CP3 V2

RF Room Thermostat & Receiver

Installation & Operation Guide

EPH CONTROLS

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RFRB^{V2} Room Thermostat

Installation Instructions

Factory Default Settings

Temperature indicator:	˚C
Hysteresis:	0.4˚C
In built frost protection:	5˚C - Not adjustable
Keypad lock:	Off

Frost Protection

5˚C

Frost protection is built into this thermostat.

It is fixed at 5°C and is not adjustable.

It will only be activated when the thermostat is in the OFF mode and the room temperature falls below 5°C.

Specifications

Power supply:	2 x AAA Alkaline Batteries
Power consumption:	50 uA
Battery replacement:	Once a year
Temp. control range:	5 … 35˚C
Dimensions:	80 x 80 x 25.7mm
Temperature sensor:	NTC 100K Ohm @ 25˚C
Temperature indication:	˚C
Hysteresis:	Adjustable 0.0 … 1.0˚C

How your RFRB^{V2} Room Thermostat works

When your RFRB^{V2} thermostat is turned on, it will operate according to the target temperature selected by the user.

The setpoint is defined by turning the dial clockwise for a higher target temperature or anti-clockwise for a lower target temperature.

If the room temperature is lower than the target temperature then the thermostat will activate the demand for heat.

This will be indicated with a flame symbol on the screen.

Once the desired target temperature has been achieved, the thermostat will stop demanding heat, and the flame symbol will disappear from the screen.

The screen will always display the current room temperature.

When the thermostat is turned off, Frost protection is active. If the room temperature drops below 5°C, the thermostat will activate the demand for heat until the room temperature rises above the 5°C frost protection limit.

Mounting & Installation

Caution!

- Installation and connection should only be carried out by a qualified person.
- Only qualified electricians or authorised service staff are permitted to open the receiver.
- If the thermostat or receiver are used in a way not specified by the manufacturer, its safety may be impaired.
- Prior to setting the thermostat, it is necessary to complete all required settings described in the section.

This thermostat can be mounted in the following ways:

1) Directly mounted on a wall

2) Table mounted - Stand Included

1) The mounting height should be 1.5 metres above the floor level.

2) The thermostat should be located in the room where the heating is to be controlled.

   The place of installation should be chosen so that the sensor can measure the room temperature as accurately as possible.

   Choose the mounting location to prevent direct exposure to sunlight or other heating / cooling sources when mounted.

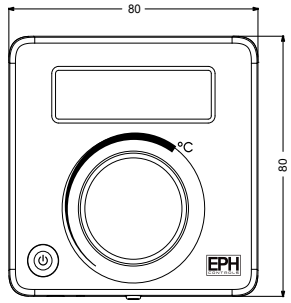
3) Press and hold the release button on the bottom of the thermostat to detach the front housing from the base plate.

4) Insert the 2 x AAA batteries provided and the thermostat will turn on.

5) For wall mounted installation, fix the base plate directly to the wall with the screws provided. Attach the front housing to the base plate.

6) For table mounted installation, attach the front housing to the base plate. Place the thermostat onto the stand provided.

1



Type
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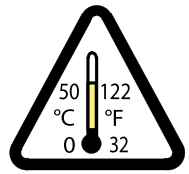
IP20
EN60529



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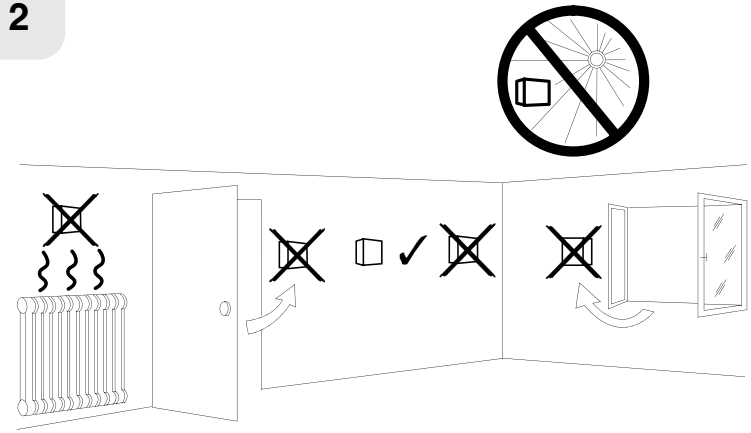

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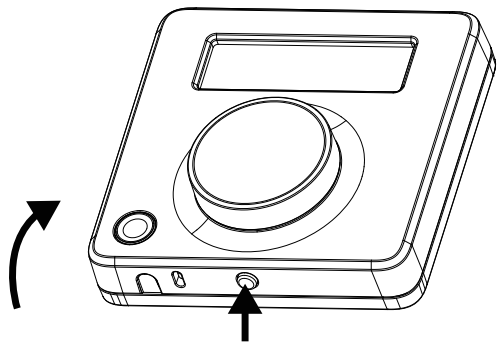

