

# MINI ECO

AMBIENT TEMPERATURE REGULATOR FOR HEATED TOWEL RAILS



## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



INSTALLATION AND SERVICING MUST BE CARRIED OUT BY QUALIFIED PERSONNEL ONLY.



**Before installing and operating the temperature controller, read this manual carefully and keep it for future reference.**

## THANK YOU FOR PURCHASING THIS PRODUCT

Electronic ambient temperature regulator for heated towel rails

### 1. GENERAL AND SAFETY WARNING INFORMATION

#### 1.1. DISCLAIMER

The manufacturer declines all responsibility for any inaccuracies in this document due to printing or transcription errors. It reserves the right to make any alterations to its products deemed necessary or useful. The manufacturer will not be held responsible for faults due to incorrect installation.

NOTE: according to the towel rail geometry, finishing, construction material and liquid type (water or water and glycol), the heat pattern on the towel rail surface can be significantly different. For specific performance, you must refer to the towel rail manufacturer or carry out specific tests.

#### 1.2. WARRANTY

The product is guaranteed for 24 months from any manufacturing defects, from the date marked on it. The guarantee of the product is not valid in case of improper use or incorrect installation.

#### 1.3. GENERAL WARNINGS

- Verification of compatibility of the final product, of any restrictions required by local administrative regulations, special or conventional requirements resulting from building regulations, constraints, laws or administration deeds must precede any other assembly or installation operation.
- Read the instructions carefully before installing and use the electronic regulator and retain the instructions for future reference.
- Installation of the regulator must be performed only by qualified technicians who assume complete responsibility for the definitive installation and consequent good functioning of the product installed.
- Installation must be compliant with all applicable safety regulations and laws, national, regional, provincial and town council Standards present in force in the Country in which the

final product has been installed, as well as the instructions contained in this manual. The manufacturer cannot be held responsible for the failure to comply with such precautions.

- In case of any doubts or insufficient information or for any other technical details and requirements, please contact the manufacturer/importer/distributor/professional installer before installing or using the controller.

## **1.4. SAFETY WARNINGS**

- Children of less than 3 years must be kept away from this appliance unless continuously supervised.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- Children aged from 3 years and less than 8 years shall only regulate the appliance provided that it has been placed or installed in its intended normal operating position and they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children aged from 3 years and less than 8 years shall not plug in, and clean the appliance or perform user maintenance.
- **CAUTION** — Some parts of this appliance can become hot and may cause burns. Precautions should be taken to ensure that prolonged contact with the towel rail cannot occur. Particular care should be taken in confined areas where accidental prolonged contact with the rail could be more likely to occur. Particular attention has to be given where children and vulnerable people are present.
- In order to avoid a hazard for younger children, the electrical towel rail should be installed so that its bottom part is at least 600 mm above the floor according to EN 60335-2-43.
- Check that the electricity supply system is connected through a circuit breaker and a high sensitivity residual current circuit breaker connected directly to the socket or connection box in use. A circuit breaker switch dedicated exclusively to the appliance is obligatory. All contacts must be separated by a distance of at least 3 mm.
- **IMPORTANT:** In order to disconnect the incoming supply for the purpose of isolation during installation and maintenance it is recommended that the fuse is withdrawn or circuit breaker

switched off at the distribution board while work is in progress (turning off the switch is not sufficient).

## 2. PRODUCT PRESENTATION

MINI ECO is an electronic control for towel rails designed to regulate the ambient temperature of the room in which the towel rail is installed.

### **Any other use is strictly forbidden.**

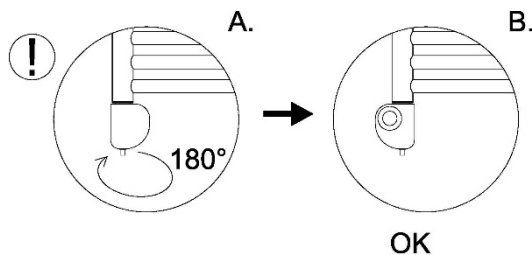
The device permits setting the ambient temperature set point of the room to 18°C, 19°C, 20°C, 22°C, 24°C and 26°C by an ON-OFF close-loop regulating mode (operated by piloting a relay) that switches the heating element on and off to achieve the required ambient temperature of the room.

The regulator is complete with a rotating knob to set the following operating mode:

- Standby mode:  
No power is supplied to the heating element connected to the regulator.
- Comfort mode:  
Ambient temperature regulation is enabled with up to 6 temperature set points that can be configured by the user with a specific knob position.
- Timer 1 (Boost 1):  
The regulator supplies the heating element with full power for 1 hour then the heating element is OFF.
- Timer 2 (Boost 2):  
The regulator supplies the heating element with full power for 2 hours then the heating element is OFF.
- Daily Chrono mode:  
Ambient temperature regulation is enabled using a temperature set point and during the daily time slot (duration of 4 hours) programmed by the user.

The device must be connected to a fully electric towel radiator or a dual electric-hot water heater. The device is available as *Class I* and can be supplied with different enclosure color (white, black and chrome).

Caution! For atypically positioned regulation heating rods (in the unit's left-side flow pipe, see Figure A), the regulator is not fixed to the heating rod due to packaging concerns. Accordingly, it needs to be rotated 180° and fixed in place.





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## 2.1. IDENTIFY THE PRODUCT VERSION

The product version is identified by the product label.

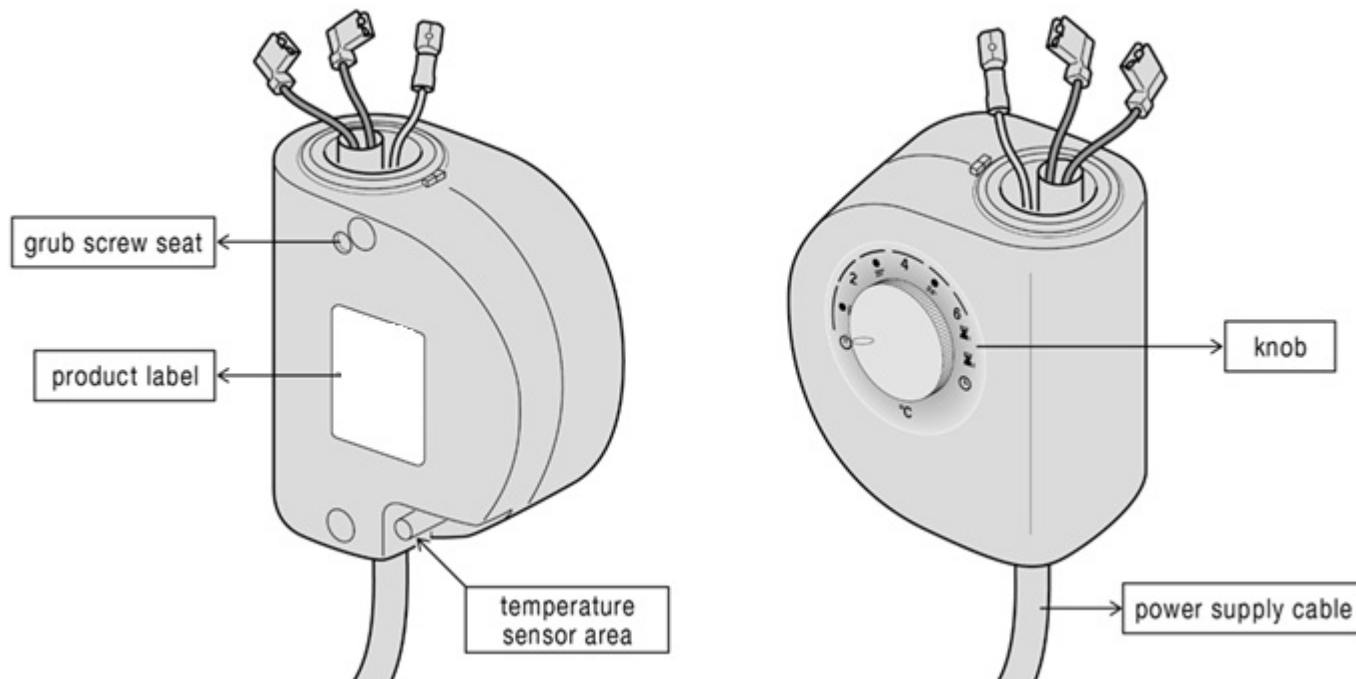
The device can be installed into an *electric only* radiator or into a *hybrid dual-fuel* radiator.

|   |  |
|---|--|
| <b>Regulator insulation level</b>                 | Class I  |
| <b>Regulator interface (knob and tampography)</b> | Knob:<br>Grey  |
|   | Tampography:<br>Black<br>White (with enclosure black)  |
| <b>Enclosure color</b>                            | White  |
|   | Black  |
|   | Chrome   |
| <b>Supply cord</b>                                | With plug or without plug  |
| <b>Towel rail</b>                                 | Electric only     |
|   | Hybrid dual-fuel  |

The operation of the electric radiator is fully compliant with EN 60335-2-30.

