NETATMO Energy

Smart Thermostat and Smart Radiator Valves user manual



Thank you for choosing Netatmo!

Welcome to the interactive user manual for the Energy range products.



Please note the Netatmo applications are constantly evolving. Therefore, the appearance or placement of some features described here may change in order to improve the ergonomics and user experience.



If you have not yet installed your products, here are direct links to our installation support pages:

> Installation guide for the Smart Thermostat

Installation guide for the district heating Starter Pack

Installation guide for the Smart Radiator Valve



Preamble

This manual consists of 3 parts. To go straight to the one that interests you, click on the corresponding logo:



Energy products

Part one: The Smart Thermostat

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NETATMO

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- 10. Monthly energy savings report
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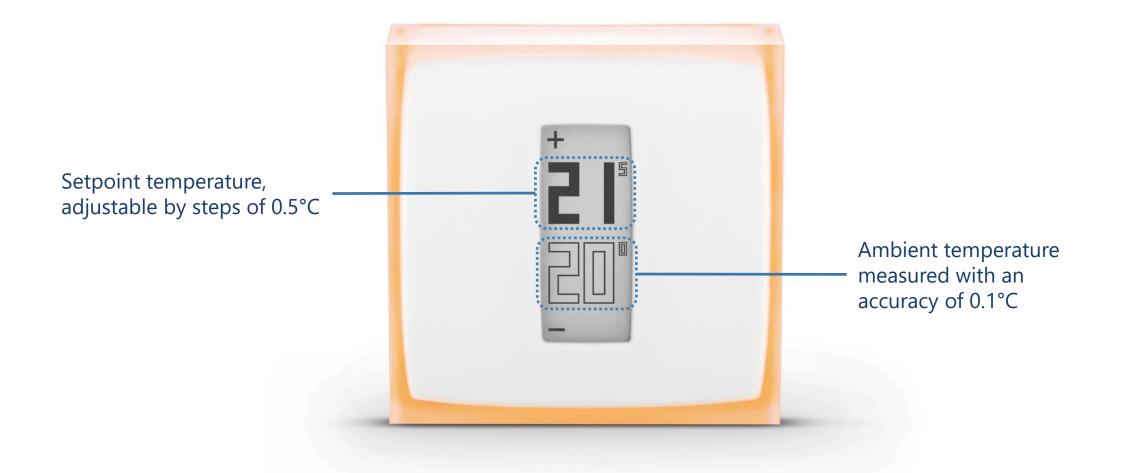
1 – Presentation

The Thermostat



Video guide to access the batteries





The temperature sensor is located in the Thermostat, not in the Relay.



Buttons

Thermostat buttons are not touch sensitive.

You must exert enough pressure on the front panel until you feel a slight "click" to change the set temperature.

Screen

The Thermostat screen uses '**e-paper**' technology. It is a technology that works with ambient light to display information in the same way as conventional paper. This allows it to display text and images indefinitely without the need for energy-consuming backlighting. Consequently, the screen consumes energy only when the display is changed.

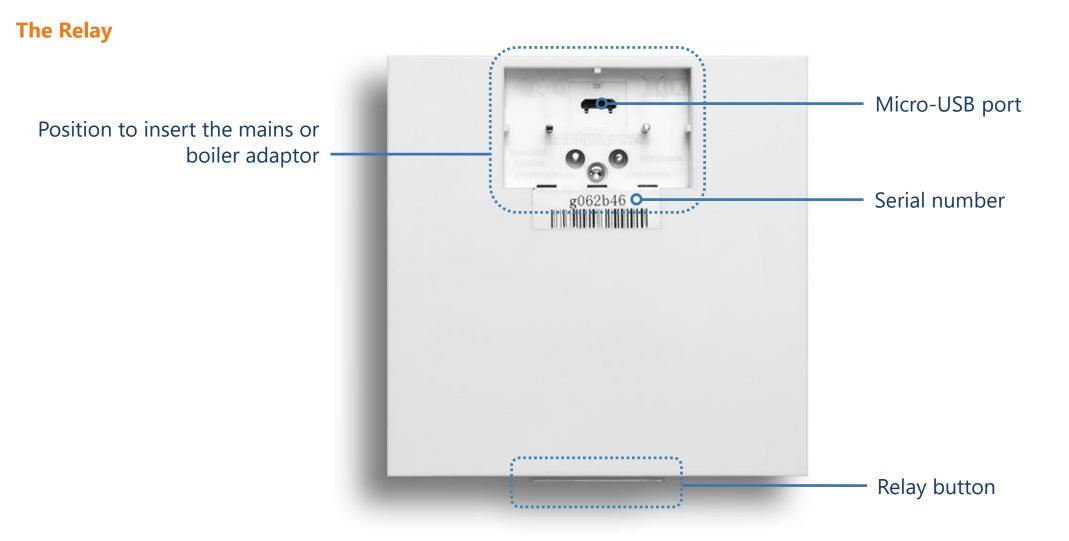
Two observations can therefore be made:

- When the batteries are removed, the screen does not go blank: the last displayed information remains.
- At regular intervals and following a change of setting, the screen **flashes for a few seconds** to refresh the display.

This screen's characteristics give the Thermostat an excellent battery lifespan of 2 years.

Note : Thanks to an accelerometer the direction of the display automatically adapts to the Thermostat's position.





PLEASE NOTE: the USB port must only be used to connect the Relay to the Wi-Fi network from a computer, and not to power the Relay for normal use.

