# eTRV

## Smart Radiator Thermostat

Installation & Operation Guide

EPH CONTROLS

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# Smart Radiator Thermostat

# **Installation Instructions**

# Factory Default Settings

| | |
|---|---|
| Keypad lock: | Off |
| Installation position: | Vertical |
| Hon: | 0.4˚C |
| Hoff: | 0.0˚C |
| Boost temperature: | 21°C |

# Specifications

| | |
|---|---|
| Power supply: | 2 x AA Li-FeS2 Batteries |
| Standby current: | <50uA |
| Battery replacement: | 240 days approx.* |
| Temp. control range: | 5…35˚C |
| Dimensions: | 80 x 52mm |
| Temperature sensor: | NTC 100K Ohm @ 25˚C |
| Temperature indication: | ˚C |
| Ambient temperature: | 0…45˚C |
| Ambient admissible humidity: | 5-95% RH |
| Backlight: | White |
| IP rating: | IP20 |
| Hysteresis (Switching differential): | Adjustable from 0 to 2°C |

* Based on average estimated usage.

Li-FeS2 (Lithium Iron) batteries available from www.ephcontrols.com

# Important Notes

It is extremely important to use good quality batteries in the eTRV to ensure correct operation of the product. EPH recommend using Li-$FeS_2$ (Lithium Iron) batteries. If poor quality batteries are used, they may cause the product to stop communicating wirelessly, fail to communicate information correctly and stop opening or closing.

Low power or discount store battery brands should not be used. When the battery is low a battery low notification will appear on the eTRV, it will also display on the EMBER app. The batteries should be changed immediately. Normally the eTRV will stop operating soon after this notification. When the eTRV shows a fault E4 – the motor is not operating correctly, this is normally due to a battery issue – possibly one or both of the batteries are not providing adequate power.

The eTRV detects temperature and communicates on cycles every 4 minutes to conserve battery power.

When buttons are pressed on the eTRV it will save these changes but may not communicate immediately to the RF16 controller. It will communicate these changes on the next communication cycle.

**The eTRV is designed for use with EPH TRV Valve bodies.**

# How your eTRV works

The eTRV is designed to control and operate a radiator valve wirelessly. When the eTRV is calling for heat, it will communicate wirelessly to the RF16 controller which will activate your heating system to heat the radiator. When the eTRV reaches its defined setpoint temperature it will close the radiator valve and stop calling for heat.

The temperature setpoint is defined by the program settings on your RF16 controller, via the EMBER app or by using the [+] and [−] buttons on the eTRV.

If the room temperature is lower than the target temperature then the eTRV will open the radiator valve and request the heating system to activate, if the room temperature is higher than the set temperature it will close the radiator valve and signal the system to stop calling for heat.

When calling for heat your eTRV will show a flame symbol 🔥 on the screen. This will disappear when the temperature setpoint has been achieved.

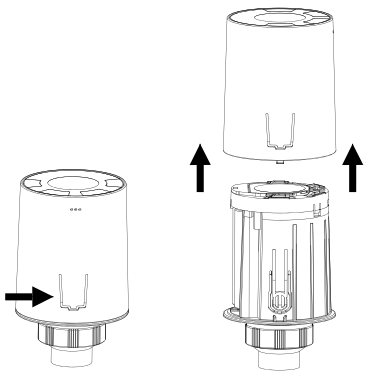
When the eTRV is in MANUAL or AUTO, the screen will display the current room temperature. When the eTRV is in the OFF mode the screen will display the word '**OFF**'.

# Mounting & Installation

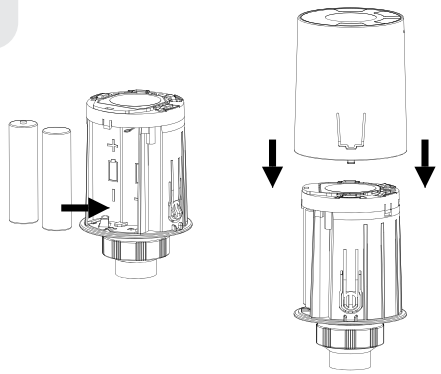
## Caution!

