ELECTRIC
PERRY ELECTRIC Srl - Via Milanese, 11 - 22070 VENIANO (CO) ITALY - www.perry.it

PE - DEVTPE003EN 03/23

SMART ELECTRONIC VALVE FOR RADIATORS AND TOWEL HEATERS

Battery-powered device, equipped with control for regulation of the water supply valve in radiators, in systems with wireless heat regulation system controlled by home automation power unit or with «STAND-ALONE» independent temperature operation and regulation.

IT IS NOT A THERMOSTATIC HEAD: to adjust the temperature DO NOT turn the valve, but consult Chapter 7.

INSTALLATION AND USER MANUAL

valid from the valve serial number: 0000025249-5 and later ones

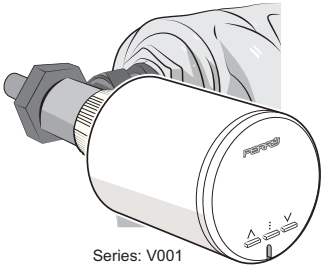
Valve controlled exclusively by Home Automation Power Unit

An electronic valve associated with a home automation power unit is set up and controlled directly by the unit in all its heat regulation actions.

The valve is only compatible with home automation units with software rev. equal to or higher than 135 (S)

CONFIGURATION: to install and configure the system (home automation control unit, ancillary devices and related APP), follow the instructions available on the Perry Electric website: C.DOM www.pdaenergy.it - CRM4.0 www.perry.it

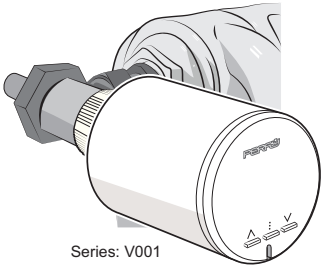
For further information on each single valve setting, see also the manual of the Home Automation Power Unit.



Series: V001

Home automation power unit (optional device)

Autonomous operation of the "Stand-alone" valve”



Series: V001

The electronic valve in autonomous operation (Stand-alone) follows its own settings. It can operate in a variety of modes:
t1 - comfort, **t2** - reduction, **OF**- antifreeze,
AUTO (according to previously recorded desired thermal profile)
In any working mode it is still possible to request a temperature value different from the one set **"CUSTOM operation"**.

CONTENTS

1 - SAFETY WARNINGS

In order to obtain efficient operation of the system, a number of rules must be respected during installation:

The installation and maintenance of the device must be performed only by qualified personnel and in accordance with the regulations and laws in force.

Carefully read the instruction manual before using the product as it provides important indications regarding safety, installation and use. Carefully store the instruction manual for further reference.

- Ensure the integrity of the product after removing it from the packaging.
- The packaging components (plastic bags, PVC suspensions, etc.) must be kept out of the reach of children.
- The device must not be used by persons (including children) with reduced physical, sensory and mental abilities or who lack experience and knowledge of the instructions, unless they are supervised or have received instructions concerning use of the appliance from a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance and remove the batteries.

If necessary, clean the device using a slightly damp cloth.

- NEVER use solvents or alcoholic solutions.

RADIO EMISSION:
The device intentionally emits radio waves in the following frequency: "868-868,6" MHz with a maximum power of less than 25 mW e.r.p. The radio receiver of this product is classified as "CATEGORY 1.5".

The radio frequency waves emitted by the device do not pose a risk to the health of humans and animals.

Important: the manufacturer reserves the right to introduce all the technical and constructive modifications that the same deems necessary,without prior notice.

AA style no.2 batteries (not included in the package)
Risk of explosion if the battery is replaced with an unsuitable battery . Always use pairs of batteries of the same type. NEVER mix different brands and models! Do not use new and used batteries together. Used and wasted batteries must be disposed at the appropriate collection centres.

Before use carefully read the instructions for use and safety of the battery manufacturer. Batteries that are exhausted and unused for long periods of time, may have leaks of liquid or corrosive substances. Replace exhausted batteries immediately. Avoid direct contact with these substances. Keep away from the eyes and not ingest. If this occurs, immediately consult a doctor.

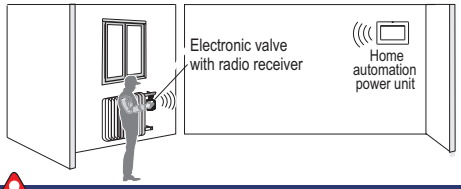
1.1 - RADIO RANGE WARNINGS

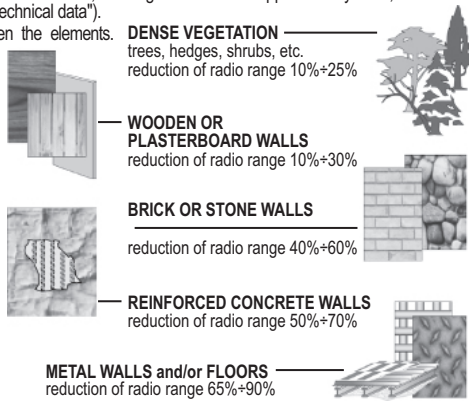
The sending of data to and from the home automation power unit takes place entirely by radio.
For this reason, during installation, a number of precautions must be taken to avoid limiting the range of the radio waves:

- install the device away from furniture or metal structures that could alter or shield the propagation of radio signals;
- check that there are no other electrical or electronic devices (television, microwave oven, etc.) within a radius of at least 1 metre of the appliance;
- if possible, install the appliance in a central position of the apartment;
- if the apartment has several floors, install the appliance on the middle floor;
- in the absence of obstacles between the home automation power unit and the smart valve, the range in "free air" is approximately 80 m; in indoor environments in the presence of walls, the range falls to around 30 m (see "technical data").

The radio range decreases considerably when obstacles are placed between the elements. This attenuation varies to a different extent depending on the type of material with which the walls or obstacles to be crossed are made. Even the presence of disturbances or interference of electromagnetic origin can reduce the radio range indicated. Below are some examples of material-related attenuation, which impact the range in "Free Air" declared above.

With the support of the "Optical and acoustic verification of the received radio signal" function (see section 7.7) it is possible to check in advance the optimal installation position (of better signal reception).





1.2 - IMPORTANT INFORMATION FOR THE INSTALLER

- **Perform the final adaptation procedure, for the implementation of the electronic valves, with the hydraulic system correctly loaded.**
- **Adaptation to an empty system could cause malfunctions of the valve itself.**
- **For correct operation of the electronic valve, a variable flow pump or at least a hydraulic bypass valve must be installed in the system.**

- **Pressure force in closure: max. 8 Kg**
- **Compatible with thermostatic valves with PN (Nominal Flow) max of 8 Bar (800 kPa).**
- **Compatible with thermostatic valves with ΔP max differential 1 Bar (100 kPa).**
- **DO NOT leave the valve energised and/or closed when not assembled on the valve.**

2 - TECHNICAL DATA

Power supply:	**No. 2 size AA style batteries** The device has been tested and guarantees its characteristics with the following batteries: • 1,5V Alkaline (Duracell, Energizer and Panasonic) • 1,2V Ni-MH rechargeable (any quality brand with capacity equal to or greater than 2300mA/h) • 1,5V Primary lithium (Energizer)
Maximum supply voltage:	3,4 V ⎓
Autonomy:	The battery life depends significantly on the number of daily manoeuvres performed and on the number of queries made to the LED display; on average: - With Alkaline batteries: 1 thermal season - With rechargeable NiMH batteries: 1 thermal season if correctly recharged - With Lithium batteries: 2 thermal seasons
Display	White LED light
Radio communication band	868-868.6 MHz
Transmission power	< 25mW
Receiver classifier	Category 1,5
Built-in room temperature probe	Yes
Measuring range	-5°C/+39°C with temperature communicated by unit 0°C/+55°C with temperature detected by internal sensor
Temperature indicator resolution	0,5 °C
Measurement range	Temperature measurement every minute
T Set adjustment field	+4°C/+39°C a step di 0,5°C
Operating temperature	0°C/+55°C
Storage temperature	-10°C/+60°C
Output type	Motorised control for needle thermostatic valves
Connection to the radiator	Compatible with M30 x 1.5mm thermostatic valves
Maximum system fluid temperature	90 °C
Maximum actuator stroke	Linear, up to approximately 4.5mm
Operating mode	Stand-alone (autonomous) or controlled by a home automation power unit
Temperature regulation method	Proportional opening (default) - hysteresis band ON/OFF opening
Radio Range	30 ÷ 80 m (depending on obstacles)
Software classification	A
Action	Type 1
Degree of pollution	2
Use	Civil/tertiary
Degree of protection	IP20
Type of insulation	Class III
Dimensions	L = 85,5 mm Diameter Ø = 5,3 mm
Weight (without batteries)	123g

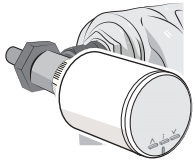
2.1 - VALVE TEMPERATURE REGULATION METHOD

The main function of the valve is to open or close the water valve assembled on the radiator connected to it so that the room temperature follows the temperature set by the user, on the thermostat, associated home automation power unit or on the valve itself. To achieve this, the valve can use 2 adjustment methods, depending on what is defined on the associated home automation power unit (unit-controlled mode) or in the same valve (stand-alone mode):

• **Proportional method:** the valve needle is opened in proportion to the thermal gap between room temperature and set temperature (default)..
• **Hysteresis band ON/OFF method**

2.2 - LOCAL DETECTION OF THE ROOM TEMPERATURE ON THE VALVE

The valve, with the help of internal sensors, estimates the temperature near the radiator. In this way the detection is performed with greater
For optimal local detection, the battery tab must be assembled correctly. Remember that local detection can be influenced by the temperature of the carrier fluid in the radiator, exposure of the valve to direct sunlight, air currents, stoves and fireplaces lit nearby etc.

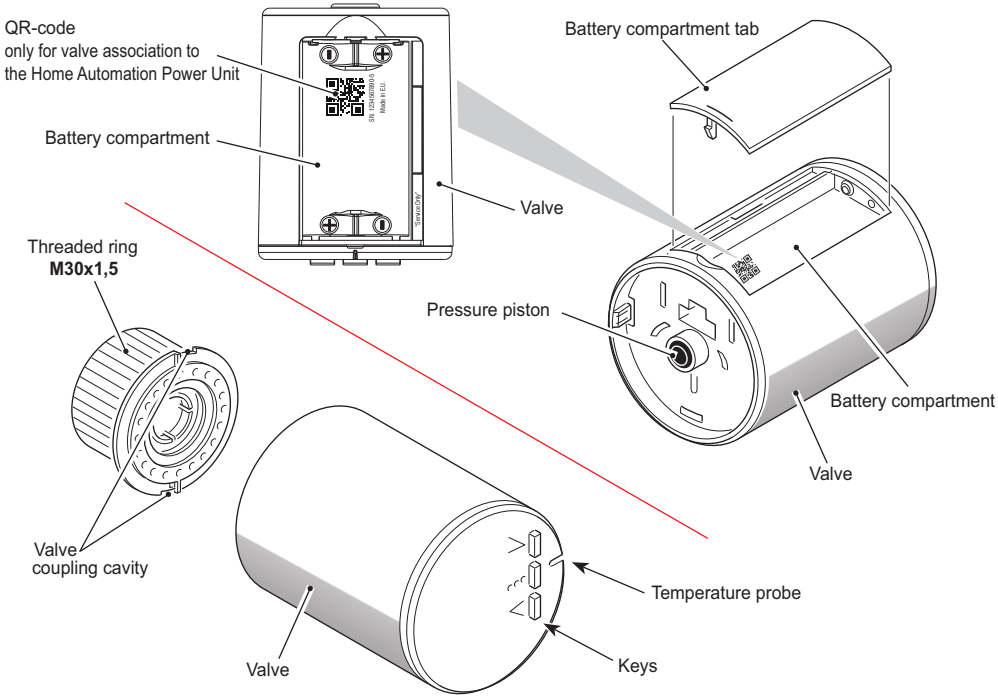


2.3 - OFFSET = Adaptation of the temperature detected by the valve to the surrounding environment.

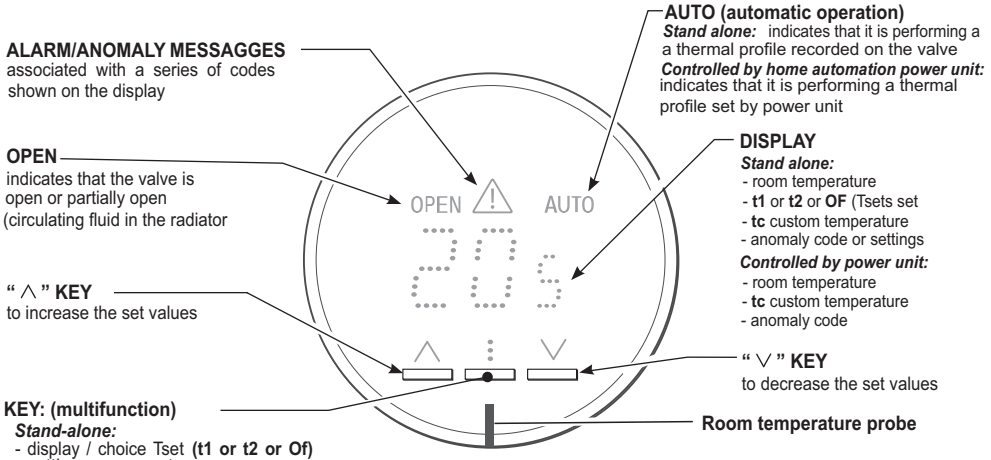
If it is necessary to correct the detection of the room temperature, it is advisable to intervene on the **"OFFSET"** setting (default 0) in the valve menu if the installation is stand-alone or through the APP of the home automation power unit in which the valve is associated.
- The OFFSET must be increased if the room temperature shown by the valve is too low compared to the actual value or if the perceived room temperature is too high.
- The OFFSET must be decreased if the room temperature shown by the valve is too high compared to the actual value or if the perceived room temperature is too low.
If it is necessary to set this parameter with a value other than zero, it is advisable to proceed in steps, changing this value a little at a time, until an optimal setting is obtained.