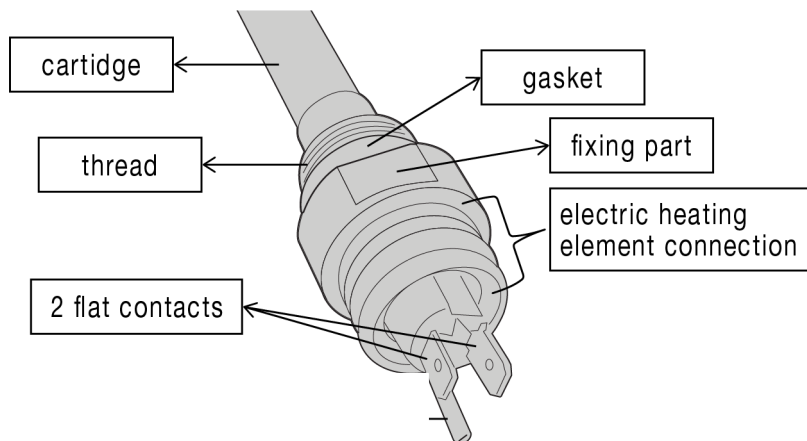
The seasonal energy efficiency ( $\eta_s$ ) of fixed electric local space heaters with MINI ECO, according to EU Regulation 2024/1103 on Ecodesign, is 47.63 %.

### 3. SYMBOLS AND GLOSSARY



#### REGULATOR COMPONENTS




| Element                        | Description  |
|--------------------------------|--|
| <b>Knob</b>                    | The control knob by which the user can set the operating modes and related parameters                |
| <b>Product label</b>           | Area on which the device label is applied (see par. 2.1)   |
| <b>Grub screw seat</b>         | Position of the grub screw in order to fix the regulator to the Electric heating element connection. |
| <b>Power supply cable</b>      | 230 V power supply cable with plug or without plug   |
| <b>Temperature sensor area</b> | Ambient temperature sensor area read by internal temperature sensor                                  |



## ELECTRIC HEATING ELEMENT COMPONENTS

| Element                                    | Description   |
|--|---|
| <b>Cartridge</b>                           | Heating part of the electric heating element.   |
| <b>Thread</b>                              | Connection part to be fitted into the towel rail.   |
| <b>Fixing part</b>                         | Necessary part to tighten the electric heating element into the towel rail with a 25 mm wrench  |
| <b>O-Ring Gasket</b>                       | O-ring gasket designed to be compressed between the electric heating element connection and the upper plastic part of the regulator in order to prevent water leakage |
| <b>Electric Heating Element Connection</b> | Part necessary for coupling with the regulator  |
| <b>2 Flat contacts</b>                     | Contacts for 230 V Female 6.3 Faston to power the electric heating element (live and neutral)   |
| <b>Male pin contact</b>                    | Cylindrical connector for earth connection  |

## STANDARD PROVIDED KIT

| Element              | Description   |   |
|----------------------|---|---|
| <b>O-Ring gasket</b> | 29mm x 2mm torus-shaped gasket to be compressed between the nipple of the electrical heating element connection and the upper plastic part of the regulator in order to prevent any water leakage |  |
| <b>Allen key</b>     | Allen key used to secure the plastic housings of the regulator onto the electric heating element connection, into the <i>grub screw sea</i> .   |   |
| <b>Grub screw</b>    | a headless screw having a socket for a hexagon key and used to secure the plastic housings of the regulator onto the nipple of the electric heating element connection, in a determined position  |  |

## 4. TECHNICAL SPECIFICATION TABLE

| MINI ECO                                |  |
|---|--|
| <b>Power supply</b>                     | 230 V +/-10% AC 50 Hz  |
| <b>Electric Heating element power</b>   | 100 ÷ 1200 W   |
| <b>Insulation class</b>                 | Class I  |
| <b>Consumption in Standby mode</b>      | Max 0,168 W  |
| <b>Colors and finishing</b>             | White or Chrome or Black   |
| <b>Dimensions</b>                       | 80(H) x 70 (W) x 40 (D) mm   |
| <b>Water protection rating</b>          | IPX4 (only if installed with heating element as per manufacturer instructions) |
| <b>Maximum altitude above sea level</b> | 2000 m   |
| <b>Operating ambient temperature</b>    | 0 °C ÷ 50 °C   |
| <b>Storage temperature</b>              | -20 °C ÷ 70 °C   |

|                           |  |
|---------------------------|--|
| <b>Max Humidity Level</b> | RH 85% at 25 °C (without condensation)   |
| <b>Operating Modes</b>    | <p><b>Comfort mode</b><br/>Room Ambient Temperature Regulation by Electronic ON/OFF close-loop controller (RELAY).<br/>Ambient Temperature Set Point: 18°C, 19°C, 20°C, 22°C, 24°C, 26°C depending on the knob position.</p> <p><b>Timer 1 (2) mode</b><br/>100% of heating element power for 1 (2) hours and then heating element is OFF.</p> <p><b>Chrono mode (Daily Chrono)</b><br/>Room ambient temperature regulation with setpoint is enabled or disabled according to the programmed daily schedule.</p> |

Tab. 1

## 5. INSTALLATION



### HOW TO INSTALL THE REGULATOR (QUALIFIED TECHNICIANS ONLY)

IMPORTANT: Always disconnect the electricity supply from the mains during installation and maintenance. It is recommended that the fuse is withdrawn or circuit breaker switched off at the distribution board while work is in progress (turning off the switch is not sufficient).

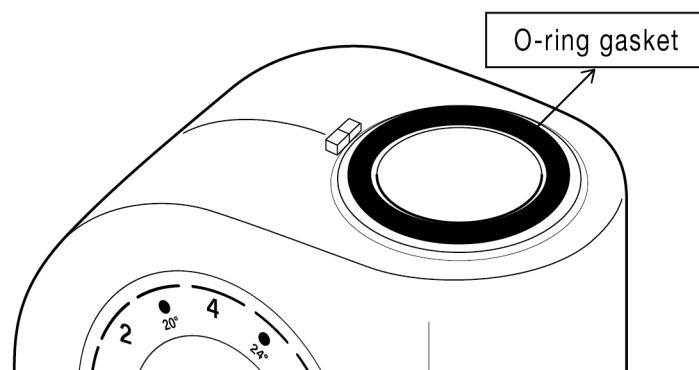
During installation, de-installation and maintenance, ensure working place safety until the operation is completed.

#### 5.1. BEFORE YOU START

- Check the pack to ensure you have all of the parts listed at par. **Chyba! Nenalezen zdroj odkazů.** with no visible signs of damage. Make sure that the regulator parts are completely dry and have no defects. If any part is missing or appears damaged, you should return the device to the point of purchase.
- Check that heating element must be fitted in the towel rail
- Check that you have the correct size electric heating element and regulator for your towel rail. IT IS ESSENTIAL that the correct sized electric heating element and regulator are

installed in line with the recommendation stated on the packaging or instruction of your towel rail CERTIFIED BY A EUROPEAN RECOGNISED APPROVAL INSTITUTE. IF YOU ARE NOT SURE OF THAT, PLEASE CONTACT THE MANUFACTURER.

