Termostato Digitale

Thermo GSM

Manuale d'Uso

User Manual
DIGITAL THERMOSTAT

CE

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Index

English

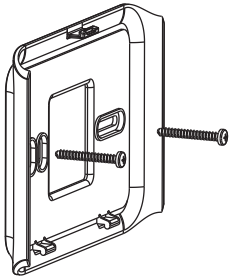
Thermo GSM Digital thermostat

English

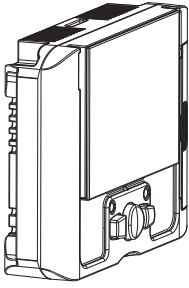
- **Comfort and control of consumptions are ensured both in winter and in summer (heating/air conditioning)**
- **Integrated GSM module for the remote control of the thermostat by mobile phone**
- **Power supply: 230 V AC (with rechargeable backup battery NiMh type AA)**

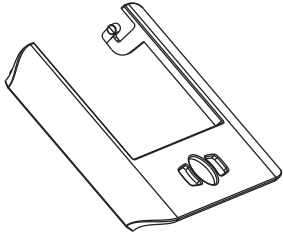
- **Possibility of wall mounting or to cover a box 503 (3 modules)**
- **Display of the operating status, time, internal and external temperature**

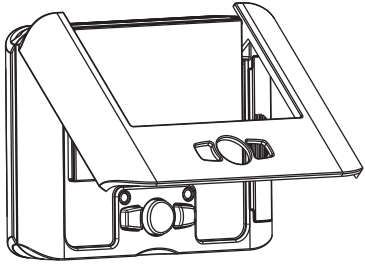
ASSEMBLY



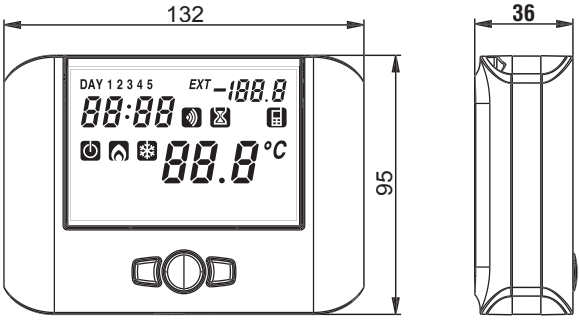
- It is recommended to place the thermostat in an area that has, as much as possible, the conditions of average temperature of the entire environment. Avoid installing too close to doors, windows, heat sources, direct sunlight radiation, and positions with excess or total lack of aeration.
  It is moreover recommended to install the ambient thermostat at about 150 cm from the floor and in an area where the gsm signal is good.
  Possibility of wall mounting or to cover a box 503 (3 modules).



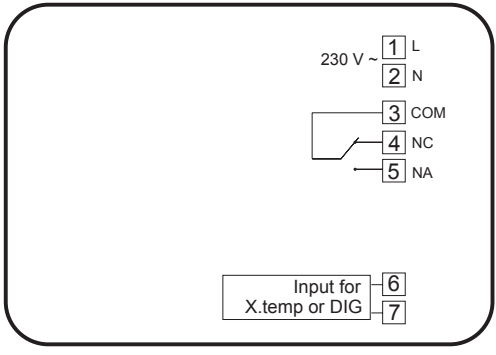




DIMENSIONS



CONNECTION DIAGRAM



■ **Thermo GSM** is a wall-mounting electronic thermostat with a built-in GSM interface, available with weekly programming. The instrument performes 1B type actions and it is suitable for installations in ambient with a pollution degree of 2 and overvoltage category III (EN 60730-1).

The GSM interface permits the total control of the thermostat, also remotely, by sending text message commands.

Thermo GSM also permits defining a night time slot to adjust the temperature according to the reduced setpoint.

Code	Model	Description
VE716700	Thermo GSM Nero	Wall-mounting GSM thermostat 230 Vac
VE715900	Thermo GSM Bianco	Wall-mounting GSM thermostat 230 Vac

SAFETY WARNINGS

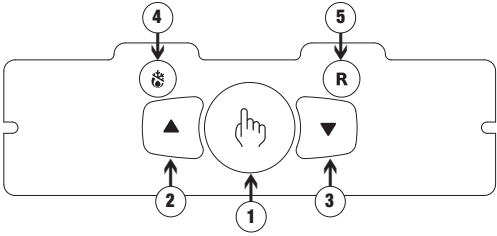
■ **During installation and operation of the product, it is necessary to comply with the following instructions:**

1) **The instrument must be installed and activated by qualified personnel, following the connection diagrams provided in this manual scrupulously.**
2) **Do not power on or connect the instrument if any part of it is damaged.**
3) **After installation it is necessary to guarantee the impossibility of accessing the terminals without specific tools.**
4) **The instrument must be installed and activated in compliance with current electric systems standards.**
5) **Before accessing the connection terminals, verify that the leads are not live.**
6) **The use of a GSM device can cause interference with the functioning of electronic devices non-screened from radiofrequency signals (electromedical devices, pacemakers, hearing aids etc.).**
7) **In the power supply network a bipolar disconnection must be present.**
8) **A protection device against over-currents should be installed in the electrical system, upstream of the device.**

