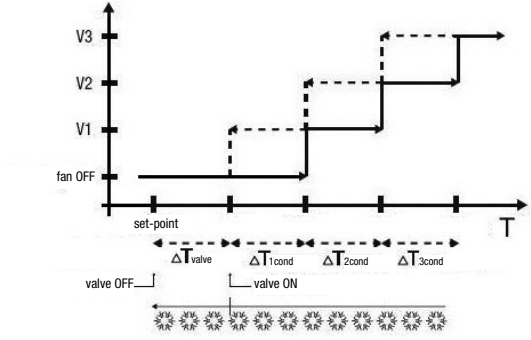
The operating principle involves activating/deactivating the fan coil speeds on the basis of the difference between the fixed setpoint and the detected temperature, using independent 1-bit communication objects to manage the individual speeds.

The figures below refer to the control of the speeds of a fan coil with three operating stages for heating and cooling. The charts show that each stage has a hysteresis cycle, and each speed is associated with two thresholds that determine its activation and deactivation.

HEATING



AIR-CONDITIONING



Speed V1 is activated when the temperature value is lower than the "setpoint - ΔT_{valve} - ΔT_{1heat}" value (in heating mode) or higher than the "setpoint + ΔT_{valve} + ΔT_{1cond}" value (in cooling mode), and deactivated when the temperature value reaches the "setpoint - ΔT_{valve}" value (in heating mode) or the "setpoint + ΔT_{valve}" value (in cooling mode). The first speed is also deactivated when a higher speed needs to be activated.

Speed V2 is activated when the temperature value is lower than the "setpoint - ΔT_{valve} - ΔT_{1heat} - ΔT_{2heat}" value (in heating mode) or higher than the "setpoint + ΔT_{valve} + ΔT_{1cond} + ΔT_{2cond}" value (in cooling mode), and deactivated when the temperature value reaches the "setpoint - ΔT_{valve} - ΔT_{1heat}" value (in heating mode) or the "setpoint + ΔT_{valve} + ΔT_{1cond}" value (in cooling mode). The second speed is also deactivated when a higher speed needs to be activated.

Speed V3 is activated when the temperature value is lower than the "setpoint - ΔT_{valve} - ΔT_{1heat} - ΔT_{2heat} - ΔT_{3heat}" value (in heating mode) or higher than the "setpoint + ΔT_{valve} + ΔT_{1cond} + ΔT_{2cond} + ΔT_{3cond}" value (in cooling mode), and deactivated when the temperature value reaches the "setpoint - ΔT_{valve} - ΔT_{1heat} - ΔT_{2heat}" value (in heating mode) or the "setpoint + ΔT_{valve} + ΔT_{1cond} + ΔT_{2cond}" value (in cooling mode).

With regards the heating (cooling) solenoid valve, you can see that once the detected temperature is lower (higher) than the "setpoint - ΔT_{valve}" ("setpoint + ΔT_{valve}") value, the thermostat sends the activation command to the solenoid valve that manages the heating system; the solenoid valve is deactivated when the detected temperature reaches the fixed setpoint value. In this way, the heating (cooling) of the fan coil can also be exploited for irradiation, without any speed being activated.

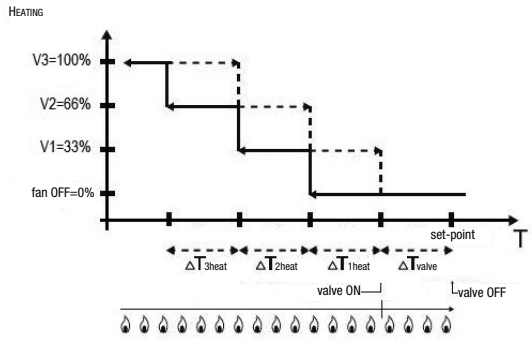
To avoid continuous switchovers, the thermostat can wait up to 2 minutes before sending the activation command to the actuator that controls the temperature adjustment system, or to the actuator channels that command the fan coil speeds.