- Avoid collisions during handling. Do not deform the regulator.
- Do not apply concentrated pressures on the regulator surface.
- Avoid the contact of cables and of parts of the regulator with sharp corners and do not cause squashing.
- Do not subject the cables to traction.
- The regulator is suitable for use on an A.C.~ electrical supply. Before installation check that the supply voltage corresponds with that marked on the electronic control.
- Before installation, never switch the regulator on to verify functioning effectiveness.
- Verify that no water leakages occur from the towel rail and re-tighten joints as necessary.
- Check that the O-ring gasket has no defects or damage (otherwise contact the manufacturer and replace the O-ring gasket).



- When you are ready to start, make sure that you have the right tools at hand, plenty of space and a clean dry area for assembly.

## 5.2. TOWEL RAIL INSTALLATION WARNING

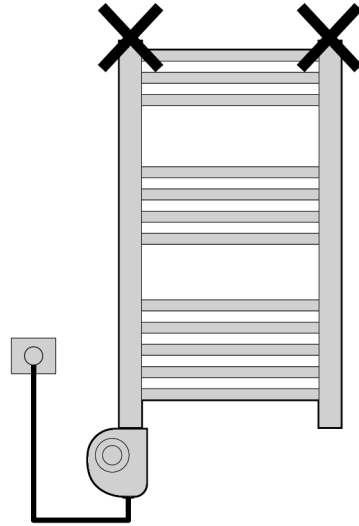


- The Towel rail has to be mounted parallel to the wall using the brackets recommended by the towel rail manufacturer.
- The appliance must be installed on a completely vertical wall.
- The heater fitted into the towel rail must not be located immediately below a socket-outlet.
- All metallic parts of the electrical towel rail fitted with the regulator and powered must not exceed the temperature limits according to the applicable standard EN 60335-2-43 also in case of the regulator continuously powering the electric heating element.
- For all other aspects related to safety installation of the towel rail refer to the towel rail manufacturer user and installation manual.

## 5.3. REGULATOR INSTALLATION WARNINGS



- The regulator must be fitted before mounting the towel rail to the wall.
- Do not use the regulator to lean the electrical towel rail on the floor as you can damage the plastic and water can penetrate inside with a risk of electrical shock.
- In '*Dual-fuel*' only installation with central heating and regulator, at least one of the rail valves must always be left open, when the electrical element is switched on.
- In '*Electric only*' regulator installation the towel rail MUST have a sufficient air gap to allow for water expansion
- Do not install the regulator with an electric heating element not equipped with pre-set protection devices designed to prevent over-heating of the towel rail in abnormal conditions.
- The regulator must not be installed in contact with the wall or floor.
- The electrical towel rail must not be installed with the regulator located at the top (see Fig. 2). This can seriously damage the control box and create a dangerous situation with a risk of fire.



**Figure 2**

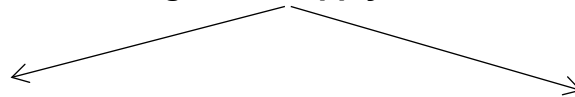
- Installation of the regulator must be carried out in accordance with the conditions described in the technical specification table (par. 4).
- Any contact between the plastic parts of the regulator and chemical products or alcohol (including the water or the mixture water + glycol inside the towel rail) must be avoided.
- The regulator and the electric heating element power must be carefully selected in proportion to the function of the towel rail size and thermal output. To select the regulator and electric heating element electrical power, please refer to the towel rail manufacturer instructions when a certification related to the complete system (according to EN 60335-2-43) issued by a recognized European institute (like SEMKO, VDE, IMQ...) is available. In case of a missing towel rail manufacturer certification, refer to EN 60335-2-43 to determine the correct regulator and electric heating element power to be installed in the towel rail.
- Do not power the regulator before it has been properly and completely installed in the towel rail with the electric heating element and make sure the O-ring gasket has no defects and is properly positioned.
- If the regulator is not firmly fixed to the towel rail, disconnect the mains turning off the circuit breaker switch and contact the manufacturer in order to avoid hazard.
- Do not insert metal objects or fingers or any other objects, even temporarily, into the connection areas where the regulator is connected to the towel rail.

## 5.4. POWER SUPPLY WARNINGS



- Do not connect the regulator to the power supply until the installation into a properly filled towel rail is completed.
- Do not cut the power supply cable to stop regulation or to switch the regulator OFF.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Make sure that the power lines are appropriate for the load required according to the technical specification tables (see par. 4).
- Verify that the rated voltage of the regulator is the same as the supply voltage.
- *Class I* regulator (with yellow-green wire or earthed plug) must ONLY be connected to sockets or connector blocks with earthed contacts according to national standards and wiring regulations in force

### Regulator supply cord



| WITH plug  | WITHOUT plug   |
|--|--|
| <p>The socket and electricity supply must be appropriate for the required power. Do not use extensions.</p> <p>The socket must be compatible with the regulator supply cord plug. Do not use adapters.</p> | <p>If regulator is not fitted with a supply cord with a plug, an all-pole disconnection from the supply is required, incorporated in the fixed wiring, in accordance with the wiring rules. Switches intended to ensure all-pole disconnection must be directly connected with the supply terminals and must have a contacts distance of at least 3 mm in each pole. The switch intended to ensure all-pole disconnection must be dedicated exclusively to the appliance.</p> <p>Follow the conventional colors for wiring operations (see below): the regulator yellow/green earth wire must be connected to the corresponding yellow/green ground wire of the electricity supply at the mains. (THIS PRODUCT MUST BE EARTHED)</p> <p><b>Live wire</b> → brown</p> <p><b>Neutral wire</b> → blue</p> <p><b>Earth</b> → yellow and green</p> |

## 5.5. POSITION

The regulator must be fitted into the towel rail BEFORE mounting the towel rail to the wall.

### 5.5.1. TOWEL RAIL POSITION

- The towel rail must be installed in a completely vertical wall.
- The towel rail has to be mounted parallel to the wall using the brackets recommended by the towel rail manufacturer.
- Do not install the heater below a socket-outlet.
- The towel Rail must not be within reach of people using the basin, shower or bath.
- The towel rail where this regulator is fitted must be mounted inside the zone 2 of the bathroom at the minimum according to its IP degree of protection and electrical legislation in force (Zone definition IEC 60364-7-701 in **Chyba! Nenalezen zdroj odkazů.**). In case of doubt about the correct installation zone, refer to the relevant public institute