TECHNICAL FEATURES

- Power supply: 230 V AC (-15% ÷ +10%) 50/60Hz
- Charge reserve: about 1 hour thanks to the backup battery
- Backup battery:NiMH rechargeable type AA, capacity 2000 mAh or higher
  ⚠ Use only rechargeable battery
- Auxiliary input configurable to connect alternately:
  – non-voltage contact (dig)
  – an external temperature probe X.Temp
- Output:
  – bistable relay with change-over contact 5A / 250V AC
- 2 temperature settings:
  – **T0** antifreeze temperature setting in advanced programming
  – **TSET** operating temperature
- Temperature adjustment:
  – ON/OFF with differential setting between 0.1°C and 1°C
  – PROPORTIONAL with proportional band and regulation period setting
- Measured temperature scale:
  – 0°C ÷ +50°C (internal probe)
  – -40°C ÷ +60°C (external probe)
- Measured and displayed temperature resolution: 0.1°C
- Temperature adjustment range: 2.0°C ÷ +50°C
- Measurement update: every 20 seconds
- Measurement precision: ± 0.5°C
- Winter or summer operating mode
- Daylight Saving Time: adjusts the time automatically (can be disabled)
- Keypad lock by password for installation in public places
- GSM quad-band module (900 - 950 - 1800 - 1900 MHz)
- Integrated GSM antenna
- Possibility to store within 5 numbers to control the instrument
- Wall mounting (or to cover a box 503)
- Terminal strips:
  – Output: 3 poles 1.5mm^2 for bistable relay
  – Input: 2 poles 1.5mm^2 for external probe or digital input
    2 poles 1.5mm^2 for connection of the power supply
- Operating temperature: 0 °C ÷ +50 °C
- Operating humidity: 20% ÷ 90% noncondensing
- Storage temperature: -10°C ÷ +65°C
- Degree of protection: XXD
- Insulation: reinforced between accessible parts (front panel) and all other terminals

CONTROL ELEMENTS / DISPLAY INDICATIONS



■ *Control elements*

1) **" ☝ " Key**: to confirm the set value / to enter the advanced programming

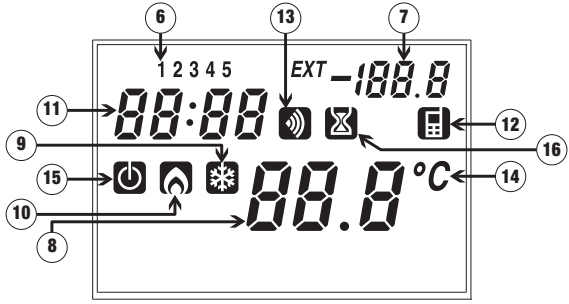
2) **" ▲ " Key**: to increase the setpoint, to increase the selected field

3) **" ▼ " Key**: to decrease the setpoint, to decrease the selected field.
To switch ON/OFF the thermostat

4) **" ❄ " Key**: to select winter operating modeg mode (preset) or summer operating mode, clock setting (use a sharp object to press the key)

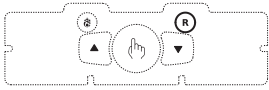
5) **" R " Key**: to reset the instrument (see "Restoring default values" page 19) (use a sharp object to press the key).

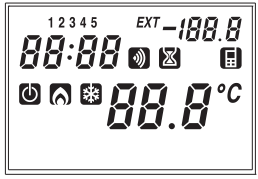
■ *Display indications*



6) "Stored numbers in bookphone" Field
7) "External temperature" Field
8) "Ambient temperature" Field
9) "Air conditioning activation" Field
10) "Heating activation" Field
11) "Clock" Field
12) "Receiving remote command (via GSM)" Field
13) "GSM connection" Field
14) "Unit of measurement" Field
15) "Heating/air conditioning systems in OFF mode" Field
16) "Night operating mode" Field

INITIAL START-UP / RESET





- Mount the thermostat to the wall, connect the power supply, the output relay and the external probe (if present) or external contact to the rear terminals. Then fix the thermostat to its base.

- Insert a SIM card enabled for telephone traffic into specific slot.
  Attention: use only 3V SIM card and standard GSM 11.12 phase 2+.

- After the device is powered on, the thermostat performs the initial start-up:
  - the relay and all the display elements switch on for 3 seconds
  - the relay and the display segments switch off.

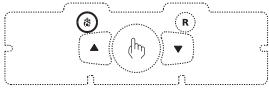
When the start-up is completed, the display shows the measured temperature.
The thermostat starts to regulate (in heating mode).
Once the clock is set, the time of the thermostat is displayed on field **(11)**.

CLOCK SETTING

- To set the clock and to switch ON/OFF the DST automatic time change, follow the steps below:

  - press the key **“ ”** for 3 seconds until the second setting appears on the display and starts flashing
  - press keys **“ ▲ ”** and **“ ▼ ”** to set the value and the key **“ ”** to confirm
  - the sequence is: seconds, hours, minutes, year, month, day, ON/OFF automatic update of DST.

- To exit the clock setting, press the key **“ ”**



Note: if the automatic update of Daylight Saving Time (DST) is activated (Change = ON):
- winter time -> summer time: last Sunday in March at 2:00 AM
- summer time -> winter time: last Sunday in October at 3:00 AM

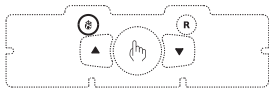
Note: if the automatic update of Daylight Saving Time (DST) is not desired, it is necessary to deactivate it manually.

Attention: if any key is not pressed before 45 seconds, the thermostat exits the setting clock menu and stores the set values.

Alternatively, it is possible to set the time of the device by sending a text message command (see "Clock synchronization, page 33).

SUMMER / WINTER OPERATING MODE

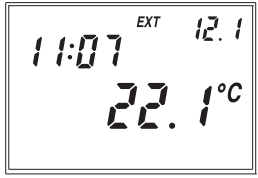
To set the operating mode (summer-air conditioning or winter-heating), press the key **" "** with a sharp object **(4)**.



On field **(11)** the writing **" rISC "** (or **" Cond "**) starts flashing and the symbol **" "** (or **" "**) appears.