For Master or STAND-ALONE mode only, the OFFSET value set is not expressed in °C but is a setting that interacts with the automatic valve compensation logic.

3 - VALVE DESCRIPTION



3.1 - DISPLAY AND KEYS LEGEND



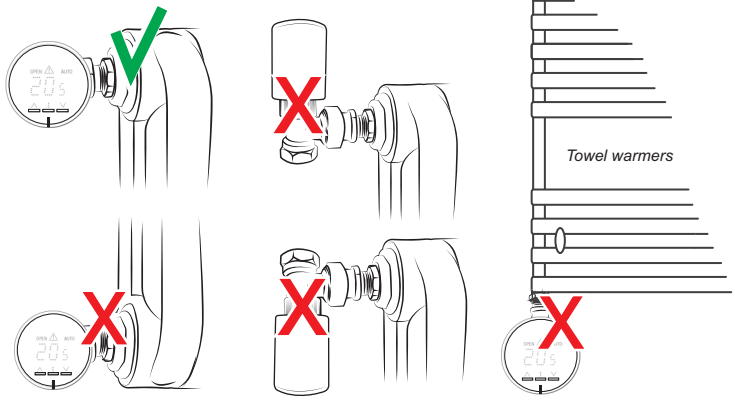
Further views of the display and particular functions of the keys are described in the specific use paragraphs

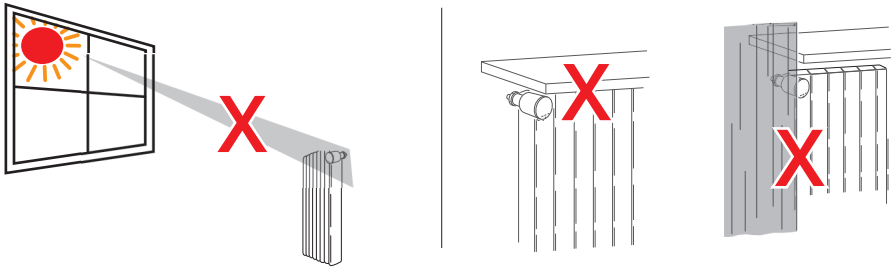
Action on keys		Acoustic alerts		
Not pressed	Pressed	Short sound	Long sound	Error sound
		Beep	n° S Beep	Beep Beep

4 - INSTALLATION

The electronic valve is preferably installed **horizontally**.

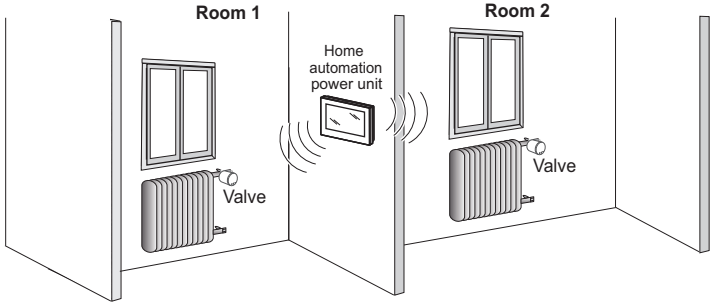
The valve can only be set in **MASTER** or **STAND-ALONE** mode if the type of installation is the one indicated with the green check; all other types involve unsuitable temperature detection and consequently potentially **INCORRECT** head regulation



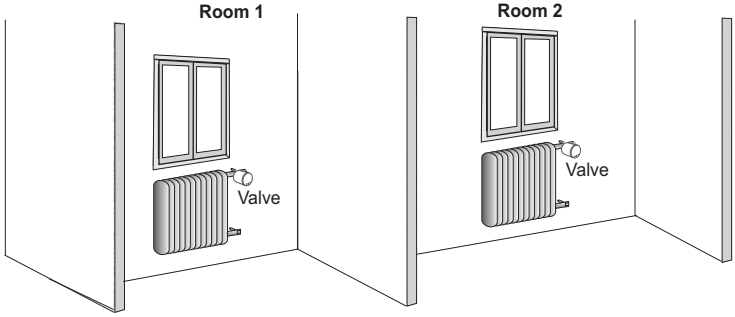


If the detection of the room temperature is performed locally by the valve, take into account the fact that heat or cold sources, air currents and direct sunlight could adversely affect the correct functioning of the valve.

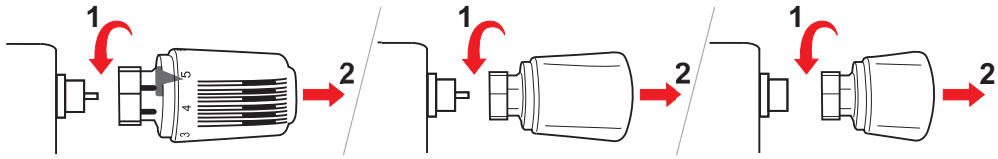
Example of installation of valve recorded on home automation control unit



Example of valve installation in STAND-ALONE operation



Remove the old valve from the radiator



Case 1: Thermostatic valve

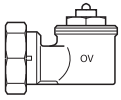
Case 2: Thermostatic valve

Case 3: Non-thermostable valve
Needle-less valve **NOT COMPATIBLE**
(requires intervention by a plumber)

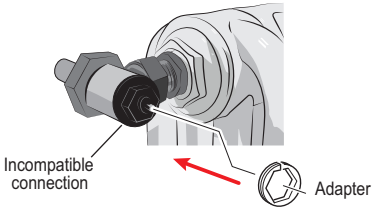
4.1 - COMPATIBILITY AND ADAPTATION OF THE VALVE TO THE MAIN NEEDLE VALVES

Attention: the electronic valve is equipped with a ring nut for fastening to the tap with metric thread M30x1.5.

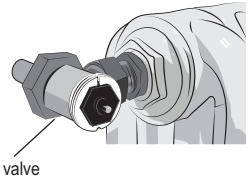
Check the compatibility of the **threaded ring nut (M30x1.5), present on the electronic valve**, with the connection of the needle valve assembled on the radiator: in case of incompatibility, apply a specific adapter to the valve or replace the valve with a suitable one (see table).

Needle valve BRAND	Needle valve FASTENING (type/step)	Electronic valve ADAPTER - features-		
CALEFFI	Pressure coupling (clip)	Plastic clip / thread fitting M30x1,5 cod. 1PAVTNN001	Not supplied (optional)	
CALEFFI CAZZANIGA LANDIS/SIEMENS HERZ HONEYWELL TIEMME MNG FAR Manifolds	thread M30x1,5	No adapter required		
COMAP mod. 804 widespread in the countries: N-B-NL	thread M30x1,5	No adapter		
OVENTROP	thread M30x1,5	Angular adapter (90°) cod. 1011450	Not supplied (optional)	
OVENTROP	thread M30x1	Adapter code 1011445 connection from M30x1 thread to M30x1.5 thread	Not available from wholesalers of thermohydraulic material	
HERZ COMAP mod. 808 popularly used in the countries: I-F-E-GR	thread M28x1,5	Klimit adapter code K371361001 connection from M28x1,5 thread to M30x1,5 thread	Not available from wholesalers of thermohydraulic material	

Example of adapting the CALEFFI valve connection **(not supplied to be purchased separately)**



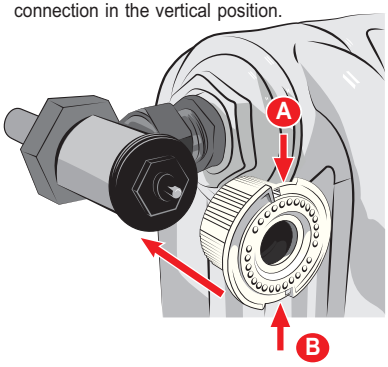
1. Insert the adapter into the incompatible connection.



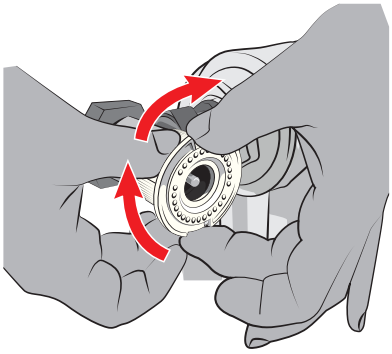
2. Assemble the connection with the threaded ring nut and the valve.

4.2 - INSTALLATION OF THE THREADED RING TO THE RADIATOR

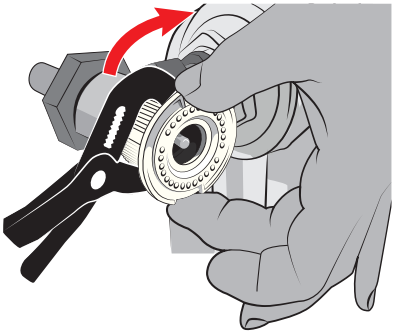
1° Position the ring nut on the radiator valve, keeping the two cavities (indicated with A and B) of the valve connection in the vertical position.



2° Screw the threaded ring nut clockwise, keeping the valve attachment as shown below.

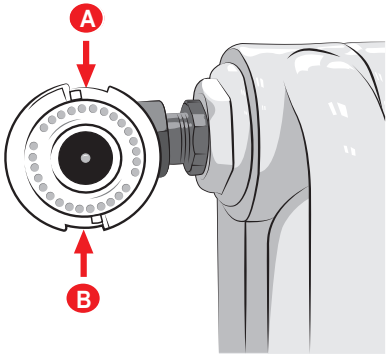


3° With the help of a tightening tool, screw the threaded ring nut until it is firmly tightened, holding the valve attachment still.
Seek to keep the cavities (A and B) in a vertical position.



4° Once the ring nut is tightened correctly, make sure that the cavities (A and B) of the valve attachment are positioned vertically.

OK!



VALVE CONTROLLED BY HOME AUTOMATION POWER UNIT

Continue as indicated on the **next page**

AUTONOMOUS OPERATION OF THE "STAND-ALONE" VALVE

Continue as indicated on **page 19**

5 - PUTTING THE VALVE INTO OPERATION (1/2)

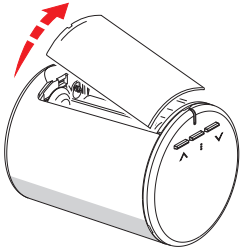
At the time of installation, the valve requires an adjustment operation that is used to precisely detect the opening and closing positions of the valve.
Before installing the valve it is necessary to insert the batteries (not supplied) to power it.
DO NOT leave the valve energised and/or closed when not assembled on the needle valve.

Valve controlled by a Home Automation Power Unit

This type of installation requires the valve to be associated with a home automation power unit.
Perform the association as indicated in the specific chapter of the manual of the Home Automation Power Unit (e.g. “Add Zone” or “Valve Management/Add Valve”)

With the support of the "Optical and acoustic verification of the received radio signal" function (see section 7.7) it is possible to check in advance the optimal installation position of better signal reception.

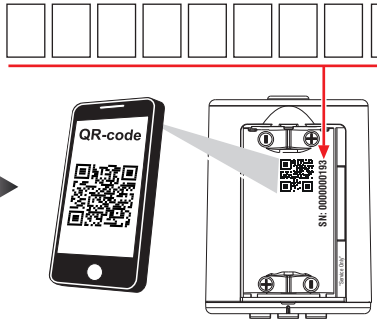
5° Remove the battery compartment tab.



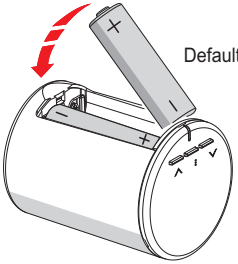
6° Attach the valve to the home automation power unit.

Valve name: _____

It is advisable to transcribe the serial number before installing the valve, useful for identification etc. The S.N. consists of 10 digits, excluding dash and last digit (example in the figure will be: **0000000193)**



7° Insert the batteries respecting the polarity.



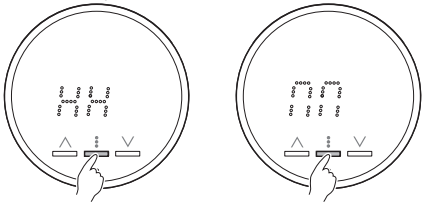
batteries not supplied

Default: **2x1,5Vdc alkaline AA LR6** recommended Duracell, Energizer and Panasonic).

or alternative type of batteries, see in the technical data and changing setting in home automation power unit

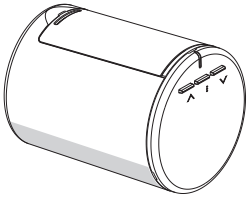
Refit the battery compartment tab.

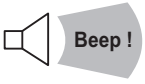
8° Current hours and minutes
This setting is not necessary because it is automatically transmitted by the home automation power unit.



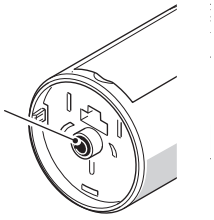
(confirm with the multifunction button or wait a few seconds)

9° Wait for the beep! It indicates complete opening of the valve (retracted piston)





Retracted pressure piston



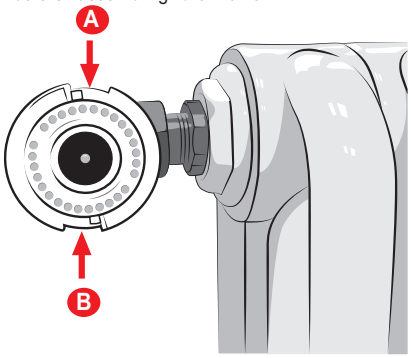
IMPORTANT!

The valve will automatically wait 5 minutes to make the closing adaptation.
Within these 5 minutes attach the valve to the radiator (see next page).