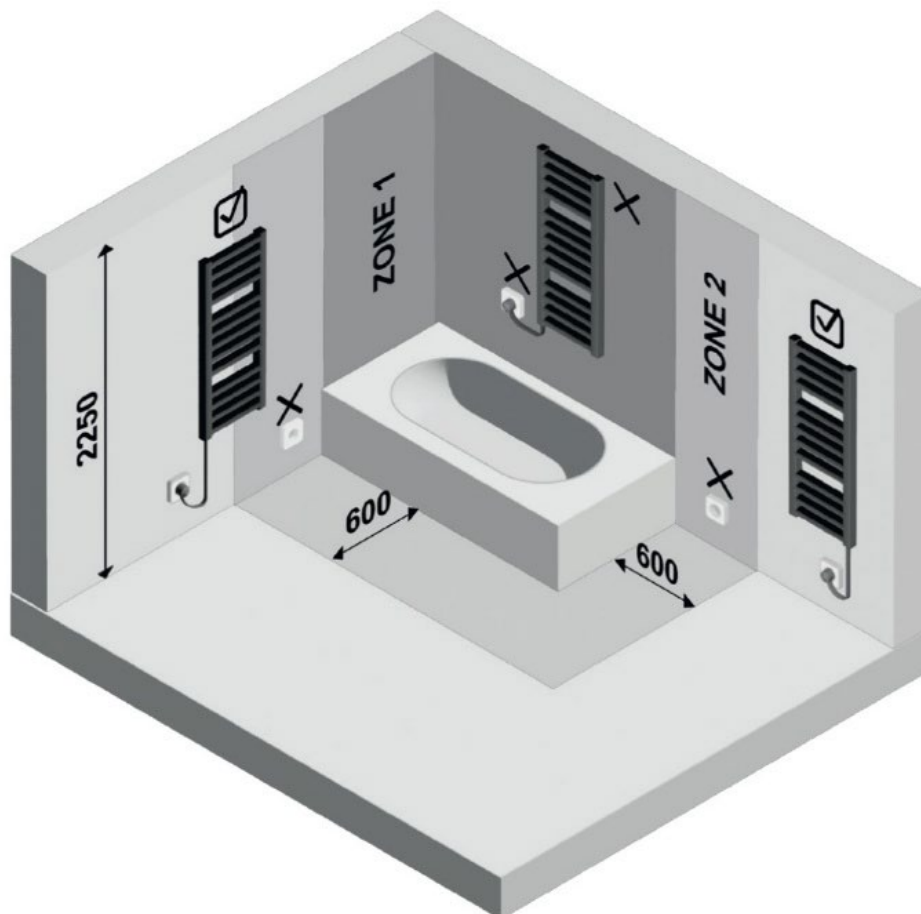


Figure 3

- Do not install the controller in a towel rail located in Zone 0 or Zone 1 (Zone definitions per IEC 60364-7-701 – see Figure 3). Any alternative placement is the responsibility of the installer and must be properly tested.
- The declared IPX4 of the assembled regulator + heating element system is guaranteed if the regulator + heating element system is properly and completely assembled by a qualified professional.

Alternatively, the declared IPX4 of the regulator is guaranteed only if it is assembled with the manufacturer’s heating element and under the manufacturer’s process according to the technical datasheet requirements pertaining to the regulator.

### 5.5.2. SUPPLY CORD POSITION

The supply cord must be connected to a proper socket or to a non-switched fused spur (without an intermediate plug for the regulator supplied without plug) which must be at least 25 cm from the floor according to the wiring regulations in force in the country where the installation is carried out.

Fig. 4a and 4b show examples of positioning the system.

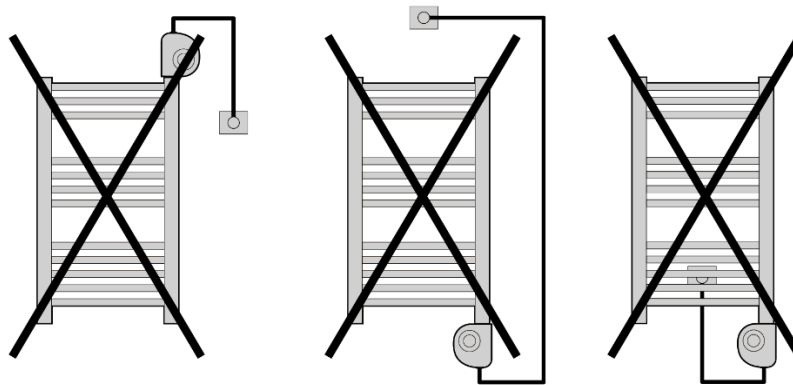
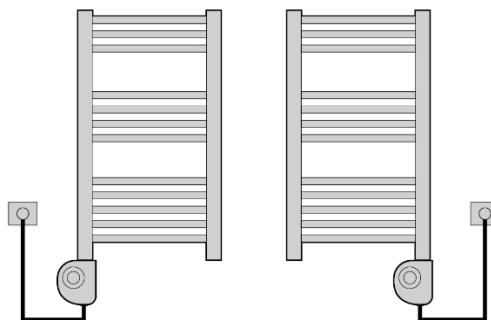


Figure 4a: non correct position



## 5.6. REGULATOR POSITION



- The regulator must be installed at a distance of 40 mm (minimum) and 80 mm (maximum) from the wall (Fig. 5).

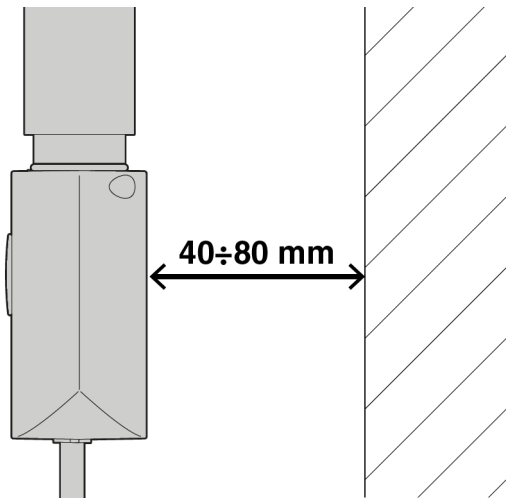


Figure 5

- The electrical towel rail must not be installed with the regulator located at the top (see Fig. 6). This can seriously damage the control box and create a dangerous situation with a risk of fire.

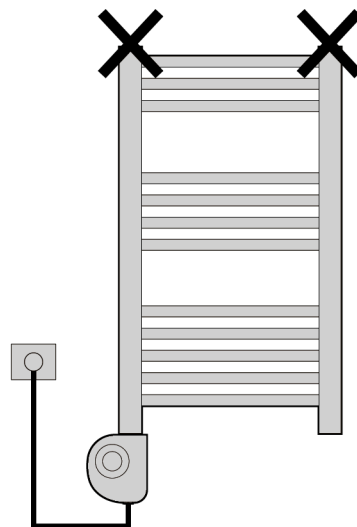


Figure 6

The regulator must only be fitted vertically from the bottom of the towel rail.

## 5.7. INSTALLATION STEPS

### ELECTRICAL CONNECTION WITH HEATING ELEMENT

- Delicately extract the wires from the hole in the top of the regulator and connect them to the electric heating element. In case of the regulator Class I version, connect the male FASTON tab contact of the regulator's yellow-green wire to the female FASTON straight receptacle contact of the corresponding yellow-green wire of the electric heating element. Connect the female FASTON flag type receptacles of the neutral and live wires (red or color different from yellow-green) of the regulator, which are interchangeable, to the flat contacts of the electric heating element (Fig. 7).