- Ensure the eTRV is positioned in an area that has good air flow so it can detect temperature effectively.
- Ensure the eTRV is out of direct sunlight.
- If the eTRV or RF16 are used in a way not specified by the manufacturer, its safety may be impaired.
- Prior to setting the eTRV, it is necessary to complete all required settings described in the mounting & installation section.
- Ensure the valve body is free of dust and debris.
- Ensure the valve body is dry and not leaking.

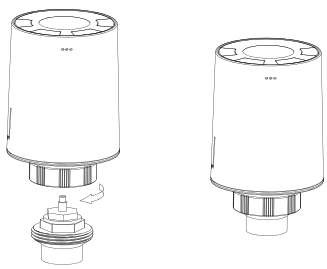
1



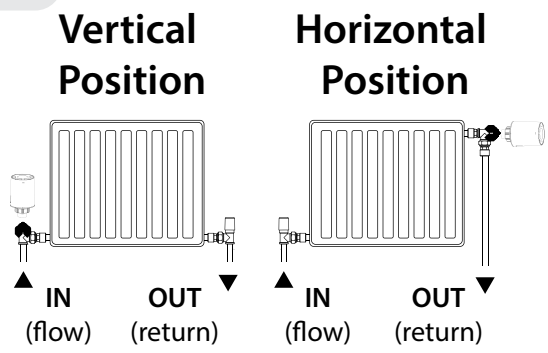
2



3



4



1) Press and hold the release mechanism on the side of the eTRV, while holding pull the cover up and it will slide off the eTRV.

2) Insert the 2 x AA batteries and replace the cover.

   Pair the eTRV to the RF16. *(see page 18)*

   - Mark the eTRV zone by using the stickers provided.
   - Note the room name on the 16 zone list provided, this will help the user of the system identify the zones if it's needed in future.

3) The eTRV can be mounted to a radiator valve with a M30 x 1.5mm thread. Rotate the ring at the base of the eTRV so it threads onto the radiator valve until it's tight. It will automatically adapt its stroke to that of the valve.

   It's recommended that the eTRV is opened to make it easier to mount, this is done by calling for heat on the RF16 or eTRV and it will retract the spindle.

4) Position the eTRV on the radiator valve so the screen is orientated correctly.