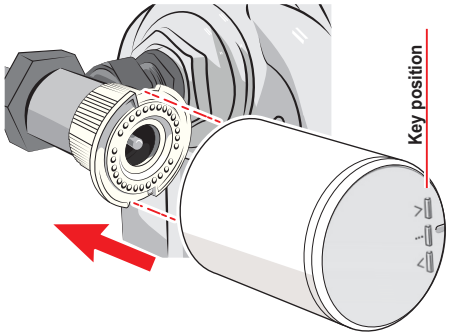
DO NOT FORCE ATTACHMENT OF THE VALVE TO THE CONNECTION !
Attention: if the 5 minutes have elapsed and the valve has not yet been assembled, remove at least one battery and repeat the procedure from point 7.
Alternatively during this phase it will be possible to perform a MANUAL FORCING OF ADAPTATION IN OPENING and CLOSING (see para. 7.8)

5 - PUTTING THE VALVE INTO OPERATION (2/2)

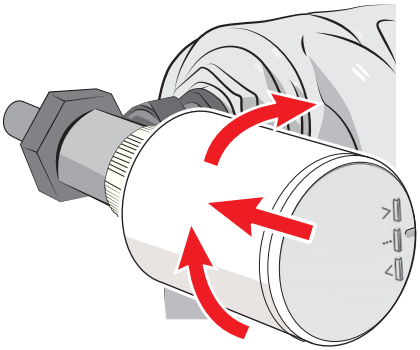
10° Make sure that the cavities (A and B) of the valve attachment are positioned vertically before assembling the valve.



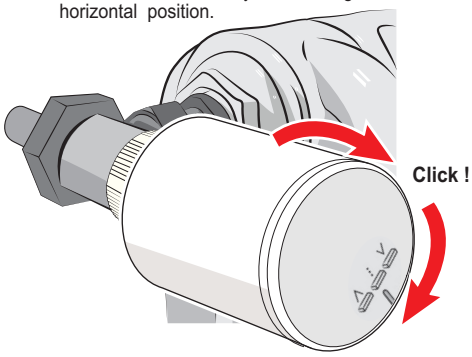
11° Using the valve keys to the right and in the vertical position as a reference. Insert and press the valve on the connection as shown in the figure.



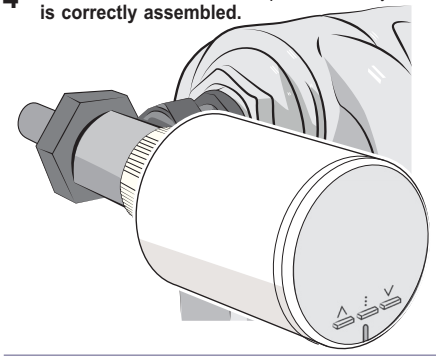
12° Keeping pressure on the attachment, turn the valve clockwise.

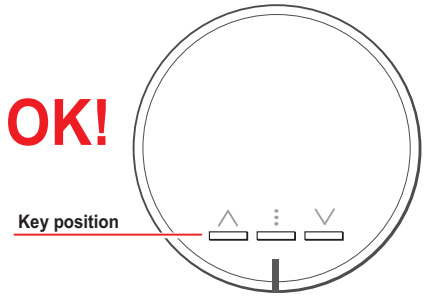


13° After hearing a "**Click**", continue the rotation clockwise until the keys are brought to a horizontal position.



14° When the installation is completed, the keys must be in the horizontal position; **this indicates that the valve is correctly assembled.**



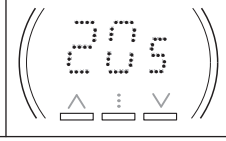


15° 5 minutes from the beep (point 9) the valve ends the adaptation.
It will be possible to anticipate the adaptation in closing or 5 minutes, by briefly pressing any key.

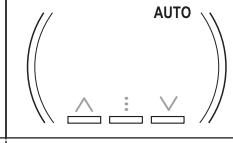
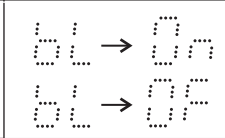
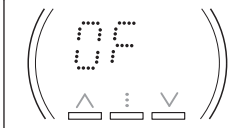
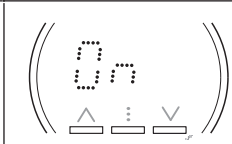
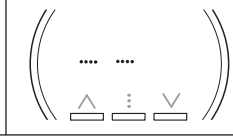
ATTENTION: in case of clockwise rotation of the valve well beyond its normal position of use (point 14) there may be accidental detachment of the same from the radiator; in this case never force the re-engagement. Remove at least one battery, wait 5 sec. before reinserting it, then repeat the procedure from point 7

6 - SUMMARY OF THE MAIN CONTROLS ON THE VALVE

With the valve operational and display off (stand-by)

Key	Press duration	Description	View	Notes
press any key 	Short	Reactivation of the valve displays the room temperature detected ***(see details in paragraph 7.1)***		**User** (in case of 1 or more alarms, they will be shown before the room temperature

With the "alarm" valve (T.room display) press the key:

press twice  press twice 	Short	CUSTOM temperature mode setting **(tc)** ***(see details in paragraph 7.2)***		**User** temporary manual until midnight of the current day
	Short	AUTO activation follows thermal profile set in home automation power unit (exits Custom temperature mode) ***(see details in paragraph 7.3)***		**User**
	10 seconds	Activates/Deactivates keypad lock ***(see details in paragraph 7.4)***		**User** function that can be activated / deactivated also by home automation power unit that will have priority over the local one in the valve
	6 seconds	Manual forcing into valve closure ***(see details in paragraph 7.5)***		**User** with forcing active by pressing any key the display shows **OF** Repeat the operation to remove the lock in closing
	6 seconds	Manual forcing when opening the valve ***(see details in paragraph 7.6)***		**Installer recommendation** with active forcing by pressing any key the display shows On Repeat the operation to remove the lock in opening
	6 seconds	RADIO Test Checks the efficiency of radio communication between home automation power unit and valve ***(see details in paragraph 7.7)***		**Installer recommendation** duration 3 minutes or can be terminated by briefly pressing the key

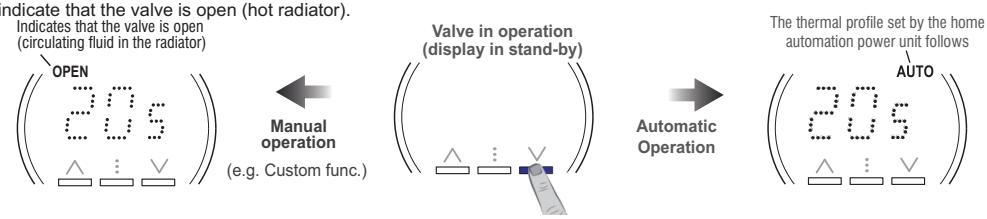
7 - OPERATIONS POSSIBLE DIRECTLY ON THE VALVE

7.1 - NORMAL OPERATION OF THE VALVE

Press one of the keys to reactivate the valve from the stand-by state. **The detected room temperature is displayed.**
the valve could be in manual forcing operation or in AUTO operation (thermal profile set by home automation power unit

If there are any alarms or anomalies when pressing any key, a code will be displayed before the room temperature (see section 8).

The words **OPEN** on steady both in power unit or Custom temperature forcing operation and in Automatic (AUTO) operation indicate that the valve is open (hot radiator).



7.2 - OPERATION IN CUSTOM TEMPERATURE MODE

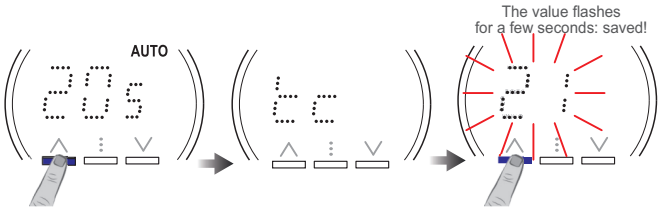
With the "alarm" valve (**T.room display**), pressing the key ∧ or ∨ . it will be possible starting from the current level and **tset** to set a different temperature **tset** value. Entering custom **t (tc)** mode, the AUTO icon if switched on will be SWITCHED OFF.

Each press of one of the two arrow keys corresponds to a variation of 0.5°C.

If a Max and/or Min Temperature lock has been set in the home automation power unit, the Custom temperature setting can also be set within these locks.

Important: the "Custom" **tc** temperature mode will have a temporary duration, the home automation power unit will restore the **AUTO** or other control mode from the power unit at midnight of the current day.

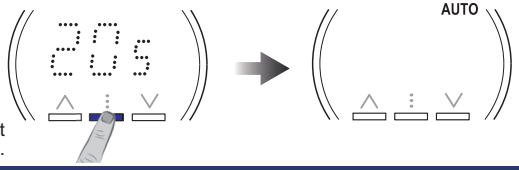
From the custom **temperature mode (tc)** it is possible to switch to **AUTO** by briefly pressing the key ⋮.



In the event that the text **AUTO** flashes, it indicates that the valve is waiting for a response from the power unit.

7.3 - AUTOMATIC OPERATION

With the "alarm" valve (**room T. display),** in Custom **(tc)** temperature mode, the first press of the key ⋮ offers the automatic **(AUTO)** control of the temperature control valve according to the profile set by the home automation power unit.



in the event that the text **AUTO** flashes, it indicates that the valve is waiting for a response from the power unit.

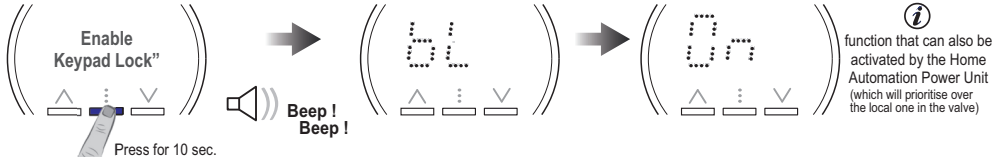
7.4 - KEYPAD LOCK

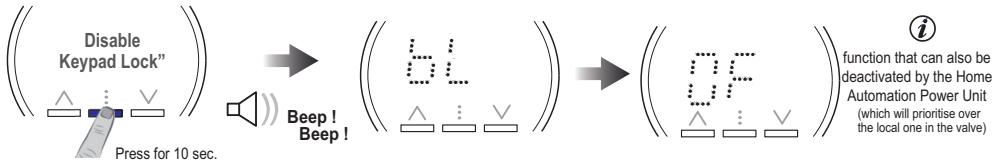
The “Keypad lock” function allows the user to lock the functions accessible via the valve buttons in order to avoid undesirable sabotage and deprogramming of the valve.

Holding down the key ⋮ for 10 seconds will activate the keypad lock. Repeat the operation to unlock the keypad.

With the keypad lock function it will in any case be possible to view the room temperature and display the alarm and anomaly codes. In addition, the function is subject to the corresponding settings from the home automation power unit.

If the keypad lock is enabled locally within 10 minutes of the batteries being inserted, the enabling is postponed for 10 minutes after the last press of a key.





7 - OPERATIONS POSSIBLE DIRECTLY ON THE VALVE

7.5 - VALVE CLOSING FORCING

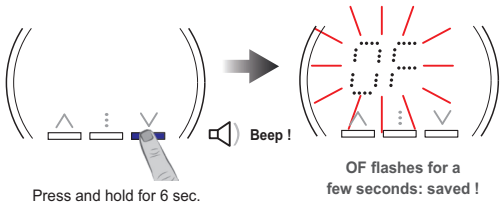
This forcing can be used to exclude a radiator without errors being made in the metering of the heat consumed and in the operation of the combined home automation power unit.
To enable the forcing, press and hold the key " ∨ " for 6 seconds; the valve emits a beep and closes the actuator.

Forcing is not possible in case of:
- Keypad lock active
- "Summer" season set by the power unit

ⓘ In case of battery change and valve adaptation, the forcing is kept in memory.

ⓘ In case of Factory Reset the forcing is lost.

With the forcing active, pressing any key shows the display for a few seconds **OF**.



To **deactivate** forcing in closing, press and hold the key for 6 seconds ∨.

7.6 - VALVE OPENING FORCING

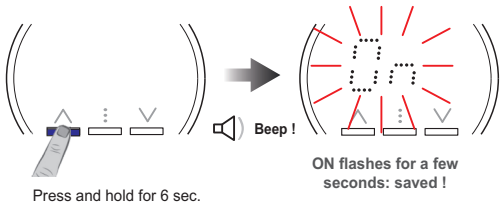
This forcing can only be used during installation and system verification; it is not designed to be used by the user.
To enable the forcing, press and hold the key ∧ for 6 seconds; the valve emits a beep and closes the actuator.

Forcing is not possible in case of:
- Keypad lock active
- "Summer" season set by the power unit

ⓘ In case of battery change and valve adaptation, the forcing is kept in memory.

ⓘ In case of Factory Reset the forcing is lost.

With the forcing active, pressing any key shows the display for a few seconds **ON**.

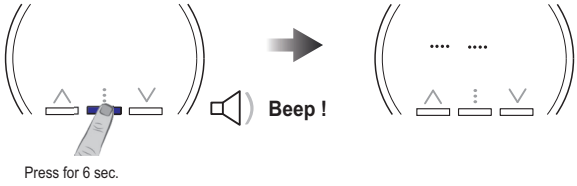


To **deactivate** forcing in closing, press and hold the key ∧ for 6 seconds.

7.7 - OPTICAL AND ACOUSTIC VERIFICATION OF THE RECEIVED RADIO SIGNAL

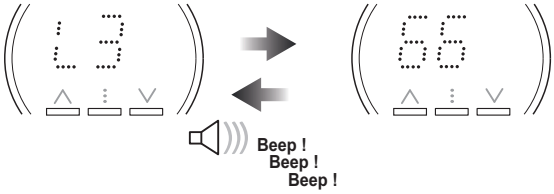
To verify, press and hold the key ⋮ for 6 seconds; two dashes are initially displayed.
The valve enables its transmitter every 3 sec. to send a command to the power unit immediately after transmission waiting for a response from the power unit.