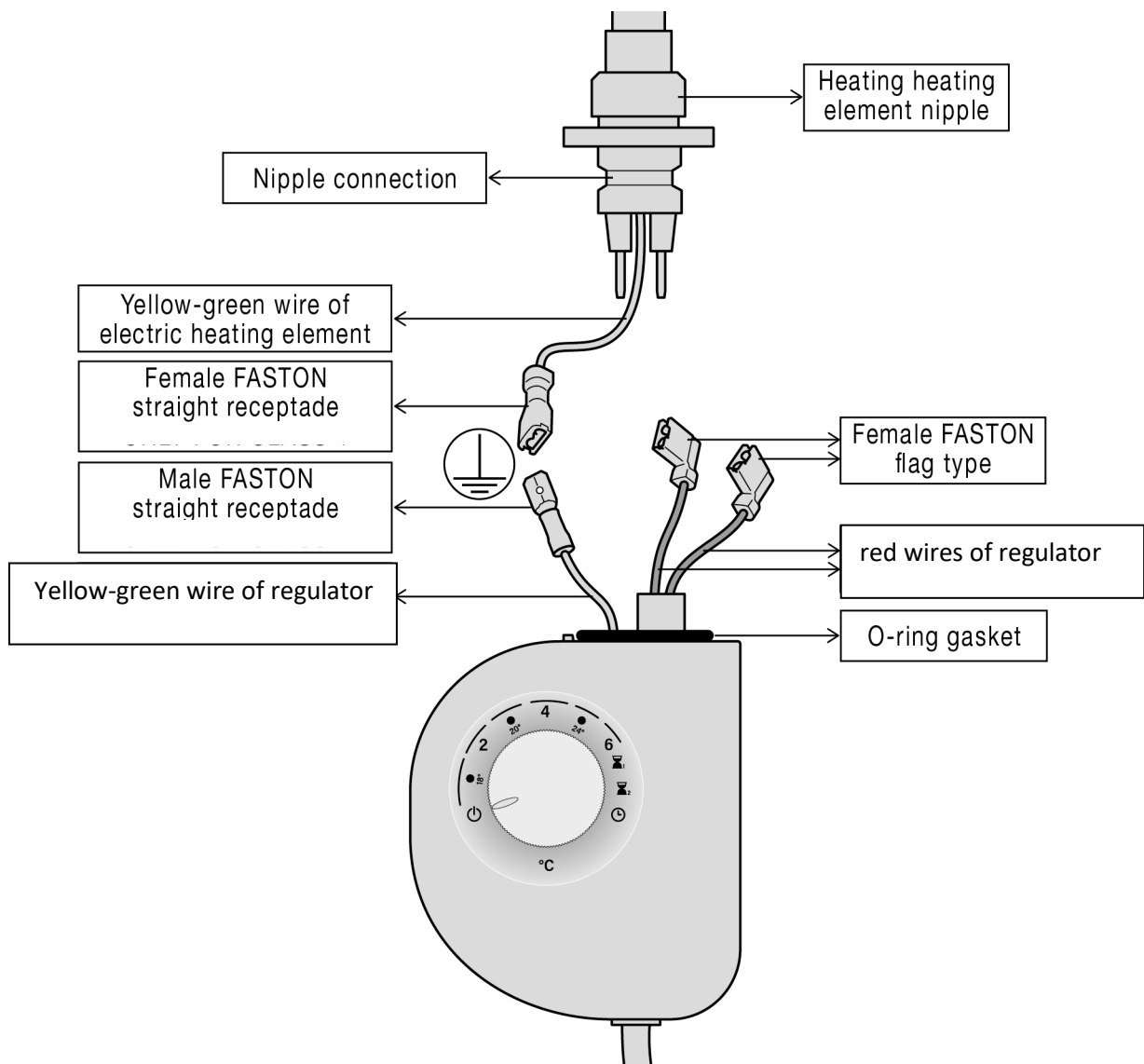


Figure 7

## COUPLING WITH HEATING ELEMENT

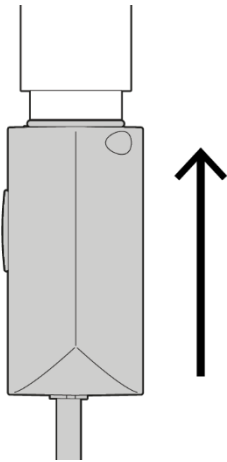


Figure 8

- Insert the regulator into the electric heating element connection (Fig. 8), applying slight pressure until the regulator is fully inserted; make sure the wires go all the way in and do not stick in the first part of the hole.

- Check that the O-ring is in the appropriate seat of the regulator plastic housing and is compressed uniformly between the regulator plastic housings top surfaces and the electric heating element nipple plane surface (Fig. 9).

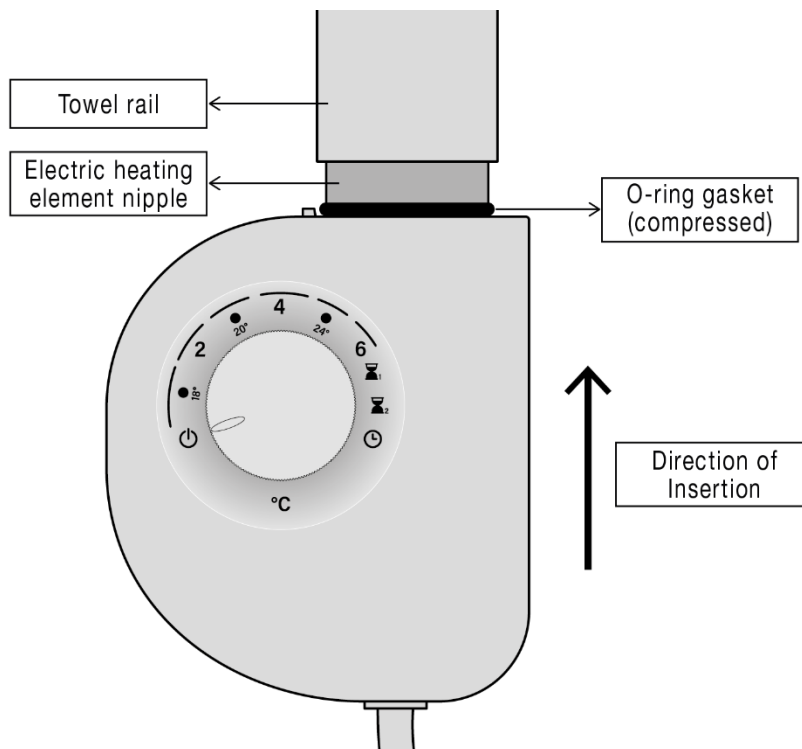
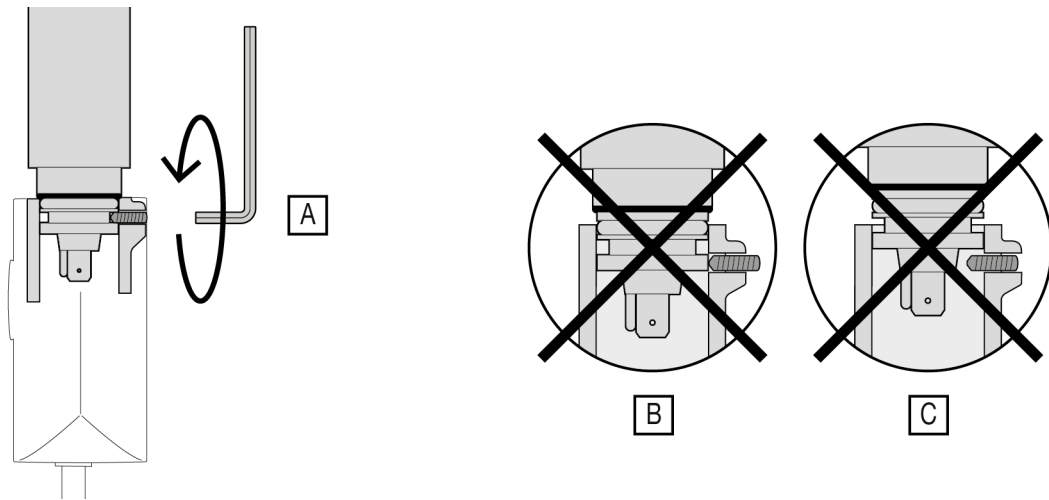


Figure 9

- Tighten the grub screw so that the regulator is securely fixed to the electric heating element and the O-ring gasket is well in contact with both surfaces (the regulator surface and heating element surface) in order to prevent any water leakage (Fig. 10 A).



**Figure 10**

Make sure the grub screw is NOT in other wrong positions by checking the alignment with the back of the regulator, as shown in figure 10 (B, C).

## MAINS POWER CONNECTION

- Connect the regulator cable to the mains power according to the current wiring regulations in force in the country where the product is installed.

## POST-INSTALLATION VERIFICATION

- Activate the regulator in mode Timer 1(Boost 1) and check the fluid level in the towel rail after approx. one hour.
- In the case of class I controls, check earthing continuity on the appliance after fitting the regulator to the electric towel rail according to the instructions in Appendix A of EN60335-1: “Routine tests”.
- Check dielectric strength on the appliance after fitting the regulator to the electric towel rail according to the instructions in Appendix A of EN60335-1: “Routine tests”.

## **5.8. CLEANING**

- To clean the regulator, use only a dry and clean soft cloth.
- Make small locally round movements.
- Apply a light pressure especially to the chrome plastic surfaces to avoid potential scratches.
- Do not clean the regulator with aggressive products.
- Do not wet the regulator in an attempt to clean it. Do not immerse in water.
- When cleaning the regulator, it must be disconnected from the power supply.