How to separate the Relay from its adaptor





Starting the Thermostat

Searching for the Relay			
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Relay not detected (out of range or not paired)



Normal display of temperatures



Exclamation mark: Relay not detected (loss of radio synchronization between Thermostat and Relay) Radiator logo: a Valve located in a different room than the Thermostat requires heating

Thermostat started

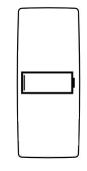


Flame logo: the Thermostat switches the heating on





Low batteries (less than one month of battery life remaining)



Out of battery: the Thermostat switches the heating off before shutting down



3 – How it works

The Thermostat is fitted with a dry contact switching relay (on/off) which allows it to control the heating by switching it on and off. It works in the same way as an interrupter that opens and closes an electrical circuit (like for controlling a light).

The Thermostat is able to cleverly regulate the heating requests by changing state (on/off) more or less frequently and for a longer or shorter time depending on the requirements. Its intelligence lies in its ability to anticipate heating needs by taking into account thermal inertia, the home's insulation and outdoor temperatures.

It is possible to install the Thermostat in wired or wireless mode, as desired (see next page).

Notes:

- The Thermostat is not able to command the heating to turn on at intermediate power (30%, 50%, etc.) but only 0 or 100% (on or off).
- **Polarity**: the operating mode can be reversed if the heating reacts in the opposite way (for example, if the heating switches off when the Thermostat is on MAX and switches on when it is in the OFF position). The Thermostat's polarity must then be reversed.

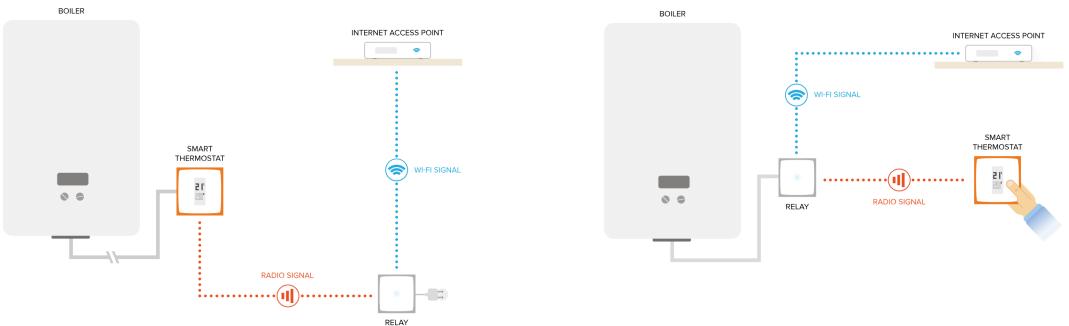
To reverse the polarity, go to the Thermostat's Advanced settings menu in the Energy application once the Thermostat has been configured: Manage my home > [room where the Thermostat is] > [name of the Thermostat] > Settings > Polarity

4 – Communication between the modules

There is a switching relay in the Relay and the Thermostat which makes it possible to install the Thermostat in either wired or wireless mode.

Wired Thermostat

Wireless Thermostat



ON MAINS



5 – Set the temperature

It is possible at any time to apply a manual setpoint temperature (Manual Boost) for a set period...

From the Thermostat



The default duration of the set temperature is defined in the Energy application settings (3 hours by default).

From the Energy application

It is then possible to change the duration for each manual setpoint, between 5 minutes and 12 hours.

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White background = heating off Scale to adjust the duration of the manual setpoint



Orange background = heating on

6 – Special modes

It is possible to set a permanent setpoint on the Thermostat by applying one of the special modes, without having to modify the weekly schedule:

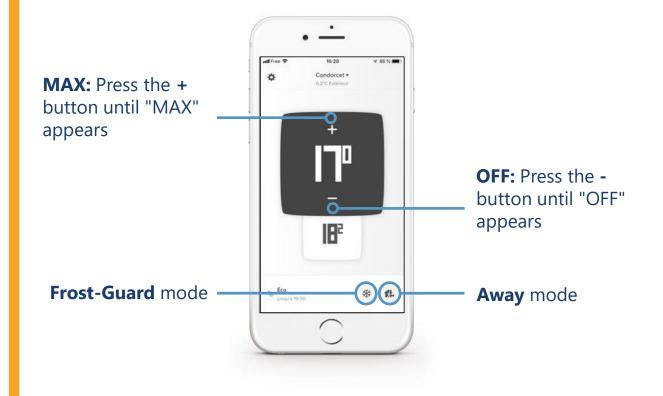
Away mode: for a short absence, between a few hours and a few days. Setpoint set to 12°C by default.

Frost-Guard mode: for long-term absence. This mode ensures the maximum energy savings while preserving the integrity of the heating system and the house in case of very low outdoor temperatures. Setpoint set to 7°C by default.

OFF: to make sure that the Thermostat does not activate the heating, regardless of the measured temperature.

MAX: to force the Thermostat to activate the heating system regardless of the measured room temperature.

The temperature of the Away and Frost-Guard modes can be changed in the settings of the Energy application.



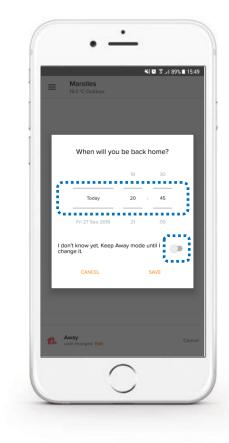
Set a return date and time for Absent and Frost Guard modes



Activate the desired mode



Click on "Modify"



Indicate the expected return date and confirm with SAVE

Note: The setpoint (orange) curve fades out from a certain zoom level to maintain good readability. To make it reappear, just zoom-in to return to a view by day or week.