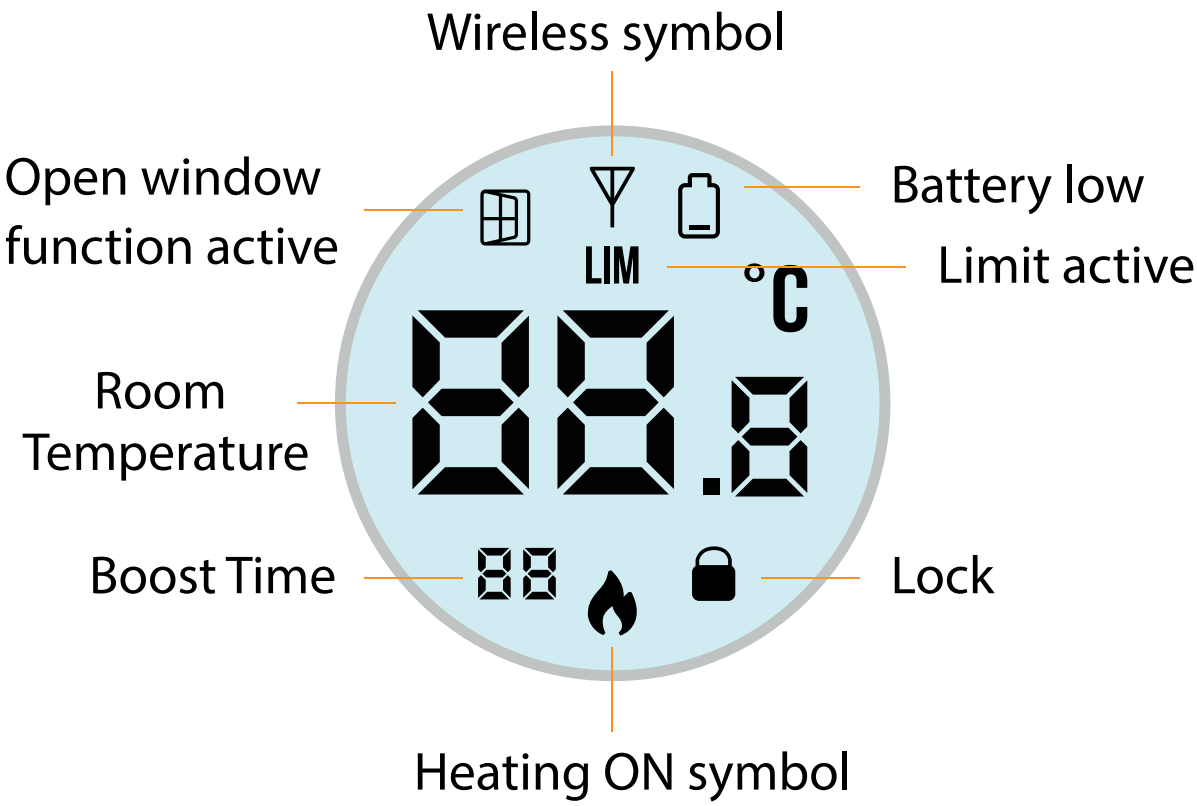
**Note:**

**The eTRV is designed for use with EPH TRV Valve bodies.**

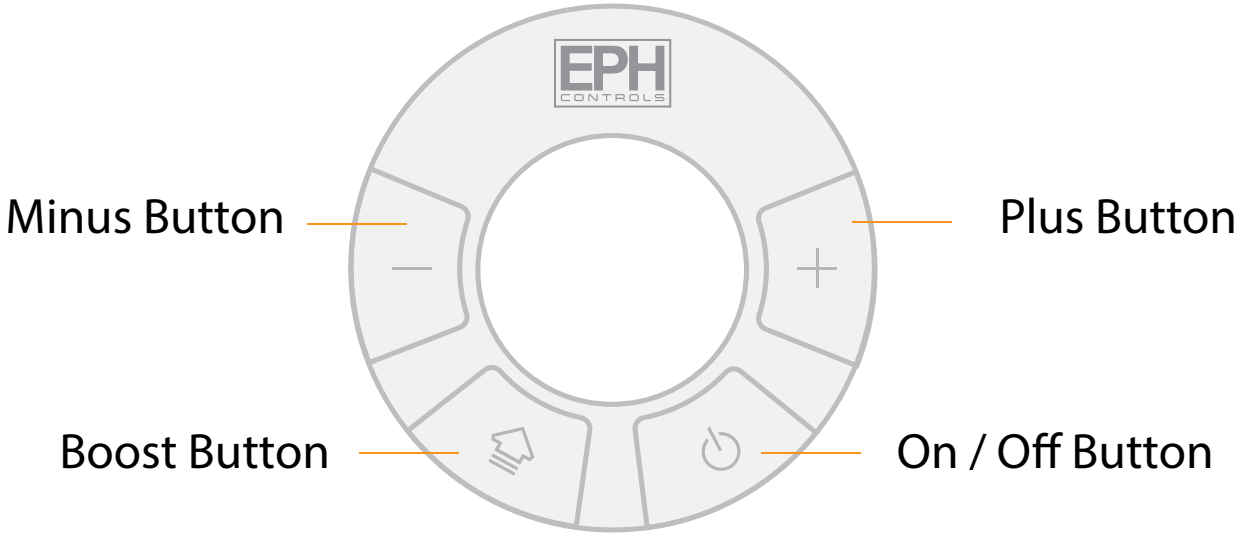
# Smart Radiator Thermostat

# **Operating Instructions**

# LCD Symbol Description



# Button Description




## Shortcuts

Hold [−] and [+] for 10 seconds for keypad lock.