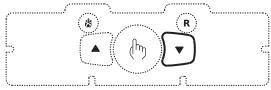
With the keys **" "** and **" "** , it is possible to select one of the two operations.

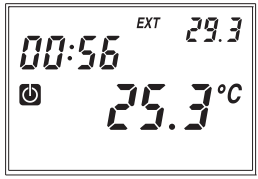
The program goes to the desired operation just pressing the key **" "** or after 45 seconds from the last operation. The functions of the summer operating mode (air conditioning) are the same of the winter operating (heating). So, the setting of all parameters can be adjusted following the procedures of this user manual.



SWITCHING ON/OFF

- To switch the thermostat off, press the key **“ ▼ ”** for 3 seconds until the symbol **“ ⏻ ”** appears on the display.
  When the thermostat is OFF (in winter-heating operating mode), it activates the antifreeze function to prevent the temperature decrease under a specific threshold.
  It is possible to set the antifreeze temperature, just entering the advanced programming menu (see “Antifreeze temperature”, page 16).





  In summer-heating opearting mode, the OFF status completely excludes the command to the air conditioner.
  To switch the device on, press the key **“ ▼ ”** again for 3 seconds until the symbol **“ ⏻ ”** stops.

ACTIVATION OF NIGHT TEMPERATURE REDUCTION

- It is possible to activate the night operating mode to reduce the temperature adjustment compared to the adjusted setpoint.
  To activate the night operating mode, press the key **“ ▲ ”** for about 3 seconds until the symbol **“ ☒ ”** appears on the display.
  The symbol is displayed according to the following criteria:
  - ON “fixed”: during the daily time slot (there is no night reduction mode)
  - ON “flashing”: during the night time slot (night reduction mode)

- To deactivate the night operating mode and do not perform the night reduction mode during the night, press the key **“ ▲ ”** for 3 seconds until the symbol **“ ☒ ”** disappears.

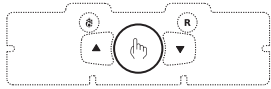
Note: the reduction value and the starting and ending time of the night reduction mode are settable in advanced programming.

ADVANCED PROGRAMMING

- In advanced programming it is possible to enter the following operating parameters:

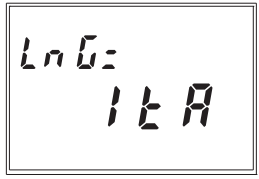
  - language selection
  - regulation type
  - parameters for the selected regulation type
  - Antifreeze temperature
  - temperature correction page
  - setting the external auxiliary input
  - regulation probe selection
  - GSM function page
  - minimum settable value as setpoint (LO)
  - maximum settable value as setpoint (HI)
  - setting of temperature reduction for night operating mode (rid)
  - starting time setting of night operating mode (INI)
  - ending time setting of night operating mode (End)
  - keypad lock password
  - system operating hours.

- To enter advanced programming, press the key **“ ”** for more than 3 seconds. The parameter to be modified starts flashing: using **“ ▲ ”** and **“ ▼ ”** it is possible to modify the value. Use **“ ”** to confirm the setting and move on to the next parameter. Once the last parameter has been confirmed exit the menu and go back to the normal operating mode.



Language selection

- The language options are: Italian, English, Spanish.
  The syntax of commands to send by text message changes according to the set language.



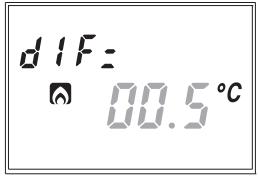
Regulation type (only for winter operating mode)

- Field **(11)** displays the writing **" rEG= "** and on field **(8)** letter **" 0 "** (ON-OFF programming) or **" P "** (proportional programming) starts flashing.

- Using the keys **" ▲ "** and **" ▼ "**, choose the desired regulation mode and press **" ☝ "** to confirm and move to the setting of the next parameter.

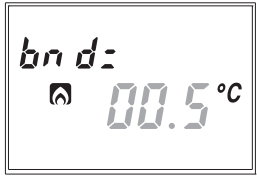
Parameters for the selected regulation type (only for winter operating mode)

- In case of **" ON/OFF "** regulation type, the only parameter to be set is the differential. Field **(11)** displays the writing **" dIF= "** and on field **(8)** the value currently set starts flashing. Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the value. The range can change from 0.1°C to 1°C.



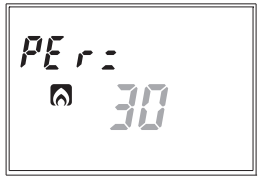
- In case of **PROPORTIONAL** regulation type, the parameters to be set are:
  - regulation band
  - regulation period

  Field **(11)** displays the writing **" bnd= "** and on field **(8)** the value currently set starts flashing. Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the value. The range can change from 0.5°C to 5°C.



English

Once the band value is confirmed, field **(11)** displays the writing **" PEr= "** and on field **(8)** the value currently set starts flashing. Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the value. It is possible to choose between 10, 20 or 30 minutes.

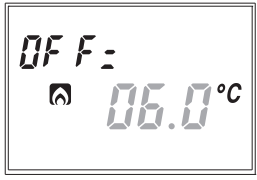


For a detailed description about how select the regulation type, please refer to the chapter "REGULATION TYPE" on page 20.

Antifreeze temperature (only for winter operating mode)

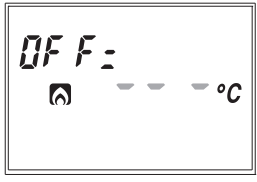
- It is possible to set a safety temperature value (antifreeze temperature) to be maintained in case the thermostat is deactivated.

Field **(11)** dispalys the writing **" OFF= "** and on field **(8)** the antifreeze temperature value currently set starts flashing.



Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the temperature value. It is possible to choose a value between 01.0°C and 10.0°C.