Room selection

Thermostat heating requests as a percentage of time over a defined period.

Example: on a onehour slot, if the bar is at 50%, the Thermostat has requested heating for 30 minutes (not necessarily consecutive) over this period.



8 – Heating algorithms

The algorithm is the intelligence of the Thermostat that allows it to make decisions and turn on the heating according to the heating history, the measured ambient temperature, the desired setpoint temperature and the heating algorithm. The choice between the 2 heating algorithms of the Thermostat, Hysteresis or Advanced (PID), is done in the parameters of the Netatmo Energy application: Settings> Manage my home> [Room of your Thermostat] > [Your Thermostat] > Settings.



Hysteresis algorithm

This is the Thermostat's default algorithm. With this algorithm, when the difference between the setpoint and room temperatures is within a given sensitivity threshold, the Thermostat assumes the setpoint temperature has been reached. You can adjust the Hysteresis algorithm sensitivity threshold in the Thermostat's advanced settings. If you use smaller thresholds (0.1°C), the Thermostat will be more responsive to room and setpoint temperature changes. With larger thresholds, the Thermostat will be more tolerant to variations in these temperatures and will switch the heating on and off less often.

Example: For a setpoint temperature of 19.0°C and a threshold of 0.3°C, the Thermostat will switch the heating on when the measured room temperature is 18.7°C and will switch it off at 19.3°C.

The threshold can be adjusted in the Energy application settings, between 0.1°C and 2.0°C.



Please note: When the setpoint is changed, the Thermostat responds instantly to the new setpoint without needing a threshold to switch the heating on or off.

Advanced algorithm (PID)

The Advanced heating algorithm (PID: Proportional-Integral-Derivative), smarter than the Hysteresis algorithm, allows a better regulation of the ambient temperature with less oscillations around the setpoint temperature, by taking into account the inertia of the heating system in your home, and greater responsiveness.

During the first weeks of operation (during heating season), the Thermostat will automatically learn the specific characteristics of your heating system and your home, including their thermal inertia and the effectiveness of insulation.

When these parameters are determined after a few days of learning (without any intervention on your part), a notification in the Netatmo Energy application warns you that the Advanced algorithm is ready to be activated (*provided that your heating is compatible - see next page*).



Note: The use of the PID algorithm is automatically suspended for all setpoint temperatures less or equal to 14°C. The hysteresis algorithm is then reactivated: it is indeed useless to switch the heating more frequently to improve comfort when an economic setpoint is activated. The PID algorithm is reactivated as soon as the setpoint goes above 14°C.

9 – Energy source selection

Choosing one of the five types of energy source only influences the default choice for the heating algorithm: the hysteresis algorithm and its threshold, or the Advanced algorithm (PID) and its minimum ignition time. Devices that are most tolerant to frequently being switched on/off can run with the most reactive settings.



Gas, fuel oil, electric boiler and "I don't know": the PID algorithm is preferred, with a hysteresis threshold of 0.1°C for the learning period, and a minimum ignition time of 2 minutes for the PID.



Wood:

the hysteresis mode is preferred, with a threshold of 0.3°C. It is strongly recommended not to use the advanced algorithm (PID) on pellet stoves.

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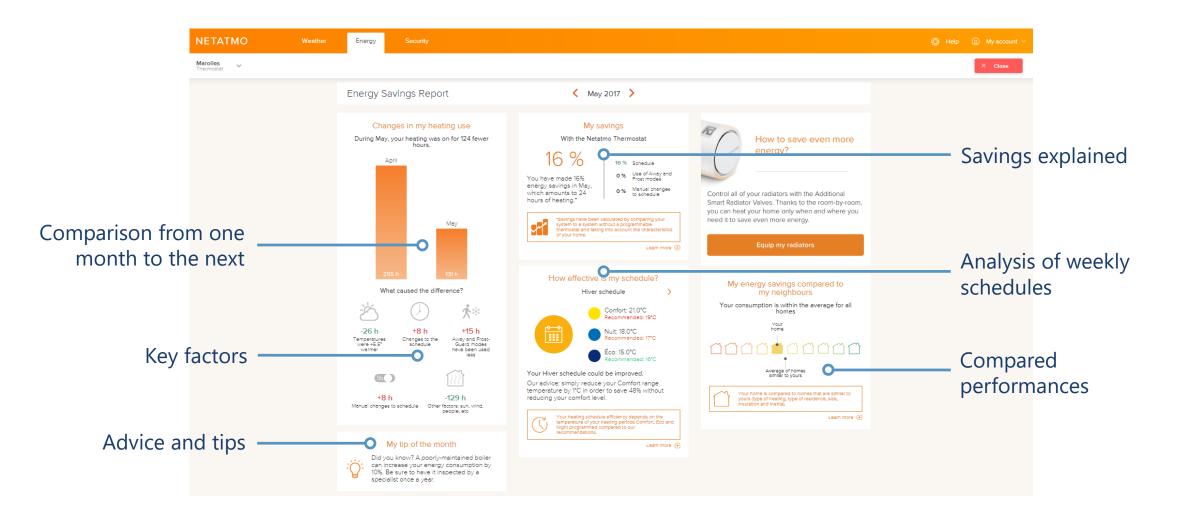
Heat pump:

the PID algorithm is preferred, with a hysteresis threshold of 0.5°C for the learning period, and a minimum ignition time of 7 minutes with the PID.