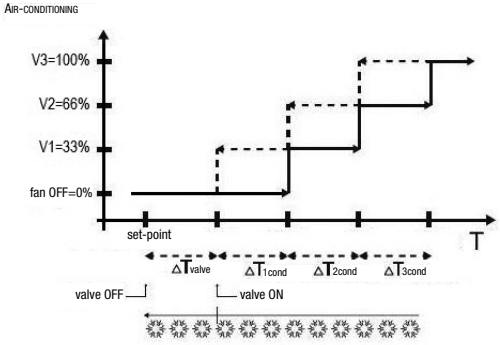
Both figures refer to the three-stage control of the fan coil, as the descriptions are complete. For two-stage or single-stage control, the logic is the same, but not all the speeds are controlled.

FAN COIL WITH CONTINUOUS SPEED CONTROL

The operating principle is similar to that of the fan coil with ON-OFF speed control, but with the difference that there are no independent communication objects for managing the individual speeds - just one 1-byte object.

The figures below refer to the control of the speeds of a fan coil with three operating stages for heating and cooling. The charts show that each stage has a hysteresis cycle, and each speed is associated with two thresholds that determine the sending of the associated value.





Speed V1 is activated when the temperature value is lower than the "setpoint - ΔT_{valve} - ΔT_{1heat}" value (in heating mode) or higher than the "setpoint + ΔT_{valve} + ΔT_{1cond}" value (in cooling mode), and deactivated (sending of "fan OFF" value) when the temperature value reaches the "setpoint - ΔT_{valve}" value (in heating mode) or the "setpoint + ΔT_{valve}" value (in cooling mode). The first speed is also deactivated when a higher speed needs to be activated.

Speed V2 is activated when the temperature value is lower than the "setpoint - ΔT_{valve} - ΔT_{1heat} - ΔT_{2heat}" value (in heating mode) or higher than the "setpoint + ΔT_{valve} + ΔT_{1cond} + ΔT_{2cond}" value (in cooling mode), and deactivated (sending of value V1) when the temperature value reaches the "setpoint - ΔT_{valve} - ΔT_{1heat}" value (in heating mode) or the "setpoint + ΔT_{valve} + ΔT_{1cond}" value (in cooling mode). The second speed is also deactivated when a higher speed needs to be activated.

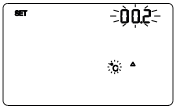
Speed V3 is activated when the temperature value is lower than the "setpoint - ΔT_{valve} - ΔT_{1heat} - ΔT_{2heat} - ΔT_{3heat}" value (in heating mode) or higher than the "setpoint + ΔT_{valve} + ΔT_{1cond} + ΔT_{2cond} + ΔT_{3cond} value (in cooling mode), and deactivated (sending of value V2) when the temperature value reaches the "setpoint - ΔT_{valve} - ΔT_{1heat} - ΔT_{2heat}" value (in heating mode) or the "setpoint + ΔT_{valve} + ΔT_{1cond} + ΔT_{2cond}" value (in cooling mode).

With regards the heating (cooling) solenoid valve, you can see that once the detected temperature is lower (higher) than the "setpoint - ΔT_{valve}" ("setpoint + ΔT_{valve}") value, the thermostat sends the activation command to the solenoid valve that manages the heating system; the solenoid valve is deactivated when the detected temperature reaches the fixed setpoint value. In this way, the heating (cooling) of the fan coil can also be exploited for irradiation, without any speed being activated.

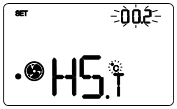
To avoid continuous switchovers, the thermostat can wait up to 2 minutes before sending the activation command to the actuator that controls the temperature adjustment system, or to the actuator channels that command the fan coil speeds.

Both figures refer to the three-stage control of the fan coil, as the descriptions are complete. For two-stage or single-stage control, the logic is the same, but not all the speeds are controlled.