## **5.9. HOW TO UNINSTALL THE REGULATOR (QUALIFIED TECHNICIANS ONLY)**

- Place the knob in standby mode.
- Disconnect the regulator supply cord from the socket or connector block (be careful not to leave the power supply leads uncovered).
- Loosen the grub screw on the back of the regulator.
- Remove the regulator from the electric heating element connection and disconnect the electrical wiring.

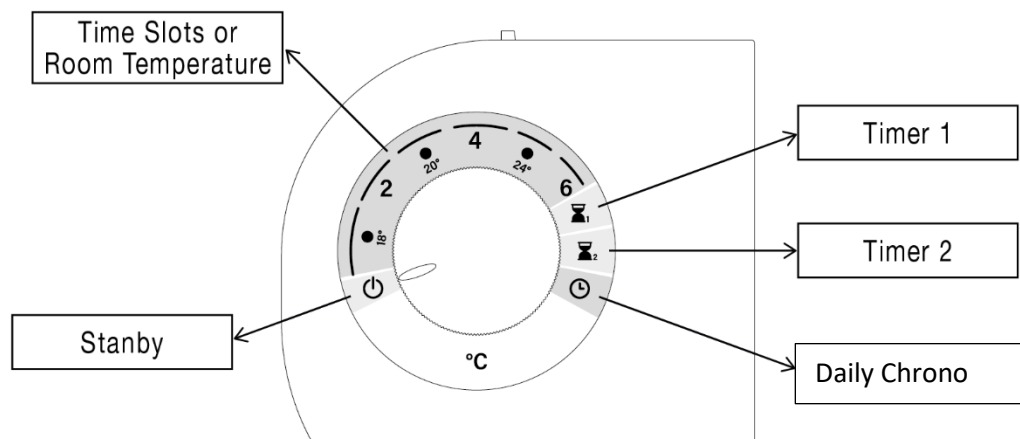
## **5.10. USE AND FUNCTIONING**

All uses different from the ones described in this section are to be intended as improper usage. In case of doubts refer to the manufacturer.

- The regulator is intended to be used and installed into a towel rail (water, water + glycol filled towel rails). Any other use is strictly forbidden and potentially dangerous.
- The regulator is intended to work only if the electric heating element - connected to the regulator and fitted into the towel rail - is completely immersed in the liquid (water or water + glycol) inside the towel rail.

## 6. REGULATOR FUNCTIONS DESCRIPTION

Below the User Interface Layout of the regulator is shown:



### 6.1. OPERATING MODES

|  |   |
|--|---|
| <b>Standby</b>                               | Heating element off   |
| <b>Room Temperature Regulation (Comfort)</b> | Room Temperature is regulated according to the set point configured by the end-user.<br>The temperature set points available are listed below:<br>18, 19, 20, 22, 24, 26 °C<br><br>(Note: In the event of a power failure, the controller remains active in this mode.) |
| <b>Timer 1</b>                               | Heating element with 100% power for a preset timing (1 h)   |
| <b>Timer 2</b>                               | Heating element with 100% power for a preset timing (2 h)   |
| <b>Daily Chrono</b>                          | Daily Scheduling:<br>the user can set the room temperature set point at different daily time slots, (see par. 7.3)  |

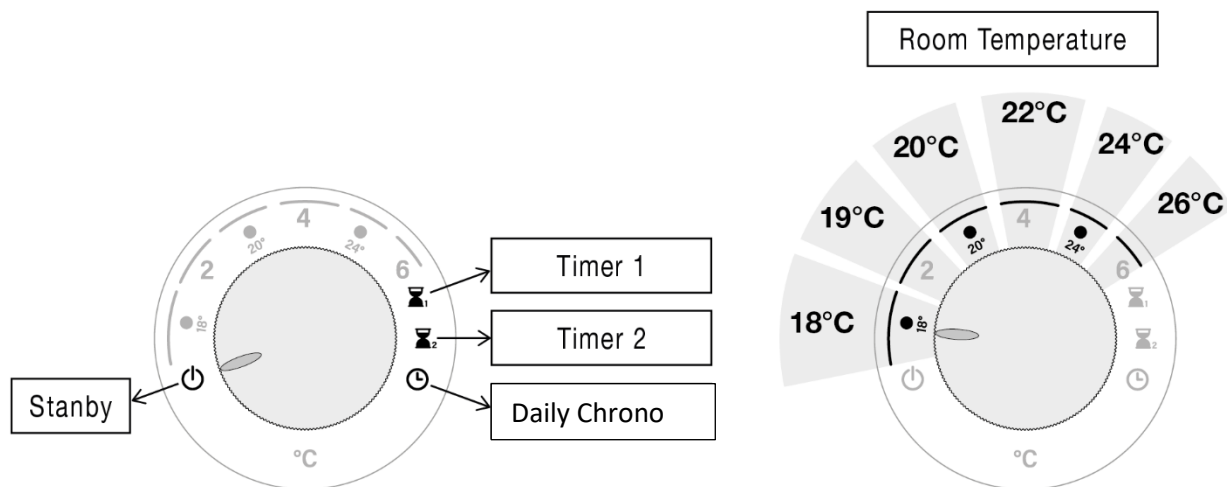
Tab. 2

**Open Window** function is always active:

If room ambient temperature quickly decreases (because window near the regulator is open) of 2 °C within 5 minutes, the heating function is disabled.

In this condition the ambient temperature is monitored every 2 minutes and if the temperature is stable or rises the heating function is enabled again.

## 6.2. MODE SETTINGS



| Knob Position    |   |
|------------------|---|
| Standby          | Heating element is OFF  |
| Room Temperature | Ambient Temperature Regulation is enabled with Temperature Set Point according to knob position |
| Timer 1          | Heating Element is ON (maximum power) for 1 hour and then OFF                                   |
| Timer 2          | Heating Element is ON (maximum power) for 2 hours and then OFF                                  |
| Daily Chrono *   | Heating Element is ON in each Time Slot programmed  |
| Error **         | Heating element is OFF  |

Tab. 3

\* The scheduled program is repeated every 24 hours. See par. 7.3.

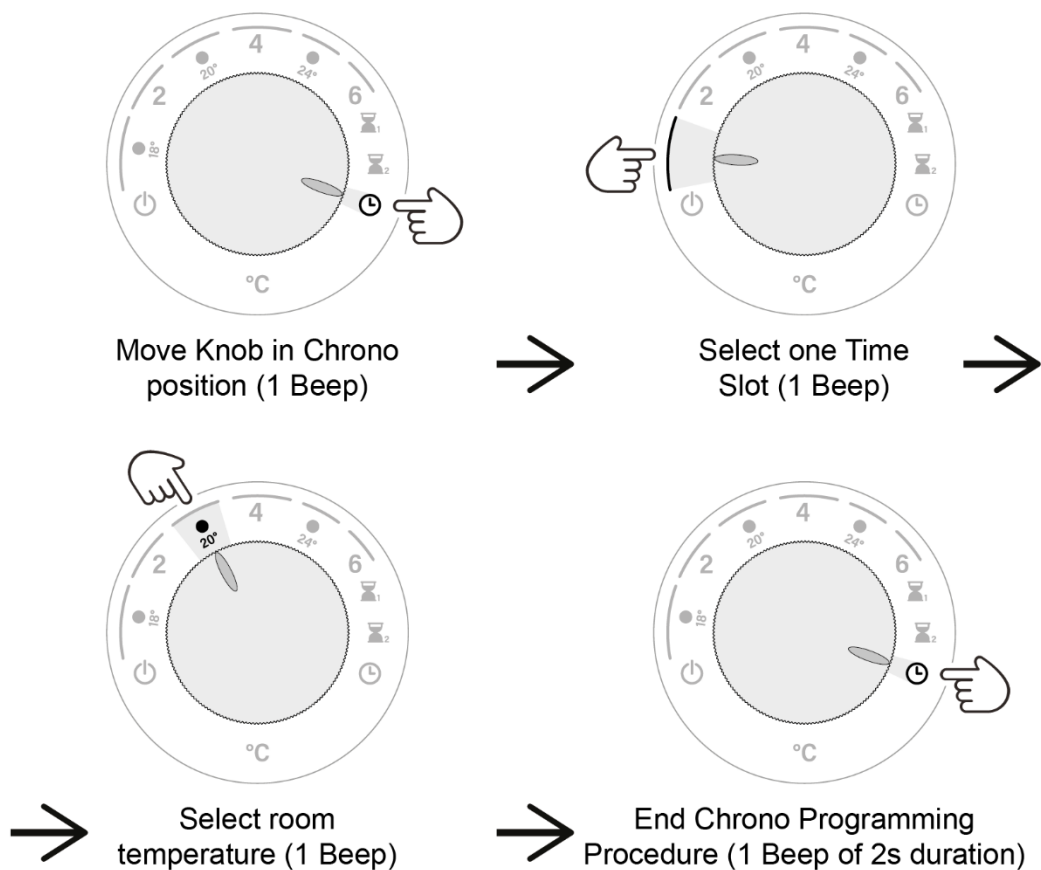
\*\* Error mode is enabled if an event described in par. 7.4 occurs.