It is always possible to force the algorithm and threshold of your choice, regardless of the defined energy type. It is recommended to only change these settings if you perfectly understand the consequences.

10 – Monthly energy savings report



11 – Auto-Care

The Auto-Care feature allows the Netatmo Smart Thermostat to inform you when the batteries are low or when a fault is detected in your heating system.

Low batteries

A first alert is sent by email and directly via the application 3 to 4 weeks before the batteries run out.



Boiler Maintenance Errors

The alert message is sent automatically by email when Energy products have been measuring a constant or lower ambient temperature for at least 4 hours while a heating request is in progress.

This generally means that the heating system is not working and allows you to respond quickly to this incident.



Note: It is possible to deactivate the alerts in the Energy application: Netatmo account settings > Change my e-mail settings > Boiler maintenance errors.



Part two: The Smart Radiator Valves

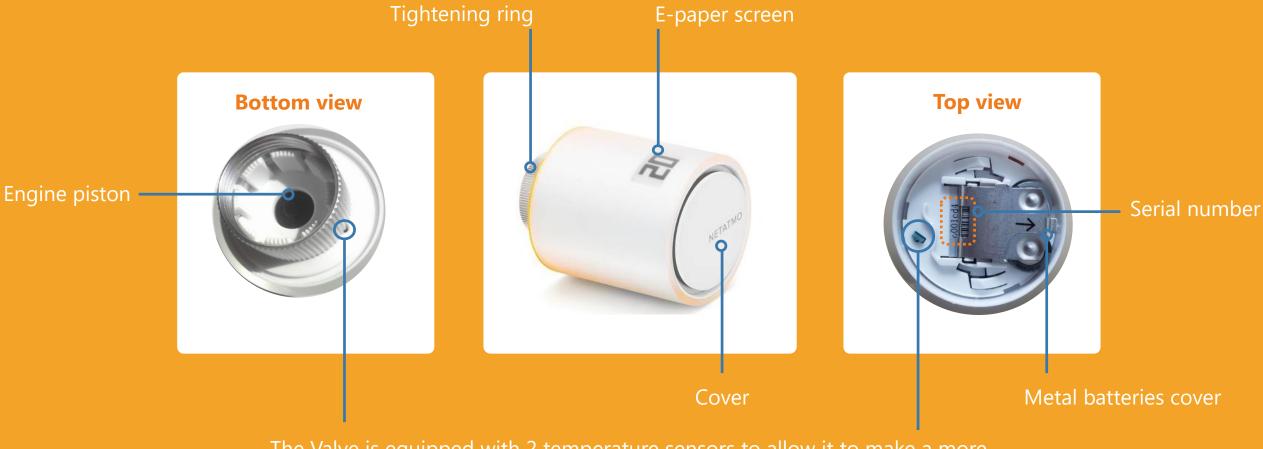


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- **3.** Functioning
- 4. Room by room synchronization

- 5. Installation types
- 6. Priority settings
- 7. Open window detection

1 – Presentation



The Valve is equipped with 2 temperature sensors to allow it to make a more accurate estimation of the ambient room temperature

Buttons

The controls of the Smart Radiator Valves are mechanical and non-tactile. Turn the Valve until there is a slight "click", to the right to increase the setpoint by 0.5°C and to the left to decrease it.

Demonstration video

Screen

The Valve screen is made of flexible electronic paper (**e-paper**). This type of screen consumes energy only when the state of the blocks (white or black) is changed. Consequently, it is normal that the display persists when the batteries are removed.

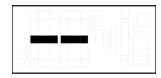
The characteristics of this screen allow the Valve to have an excellent battery lifespan of **2 years**.

Note: the Valve integrates an accelerometer that allows to automatically display the information on the screen in the right direction of reading. More info on screen technology here: <u>Description page of the Thermostat screen</u>.

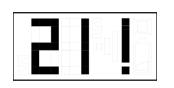


2 – Logos

Here is the different information that may be displayed on the screen of the Smart Radiator Valves:







The exclamation mark can mean 3 things:

- Loss of radio connection between the Valve and Relay
- Loss of radio connection between the Thermostat and Relay
- Calibration failed or not performed

NB: the Energy application gives details about the error if the Valve has already been connected.



Searching for the Relay



Setpoint temperature



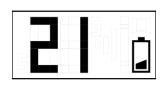
Searching for the Relay + identification number



If the Valve's setpoint is changed when the Thermostat is OFF, the Valve displays two white dashes on a black background



Measured room temperature



Low batteries (less than one month of battery life remaining)



Open window detected



Dead batteries, the Valve has stopped working



3 – Functioning

Mechanical

Each Smart Radiator Valve has 2 inbuilt temperature sensors. One points towards the radiator while the other points the opposite way to accurately assess the room temperature. The Smart Radiator Valves compare the temperature measured in the room with the setpoint temperature and cleverly regulate each radiator's hot water flow using their motor that functions step-by-step to effectively achieve the desired temperature in the room.

Algorithmic

Following a learning period, an advanced heating algorithm (<u>PID</u>) is automatically applied to allow each Smart Radiator Valve to manage the duration and the moment to open the valve body by taking into account the room's thermal inertia and the radiator's heating power.

Temperature setting

The temperature setpoint applied by the Smart Radiator Valves can be determined:

- By weekly schedule (and Heating Prediction if enabled)
- By activating Away or Frost-Guard modes

- By applying a Manual Boost (from the app or from the Valve directly). If the Valve is paired with a Thermostat, then it will force the heater activation even if the room where the Thermostat is located does not need to be heated.