When the valve does not receive the response from the power unit, it displays two dashes.



Each time the valve receives a response from the power unit, it displays the power level of the response alternating with the corresponding value

example: optimal reception



L0 */ no beep* - Insufficient reception
L1 */ 1 beep* - Poor reception
L2 */ 2 beep* - Weak reception
L3 */ 3 beep* - Optimal reception

The valve also emits a number of beeps corresponding to the level received: no beeps, 1 beep, 2 beeps, 3 beeps.
The test ends automatically after 3 minutes or by briefly pressing the key ⋮.

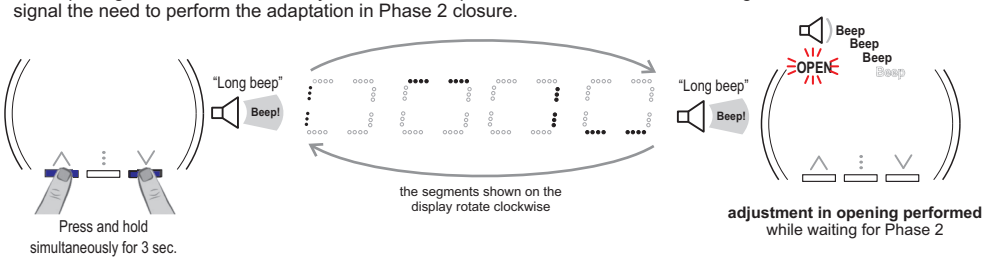
7 - POSSIBLE OPERATIONS DIRECTLY ON THE VALVE

7.8 - MANUAL FORCING OF ADJUSTMENT IN OPENING AND CLOSING

Operation recommended for the installer.
ATTENTION! this procedure will be possible **within 10 minutes from the last press of a key, only during the installation phase upon the 1st insertion of the batteries or when changing the batteries and in any case when removing a battery and 5 seconds after placing one of the batteries back in the valve.**

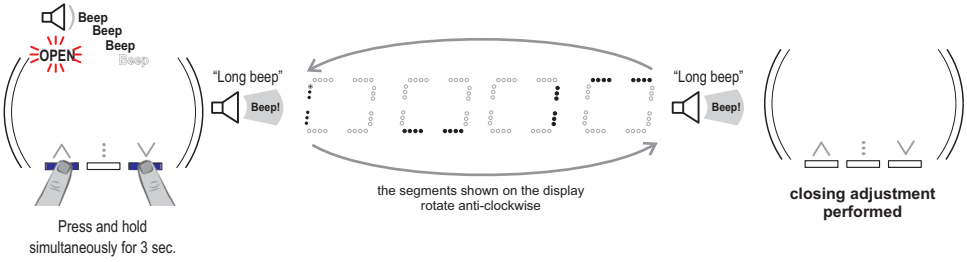
Step 1: press the arrow keys simultaneously for 3 seconds. An extended beep indicates that the valve opens as shown below.

After opening, the valve consecutively emits short beeps combined with the intermittent ignition of the word OPEN to signal the need to perform the adaptation in Phase 2 closure.



If Phase 2 is not performed automatically after approximately 15 minutes from the open valve condition (Phase 1), the same is brought to closure, completing the adaptation procedure.

Step 2: Press the arrow keys simultaneously for 3 seconds. An extended beep indicates that the valve is closing as shown below.
The manual adaptation procedure has been performed.



7.9 - AUTOMATIC WEEKLY ANTI-LIMESCALE OPERATION

This operation is managed automatically by the valve and cannot be activated locally on the valve by the user.

In order to avoid harmful deposits of limescale in the radiator valve which could compromise correct operation of the valve, in the absence of operation of the same within a week, a closing and opening cycle of the valve is automatically activated.

7 - OPERATIONS POSSIBLE DIRECTLY ON THE VALVE

7.10 - FACTORY RESET

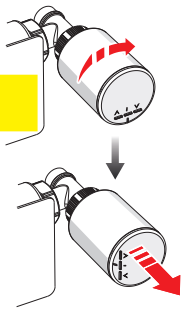
ATTENTION: In case of factory reset the valve will always load the STAND-ALONE factory settings (see section 11.11.)
Only later if combined with a power unit and not eliminated by the power unit, upon the first radio contact (automatic when the batteries are inserted), will it be reassigned to the home automation power unit that will take control of it, proposing the settings already set in the power unit before restoring factory settings on the valve.

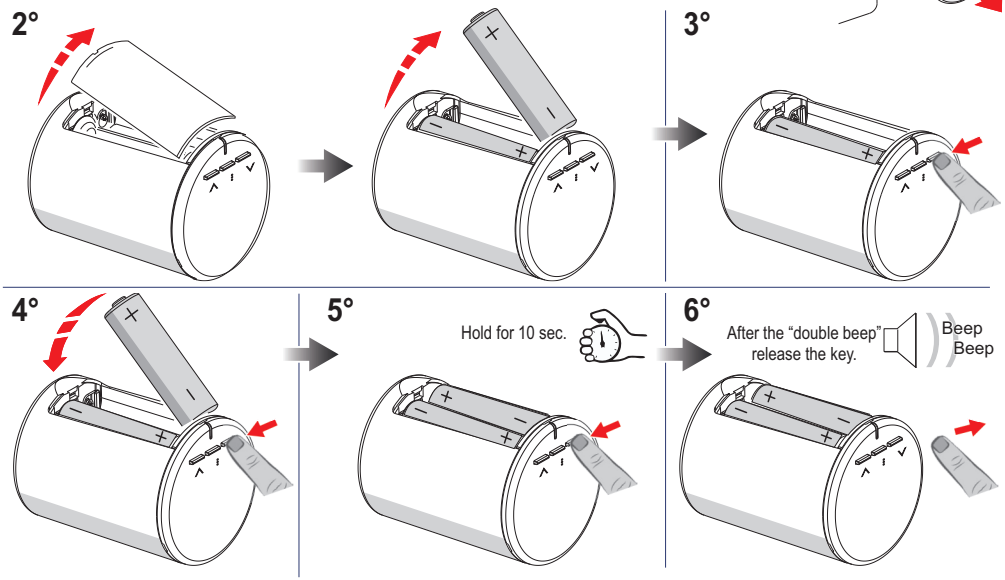
To cancel the association of the valve with the home automation power unit, before performing the factory reset it must be deleted or replaced as described in the manual of the power unit.

To return the valve to factory status, perform the following procedure:

IMPORTANT! Force the valve to open,
pressing and holding the key ∧ for 6 seconds (see section 7.6).

1° Rotate the valve's body **clockwise** until a certain resistance is felt. Continue the rotation, applying the necessary force until it is released from the attachment and removed.
2° Open the tab and remove a battery.
3° Press and hold one of the keys.
4° Restore the previously removed battery.
5° Restore the previously removed battery.
6° After the beep it is possible to release the button.
On release the factory settings will be reloaded and the valve will self-reset.



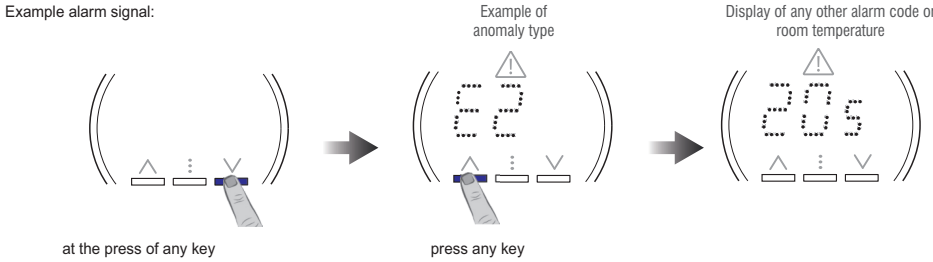


From this moment onwards the valve performs an automatic adjustment and opens the piston. Within 5 minutes assemble the valve on the radiator.

DO NOT leave the valve energised and/or closed when not assembled on the valve.

8 - ALARMS AND ANOMALIES

Reports of any **alarms** or **anomalies** appear on the display showing the symbol ⚠ and the code **E**X (where X identifies the type of alarm) at the press of any key before the display of the room temperature.
If there are multiple reports of alarms or anomalies, each press of a key is displayed in succession every 3 seconds.



Description	Code view	Product activity	Solution	Notes
Batteries almost depleted Autonomy see technical data		Valve working	Replace the batteries as soon as possible	***(see details in paragraph 9.1 and paragraph 9.1.1)***
Fault temperature sensor		If the room temperature is detected locally the valve does not thermoregulate	Replace the valve	***(see details in paragraph 9.2)***
Valve position not recognised		The valve does not thermoregulate	Adaptation is required	Excessive stroke with respect to the adaptation ***(see details in paragraph 9.3***
Space between opening and closing too short		The valve does not thermoregulate	Adaptation is required	Stroke too short with respect to the adaptation ***(see details in paragraph 9.3)***
Radio signal anomaly between home automation power unit and valve		The valve will be closed or open (depending on the setting in the home automation power unit).	Check radio signal between home automation power unit and valve *(see details in paragraph 9.4)*	40 minutes after the last transmission of a home automation power unit associated with the valve, there will be an anomaly reported by E6; the valve will close or open (depending on the settings in the home automation power unit).
Power failure situation Home automation power unit with absence temperature enabled		The valve performs an automatic antifreeze cycle (every hour the valve opens for 6 minutes)	At the end of the power failure situation the valve returns to normal operation and the E7 signal disappears automatically	***(see details in paragraph 9.5)***

9 - TROUBLESHOOTING

9.1 - BATTERIES ALMOST DEPLETED (E0 anomaly message)

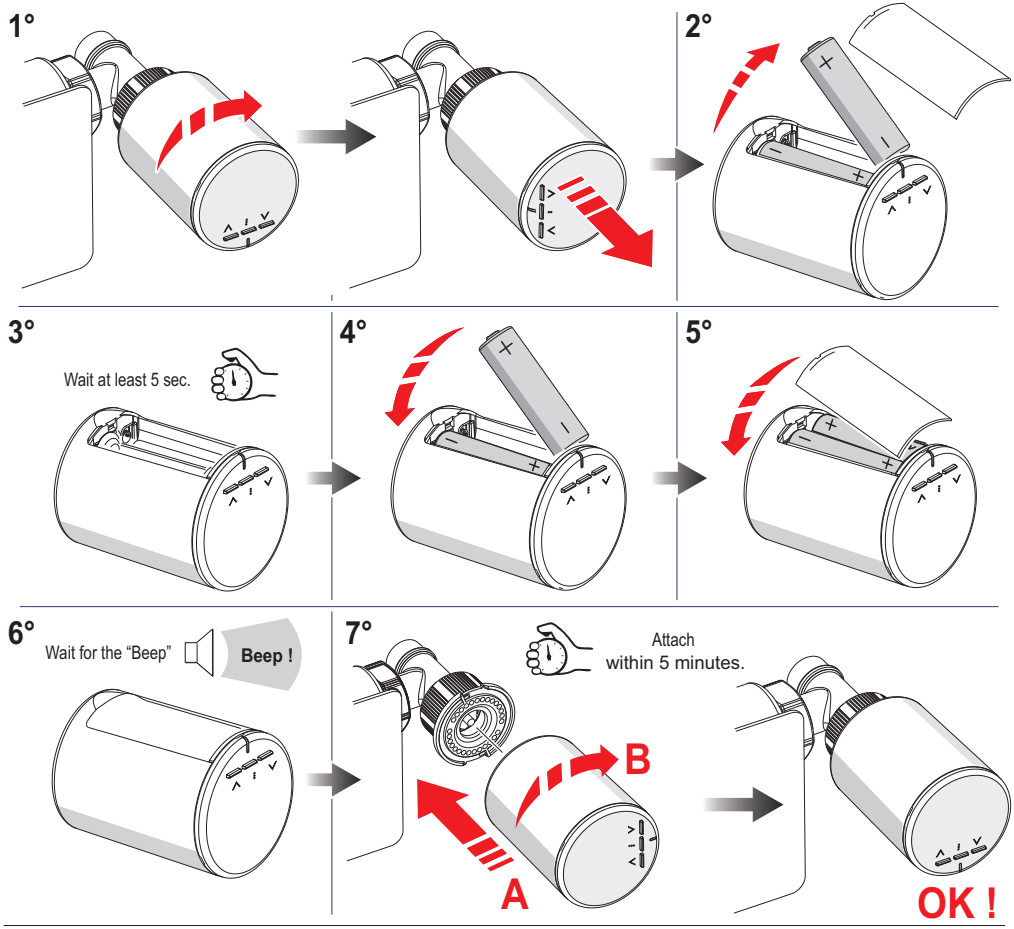
When the level of charge of the batteries inside the valve drop below a predetermined level (batteries almost depleted), an anomaly is generated, indicated by the code E0. **Replace the batteries immediately according to the procedure in the next paragraph.**

ATTENTION: after the valve batteries are almost depleted, when the battery voltage drops further and reaches a factory programmed safety value, the valve automatically closes or opens (depending on the settings in the home automation power unit) and all the functions and signals are disabled (valve off). The valve remains switched off until the batteries are replaced (the valve is closed and switched off after approximately 15 days from the signal of batteries almost depleted).

9.1.1 - REPLACING THE BATTERIES AND ADAPTING THE VALVE

IMPORTANT: it is advisable to bring the valve into opening (control from home automation power unit) and to operate as follows:

1° Rotate the valve's body **clockwise** until a certain resistance is felt. Continue the rotation, applying the necessary force until it is released from the attachment and removed.
2° Open the battery compartment tab and remove the depleted batteries.
3° **IMPORTANT! Wait at least 5 seconds before inserting new batteries.**
4° Insert the new batteries paying attention to the polarities.
5° Refit the tab on the battery compartment.
6° Wait for the "Beep" sound.
7° Within 5 minutes from the acoustic alert, attach the valve to the coupling and turn it clockwise until the horizontal position of the keys is obtained
DO NOT leave the valve energised and/or closed when not assembled on the valve.