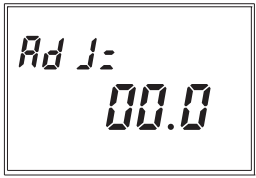
It is also possible to disable the antifreeze function pressing the key **" ▼ "** until field **(16)** displays the symbol **" --- "**. In this case, when the thermostat is OFF, no regulation is executed.



Temperature correction page

Using this parameter to make a correction to the temperature value measured by the probe.

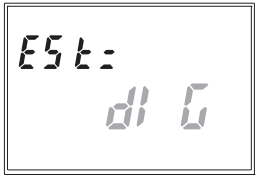
The set value is added or subtracted to the measured temperature.
Values range from -5.0°C to +5.0°C



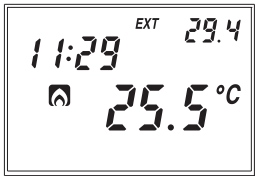
Setting the external auxiliary input

The thermostat allows to connect a remote external temperature probe for the displaying (and in case also regulation) of the measured temperature where the probe is placed, or a non-voltage contact if an auxiliary device is connected (for example, a gas detector, an anti-theft system, block detection boiler system, ...). In this case, a change of the input status can be signalled by sending sms to a specific number (for more further information, see **"GSM interface"** on page 21).

Field **(11)** dispalys the writing **" ESt= "** and on field **(16)** the selected option starts flashing. Choose **" °C "** to connect an external temperature probe or choose **" DIG "** to connect an auxiliary device.



If **"C"** is selected, when exit the menu, the writing **"EXT"** appears on the display **(7)** followed by the temperature value measured by the probe.



The characteristics of the probe are the following:

- Degree of protection: IP66
- Cable length: 2 meters (extendable up to 40 meters with a bipolar cable min section 1 mm^2)
- Operating temperature: -40 °C ÷ +60 °C

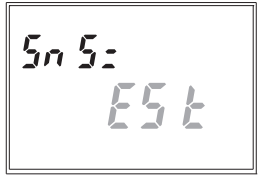
Code	Model	Capacity
VN883500	X.Temp	-40 °C ÷ +60 °C

Regulation probe selection

In case an external probe is present, it is possibile to choose when using the internal or external probe as a regulation sensor.

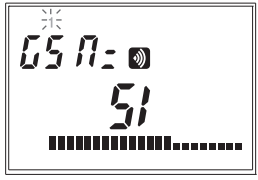
Field **(11)** dispalys the writing **" SnS= "** and on field **(8)** the value currently set starts flashing.

Using the keys **" ▲ "** and **" ▼ "**, choose **" Int "** to use the internal probe or **" Est "** to use the external probe and press **" ☝ "** to confirm the choice.



GSM function page

This page is related to the remote operation and it is described in detail in the "GSM INTERFACE" chapter on page 21.



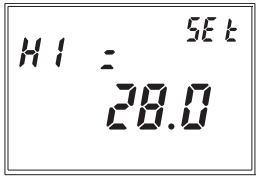
Minimum settable value as setpoint (LO)

- It is possible to limit the minimum settable value as setpoint.
  On field (11) the symbol "LO=" appears and on field (8) the minimum value of the setpoint starts flashing. Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the value and the key **" ☝ "** to confirm.
  Settable values: 2°C ÷ HI (maximum value of the settable setpoint).

Maximum settable value as setpoint (HI)

- It is possible to limit the maximum settable value as setpoint.

On field **(11)** the symbol **"HI="** appears and on field **(8)** the maximum value of the setpoint starts flashing. Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the value and the key **" ☝ "** to confirm.
Settable values: LO ÷ 50°C.



Setting of temperature reduction for night operating mode (rid)

- The thermostat Thermo GSM allows to specify a night time slot where it is possible to adjust the temperature with a setpoint lower than the daily time slot. This menu allows to specify the reduction value compared to the setpoint.

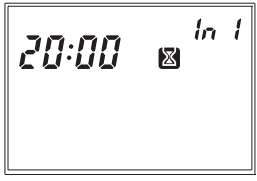
- On filed **(11)** the symbol **"rid="** appears, on field **(7)** the writing **"Set"** appears, the symbol **" ⧖ "** is on and on field **(8)** the reduction value starts flashing. Press the keys **" ▲ "** and **" ▼ "** to increase or decrease the value and the key **" ☝ "** to confirm.
  Settable values: 1.0 ÷ 5.0°C.

  For example: if the setpoint is set of 20°C and the reduction is of 3°C, during the night time slot (it is defined in the menu INI and END) the temperature adjustment is of 17°C.

Starting time setting of night operating mode (INI)

- The thermostat Thermo GSM allows to specify a night time slot where it is possible to adjust the temperature with a setpoint lower than the daily time slot. This menu allows to specify the starting time of the night time slot.

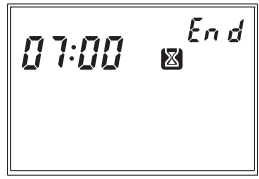
- On field **(11)** the time starts flashing, on field **(7)** the writing **"Set"** appears and the symbol **" ⧖ "** is ON.
  Press the keys **" ▲ "** and **" ▼ "** to set the starting time and the key **" ☝ "** to confirm.



Ending time setting of night operating mode (End)

- The thermostat Thermo GSM permits to specify a night time slot where it is possible to adjust the temperature with a setpoint lower than the daily time slot. This menu permits to specify the ending time of the night time slot.

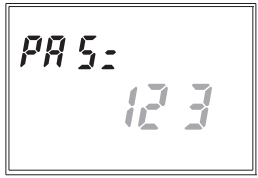
- On field **(11)** the time starts flashing, on field **(7)** the writing **"Set"** appears and the symbol **" "** is ON.
  Press the keys **" ▲ "** and **" ▼ "** to set the ending time and the key **" "** to confirm.