4 – Room by room synchronization

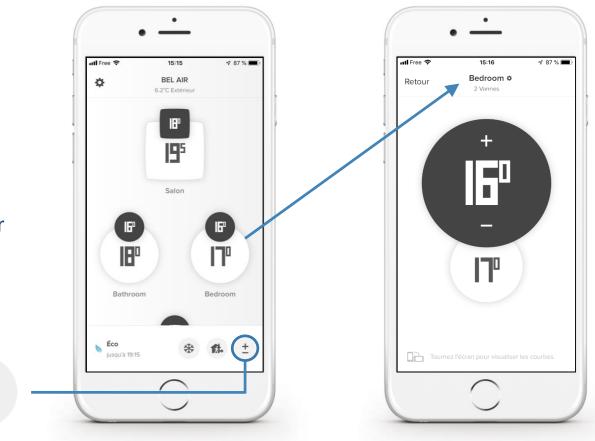
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All the products installed in the same virtual room are synchronized to:

- display the same measured temperature
- apply the same setpoint temperature
- follow the same schedule

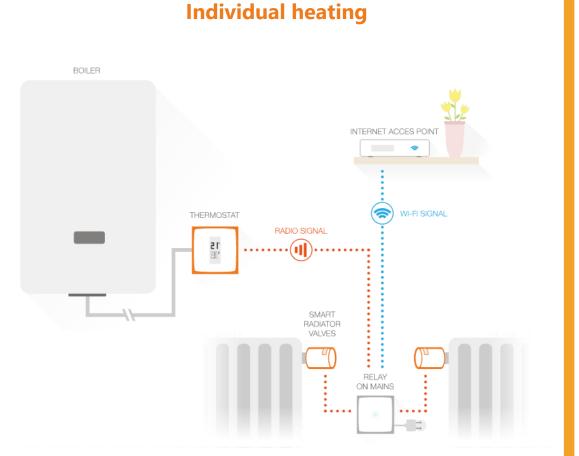
In the Energy application they are therefore grouped together as a single icon on the home screen.

When there are multiple rooms in a Home, it is possible to apply a Manual Boost for all rooms simultaneously using this button:

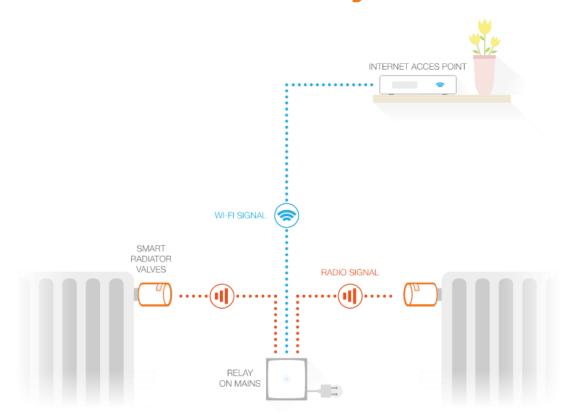




5 – Installation types



Collective heating



• Valves paired with the Thermostat Relay

Valves paired with the Relay of the pack for district heating

6 – Priority settings

When Smart Radiator Valves are paired with a Thermostat, it is possible to choose between two operating modes:

- ECO Priority (default mode): the rooms equipped with Smart Radiator Valves can only be heated when the Thermostat room is also in heating demand, or if a Manual Boost is applied (<u>see here</u>). They apply the weekly schedule only as temperature limiters, as in a conventional thermostatic valve installation.
- **COMFORT** Priority: in this mode, the rooms only equipped with Smart Radiator Valves can request the Thermostat to activate the heating for their needs even from a scheduled heating demand, and even if the room temperature is satisfied in the Thermostat room.

Notes : When the Comfort Priority mode is activated, it is recommended to equip the room where the Thermostat is located also with Netatmo Smart Radiator Valves, so they will thereafter limit the heating of this room. If there is no Netatmo Valve in the Thermostat room, it is advisable to fully open all the radiator valves in this room, whether manual or thermostatic.

7 – Open window detection

The Open Window Detection is a feature of the Netatmo Valves which recognizes sudden changes in a room's temperature and switches off the heating in that room to avoid wasting energy.

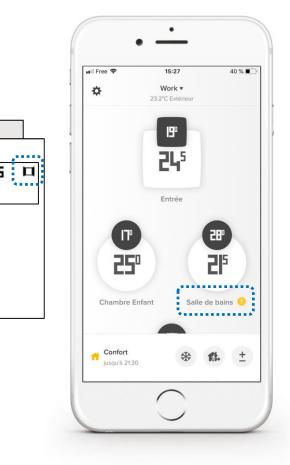
The feature can be activated/deactivated for the Home in the Netatmo Energy application's settings: Settings > Operating mode > Open window detection.

Open window detection only works if the Netatmo Valves are heating up.

The heating in the room will come back on again:

- If the Valves detect a window has been closed (allow at least 3 minutes).
- After 30 minutes of a window being opened, even if it is still open.
- When you select 'Continue to heat' in the Energy application.

When the heating starts up again, open window detection is disabled for 30 minutes in that room.





Features common to all Energy products

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Mobiles (iOS and Android) Web

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- 6. Download historical data

- 7. Offline behaviour
- 8. How to set the products during summer
- 9. Interactivity
- **10.** Link the products with Homekit
- **11.** Online help



1 – Your Netatmo account

Before you can control your Netatmo products from your smartphone, tablet or computer, a Netatmo account must be created.