Hold [⌂] and [⏻] for 5 seconds to access the menu.

Hold [−] and [⌂] for 5 seconds for RF connection.

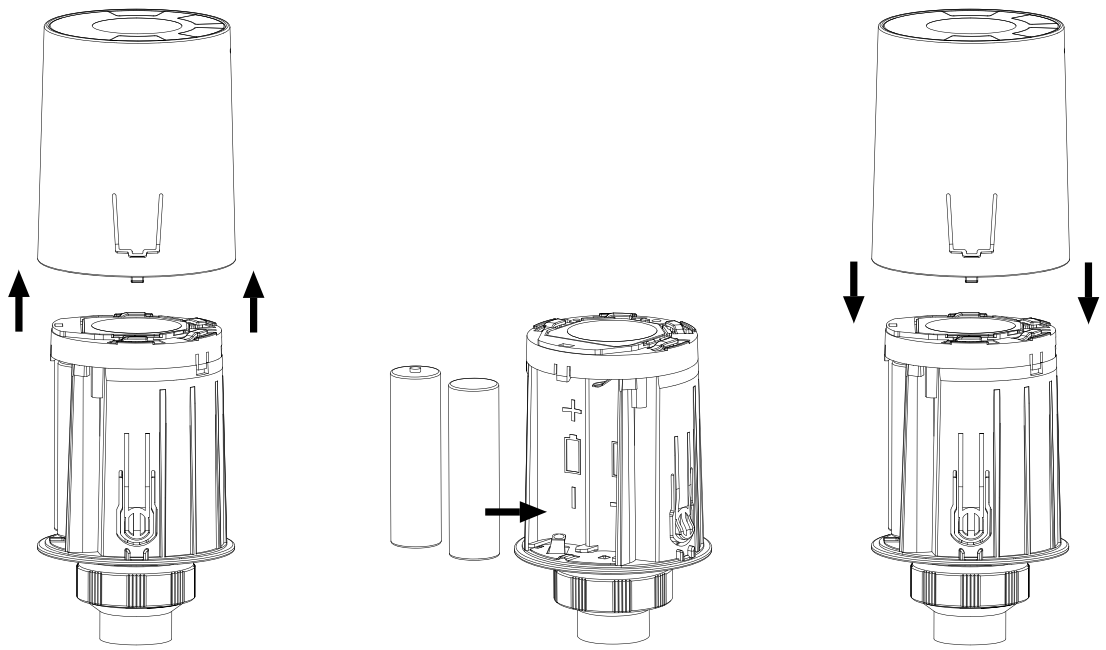
Hold [⏻] and [+] for 5 seconds for open window function.

# Replacing the Batteries

Press and hold the release mechanism on the side of the eTRV, while holding pull the cover up and it will slide off the eTRV.

Remove and replace the 2 x AA batteries. It is extremely important to use good quality batteries in the eTRV to ensure correct operation of the product.

Slide the cover back on to the eTRV and it will return to it's normal operation.



Li-$FeS_2$ (Lithium Iron) batteries available from www.ephcontrols.com

# Error Codes

The eTRV will display error codes if there is a problem.

1) **E4**

   Motor Issue – Check Batteries

   If E4 still shows after premium batteries are used, the eTRV needs to be replaced.

2) **Battery Low Indication**

   When the batteries are low on the eTRV, the screen will show a low battery icon , this will also show on the zone in the EMBER App. When this appears on the screen it is recommended to change the batteries immediately. *(see page 6)*

# Boost Function

The eTRV can be boosted to a specific temperature for 30 minutes, 1, 2 or 3 hours.