Keypad lock password

It is possible to lock the keypad with a 3-digit password to prevent unauthorised people from doing setting modifications.

On field **(11)** the writing **" PAS= "** appears. Using the keys **" ▲ "** and **" ▼ "** to choose the desired password (between 001 and 999). and press **" "** to confirm.



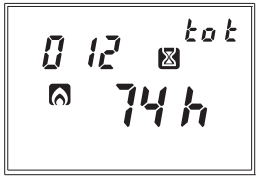
The keypad lock is active after 30 seconds by the last key pressing.
The keypad lock is activated 30 seconds after the last pressure of a key. After 30 seconds, touching any key, the symbol **"Bloc"** appears. In this case it is necessary to press and hold one key for 3 seconds at least until the display shows dashes **"---"**: now the password must be entered to unlock the keypad.

To remove the keypad lock, enter the menu **"password for keypad lock"** and press the key **" ▼ "** until the symbol **"---"** appears on the display.

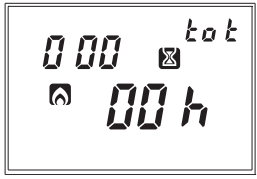
System operating hours

It is possible to display the operating hours of the system (relay in ON status).

Field **(7)** displays the writing **" tot= "** while fields **(11)** and **(8)** dispaly the timing value (this value consists of 5 digits, 3 on field **(11)** and 2 on field **(8)** and the reading direction is from left to right. In the example the value is 1274 hours).



There are two indipendent totalizers for winter and summer operating mode. The maximum storable value is 65535 hours. To reset the counter, press the key **" ▼ "** for about 3 seconds in the counter display menu.



ADVANCED FUNCTIONS

Emergency regulation

In winter operating mode if the sensor is failed, the thermostat activates the relay for 10 minutes every 4 hours in order to avoid problems due to freezing and field **(8)** displays the symbol **" --- "**.

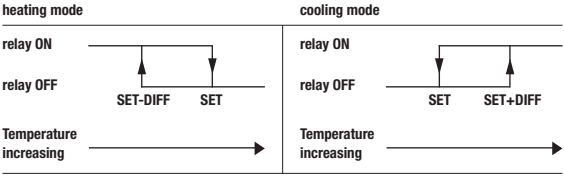
Restoring default values

Just pressing the key **" R "** do not cause a total reset of the instrument. To reset the instrument and restore the default values, it is necessary to press the key **" R "** then the key **" ☜ "** within 3 seconds. The display shows the writing **"dEF"**.

Note: In this way, also the remote operating settings (stored numbers, recipient of alarm, etc.) are reset (see "Gsm interface" page 21).

REGULATION TYPE

The default set regulation is ON/OFF with deactivation just at the setpoint and with differential set at 0.3°C.
In ON/OFF operating mode, the output relay follows the logic below:



In heating mode it is possibile to choose the proportional regulation that allows the regulation to improve in some systems, in order to reach a constant temperature.
This regulation activates the ON/OFF relay within a predefined regulation cycle according to the gap of the temperature measured by the setpoint value.
The required parameters for the definition of this mode are:

- the regulation band
- the regulation period

The regulation band is centered on the setpoint and represents the temperature range where it is performed the proportional regulation.
In the device it is possible to set the half of the desired regulation band.
The range for this parameter is 0.5 ÷ 5.0°C with 0.1°C resolution

The regulation period represents the duration of the regulation cycle (activation period + deactivation period)
The value of this parameter is selectable between 10', 20' and 30'

Choose the regulation period value as follows:

- 10' for low thermal inertia systems
- 20' for medium thermal inertia systems
- 30' for high thermal inertia systems

Choose the regulation band value as follows:

- broad band (5°C) for systems with high thermal gradient
- narrow band (0.5°C) for systems with low thermal gradient

GSM INTERFACE

■ The Thermo GSM has an interface module with built-in GSM that can manage the thermostat remotely, just using a mobile phone.
The functions associated with the GSM mode are:

- via a telephone ring

  – ON/OFF of the thermostat

- via a text message

  A) Settings
  – to set the operating mode (ON/OFF)
  – to switch the temperature T_{SET} and Tantifreeze
  – to switch from the heating mode to the air conditioning mode and vice versa
  B) Information
  – to display the temperatures measured by the internal and external probe (if enabled)
  – to display the status of the external input (if enabled)
  C) Alarms
  – to receive an alarm of failure or restoration of mains supply
  – to receive an alarm when a temperature threshold is exceeded (minimum or maximum)
  – to receive a digital input alarm

Structure of a command text message

The text messages sent to a thermostat to perform settings follow the structure below:

[password] [command] [parameter 1] … [parameter n]

[password] → numeric input field: 4 digits
[command] → type of command recognised by the device
[parameter] → series of parameters relative to the command

Notes:
– it is necessary to separate the words by one or more blanks
– the password field may be omitted if the message sender is a number in the phonebook (see the procedure for phonebook management below)
– several commands may be included in a single message for maximum of 160 characters (standard text message). The commands will be executed, only if the reply can be contained in a single text message
– to enter numbers with a decimal part, the separator must be a point
– It is possible to write commands in small letters or capital letters.

If the command is correct, the sender receives a text message reply that has the same structure of the command with the addition of the symbol **"="** that indicates the current status. For example:
TERMO=ON

Inserting the SIM Card

To remotely control the device with your mobile phone, it is necessary to insert a SIM card in the specific slot which needs to:
– be enabled for telephone traffic
– have the PIN code request deactivated (to eliminate the request, if necessary, use a mobile phone)
– have the answering machine disabled (contact the mobile phone operator to disable the answering machine)

Attention: use only 3V SIM card and standard GSM 11.12 phase 2+.