Your account will allow you to control an unlimited number of Netatmo products, in one or more Homes from the same application.

You can use your account settings to:

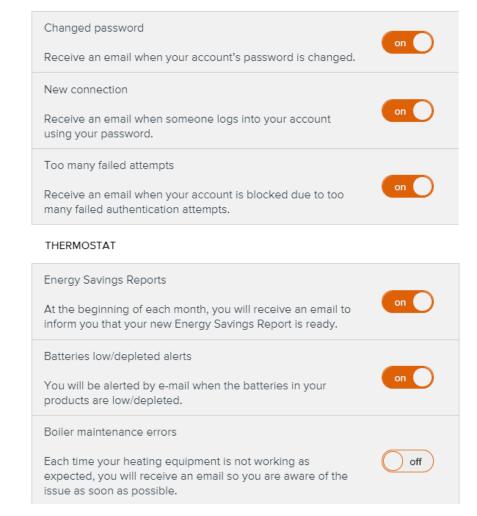
- Configure your e-mail alerts (see opposite)
- Change your e-mail address and password
- Manage third-party applications

Share access to your products

Users invited to control an Energy product have access to all the products of the Home in which it is installed, including any Netatmo Security cameras that may be present.

Note: All users with access to a Home have the same rights (administrators). It is therefore advisable to share access to the Home's products only to people you trust.

ACCOUNT



2 – The Energy applications



Mobile applications for smartphone and tablet

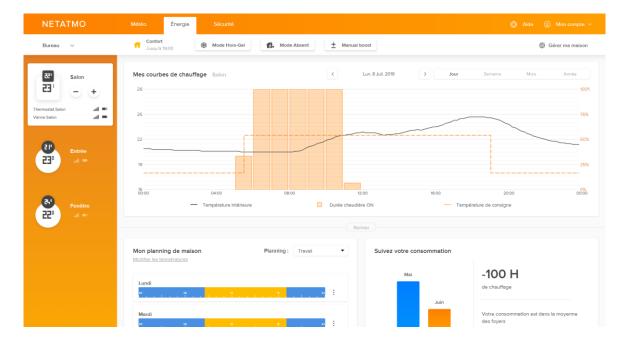
Download the Netatmo Energy app on the Appstore (iOS) or the PlayStore (Android):



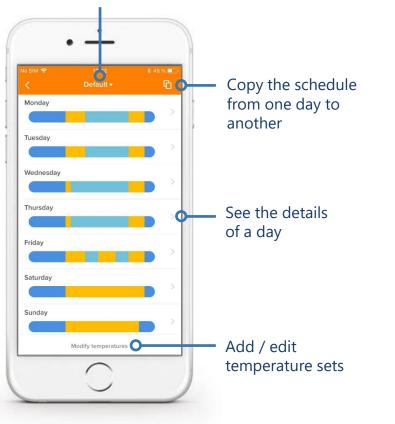
iOS & Android

Web application, for any internet browser and operating system

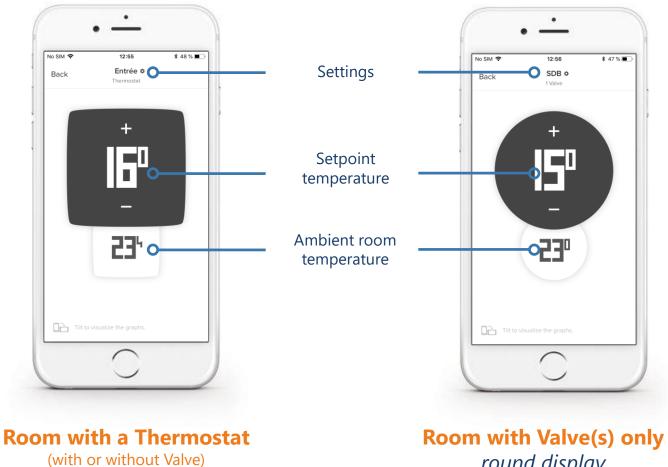
In the search bar of your browser, type my.netatmo.com