9 - TROUBLESHOOTING

9.2 - FAULTY TEMPERATURE SENSOR (E1 anomaly message)

The fault code E1 indicates that the temperature sensor on the valve is faulty.

Solution 1:

if the valve has been associated with the home automation power unit as a zone sensor, it must be replaced.

Solution 2:

if the valve has been associated with the home automation power unit only as an actuator, it will be possible to continue using it.

9.3 - VALVE NOT ADAPTED TO THE RADIATOR VALVE (anomaly message E2 - E4)

When for any reason the valve no longer recognises the parameters stored during the operation of adaptation to the valve (example: air in the system, limestone in the valve, pressure changes, etc.), an anomaly is generated that will be signalled by the codes E2 or E4; the valve manoeuvres will be blocked until reset.

The "Non-adapted valve" anomaly can also be found in the following cases:
- Faulty needle valve
- Failure of the hydraulic system with sudden pressure losses.

After resolving the problem (replacement of the valve or repair of the hydraulic system), **perform a new adaptation:**

Solution 1:

perform the same procedure as described in paragraph 9.1.1:

«Replacing batteries and adapting the valve» by removing and replacing one of the batteries after 5 sec.

With this operation, the valve performs the adjustment operation that is used to precisely detect the opening and closing positions.

Solution 2:

If the valve is correctly assembled on the radiator (see section 5 "Commissioning the valve" in point 14) it is possible to perform an APP-commanded adaptation of the home automation power unit.

9.4 - PROBLEMATIC RADIO TRANSMISSION (E6 anomaly message)

The E6 anomaly code indicates that the radio transmission between the home automation power unit and the valve is not optimal.

Solution:

Check with the radio test whether the radio signal is absent or weak (see section 7.7).
Make sure that no elements have been placed between the radio power unit and the valve that could decrease the signal intensity.

9.5 - HOME AUTOMATION POWER UNIT WITH ABSENCE AND POWER FAILURE IN PROGRESS TEMP. ENABLED (on the anomaly message valve E7)

In the situation of continuing power failure and home automation power unit with the Absence Temperature enabled, the valve signals the E7 anomaly and will perform an automatic antifreeze cycle, opening the radiator every hour for 6 minutes for the entire duration of the power failure.
Once the power failure ceases, the valve returns to its normal operation and the E7 signal disappears automatically.

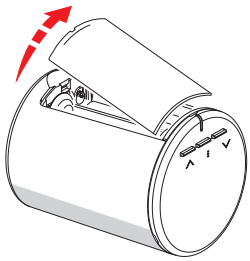
from page 8

10 - PUTTING THE VALVE INTO OPERATION (1/2)

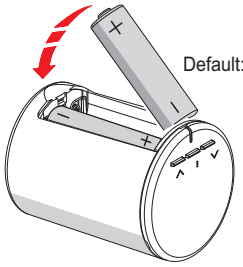
At the time of installation, the valve requires an adjustment operation that is used to precisely detect the opening and closing positions of the valve.
Before installing the valve it is necessary to insert the batteries (not supplied) to power it.
DO NOT leave the valve energised and/or closed when not assembled on the needle valve.

Autonomous operation of the "Stand-Alone" valve

5° Remove the battery compartment tab.



6° Insert the batteries respecting the polarity.

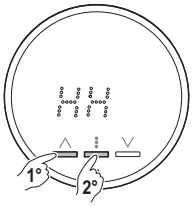


batteries not supplied

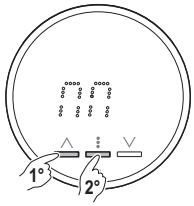
Default: **2x1,5Vdc alkaline AA LR6** (recommended Duracell, Energizer and Panasonic).
or alternative type of batteries, see in the technical data and changing the setting in the valve (see section 14)

Refit the battery compartment tab.

7° Set current time
Press ∧ or ∨ to enter the current time and confirm with the key ⋮.

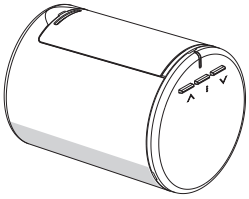


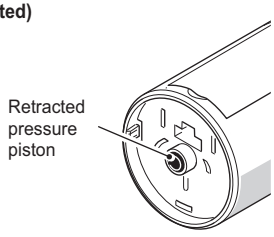
8° Set current minutes
Press ∧ or ∨ to enter the current minutes and confirm with the key ⋮.



The insertion of current hours and minutes is only essential if it is intended to use the AUTO thermal profile recording function on 24 hours, otherwise press the key ⋮ twice to ignore the setting.

9° Wait for the beep! Indicates complete opening of the valve (piston retracted)



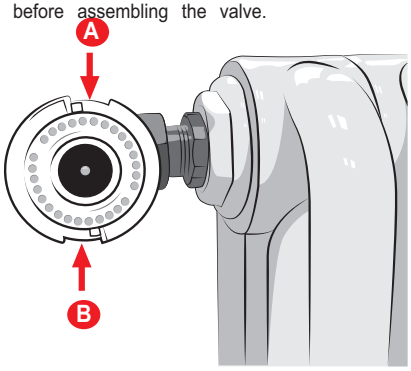


IMPORTANT !
The valve will automatically wait 5 minutes to make the closing adaptation.
Within these 5 minutes attach the valve to the radiator (see next page).

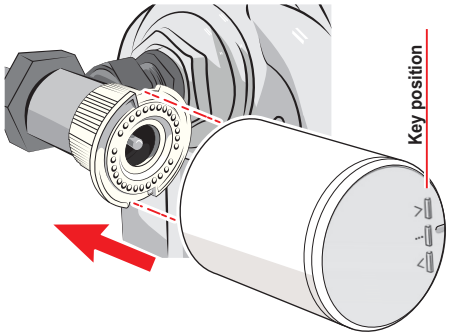
DO NOT FORCE ATTACHMENT OF THE VALVE TO THE CONNECTION !
Attention: if the 5 minutes have elapsed and the valve has not yet been assembled, remove at least one battery and repeat the procedure from point 7.
Alternatively during this phase it will be possible to perform a MANUAL FORCING OF ADAPTATION IN OPENING and CLOSING (see para. 11.9)

10 - PUTTING THE VALVE INTO OPERATION (2/2)

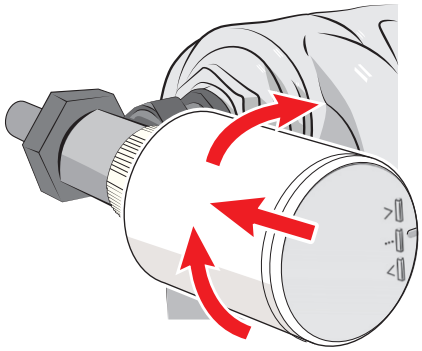
10° Make sure that the cavities (A and B) of the valve attachment are positioned vertically before assembling the valve.



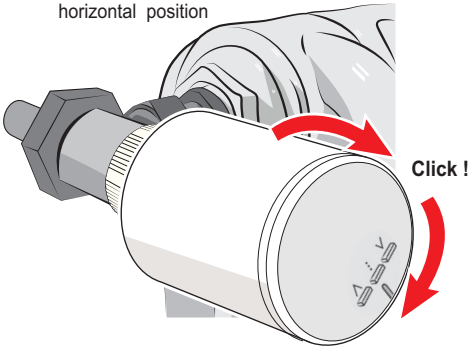
11° Using the valve keys to the right and in the vertical position as a reference. Insert and press the valve on the connection as shown in the figure.



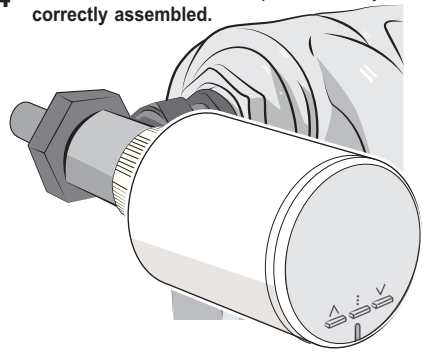
12° Keeping pressure on the attachment, turn the valve clockwise.

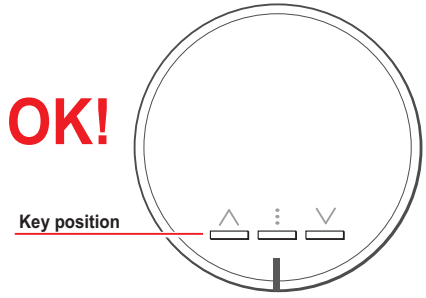


13° After hearing a **"Click"**, continue the rotation clockwise until the keys are brought to a horizontal position



14° When the installation is completed, the keys must be in the horizontal position; **this indicates that the valve is correctly assembled.**





15° 5 minutes from the beep (point 9) the valve ends the adaptation.
It will be possible to anticipate the adaptation in closing before 5 minutes by briefly pressing any key.

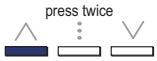
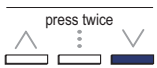
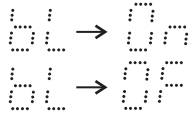
ATTENTION: in case of clockwise rotation of the valve well beyond its normal position of use (point 14°) there may be accidental detachment of the same from the radiator; in this case never force the re-engagement. Remove at least one battery, wait 5 sec. before reinserting it, then repeat the procedure from point 5.

11 - SUMMARY OF THE MAIN CONTROLS ON THE VALVE

With the valve operational and display off (stand-by)

Key	Press duration	Description	View	Notes
press any key 	Short	Reactivation of the valve displays the room temperature detected ***(see details in paragraph 11.1)***		**User** (in case of the presence of 1 or more alarms, these will be displayed before room temperature

With the "alarm" valve (T.room display) press the key:

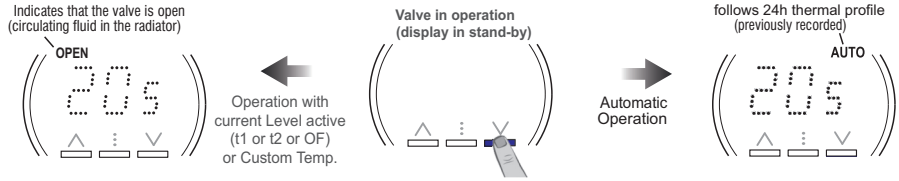
	Short	Display of the operating current level and relative temperature set: **t1** (comfort) or **t2** (reduction), or **OF** (antifreeze) or **tc** (Custom) ***(see details in paragraph 11.2)***	example: 	**User** to set another level and/or to change temperature sets *(see section 11.2)*
press twice  press twice 	Short	Mode set-up CUSTOM Temperature (tc) ***(see details in paragraph 11.3)***		**User:** the tc setting remains permanently active if the AUTO operation was active. The tc setting remains until midnight of the current day after which it will continue with AUTO
	10 seconds	Activates/Deactivates keypad lock ***(see details in paragraph 11.4)***		**User**
	6 seconds	Manual forcing when closing the valve ***(see details in paragraph 11.5)***		**User** with forcing active by pressing any key the display shows **Of** Repeat the operation to remove the lock in closing
	6 seconds	Manual forcing when opening the valve ***(see details in paragraph 11.6)***		**User** with forcing active by pressing any key the display shows **On** Repeat the operation to remove the lock in opening
	10 seconds	24h thermal profile programming recording ***(see details in paragraph 11.7)***		**Installer / User** 24-hour duration of the thermal profile MAX 8 changes
	6 seconds	AUTO Operation (active 24h thermal profile previously recorded by the user) ***(see details in paragraph 11.8)***		**User** If disabled *Attention: if there is no previously recorded 24h thermal profile it will activate the recording* *(vedere dettagli al paragrafo 11.7)*
	6 seconds	Disables AUTO OPERATION ***(see details in paragraph 11.8)***		**User** If enabled
	6 seconds	RADIO TEST **ATTENTION** **do not access the function in stand-alone mode**		**Installer / User** In case of involuntary entry into the function, briefly press the key ⋮ to exit the Radio Test or wait 3 minutes.

11.1 - NORMAL OPERATION OF THE VALVE

Press one of the keys to reactivate the valve from the stand-by state, **the detected room temperature is displayed.**
Any steady **AUTO** text indicates automatic operation with a previously set thermal profile.

If there are any alarms or anomalies when pressing any key, a code will be displayed before room temperature (see section 12).
If the word AUTO is flashing, it indicates that a thermal profile is being recorded (see section 11.7).

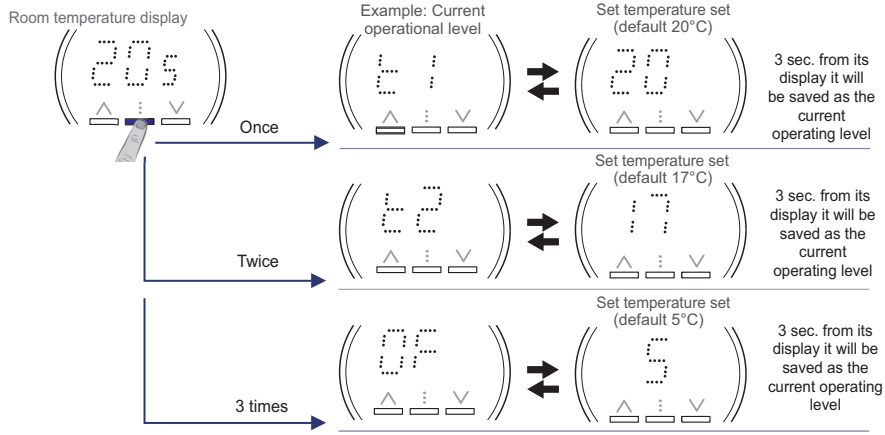
The text **OPEN** ON steady both in normal operation with current level set **(t1** or **t2** or **OF)** or Custom temp.
and in Automatic operation (AUTO) indicates that the valve is open (hot radiator).