Turn the SIM card so that the bevelled edge is towards to the right and the gold-coloured contacts are facing up, and then slide the SIM card into the push-push slot (located at the bottom of the instrument) until it locks into place.

Note: the SIM card can be inserted/removed even if the instrument is powered on.

The connection status to the GSM network is displayed with the symbol (( )) according to the following criteria:

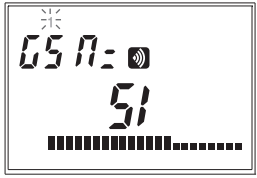
ON "fixed" → the modem is ON and operates correctly
ON "flashing" → the card is not inserted / no GSM coverage / looking for networks

Recording phone numbers in the phonebook

The Thermo GSM permits storing within 5 phone numbers in the phonebook, identified with a progressive number from 1 to 5, which can activate/deactivate the instrument with a ring or send text message commands or receive alarms.

Storing the first phone numbers in the phonebook

To store the first phone number, from the normal operating status:



– press and hold down the key **"** ☝ **"** for at least 3 seconds to access the advanced programming menu.
– press the key **"** ☝ **"** until the **"GSM"** page appears.
– the symbol is fixed, indicating the correct reception of the GSM signal.
– the number "1" starts flashing to indicate that the number is storing in the position 1 of the phonebook.
– call Thermo GSM the selected phone number to stored it in the first position of the phonebook.
The symbol appears on the display during the call

The caller receives a text message confirmation that setting is performed
PHONEBOOK 1=number1 2=EMPTY 3=EMPTY 4=EMPTY 5=EMPTY

Storing other phone numbers in the phonebook

The remaining phone numbers in the phonebook can be stored by sending a text message (SMS mode) or with a telephone ring (ring mode) directly with the selected phone numbers.

Text message mode

The command to send is:

PHONEBOOK [index] [number] where:

[index] → stands for the position in which the phone number should be stored (from 1 to 5)
[number] → stands for the the selected phone number to add to the phonebook

Note: remember that if the command sender is not in the telephone book, it is necessary to enter the password before writing the command.

For example:
PHONEBOOK 2 3921234567

The device replies with a text message confirmation containing the complete phonebook (if a number is not defined, it is indicated with the writing "EMPTY"). Multiple numbers can be added with one text message.
For example:
PHONEBOOK 2 3921234567 5 3001234567

To delete the phone number from the phonebook, use the string EMPTY.
For example:
PHONEBOOK 2 EMPTY deletes the phone number stored in position 2.

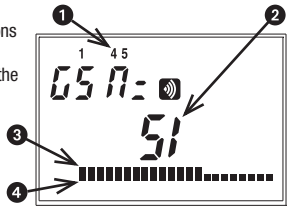
To view a complete list of the stored phone numbers, use the command PHONEBOOK without parameters.
For example:
PHONEBOOK
Reply with a text message
PHONEBOOK **1= 2221234567 2=EMPTY 3=EMPTY 4=EMPTY 5= 3001234567**

Ring mode

Attention: the following procedure is recommended for expert users; otherwise use the previous described procedure in Text message mode.

The GSM function page displays the following information:

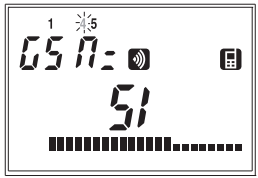
- ➢ the filled positions in phonebook positions (1)
- ➢ the presence of the GSM field (2), with the level of the GSM signal (3) the available network (4)



Checking the presence of a phone number in the phonebook

From the GSM function page, it is possible to check if the phone number is present in the phonebook and, possibly, in which position. To do this, simply make a call

to Thermo GSM with the selected phone number to check it: if the phone number is in the phonebook, the index of the corresponding memory starts flashing (in the example, the phone number is in position 4).



Adding a phone number to the phonebook

It is possible to add phone numbers to the phonebook just with a phone ring without sending a text message. To do this, from the GSM function page:

- ➢ press the keys **" ▲ "** and **" ▼ "** to select the position in the phonebook where store the phone number (1...5)
- ➢ make a phone ring with the selected phone number to add it to the phonebook. The caller will receive a text message from Thermo GSM confirming the number addition (to exit without storing a new phone number, press the key **" ☜ "**).

Note: if the position in the phonebook is already filled, the position is overwritten with the new phone number.

MANAGEMENT OF THE THERMOSTAT

Switch ON/OFF with a phone ring

The phone numbers in the phonebook can switch the operating modes (from ON to OFF and vice versa) just with a phone ring.

The phone number in the phonebook that makes the call will receive a text message informing of the thermostat status.
For example:

```
TERMO="ON" (SET=20.0 C, TINT=18.9 C, TEXT=5.0 C)
```

Setting the operating mode

It is possible to set the operating mode of the instrument (ON or OFF).