Choice of the current schedule



Weekly schedule

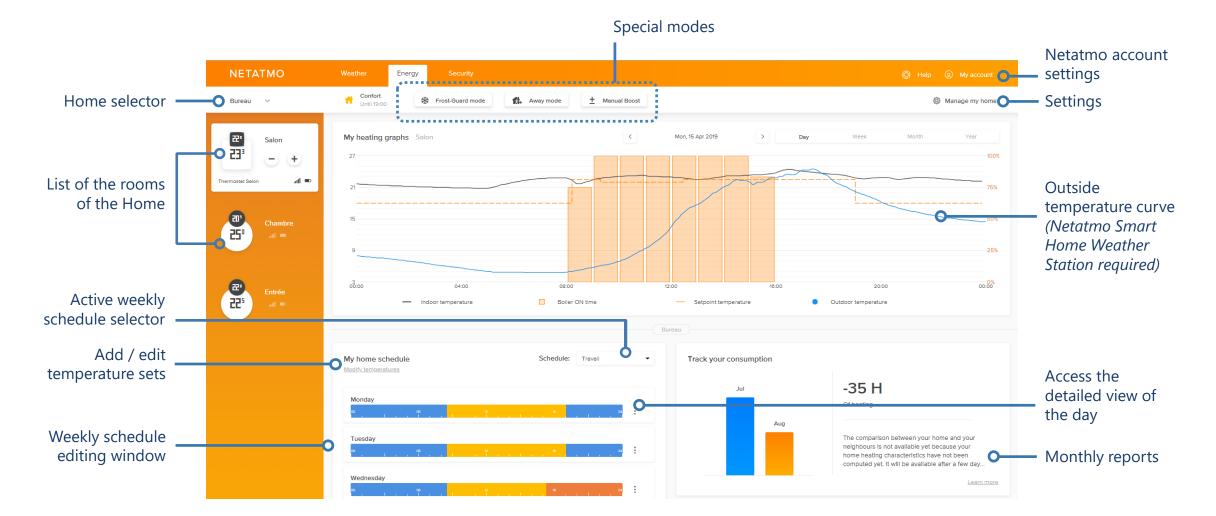


square display

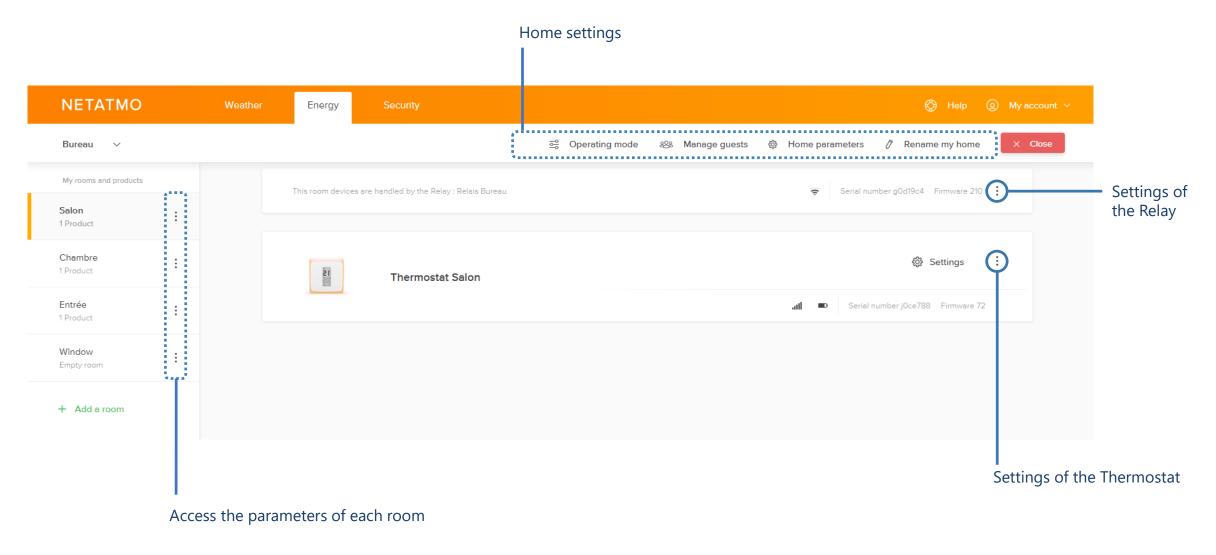
round display



Detailed views: web application



Web applications : Manage my home





3 – Weekly schedules

The Energy application allows you to optimize your heating by applying a weekly schedule to adapt the heating demands to your lifestyle. New schedules can easily be established from a 5-step questionnaire.

Up to **10** weekly schedules can be defined by House, which is very useful for creating a different schedule for holidays, or for those with different work patterns from one week to another, etc...

For each schedule, it is possible to set custom heating periods, at the temperatures, start and end times of your choice, to the nearest quarter of an hour.

Here are the links to our help videos for creating and editing weekly schedules on each of the Energy application platforms:





4 – Auto-Adapt (Heating Prediction)

The Heating Prediction (Auto-Adapt) is an intelligent function of Netatmo Energy products that allows heating to be started earlier to reach the desired setpoint temperatures at the time indicated in the home's heating schedule. *The products' intelligence takes into account the heating power, the home's insulation and the outdoor temperature.*

The heating prediction is optimized room by room. There are two possible settings:

- Prediction disabled: the heating starts at the time indicated in the schedule.
- **Prediction enabled:** the default duration (30 min of anticipation) is applied during the learning period.

After a few weeks of heating, without any action on your part, the duration of the heating prediction will be automatically optimized for all the rooms.

The use of outdoor temperature readings allows optimal regulation:

- **Optimized using local weather forecasts,** according to the geographical location of your home.
- Optimized with measures taken by the Netatmo Smart Home Weather Station, when the two devices are connected to the same Wi-Fi network and linked to the same Netatmo account, the temperature reports provided by the Station's outdoor module are automatically retrieved by the Energy products. The anticipation is therefore optimal.

On the <u>web application</u>, the curve of the outdoor temperatures measured by the Station appears <u>juxtaposed in blue</u> on the temperature curves of the Energy products.

NB: The maximum anticipation duration is 8 hours instead of 3 hours if the setpoint is 14°C or below.

5 – Temperature offset (*True Temperature*)

Depending on the location of Netatmo products, you may notice a difference between the temperature they measure and the temperature displayed on another thermometer.

For example: if the Thermostat measures 19.0°C while your usual thermometer reads 20.0°C, then you must force a +1.0°C offset in the Energy application so that the Thermostat displays the same value as the thermometer.

To choose the temperature display that best represents the reality, follow this procedure depending on the application you are using.

Note: It is recommended to carry out this procedure when the radiators are hot.