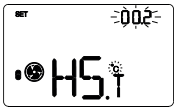
ATTENTION: To control the fan coil speeds with ON/OFF commands in the absence of an actuator with interlock, you must enable the notifications from the commanded actuator and the link of the relative objects in the configuration of the ETS project. In this case (e.g. passing from V1 to V2), the thermostat only sends a speed V2 activation command after receiving the notification of the opening of the speed V1 command contact (transit from speed OFF). If there is no notification, the thermostat repeats the contact opening command until it receives a positive result. This condition is shown on the display by the flashing ⚙ symbol.



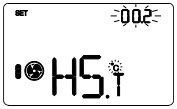
Setting the valve adjustment differential
Use the ▲ ▼ button keys to set the value of the adjustment differential of the fan coil valve control algorithm (the gap can be set from 0.1°C to 2.0°C). If the control logic is common, the parameter remains the same in both heating and cooling mode. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



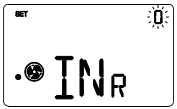
Setting the adjustment differential for speed 1
Use the ▲ or ▼ button key to set the value of the adjustment differential of fan coil speed 1 (the gap can be set from 0°C to 2.0°C). If a value of 0°C is set, then when the solenoid valve is activated fan coil speed 1 will be activated as well. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



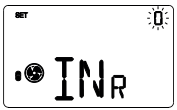
Setting the adjustment differential for speed 2
Use the ▲ or ▼ button key to set the value of the adjustment differential of fan coil speed 2 (the gap can be set from 0.1°C to 2.0°C). This parameter is visible if the fan coil speed number is higher than 1. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



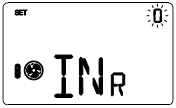
Setting the adjustment differential for speed 3
Use the ▲ or ▼ button key to set the value of the adjustment differential of fan coil speed 3 (the gap can be set from 0.1°C to 2.0°C). This parameter is visible if the fan coil speed number is 3. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the inertia for speed 1
Use the ▲ or ▼ button key to set the value of the inertia time for fan coil speed 1 (the gap can be set from 0 to 10 seconds). To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

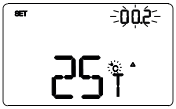


Setting the inertia for speed 2
Use the ▲ or ▼ button key to set the value of the inertia time for fan coil speed 2 (the gap can be set from 0 to 10 seconds). This parameter is visible if the fan coil speed number is higher than 1. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the inertia for speed 3
Use the ▲ or ▼ button key to set the value of the inertia time for fan coil speed 3 (the gap can be set from 0 to 10 seconds). This parameter is visible if the fan coil speed number is 3. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

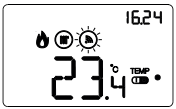
Common settings for all the control algorithms



Setting the 2nd stage adjustment differential
Use the ▲ or ▼ button key to set the value of the adjustment differential of the 2nd stage control algorithm (the gap can be set from 0.1°C to 2.0°C). This screen is only visible if the second stage has been enabled from ETS. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

Setting the control modes
Use the ▲ or ▼ button key to modify the operating mode of the thermostat from Slave to autonomous and vice versa (SLA = slave; AUT = autonomous). This screen is only visible if the device has been set as a slave on ETS.
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

Enabling remote commands
Use the ▲ or ▼ button key to enable the possibility to receive remote commands when the device is set as autonomous (ON = remote commands enabled; OFF = remote commands disabled). This screen is visible if the device has been set as autonomous and with the remote parameters enabled via ETS. It can also be called up manually by setting AUT as the value on the “Setting the control modes” screen. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

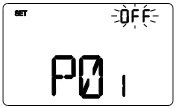


By enabling the remote commands, you can set the thermostat type and operating mode from a remote device (e.g. the KNX GSM remote control). During normal thermostat operation, when a remote command is received the symbol will flash as long as the active mode is the one set via the remote device.

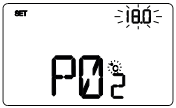
The setting of the thermostat parameters is now complete. Press the SET button key to return to normal operation.