The syntaxes of the commands to send are:

TERMO ON
TERMO OFF

The phone number in the phonebook that sends the command will receive a text message informing of the thermostat status.
Some examples:
`TERMO=ON`
`TERMO=OFF (ANTIFREEZE=DISABLED).`

Setting heating/air conditioning mode

The heating or air conditioning operating mode can be set with a text message.
The syntax of the commands to send are:

TERMO HEATING
TERMO COOLING

For example:

TERMO HEATING → sets the heating operating mode

The thermostat replies with a text message about the operating mode
For example:
`TERMO=HEATING`
`TERMO=COOLING`

Defining the antifreeze temperature

The T0 command can be used to set the antifreeze temperature to be maintained if the thermostat is turned off (remember that the antifreeze function is only available with the heating mode).
The syntax of the command to send is:

T0 [tt.t] where
[tt.t] → values between 1.0 and 10.0 or DISABLED

Some examples:
T0 DISABLED excludes the antifreeze temperature (therefore when the instrument is off, there is no regulation)
T0 5.5 sets the antifreeze temperature to 5.5°C

The phone number in the phonebook that sends the command will receive a text message confirmation. For example:

```
T0 ANTIFREEZE=05.5 °C
T0 ANTIFREEZE=DISABLED
```


Definition of the temperature adjustment

It is possible to set the value of TSET temperature adjustment using the command TSET.
The syntax of the command to send is:

TSET [tt.t] where
[tt.t] → values between 2.0 and 50.0

For example:
TSET 18.0 sets TSET temperature adjustment to 18°C

The phone number in the phonebook that sends the command will receive a text message confirmation. For example:

```
TSET=18.0 °C (SUMMER)
```

Definition of the night reduction mode

It is possible to define parameters for the night reduction mode using the command "NIGHT".
In particular, it is possible to define the reduction value (delta) and the starting and ending time of the night reduction mode.
The syntax of the command is:

NIGHT [delta] [starting time] [ending time] where
[delta] → it is the value in degrees of the reduction compared to the setpoint TSET.
Delta can have values between 1.0°C and 5.0°C.
[starting time] → it is the starting time of the night reduction mode
[ending time] → it is the ending time of the night reduction mode

For example:
NIGHT 3 22:10 6:30 it sets the reduction of 3°C compared to the setpoint in time slot between 22:10 and 6:30

The phone number in the phonebook that sends the command will receive a text message confirmation: NIGHT=ON (-3C INI 22:10 END 6:30)

To deactivate the night reduction mode:
NIGHT OFF

To activate the night reduction mode:
NIGHT ON

To change the reduction value (delta) without changing time:
NIGHT 4 activates the reduction of 4°C compared to the setpoint without changing the previous set time slot

Note: if the night reduction mode is set, the symbol " " appears on the display.
In particular:
- ON "fixed": during the daily time slot (there is no night reduction mode)
- ON "flashing": during the night time slot (night reduction mode)

Request information

It is possible to query the thermostat to receive information regarding the system status, using commands TERMO INFO.

– measured temperature by the internal probe (INT)
– measured temperature by the external probe (EXT) or digital input status
– operating status (with the value of the set temperature setpoint)
– operating mode (heating or air conditioning)
– power supply status
– GSM field
– number of the SIM card inserted in the Thermo GSM
– date and time
– active night reduction mode

The syntax of the comand to send is:

TERMO INFO

A possible reply is the following:

INT=20.1°C (REG)
EXT=-10.3°C or CONTACT OPEN
POWER=YES
GSM=100%

N SIM=3331234567
01.07.10
14:55:23

In this case, the writing " **(reg)** " is related to the measured temperature value of the internal probe and indicates the probe (if there are two probes) on which is performed the regulation.

MANAGEMENT OF ALARMS

The thermostat can be configured to send text message alarms to phone numbers in the phonebook.
There are four alarm sources:

– minimum alarm → if the measured temperature decreases a specified threshold
– maximum alarm → if the measured temperature exceeds a specified threshold
– power supply alarm → in case of blackout
– external alarm → in case of generic alarm on the digital input

For each alarm source, it is possible to specify phone numbers in the phonebook to send the text message.

The instrument is configured at the factory to send alarms to the first phone number in the phonebook in the following cases:
– failure and restoration of the power supply
– measured temperature by the internal probe lower than 5 °C
– closed digital input status alarm (with delay of 10 seconds)

The following commands can be used to change this configuration.

Defining alarm recipients

It is possible to specify message recipients for each alarm source.
The command syntax is:

SEND ALARM MINIMUM [recipient] …[recipient]
SEND ALARM MAXIMUM [recipient] …[recipient]
SEND ALARM EXTERNAL [recipient] …[recipient]
SEND ALARM POWER [recipient] …[recipient]

where:

[recipient] → indicates the phone number in the phonebook to send the alarm.

Some examples:
SEND ALARM EXTERNAL 1 3 4 → sends a text message to phone numbers 1, 3, 4 in the phonebook in case of alarm on digital input
SEND ALARM MAXIMUM 2 → sends a text message to phone number 2 in the phonebook in case of alarm for exceeded temperature threshold
SEND ALARM POWER 5 → sends a text message to phone number 5 in the phonebook in case of failure of power supply.

If the receiver is not specified, the instrument replies with the list of phone numbers that receive the alarm. For example:
SEND ALARM EXTERNAL → **`EXTERNAL ALARM=1, 3, 4`**

Note: a new setting of receivers overwrites the previous setting, therefore it is necessary to indicate all receivers in a single command.

To delete a setting of the receivers, use "EMPTY" .
For example:
SEND ALARM POWER EMPTY → deletes all receivers in case of alarm for electrical network failure

Definition of the alarm from digital input

It is possible to specify the condition for which an alarm occurs in the digital input. In particular, it is necessary to define:
– the status (open or closed)
– the delay: the time after which a certain time can be considered as an alarm.

The alarm syntaxes are:

SET ALARM CONTACT OPEN [delay]
SET ALARM CONTACT CLOSED [delay]

where:

[delay] → numeric value that indicates after how many seconds of permanence in open or closed status can be considered an alarm
SET ALARM CONTACT → restores the current configuration of the input alarm

Some examples:

SET ALARM CONTACT OPEN 10 → digital input alarm if the input of the thermostat stays open for about 10 seconds

SET ALARM CONTACT CLOSED 30 → digital input alarm if the input of the thermostat stays open for about 30 seconds

Notes: the alarm return is immediate in correspondence with the contact status change.