• Mobile application (iOS and Android):

- Click on the "Gear" button (iOS) or "3 horizontal lines" (Android) to display the parameters
- Click on the button 'Manage my home'
- Select the room where an adjustment must be applied
- In the 'Advanced Settings' menu, click on the 'True Temperature' button
- Enter the temperature displayed on the reference thermometer and validate

• Web Application (*my.netatmo.com*):

- Click on the 'Manage my house' button to access the settings
- In the left column, click on the menu button (3 vertical points) of the room in which the offset must be applied
- Press the 'Settings' button
- In the 'True Temperature' menu, click on 'Choose the displayed temperature that better represents the room temperature'
- Enter the temperature displayed on the reference thermometer and validate

6 – Download historical data

To download the data of your Thermostat and/or Valves, go to the Energy web application, then in the menu 'Manage my home' (gear icon in the right part of the upper banner):

- In the left column, click on the menu button (the 3 vertical points) of the desired room, then on the 'Settings' button.
- In the 'Data Management' section, click on 'Download your room's data'.

It is then possible to select the measurement frequency, the type of data exported and the period to be analyzed. In the downloaded document, we find different information:

- **Timezone**: date and time according to the timezone in application.
- **Temperature**: measured ambient room temperature.
- **Sp-Temperature**: setpoint temperature.
- **BoilerOn**: number of seconds the Thermostat ordered the heating to activate.
- **BoilerOff**: number of seconds the Thermostat ordered the heating to deactivate.
- Heating_power_request (rooms with Valves): opening percentage of Valves.

7 – Offline behaviour

In the event of an internet outage, the Thermostat and the Valves continue to regulate the heating according to the weekly schedule in application or the last setpoint applied before the shutdown (Away mode, Frost-Guard mode or manual setpoint).

During the outage:

- Remote interaction, changing schedules or settings are no longer possible.
- The physical buttons on the Thermostat or Valves always allow you to force manual setpoints. The duration of these setpoints is then the same which was defined before the outage in the advanced parameters of the Energy App > Operating Mode > Default duration of the manual setpoints (3h by default).
- The Auto-Adapt feature is also disabled because it relies on outdoor temperature readings that are not available offline.
- All the functions of the Thermostat and the Valves will be automatically restored as soon as the connection returns.

In case of power outage, both heating system and Netatmo products no longer work. However, our equipment is designed to automatically restart and reconnect when power is restored.

Note: The Netatmo Relay may take a few minutes to reconnect after a power outage.

8 – How to set the products during summer

• For a prolonged absence, it is recommended to use the Frost-Guard mode, in order to guarantee the deactivation of the heating without risk of deterioration of the house. In fact, the Frost-Guard mode will only start heating if the room temperature reaches a critical level, in order to prevent the pipes and the heating system from freezing.

• Anti-seizing:

• **Thermostat:** In summer, it may be useful in some cases to define a schedule for the Thermostat with a heating period of 30°C for 15 minutes once a week, to force the activation of the heating and thus prevent the circulator to get stuck after a prolonged stop. *For more information, consult a professional heating engineer.*

• Valves: They calibrate automatically every 2 weeks, which prevents the valve body piston from seizing. So just leave them in the Frost-Guard mode.

• To ensure that the Thermostat will <u>never</u> turn on the heater, it is possible to activate the **OFF** mode by pressing the "-" button on the physical box or in the application until "OFF" appears on the display. 'screen.

9 – Interactivity

The voice assistants below allow you to control some features of your heating system via vocal commands without having to open the application. They also allow you to create scenarios that interact with other connected objects. For more information, click on the icons below:









IFTTT is a very simplified task automation service, which allows you to create interactions between different connected devices. The links take the form of recipes (**applets**) which allow an event ("*If This...*") to trigger an action ("*Then That*"). *Example: If* "the temperature is changed manually on the Thermostat"> then "send a warning e-mail". *It is possible to create many recipes, and to activate / deactivate them at will.*

For more information, click on the logo on the left



Your imagination. Our technologies. Connected. **Netatmo Connect** is the application programming interface (API) of Netatmo. It allows you to create solutions by coding thirdparty applications that will link our products to your applications and services. **For more information, click on the logo on the left**



10 – Link the products with Homekit



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1. Compatibility

To check the compatibility of your Netatmo Relay with HomeKit, go to the Netatmo Energy app for iOS (iPhone, iPod or iPad): Settings > Manage my home > Relay name. The Delay is compatible with Apple HomeKit if the "Configure HomeKit" security is present.

The Relay is compatible with Apple HomeKit if the "Configure HomeKit" menu is present.

2. Code location

a. General case

The HomeKit code is stuck on the front of the Relay. It is also written on the gray label on its back, following the serial number. A third label is also added in the supplied installation manual.

b. Relay without HomeKit sticker

In this case, the HomeKit code will be displayed on the Thermostat screen instead of the temperatures (*see image on the left*), **once the association procedure is initiated from the Netatmo Energy application** (see below).

3. Pairing procedure

To proceed with the configuration, you must first have installed and connected the Relay to your Wi-Fi network. If there is a Thermostat paired with the Relay, it must be powered and within radio range of its Relay.

Then just follow this procedure:

- 1. Go to the settings of the Energy application on the iOS device ("Gear" icon in the top banner)
- 2. Go to the "Manage My Home" menu
- 3. Click on the name of the Relay
- 4. Click on the "Configure HomeKit" button

The instructions are then displayed on the Energy application screen. **The HomeKit code will have to be captured with the camera of your smartphone/tablet** or entered manually.



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For more details on our products...

<u>Help Center</u> > frequently asked questions, explanation of features and solutions.

forum.netatmo.com > get help from other Netatmo enthusiasts.



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