11.2 - DISPLAY OR CHOICE OF TEMPERATURE LEVEL

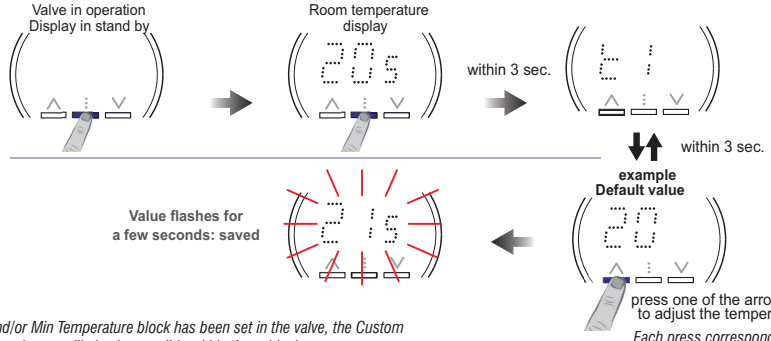
With the product "awake" displaying room temperature, press the key ⋮ to display the operating current level alternating with the relative temperature set value. **Note:** if it was active, the tc (custom) operation is deactivated and the display shows the **t1** level.
By pulse pressing the key ⋮ the levels are displayed in rotation: **t1 = comfort; t2 = reduction; OF = antifreeze**
After 3 seconds from the display of the chosen level, it will be saved as the current operating level.
The setting **will be permanent** until it is decided to choose another level **t1** or **t2** or **OF**, or the custom temperature mode **(tc),** or to activate a thermal profile previously recorded «AUTO automatic operation» see section 11.8.

If the **AUTO** mode was active before setting the desired level, the latter will have a **temporary duration** and at midnight the valve will reactivate the automatic (AUTO) mode with the previously recorded thermal profile. **Note:** to reactivate the **AUTO** operation and to exit the level set before 23:59:59 of the current day, press the key ⋮ while the room temperature is displayed (see paragraph 11.8.1).



11.2.1 - CHANGING SET TEMPERATURES SETTING: "t1" - "t2" - "OF"

If desired, it is possible to change the pre-set set temperatures in the 3 levels bearing in mind that:
t1 greater than or equal to t2; t2 greater than or equal to OF.
Example of editing set t1: Value "t1" (Comfort) - Default value 20°C - Range settable from t2 to 39°C.



If a Max and/or Min Temperature block has been set in the valve, the Custom temperature change will also be possible within these blocks.

It is possible to set the desired level and change the temperature set of t2 or OF as shown in the example above.

11.3 - OPERATING MODE WITH CUSTOM TEMPERATURE

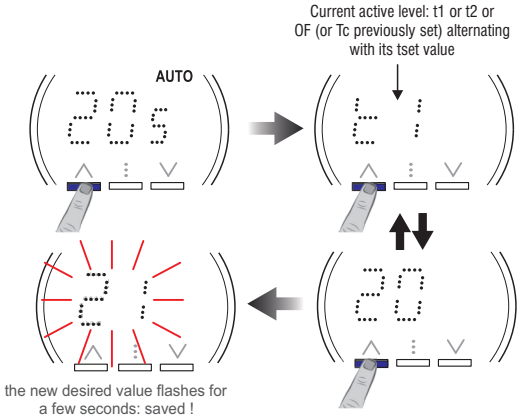
At any time it will be possible to switch to a set setting, defined Custom temperature tc, in which the user can choose the desired temperature set value.

With the "alarm" valve (room T. display), press the key ∧ or ∨ to display the level and tset at that time active: **t1** or **t2** or **OF** (or tc previously set). By pressing an arrow key again it will be possible to set a different temperature tset value. Entering custom temperature **(tc) mode**, the **AUTO** icon will be switched off if switched on.

Each press of one of the two arrow keys corresponds to a variation of 0.5°C and is confirmed with a Beep.

If a Max and/or Min Temperature block has been set in the valve, the Custom temperature change will also be possible within these blocks.

Important: the **Custom temperature mode (tc)** will have a permanent duration.
To exit the Custom permanent mode of operation , select the desired level **t1, t2** or **OF** (see section **11.2).**



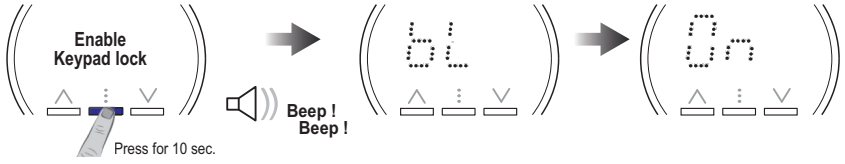
If the **AUTO** mode was active before setting the Custom **(tc)** temperature, the latter will have a temporary duration and at midnight the valve will reactivate the automatic (AUTO) mode with the previously recorded thermal profile.

Note: to reactivate the **AUTO** operation and to exit the Custom temperature **(tc) before 23:59:59 on the current day**, press the key ⋮ while the room temperature is displayed; the temperature level expected by the thermal profile for the current time will be immediately charged and the AUTO icon will return on steady.

11.4 - KEYPAD LOCK

The “Keypad lock” function allows the user to lock the functions accessible via the valve buttons in order to avoid undesirable sabotage and deprogramming of the valve.
Holding down the key ⋮ for 10 seconds will activate the keypad lock. Repeat the operation to unlock the keypad.
With the keypad lock function it will in any case be possible to view the room temperature and display the alarm and anomaly codes.

If the keypad lock is enabled locally within 10 minutes of the batteries being inserted, the enabling is postponed for 10 minutes after the last press of a key.



11.5 - VALVE CLOSING FORCING

This forcing can be used to exclude a radiator.

To enable the forcing, press and hold the key " ∨." for 6 seconds; the valve emits a beep and closes the actuator.

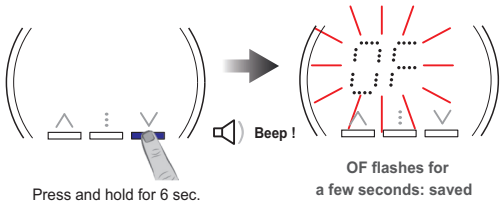
Forcing is not possible in case of:

• Keypad lock active

ⓘ In case of battery change and valve adaptation, the forcing is kept in memory.

ⓘ In case of factory reset the forcing is lost.

With the forcing active, pressing any key shows the display for a few seconds **OF**.



To deactivate forcing in closing, press and hold the key ∨ for 6 seconds .

11.6 - VALVE OPENING FORCING

This forcing can only be used during installation and system verification; it is not designed to be used by the user.
To enable the forcing, press and hold the key " ∧ " for 6 seconds; the valve emits a beep and closes the actuator.

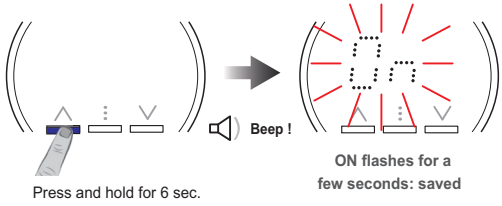
Forcing is not possible in case of:

• Keypad lock active

ⓘ In case of battery change and valve adaptation, the forcing is kept in memory.

ⓘ In case of factory reset the forcing is lost.

With the forcing active, pressing any key shows the display for a few seconds **On**.



To **deactivate** the forcing in opening, press and hold the key ∧ for 6 seconds. The word **"OPEN"** will be displayed for a few seconds.

11.7 - DAILY THERMAL PROFILE PROGRAMMING FUNCTION (24h)

This function, only available in 'Stand-alone' mode, offers the user the possibility to manage the heat regulation daily according to a thermal profile in the previously recorded 24h.
The thermal profile must have the following characteristics:

• Maximum 8 level changes in 24h.
• At minimum, the profile will contain for all 24 hours the level active at the time the recording began.
• The levels that can be set can be as follows:
  - **t1** - Comfort temperature (Tset at 20°C factory setting)
  - **t2** - Reduction temperature (Tset at 17°C factory setting)
  - **OF** - Antifreeze temperature (Tset at 5°C factory setting).
• Each level change must be performed **at least one minute** after the previous one.
• The beginning and end of the profile need not necessarily be on the same level (the software automatically adds the missing level at the end of 24 hours, provided that the no. 8 changes available have not been exhausted.

ⓘ *The insertion of a daily thermal profile involves switching on the LEDs for some time (with consequent power consumption). It is advisable not to exceed continuous changes of the 24h program, **to safeguard battery autonomy**.*

IMPORTANT: By default, the valve has no pre-set thermal profile.

11.7.1 - RECORDING THE DESIRED THERMAL PROFILE

To record a profile it is necessary to have set current time and minutes as described in the paragraphs:
"COMMISSIONING OF THE STAND-ALONE VALVE"
"REPLACEMENT OF the STAND-ALONE VALVE BATTERIES".

If hour (HH) and minutes (MM) have not been set correctly, the Daily Programming function cannot be managed correctly by the valve.

In this case it is enough to disassemble the valve from the radiator, remove a battery, wait at least 5 seconds and reset it to reset the valve and to insert the correct time and minutes. Finally reassemble the valve on the radiator.

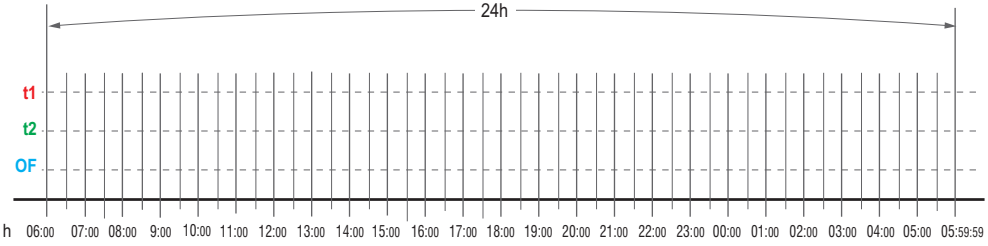
If time (HH) and minutes (MM) are not confirmed by the user, this function is automatically disabled (if enabled) for safety reasons (the profile is not deleted); it can be manually re-enabled at a later time.

The valve is not able to manage the automatic daylight saving/solar time change, therefore the time reset must be performed by the user.

IMPORTANT: when recording begins the current level must be between the levels listed above otherwise the option is rejected (example if the operation mode with Custom Temperature is activated).

USER REMINDER

To record a thermal profile in 24h, the user is advised to write it down in order to store it correctly in the valve. Any time and minutes can be chosen to start the recording (maximum resolution 1': example h10:16) which will end the next day at the same time.



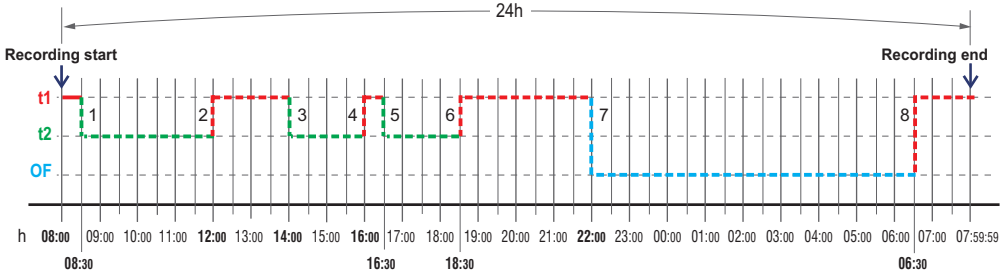
Below is an example of inserting a customised thermal program in 24 hours, **recording start at 08:00** with 8 level changes:

t1 = from h 06:30 to h 08:30
t2 = from h 08:30 to h 12:00
t1 = from h 12:00 to h 14:00
t2 = from h 14:00 to h 16:00
t1 = from h 16:00 to h 16:30
t2 = from h 16:30 to h 18:30
t1 = from h 18:30 to h 22:00
OF = from h 22:00 to h 06:30

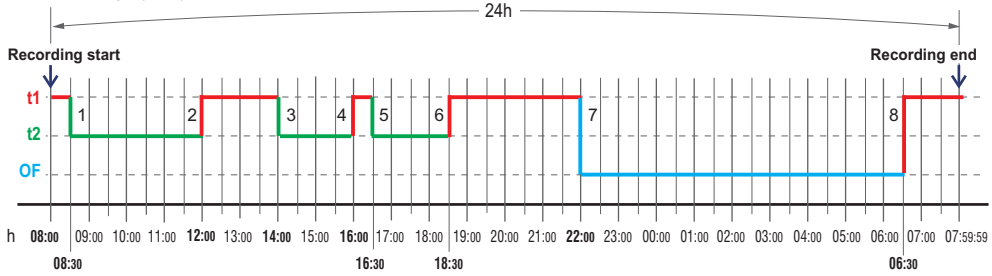
On the Valve, choose by pressing the multifunction key ⋮ the desired temperature level, in this case **t1**, it will also be possible to change the set temperature value (default 20°C) by pressing the keys ∧ or ∨.
At 08:00 the two keys ∧ and ∨ must be pressed simultaneously for 10 seconds to start recording.

Press and hold simultaneously for 10 sec. until beeps are heard.

The recording phase in progress is confirmed by the continuous flashing of the AUTO icon (only when the LED display is on, e.g. by briefly pressing one of the keys)".