Defining the digital alarm text

Using the command TEXT ALARM EXTERNAL, it is possible to specify the text of the message sent to the phone numbers in the phonebook after an alarm on the digital input.
The command syntax is:

TEXT ALARM EXTERNAL [text] where

[text] → text of maximum 24 characters (spaces included)

For example:
TEXT ALARM EXTERNAL boiler shutdown alarm → in this case, if an alarm occurs on the input, the text "boiler shutdown alarm" will be sent to the specified phone numbers.

Definition of the alarm for exceeded temperature threshold

Using the commands SET ALARM MAXIMUM and SET ALARM MINIMUM, it is possible to set a maximum or minimum threshold that when is exceeding, it generates an alarm to be sent to phone numbers in the phonebook.
The command syntax is:

SET ALARM MAXIMUM [probe] [threshold] [hysteresis] [delay]
SET ALARM MINIMUM [probe] [threshold] [hysteresis] [delay]
where:
[probe] → INT in case of using the internal probe, EXT for the external probe
[threshold] → value of temperature limit
[hysteresis] → value used to calculate the threshold for the return alarm. It is subtracted from the threshold in the case of maximum alarm and added to the threshold in case of minimum alarm

[delay] → numerical value that indicates minutes of permanence after which the threshold [threshold] can be considered an alarm

SET ALARM MAXIMUM → restores the current configuration for the maximum threshold
SET ALARM MINIMUM → restores the current configuration for the minimum threshold

Some examples:

SET ALARM MINIMUM INT 12 2 30 → generates a minimum alarm if the measured temperature by the internal probe decreases 12°C for 30 minutes and it considers the alarm restored when the temperature exceeds 14°C (12+2).

SET ALARM MAXIMUM EXT 28.5 1.5 50 → generates a maximum alarm if the measured temperature by the external probe exceeds 28.5°C for 50 minutes and considers the alarm restored when the temperature decreases 27°C (28.5-1.5).

Note: the return alarm is immediate when the return alarm of the temperature is reached (no delay)

Alarm of power supply failure

In case of power supply failure, the Thermo GSM has a buffer battery that permits operation of the thermostat for about one hour.
The receivers of this alarm will receive the following messages in case of failure and restoration of power supply:

```
POWER ALARM=INTERRUPTED (dd/mm/yy  hh:mm)

END POWER ALARM=RESTORE (dd/mm/yy  hh:mm)
```

By default, the phone number in the phonebook with index 1 receives alarm of power supply failure.

Note: the alarm message is not sent instantaneously, but there is a delay of a seconds (signalled by the flashing symbol), allows the instrument to have a stable GSM connection.

Redirecting unrecognised messages

If the thermostat receives a text message that is not recognised as a command, the text message is forwarded to a number in the phonebook.
This function can be useful if the telephone operator sends informative messages to the SIM card inserted in the thermostat (for example lack or expiring credit).
By default, the unrecognised messages are forwarded to the phone number in position 1 in the phonebook.
With the command FORWARD, it is possible to specify another phonebook number.
The syntax is:

FORWARD [index], where

[index] → 1, 2, 3, 4, 5 to indicate one of the numbers in the phonebook

FORWARD NONE disables the forward function (messages are not redirected)

Password management

All commands previously described can also be sent by phone numbers not stored in the phonebook, as long as the message starts with the correct password. The default password is 1234
This password can be modified by any number in the phonebook with the command:

PASSWORD [new password]

The new password must have 4 numbers.

Clock synchronization

For correct Thermo GSM operation, it is necessary that date and time are correct. In case of an extended blackout - longer than the battery charge for about one hour - these values are lost.
These values can be restored automatically.

Automatic restoration

In this case, the thermostat automatically sets date and time when the power supply returns, without user intervention.
To do this, after installing and configuring the GSM parameters of the instrument, it is necessary to specify the number of the inserted SIM card with the command:

TERMO NUMBER [number]

where [number] is the phone number of the SIM card inserted in the Thermo GSM.

The Thermo GSM replies to the sender with the following type of message:

TERMO NUMBER 3331234567

Manually

If the number of the SIM card in the Thermo GSM is not specified, it is possible to synchronise time and date remotely.
Once the power supply restoration message is received ("**end power alarm=restored (set date and time**), simply send the following command to Thermo GSM:

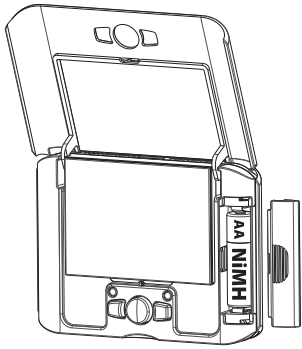
CLOCK

The thermostat responds to the sender with the set date and time. For example:

CLOCK=01/07/2014 14.31

BACKUP BATTERY

The instrument has a backup battery that permits operation in case of power supply failure until it is completely discharged.
The battery is recharged by Thermo GSM: the battery is completely recharged after about 24 hours of powering by mains supply.
The backup battery can be accessed through the removal of the front panel and can be replaced without disconnecting the power supply voltage.
Use batteries NiMh (AA) with a capacity of 2000 mAh or higher.



⚠ **Do not use non-rechargeable batteries for any reason**.

In case of replacement, it is necessary to throw away the depleted batteries in specific containers in compliance with current regulations related to the disposal of hazardous waste.

REFERENCE STANDARDS

Compliance with Community Directives
1995/5/CE R&TTE
is declared in reference to the following harmonized standards:
EN 60730-2-7 and EN 60730-2-9
EN 301489-1 and EN 301489-7
EN 301511

V3ISO0799-011

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