Press [⌂] once for 30 minutes,
twice for 1 hour,
three times for 2 hours or
four times for 3 hours.

Then press [−] or [+] to set the desired temperature for the boost period.

30, 1, 2 or 3 will appear on the screen,

Wait 5 seconds for the eTRV to return to the home screen.

To cancel a boost, press [⌂] when boost is active.

# Locking and unlocking the eTRV

### To lock the eTRV

Press and hold [−] and [+] for 10 seconds.

🔒 will appear on the screen. The buttons are now disabled.

### To unlock the eTRV

Press and hold [−] and [+] for 10 seconds.

🔒 will disappear. The buttons are now enabled.

# Changing the Mode

Press [⏻] to change between AUTO, MANUAL and OFF modes.

**AUT** - Auto

**OFF** - OFF

**On** - Manual

# Adjusting the Target Temperature

Press [−] or [+] to decrease or increase the target temperature.

Press [⏻] or wait 5 seconds.

The target temperature is now saved.

**Temporary Override**

If the eTRV temperature is changed when in the Auto mode it will apply a temporary change to the current program and will revert to the programmed settings at the next program time.

**Permanent Override**

If the eTRV temperature is changed when in manual mode, it will change the target temperature permanently.

# Connecting an eTRV to the RF16 Controller

## On the RF16:

Press MENU.

**'P01 rF Cn'** will appear on the screen.

Press ◯ to confirm.

**'01'** will appear on the screen.

Rotate ◯ to the required zone.

Press ◯ to select that zone.

**'CONNECT'** will appear flashing on the screen.

**Note:** When selecting a zone to pair, zones that are flashing are available while zones that are solid have already been paired.

# Connecting an eTRV to the RF16 Controller continued

## On the eTRV:

Press and hold [−] and [⌂] for 5 seconds.

**‘nOE’** will appear on the screen followed by **‘ - - ’**

The eTRV will display **‘r ‘** followed by the **zone number**.

Press [⏻] to exit from screen.

## On the RF16:

**‘CONNECTED’** will appear solid on the screen when the eTRV is successfully paired.

Rotate ◯ to pair the next available zone and repeat the process or press [MENU] to exit.

Press [MENU] to return to normal operation at anytime.

# Disconnecting an eTRV from the RF16 Controller

## To Disconnect all zones:

## On the RF16:

Press MENU on the RF16.

**'P01 rF Cn'** will appear on the screen.

Rotate ◯ clockwise until **'P06 rF dn'** appears on the screen.

Press ◯ to confirm.

**'ALL'** will be flashing.

Press ◯ to select ALL.

**'nO'** will appear on the screen.

Rotate ◯ clockwise.

**'YES'** will appear on the screen.

Press ◯ to confirm disconnection.

(This allows you disconnect all connected zones at once)

# Disconnecting an eTRV from the RF16 Controller continued

## To Disconnect an individual zone:

## On the RF16:

Press MENU on the RF16.

**'P01 rF Cn'** will appear on the screen.

Rotate ◯ clockwise until **'P06 & rF dn'** appears on the screen.

Press ◯ to confirm.

**'All'** will be flashing.

Rotate ◯ to select an individual zone.

Press ◯ to select the zone to be unpaired.

**'nO'** will appear on the screen.

Rotate ◯ clockwise.

**'YES'** will appear on the screen.

Press ◯ to confirm disconnection.

Press MENU to exit to the home screen.

# Open Window Function

Enabling this feature will stop the zone from operating if the eTRV detects a drop in temperature of over 1.5°C within 3 minutes.

When this is detected the eTRV will display the open window symbol and will stop reading temperature. That zone will be prevented from turning on even if it falls below it's setpoint.

The open window function will disable if the temperature rises by 0.5°C within 3 minutes or if the temperature stays low for more than 15 minutes.

Press and hold and for 5 seconds.

'**OFF'** will appear on the screen.

Press until **'On'** appears on the screen.

Press to select.