N°2 beeps are emitted with the period described in par. 7.4.

## 6.3. CHRONO MODE PROGRAMMING

### CHRONO MODE PROGRAMMING FOR ONE TIME SLOT

In Chrono mode, the thermostat regulates the room temperature according to the Time Slots and temperature set points programmed by the User with the procedure shown below:

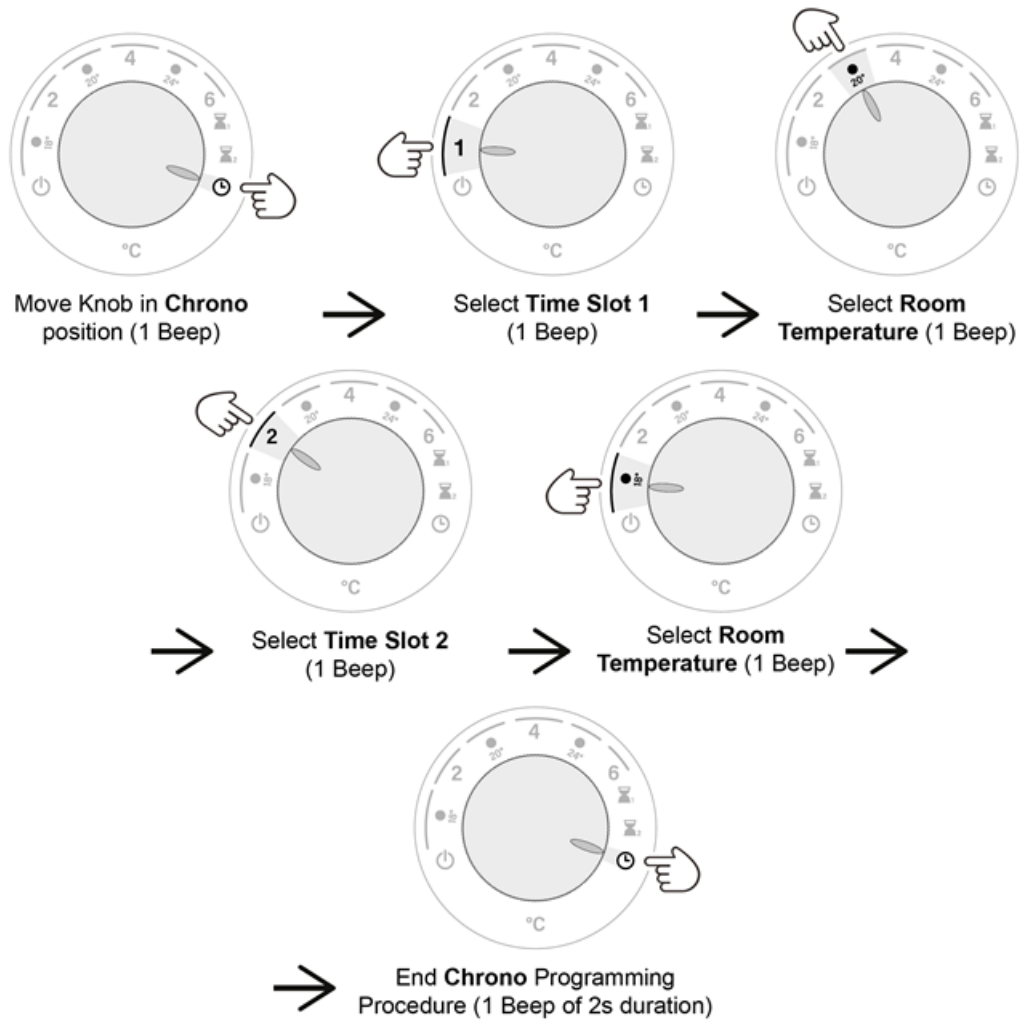


During Time slot, the not programmed Temperature Regulation is disabled and Heating function is OFF.

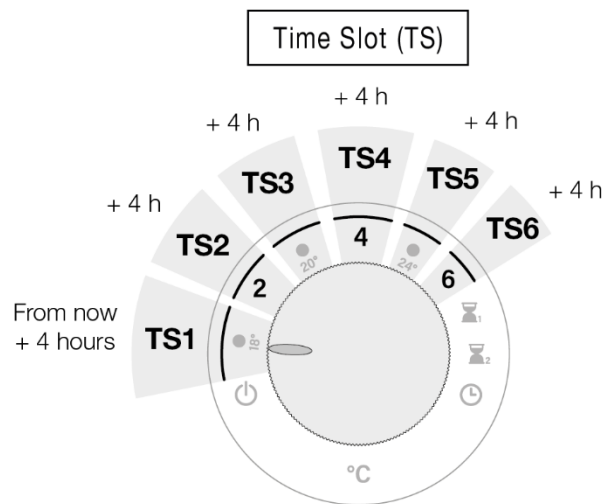
NOTE: If you need to reset the Chrono Mode Programming place the knob in the Standby position

# CHRONO MODE PROGRAMMING FOR MORE THAN ONE TIME SLOT

In Chrono mode, the device regulates the room temperature according to time slots and temperature set points programmed by the end-user with the procedure shown below:



## TIME SLOT EXAMPLES



| All Time Slot Programmed                 |             | Current Time | 08:00     |         |       |  |
|--|-------------|--------------|-----------|---------|-------|--|
| <b>TS1</b>                               | Start TS1 * | 08:00        | + 4 hours | End TS1 | 12:00 |  |
| <b>TS1 + TS2</b>                         | Start TS2   | 12:00        | + 4 hours | End TS2 | 16:00 |  |
| <b>TS1 + TS2 + TS3</b>                   | Start TS3   | 16:00        | + 4 hours | End TS3 | 20:00 |  |
| <b>TS1 + TS2 + TS3 + TS4</b>             | Start TS4   | 20:00        | + 4 hours | End TS4 | 00:00 |  |
| <b>TS1 + TS2 + TS3 + TS4 + TS5</b>       | Start TS5   | 00:00        | + 4 hours | End TS5 | 04:00 |  |
| <b>TS1 + TS2 + TS3 + TS4 + TS5 + TS6</b> | Start TS6   | 04:00        | + 4 hours | End TS6 | 08:00 |  |

\* Programming starts after the last 2s beep as described in the previous procedure. In this example, Chrono is set for a total of 24 hours.