At 08:30 hours select the level " t2" by pressing the key ⋮.
Select the next levels at their respective times as shown in the example graph.
In the last change (no.8) select the level **"t1".**



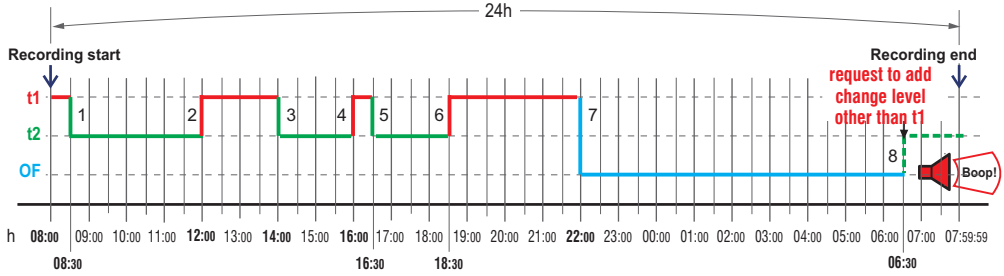
Enter a level in addition to the 8 possible levels already entered, the valve emits an error sound (boop!).

Note: to exit the recording in progress, press and hold the keys ∧ and ∨ simultaneously for 10 seconds (release the keys at the sound of the no.5 beeps). The partial 24h programming will be cancelled.

After 24 hours of programming, the set time profile is saved and this function is automatically activated, a condition confirmed by the steady coming on of the word AUTO (only when the LED display is on, e.g. by briefly pressing one of the keys)".
The set profile will be managed every day with the same settings, until it is disabled (“AUTO” icon off).

IMPORTANT: If a profile is already stored, it will be deleted if a new recording is started.

If the user performs an operation that is not permitted, it is rejected and the valve emits an acoustic alert with a low tone (boop!). In addition to the attempt to enter more than 8 level changes, the possible causes of error are:
- Attempting to insert a new level change before at least one minute has elapsed.
- 7 level changes have already been entered and an attempt is made to insert another one that does not coincide with the first one stored (see example below).



If the batteries are replaced, hour and minutes must be reset, any set thermal profile (AUTO) remains stored. The enabling or not of the function remains unchanged.

When the function is disabled, the word AUTO is off and the current t set level (and relative value) remains active at the time of disabling.

The function, if active, can be temporarily “suspended” if the user selects a different level from the one set in the profile or if a different set value is set with the “∧” or “∨” buttons. In this case, the function is automatically reactivated at the following midnight.

If the function is disabled by the user while the recording is in progress, the latter will be completed regularly. Simply at its end the valve will manage the active level at that time.

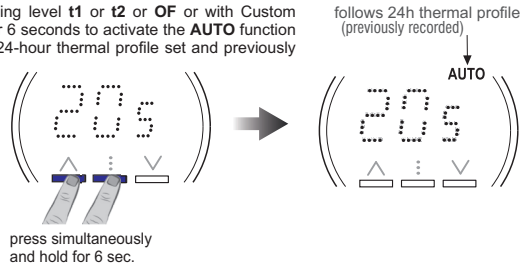
When the function is active, the user can consult the active level at any time by briefly pressing the central key and, once the current room temperature is displayed, with a subsequent pressing of the central key the active level and the respective set temperature are alternately displayed. Similarly, the user can consult the value of the active Tset by briefly pressing the keys “∧” or “∨” twice consecutively.

11.8 - AUTOMATIC OPERATION

With the "alarm" valve (room temperature display), and operating level **t1** or **t2** or **OF** or with Custom temperature mode, press the keys ∧ and ⋮ simultaneously for 6 seconds to activate the **AUTO** function (word on steady) with the temperature control valve as per the 24-hour thermal profile set and previously stored by the user (paragraph 11.7).

To deactivate the **AUTO** function and to continue with the level at that operating moment in the previously recorded 24h thermal profile, press the keys ∧ and ⋮ simultaneously for 6 seconds.

ATTENTION!
If no previously saved thermal profile is stored, the valve will automatically start a recording phase **word AUTO flashing** (see entire procedure in previous paragraph 11.7).

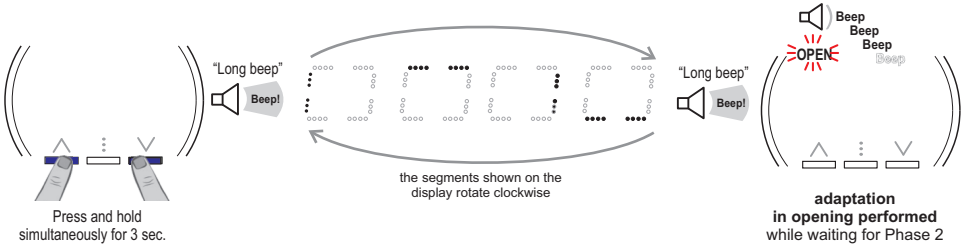


11.8.1 - RESETTING THE AUTOMATIC OPERATION (AUTO) before 23:59:59 on the current day
If the user has suspended the automatic operation (AUTO) in progress (see paragraph 11.2 and 11.3), if they wish to restore it before midnight, they must press the key ⋮ while the room temperature is displayed; in this case the level provided by the thermal profile for the current time will be loaded immediately and the **AUTO** icon will return on steady.

11.9 - MANUAL FORCING OF ADJUSTMENT IN OPENING AND CLOSING

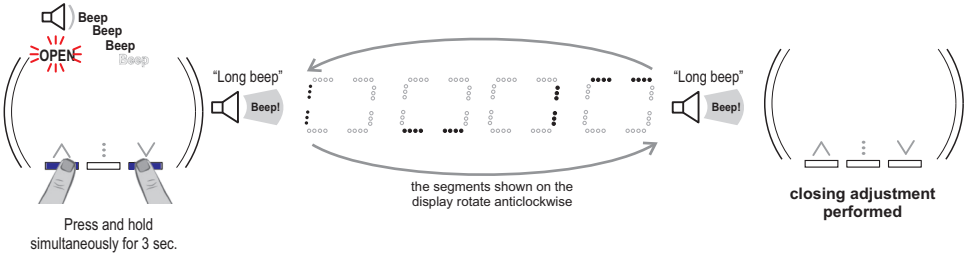
Operation recommended for the installer.
ATTENTION! this procedure will be possible **within 10 minutes from the last press of a key, only during the installation phase upon the 1st insertion of the batteries or when changing the batteries and in any case when removing a battery and 5 seconds after placing one of the batteries back in the valve.**

Step 1 : press the arrow keys simultaneously for 3 seconds; the valve opens as shown below.
After opening the valve consecutively emits short beeps combined with the intermittent ignition of the word OPEN to signal the need to perform the adaptation in Phase closure**.**



If phase 2 is not performed automatically after approximately 15 minutes from the valve open (phase 1) it is brought to closure, completing the adaptation procedure.

Step 2: Press the arrow keys simultaneously for 3 seconds. An extended beep indicates that the valve is closing as shown below.
The manual adaptation procedure has been performed.



11.10 - AUTOMATIC WEEKLY ANTI-LIMESCALE OPERATION

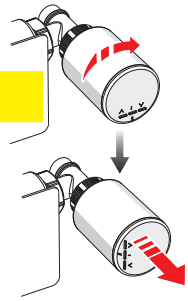
This operation is managed automatically by the valve and cannot be activated locally on the valve by the user.

In order to avoid harmful deposits of limescale in the radiator valve which could compromise correct operation of the valve, in the absence of operation of the same within a week, a closing and opening cycle of the valve is automatically activated.

11.11 - FACTORY RESET

To return the valve to factory status, perform the following procedure:

IMPORTANT! Forcing the valve open,
by holding down the key ∧ for 6 seconds (see paragraph 11.6).



1° Rotate the valve's body **clockwise** until a certain resistance is felt. Continue the rotation, applying the necessary force until it is released from the attachment and removed.

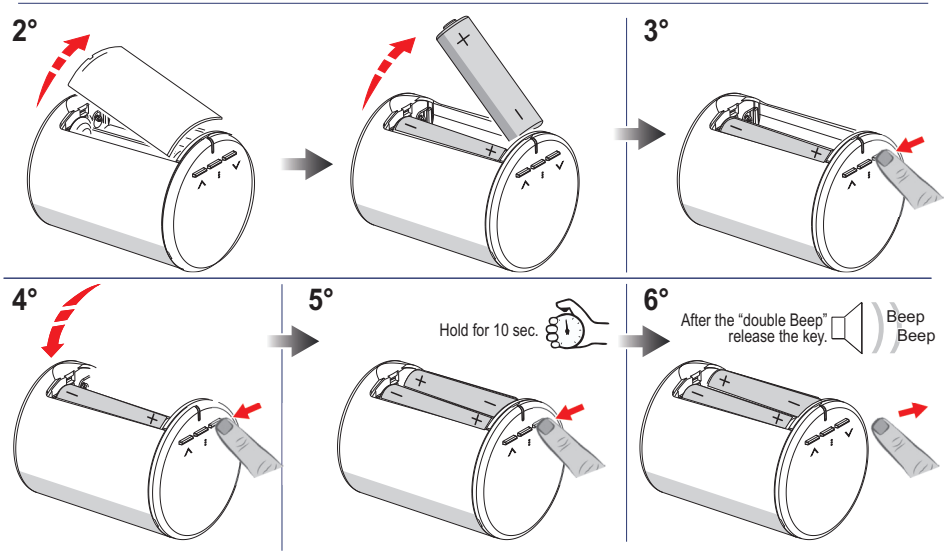
2° Open the tab and remove a battery.

3° Press and hold one of the keys.

4° Restore the previously removed battery.

5° Wait approximately 10 seconds for an acoustic double beep signal.

6° After the beep it is possible to release the button.
On release the factory settings will be reloaded and the valve will self-reset.



From this moment onwards the valve performs an automatic adjustment and opens the piston. Within 5 minutes assemble the valve on the radiator.

DO NOT leave the valve energised and/or closed when not assembled on the valve.

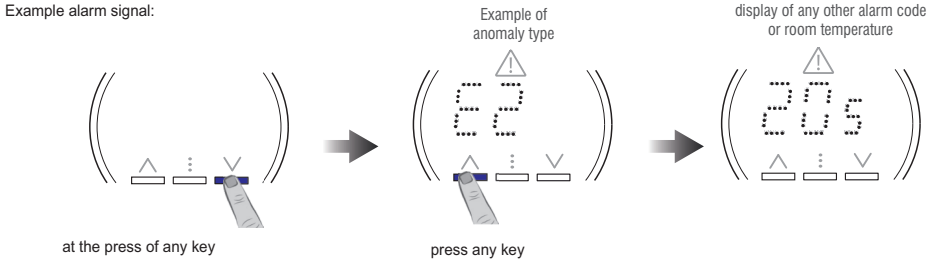
VALVE FACTORY SETTING RESET

Upon the first power supply and each time a "Factory Reset" is performed, the valve will load the following default settings:·

Operating temperature level: **t1** (Comfort)
· Comfort level **t1: set at 20°C**
· Reduction level **t2: set at 17°C**
· Antifreeze level **OF: set at 5°C**
· Temperature regulation mode: **Proportional**
· ON/OFF differential hysteresis value: **0.3°C**
· correction of room temperature reading OFFSET: **0**
· Battery type: **Alkaline**
· Max. temperature set block: **None**
· Min. temperature set block: **None**
· 24h thermal profile (AUTO operation): **None**
Note: Any active forcings before resetting the valve factory settings will be cancelled (example: Custom operation, Forcing valve to close or open)

12 - VALVE ALARMS AND ANOMALIES

Reports of any **alarms** or **anomalies** appear on the display showing the symbol ⚠ and the code **E**X (where X identifies the type of alarm) at the press of any key before the display of the room temperature.
If there are multiple reports of alarms or anomalies, each press of a key is displayed in succession every 3 seconds.



Description	Code view	Product activity	Solution	Note
Batteries almost depleted Autonomy see technical data		Valve working	Replace the batteries as soon as possible	***(see details in paragraph 13.1 and paragraph 13.1.1)***
Fault temperature sensor		The valve does not thermoregulate	Replace the valve	***(see details in paragraph 13.2)***
Valve position not recognised		The valve does not thermoregulate	Adaptation is required	Excessive stroke with respect to the adaptation ***(see details in paragraph 13.3)***
Space between opening and closing too short		The valve does not thermoregulate	Adaptation is required	Stroke too short with respect to the adaptation ***(see details in paragraph 13.3)***

13 - TROUBLESHOOTING

13.1 - BATTERIES ALMOST DEPLETED E0 anomaly message

When the level of charge of the batteries inside the valve drop below a predetermined level (batteries almost depleted), an anomaly is generated, indicated by the code E0. **Replace the batteries immediately according to the procedure in the next paragraph.**

ATTENTION: after the valve batteries are almost depleted, when the battery voltage drops further and reaches a factory programmed safety value, **the valve automatically closes and all the functions and signals are disabled** (valve off). **The valve remains switched off until the batteries are replaced** (the valve is closed and switched off after approximately 15 days from the signal of batteries almost depleted).