# Menu

## P1 CAL - Calibrate

This function allows the user to calibrate the temperature reading of the eTRV.

It's strongly recommended that you should leave the eTRV for a minimum of 20 mins to acclimatise to the room temperature before calibrating. Do not hold the eTRV during this time as it can increase the temperature reading.

Press and hold and for 5 seconds.

**'CAL'** will appear on screen.

Press to select.

The current actual temperature will appear on the screen.

Use and to adjust the temperature reading.

Press to confirm and you will return to the menu.

Press to exit at any point.

# P2 Hi & Lo – Setting high & low limits

## OFF

This function allows the user to change the minimum and maximum temperatures that the thermostat can be set to between 5...35°C.

Press and hold [⌂] and [⏻] for 5 seconds.

**'CAL'** will appear on the screen.

Press [+] until **'LIn'** appears on the screen.

Press [⌂] to select.

Press [+] to select ON.

Press [⌂] to confirm.

**'Hi'** will appear on the screen & the temperature will flash.

Use [−] and [+] to select the high limit.

Press [⌂] to confirm,

**'Lo'** will appear on the screen & the temperature will flash.

Use [−] and [+] to select the low limit.

Press [⌂] to confirm and you will return to the menu.

Press [⏻] to exit at any point.

**'LIM'** will appear on the screen of the eTRV.

# P3 rSt – Resetting the eTRV

This function allows the user to reset the eTRV to its factory default settings.

Press and hold and for 5 seconds.

**'CAL'** will appear on the screen.

Press until '**rSt'** appears on the screen.

Press to select.

**'nO'** will flash on the screen.

Use to adjust.

**'YES'** will flash on the screen.

Press to confirm.

The eTRV will now reset and will go to the OFF mode.

Press to change between Manual, Auto and OFF.

# P4 bL – Backlight Auto

This function allows the user to select the backlight to be OFF or Auto.

**Auto -** this allows the backlight to activate for 5 seconds when a button is pressed.

**OFF -** the backlight is permanently off.

Press and hold ⌂ and ⏻ for 5 seconds.

'**CAL'** will appear on the screen.

Press + until **'bL'** appears on the screen.

Press ⌂ to select.

**'AUt'** will display on the screen.

Use − and + to adjust between Auto and OFF.

Press ⌂ to confirm and you will return to the menu.

Press ⏻ to exit at any point.

# P5 InS – Installation Direction Vertical

It is important to select the correct setting for the ETRV if it is mounted on a radiator in the vertical or horizontal position. The installation direction changes how the eTRV senses temperature.

Press and hold [⌂] and [⏻] for 5 seconds.

**'CAL'** will appear on the screen.

Press [+] until **'InS'** appears on the screen.

Press [⌂] to select.

**'ud'** will display on the screen.

Use [−] and [+] to adjust to the correct setting.

**'ud'** - Vertical Direction.

**'Hd'**- Horizontal Direction.

Press [⌂] to confirm and you will return to the menu.

Press [⏻] to exit at any point.

# P6 HOn - Hysteresis HOn 0.4°C & HOF 0.0°C

This menu allows the installer to change the switching differential when the temperature is rising and falling.

If '**H ON**' is set at 0.4˚C and the setpoint is 20˚C, then the thermostat will turn on when the temperature drops below 19.6˚C.

If '**H OF**' is set at 0.2˚C and the setpoint is 20˚C, then the thermostat will turn off when the temperature reaches 20.2˚C.

Press and hold ⌂ and ⏻ for 5 seconds.

**'CAL'** will appear on the screen.

Press + until **'HOn'** appears on the screen.

Press ⌂ to select.

**'On'** temperature will begin to flash.

Use − and + to adjust the HOn temperature.

Press ⌂ to confirm.

**'OF'** temperature will begin to flash.

Use − and + to adjust the HOF setting.

Press ⌂ to confirm and you will return to the menu.

Press ⏻ to exit at any point.

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EPH CONTROLS

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