Setting the parameters of the remote elements

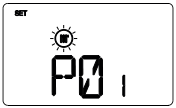
From the thermostat display, you can modify the parameters relating to the general remote element. The screens of the Set menu of the individual remote element are shown below. Repeat the programming for all the remote elements (P01, P02, P03, P04) that are present. To access the pages for setting the parameters of the remote elements, start from the visualisation screen of the required element (see *Choosing the page you want to see - page 10*), then press the SET button key.



Choosing the HVAC mode (pre-comfort, comfort, economy or OFF)
Use the ▲ or ▼ button key to select the required HVAC mode (ECO = economy, PREC = pre-comfort, COMF = comfort, or OFF).
The screen is only visible if the remote element control type has been set in HVAC mode via ETS. To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the setpoint
Use the ▲ or ▼ button key to modify the setpoint. The screen is only visible if the remote element control type has been set in Setpoint mode via ETS.
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.



Setting the type of operation
Use the ▲ or ▼ button key to set the type of operation (heating or cooling).
To confirm your choice and move on to the next parameter, press the MODE button key within 30 seconds.

The setting of the remote element parameters is now complete. Press the SET button key to return to the remote element visualisation screen.

Pre-set parameters

Time		0.00
Heating temperature setpoint	**T1**	16 °C
	T2	18 °C
	T3	20 °C
	$T_{ANTI-FREEZE}$	5 °C
Cooling temperature setpoint	**T1**	24 °C
	T2	26 °C
	T3	28 °C
	$T_{HIGH\ TEMPERATURE\ PROTECTION}$	35 °C
Temperature measurement unit		°C
Control logic		common, 2 ON-OFF points
Adjustment differential control with 2 points		0.2°C
2nd stage		Disabled
Control modes		Autonomous
Back-lighting colour		White
Icons theme		Monochrome
Icon colour		Black
Time-out for back-lighting deactivation		20 seconds
Light intensity adjustment		Manual (100% light intensity)

F.A.Q.

What does the temperature value on the display actually represent?

If no external temperature probe is enabled during ETS programming, the value shown on the display is the temperature detected by the sensor in the thermostat.
If, however, an external temperature probe (of the KNX or NTC type) has been enabled, the thermostat shows the average of the values detected by the probe and the sensor, using a variable weight between 10% and 100% (which can be defined via ETS).

The temperature shown on the display (measured by the internal sensor) does not vary, even in the face of heat variations. Why?

Following the intensive use of the device (e.g. during the programming phases) with the backlighting enabled, there may be slight alterations in the local temperature, so the device prevents the updating of the measurement for a few minutes in order to guarantee the accuracy of the measurement in these conditions too.

Can the temperature of an external KNX probe (e.g. temperature adjustment probe GW1x799, or the one on a 6-channel push-button panel GW1x783 or a 6-channel push-button touch panel GW10746) be visualised?

If the thermostat is configured (during ETS programming) to manage a KNX probe, the temperature measured by that probe can be viewed on the display; press the MODE button key on the visualisation page of the corresponding remote element, as explained in *Visualising the remote elements* on page 12.

How is the humidity value measured?

The timed thermostat does not have its own humidity sensor, so the relative humidity value must be supplied by an external KNX sensor (e.g. GW1x762H).

What happens to the time band set on the thermostat if the BUS power supply fails and is reset?

The thermostat has no buffer battery, so the time setting is lost if there is a BUS voltage failure. The time can be reset manually, or automatically via the BUS (defined via ETS) from a KNX device (timed thermostat, weather station, Master, Internet Gateway, etc.).

Is it possible to understand whether the potential-free contact input is open or closed?

If the auxiliary input was enabled during ETS programming, the thermostat display shows whether the contact is closed or open .

code 7.01.7.680.5

Ai sensi dell'articolo 9 comma 2 della Direttiva Europea 2004/108/CE si informa che responsabile dell'immissione del prodotto sul mercato Comunitario è:
According to article 9 paragraph 2 of the European Directive 2004/108/EC, the responsible for placing the apparatus on the Community market is:
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