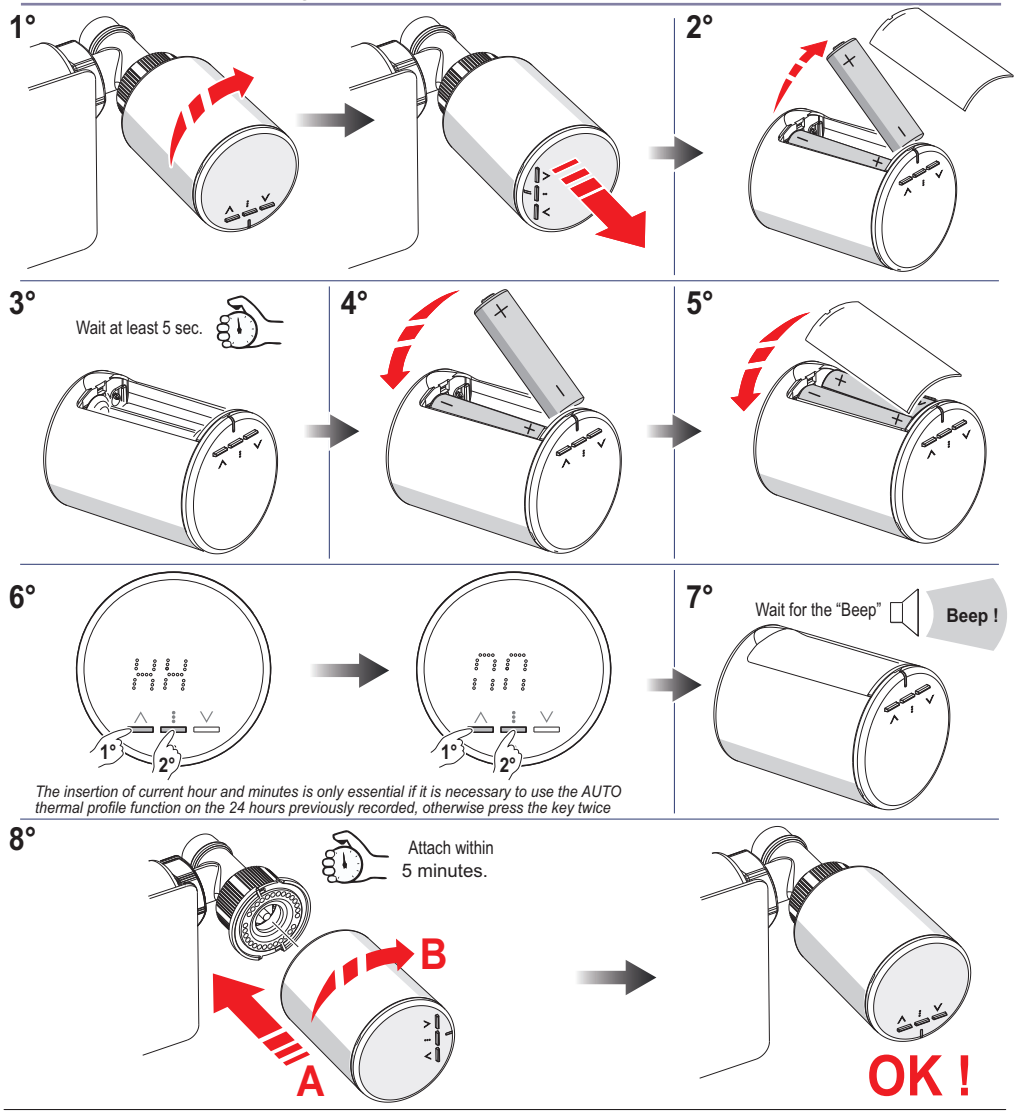
ATTENTION: Depleted batteries must be disposed of as required by the specific regulations in force in the country of use of the valve.
Do not throw batteries into the fire!

13 - TROUBLESHOOTING

13.1.1 - REPLACING THE BATTERIES AND ADAPTING THE VALVE

IMPORTANT: it is advisable to bring the valve to open (for example by setting the current Tset above room temperature)
Proceed as follows:

1° Rotate the valve's body **clockwise** until a certain resistance is felt. Continue the rotation, applying the necessary force until it is released from the attachment and removed.
2° Open the battery compartment tab and remove the depleted batteries.
3° **IMPORTANT! Wait at least 5 seconds before inserting the new batteries.**
4° Insert the new batteries paying attention to the polarities.
5° Refit the tab on the battery compartment.
6° In **Stand-alone** operation, if a thermal time profile has been entered, the current time and minutes must be set.
7° Wait for the "Beep" acoustic alert.
8° Within 5 minutes from the acoustic alert, attach the valve to the coupling and turn it **clockwise** to obtain the horizontal position of the keys.
DO NOT leave the valve energised and/or closed when not assembled on the valve.



The insertion of current hour and minutes is only essential if it is necessary to use the AUTO thermal profile function on the 24 hours previously recorded, otherwise press the key twice

13 - TROUBLESHOOTING

13.2 - FAULTY TEMPERATURE SENSOR (E1 anomaly message)

The fault code E1 indicates that the temperature sensor on the valve is faulty.
Solution:
- replace the valve.

13.3 - VALVE NOT ADAPTED TO THE RADIATOR VALVE (anomaly message E2 - E4)

When for any reason the valve no longer recognises the parameters stored during the operation of adaptation to the valve (example: air in the system, limestone in the valve, pressure changes, etc.), an anomaly is generated that will be signalled by the codes E2 and/or E4; the valve manoeuvres will be blocked until reset.

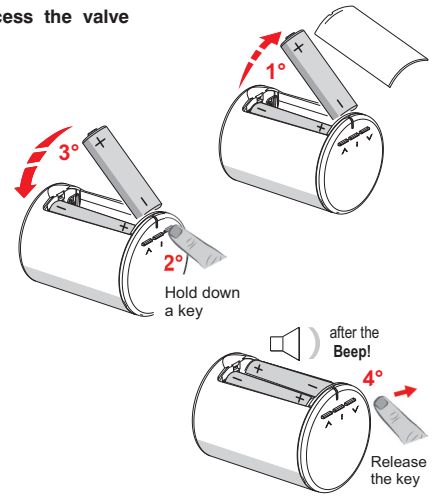
The "Non-adapted valve" anomaly can also be found in the following cases:
- Faulty needle valve
- Failure of the hydraulic system with sudden pressure losses.

After resolving the problem (replacement of the valve or repair of the hydraulic system),
perform a new adaptation.

Solution:
Perform the same procedure as described in paragraph 13.1.1:
«Replacing batteries and adapting the valve» by removing and replacing one of the batteries after 5 sec.
With this operation, the valve performs the adjustment operation that is used to precisely detect the opening and closing positions.

14 - VALVE CONFIGURATION MENU

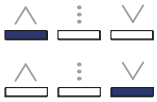
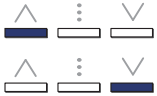
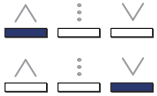
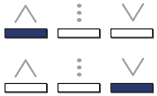
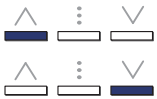
ATTENTION: <u>the installer or expert user</u> is advised to access the valve configuration menu as the modification of certain settings could compromise the correct functioning of the system.



With the valve removed from the radiator:
With the valve removed from the radiator:
1) remove one of the batteries;
2) hold down one of the keys;
3) refit the battery **3**;
4) Release the button at the sound of **1 Beep** .
The display will show the first setting A0.
Inside the menu by pressing the key : pulse scrolling takes place, in rotation, from one setting code to another: A0, A1, A2, A3, A4, A5 (see table).
Use the key ∧ or ∨ to change the value of the setting.
Each new setting is saved after 3 seconds of changing the value.
<u>To exit settings mode</u>, wait 8 seconds after the last press of a key.The valve at this point requires the insertion of current time "HH" and current minutes "MM", then the piston retracts.
From this moment, **within 5 minutes**, assemble the valve on the radiator as indicated in paragraph 10 and follow from point 7.

Setting	Modification	Description	Display	Value	Notes
∧ ⋮ ∨		**Temperature regulation mode** ***(see also section 15.1)***	A0		Proportional or Differential ON / OFF
	∧ ⋮ ∨	Proportional (Default)		On	Proportional ON
	∧ ⋮ ∨	Differential ON / OFF		OF	Proportional OFF it therefore works in ON/OFF
∧ ⋮ ∨		**OFFSET** Room temperature reading correction	A1		***(see also section 15.2)***
	∧ ⋮ ∨	Correction value modification (OFFSET)		0	Default 0 from -6°C to +6,°C (0,5°C step)
∧ ⋮ ∨		**Hysteresis** (Differential ON / OFF)	A2		***(see also section 15.3)***
	∧ ⋮ ∨	Hysteresis value modification		0,3	Default 0,3°C from 0,1°C to 1,5°C (0,1°C step)

14 - VALVE CONFIGURATION MENU

Setting	Modification	Description	Display	Value	Notes
		**Type of batteries used**			***(see also paragraph 15.4)***
		2 x 1,5V Alkaline			Default
		2 x 1,2V Nickel Metal Hydrate (RECHARGEABLE)			
		2 x 1,5V Primary lithium			
		**MAX. settable temperature block**			***(see also paragraph 15.5)***
		MAX. block temperature value settable between 4°C and 39°C			Default no block
				the MAX block must be greater than / equal to the MIN block.	
		**MIN. settable temperature block**			***(see also paragraph 15.5)***
		MIN. block temperature value settable between 4°C and 39°C			Default no block
				the MIN block must be greater than / equal to the MAX block.	

15 - DESCRIPTION OF VALVE SETTING CODE

15.1 - VALVE TEMPERATURE REGULATION METHOD (setting code A0)

The main function of the valve is to open or close the water valve assembled on the radiator connected to it so that the room temperature follows the temperature set by the user on the same valve. To achieve this, the valve can use 2 adjustment methods, depending on what is defined in the same valve:

• **Proportional method:** the valve needle is opened in proportion to the thermal gap between room temperature and set temperature (default).
• **hysteresis band ON/OFF method**

15.2 - OFFSET = Adaptation of the temperature detected by the valve to the surrounding environment (setting code A1).

If it is necessary to correct the detection of the room temperature, it is advisable to intervene on the "OFFSET" setting (default 0) in the valve menu:
- The OFFSET must be increased if the room temperature shown by the valve is too low compared to the actual value or if the perceived room temperature is too high.
- The OFFSET must be decreased if the room temperature shown by the valve is too high compared to the actual value or if the perceived room temperature is too low.

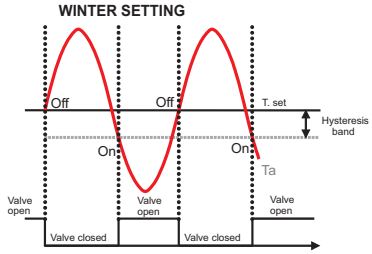
If it is necessary to set this parameter with a value other than zero, it is advisable to proceed in steps, changing this value a little at a time, until an optimal setting is obtained.

To cancel any temperature corrections previously set, set the OFFSET to 0.

For Master or STAND-ALONE mode only, the OFFSET value set is not expressed in °C but is a ** setting that interacts with the automatic valve compensation logic.

15.3 - CHANGING HYSTERESIS IN 0N/0FF TEMPERATURE REGULATION METHOD (setting code

The valve can operate in hysteresis band **ON/OFF mode** with thermal value set to 0.3°C (default).
Note: values can be set from 0.1°C to 1.5°C.
Example : the hysteresis value must be set according to the thermal inertia of the system: a low value is recommended for systems with cast iron radiators and a high value for steel radiators.



15.4 - TYPE OF BATTERIES USED (setting code A3).

Choose the type of batteries to be inserted into the valve (see in the technical data paragraph 2, the autonomy according to the type of battery used):
P1 = 2 x 1.5V AA alkaline batteries (default)
P2 = 2 x 1.2V Ni-MH (Nickel Metal Hydrate) AA batteries (rechargeable)
P3 = 2 x 1.5V Lithium batteries (primary)

15.5 - BLOCKING THE TEMPERATURE SET MAX (setting code A4) and MIN (setting code A5)

In some particular cases of valve installation, for example in public buildings, hotels, etc., it may be useful to limit the maximum and/or minimum temperature sets in order to avoid incorrect settings by unauthorised personnel

It is possible to limit (block) the maximum, minimum values, or both, of the temperature settable on the valve including the custom tc temperature.

General rule:
If the **Set t1 (comfort) temperature** set is **higher than the maximum block entered**, it will level off at the latter.
If the **Set t 2 or OF temperature** set is **lower than the minimum block entered**, it will level off at the latter.
For all other temperatures, the following rule applies: **t1** higher than or equal to **t2; t2** higher than or equal to **OF**.

During operation of the valve, the user will not be able to set a temperature set higher or lower than the max. and min. blocks entered.
Trying to set a Set t higher or lower than the max and min blocks, the valve signals it with a Beep.

MAX. SETTABLE TEMPERATURE BLOCK
the max. temperature block can be set between 4° and 39°C
by default no block is inserted (•••• ••••)

SETTABLE MIN TEMPERATURE BLOCK
the min. temperature block can be set between 4° and 39°C
by default no block is inserted (•••• ••••)

To cancel any previously set blocks, return the MAX/MIN sets to •••• ••••

16 - Smart Thermostatic Valve FAQ

Involuntary release from the valve radiator attachment.
Never force re-attachment. Remove at least one battery, wait at least 5 sec. before re-inserting it, then repeat the procedure from point 5 to point 7 of paragraph 9.1.1 (Valve controlled by home automation power unit) and from point 5 to point 8 of paragraph 13.1.1 (Valve in stand-alone operation).

Difficulty attaching the valve to its specific attachment.
The pressure piston is not sufficiently retracted. Never force re-attachment.
Remove at least one battery, wait at least 5 sec. before re-inserting it, then repeat the procedure from point 5 to point 7 of paragraph 9.1.1 (Valve controlled by home automation power unit) and from point 5 to point 8 of paragraph 13.1.1 (Valve in stand-alone operation).

ATTENTION:
Corrosion hazard due to batteries.
If the product remains out of operation for long periods, there is a risk that the batteries will leak liquid which can cause corrosion.
In case of long absences, remove the batteries.
If batteries leaking liquid are removed, use corrosion-resistant protective means and clean the contacts.

Valve not assembled on radiator valve

DO NOT leave the valve energised and/or closed when not assemble

DISPOSAL OF OLD ELECTRICAL AND ELECTRONIC EQUIPMENT

This symbol on the product or on its packaging indicates that this product cannot be treated as household waste.
Conversely, it must be taken to a specific collection point for the recycling of electrical and electronic equipment, such as:
- points of sale, when purchasing a new product similar to the one to be disposed of;
- local collection points (waste collection centres, local recycling centres, etc.).

By ensuring that the product is disposed of properly, you will help prevent potential negative environmental and health consequences, which could be caused by the improper disposal of this product. Recycling materials will help conserve natural resources. For further detailed information about recycling this product, please contact your local office, your household waste disposal service or the store where you purchased this product.