**Programming restarts the following day at the same time, with the same slots and with the same set temperatures.**

| 3 Time Slot programmed |             | Current Time | 08:00     |         |       |  |
|------------------------|-------------|--------------|-----------|---------|-------|--|
| <b>TS1</b>             | Start TS1 * | 08:00        | + 4 hours | End TS1 | 12:00 |  |
| <b>TS1 + TS2</b>       | Start TS2   | 12:00        | + 4 hours | End TS2 | 16:00 |  |
| <b>TS1 + TS2 + TS3</b> | Start TS3   | 16:00        | + 4 hours | End TS3 | 20:00 |  |

\* Programming starts after the last 2s beep as described in the previous procedure. In this example, the Chrono is set for a total of 12 hours, after which it remains off. **Programming restarts the following day at the same time, with the same slots and with the same set temperatures.**

## 6.4. ERROR MODES

Error modes start if at least one of the following events occurs:

- If the Room Temperature Regulation Mode is set and the Ambient Temperature Sensor is broken
- In Timer 1 / Timer 2 / Chrono Mode if a Black out event occurs (no power supply available for the regulator) and then the power supply is restored
- If the Chrono Programming Procedure is not executed correctly

Example of wrong Chrono programming procedure:

- During Chrono Programming the knob is placed in the Timer 1 or Timer 2 position
- During Chrono Programming the knob is placed in the Chrono position after the time slot is selected
- During Time Slot or Temperature Set Point selection the knob is not placed in any TS1...TS6 position within 8s after the last Temperature Set Point or Time Slot selection
- The same time slot is programmed

During Error Mode N°2 beeps are emitted with a period of 1 minute for the first 10 minutes starting from the Error Mode enabling. Then the period is increased to 10 minutes.

To exit from Error mode the User has to move the knob into the Standby position. In this case the regulator returns to standby mode.

## 6.5. IMPROPER USE

- All different usages which are not described in the “USE AND FUNCTIONING” section are considered improper usage. In case of doubts refer to the manufacturer.
- Do not switch on the regulator unless the heating element is properly immersed in the liquid inside the towel rail.

- Before installation, never switch the regulator ON to verify functioning effectiveness.
- Don't use excessive force to turn the knob as you risk breaking it.
- In case of anomalous or strange working condition or if the regulator has visible signs of damage, disconnect the regulator from the mains and send the device to the manufacturer for investigation or replacement.
- If the regulator shows some plastic cracks, please, contact the manufacturer for replacement.
- The regulator power supply cable cannot be repaired. If it is damaged, contact the manufacturer to replace the complete regulator.
- Never try to modify or repair the regulator or any of its parts by yourself.
- Never try to remove any part of the regulator.
- Never knock the regulator against anything. Handle with extreme care during every operation and never leave it in wet areas.
- Do not use the regulator before it has been completely and correctly installed. If the regulator is not firmly fixed to the towel rail, disconnect the mains turning off the circuit breaker switch and contact the manufacturer in order to avoid hazard.
- Do not cut the power supply cable to stop regulation or to switch the regulator OFF.
- Once connected to the heating element, the regulator **MUST NOT** be disconnected from the heating element in order to avoid electrical shock risk.
- Do not cover the regulator, even partially, even temporarily.

## **7. MAINTENANCE**

### **Ordinary**

At regular periods of time, depending on the usage of the product:

- turn the regulating knob at timer 1 operating mode to check if working properly (heating element driven at 100% of power for 1 hour)

If the above control fails, switch off the regulator, do not use it and refer to the IMPROPER USE section and contact the manufacturer.

### **Extraordinary**

The regulator shall be replaced at least every 7 years.

Switch off the mains before any installation, de-installation or maintenance operation on the regulator.

- During installation, de-installation and maintenance, ensure working place safety until the operation is completed.
- Do not touch the metallic parts of towel rail if the regulator is powered; before, maintenance and de-installation operation wait the necessary time to ensure it is cold after the regulator is switched off. **IMPORTANT:** Always disconnect the electricity supply from the mains before and during installation, maintenance and de-installation. It is recommended that the fuse is withdrawn or circuit breaker switched off at the distribution board while work is in progress (turning off the switch is not sufficient).

**IMPORTANT:** In case of doubts, please, contact the manufacturer.

## 8. DIAGNOSTICS

| Description of fault   | Operations  |
|--|---|
| The regulator is set to Timer 1 or Timer 2 mode regulation mode and the towel rail doesn't heat at all | The product must be replaced, please contact the manufacturer.  |
| The regulator is in Error Mode and the knob is in Timer 1 / Timer 2/ Chrono position.                  | <ul style="list-style-type: none"> <li>• Place knob in Standby position to reset error mode condition.</li> </ul> <p>If after this operation the regulator Error Mode is active when the knob position is different from Standby, the temperature sensor is damaged and is to be replaced by a qualified technician</p> |
| In case of anomalous or strange working condition or if the regulator has visible signs of damage      | <ul style="list-style-type: none"> <li>• Disconnect the regulator from the mains</li> <li>• Send the regulator to the manufacturer for investigation or replacement.</li> </ul>   |

If fault occurs consult the “IMPROPER USE” section and contact the manufacturer.

## 9. SPARE PARTS

In the event of malfunctioning or damage, the whole regulator must be replaced.

No spare parts are available.

**IMPORTANT: In case of doubts, please contact the manufacturer.**

**IMPORTANT: Please, retain these instructions for future reference**

## 10. POWER CABLE SIZE REDUCTION

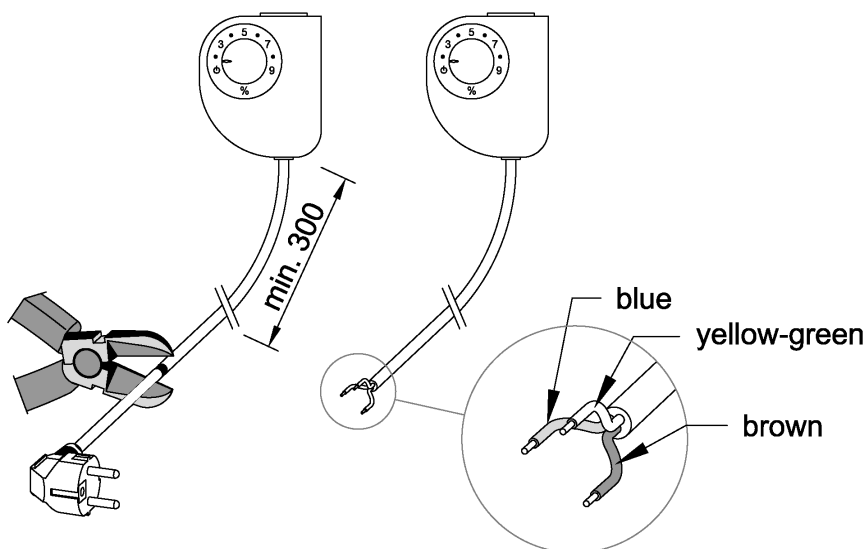
The length of the power supply cable can be reduced to allow its direct installation in a wall box or connection to a terminal designed for the cable, i.e. it is certified and rated for the given type of installation (e.g. an electric plug with an integrated switch).

**CAUTION!** The cable must extend at least 300 mm from the inlet to the heating unit, the thermostat receiver or regulator (according to the equipment installed) after it has been cut. No warranty claim or repair will be accepted, including defects not related to the shortening of the cable, if the length of the cable is less than 300 mm.

**The reduction may only be carried out by a person with the appropriate electrical expertise!** The external insulation of the cable and the insulation of individual conductors must remain intact. Avoid using cables with broken insulation.

All connections/wiring must be in compliance with the legislation of the country where the installation is performed, as well as with the rules for use in specific environments (e.g. bathrooms), the IEC 60364-7-701 standard in particular.

**In this case, the rated degree of protection, IPX4, as declared by the manufacturer of the product, will not apply to the reduced end of the cable and/or any terminal.**



The wiring of Class I equipment is as follows:

|                       |           |                                     |
|-----------------------|-----------|-------------------------------------|
| <b>Brown (black):</b> | <b>L</b>  | <b>phase 230 V AC / 50-60 Hz</b>    |
| <b>Blue:</b>          | <b>N</b>  | <b>neutral conductor</b>            |
| <b>Yellow-green:</b>  | <b>PE</b> | <b>protective conductor (earth)</b> |

The manufacturer assumes no responsibility for any damage to the equipment or personal injury caused by improper installation of the cable, reversed polarity, insulation damage or any other intervention, connection or wiring that is not in compliance with the applicable regulations.

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