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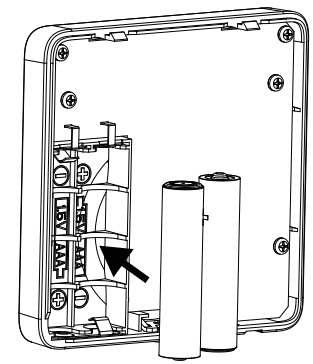
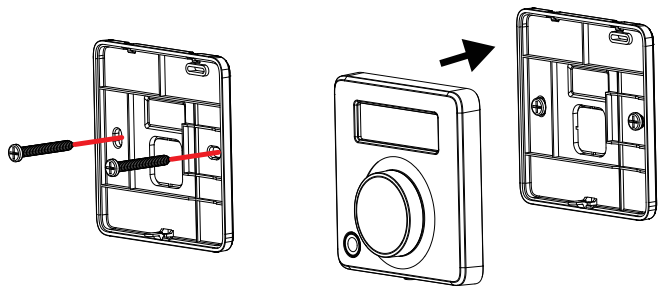
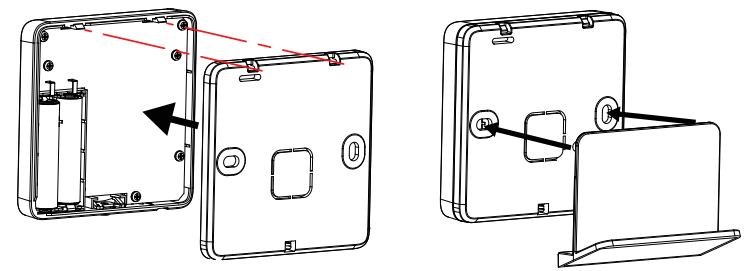


5 Wall mounted



6 Table mounted



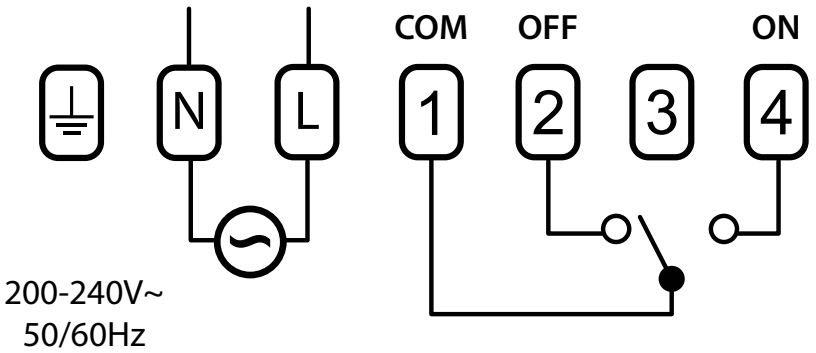
RF1C Receiver

Installation Instructions

Specifications & Wiring

Power supply:	200 - 240Vac 50-60Hz
Contact rating:	230 Vac 3A
Ambient temperature:	0…45˚C
Automatic action:	Type 1.C.
Appliance classes:	Class II appliance ⧈
Pollution degree:	Pollution degree 2
IP Rating:	IP20
Rated Impulse Voltage:	Resistance to voltage surge 2500V as per EN 60730

Internal wiring diagram for RF1C



Switching Options

Mains Switching

- Link L to 1.

Low Voltage Switching

- Remove the external controls link from the boiler PCB.
- Connect 1 and 4 to these terminals.

Mounting & Installation

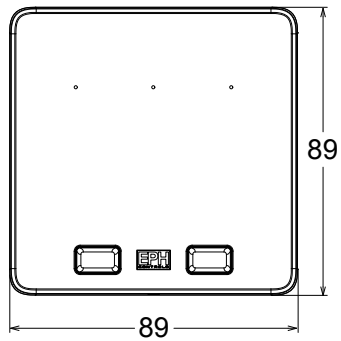
1) The RF1C receiver should be wall mounted in an area within 20 metres distance of the wireless thermostat. It is important that the receiver is mounted more than 25cm away from metal objects as this will affect communication with the thermostat.

   The receiver should be installed at least 1 meter from any electronic devices such as radio, TV, microwave or wireless network adaptor.

   The unit can be fitted to:
   1. Recessed conduit boxes
   2. Surface mounting boxes
   3. Directly mounted on a wall

2) Use a Phillips screw driver to loosen the screws of the backplate on the bottom of the RF1C. The receiver is lifted upwards from the bottom and removed from the backplate. (see page 12)
3) Screw the backplate to the wall with the screws provided.
4) Wire the backplate as per the wiring diagram on page 10.
5) Mount the receiver on the backplate making sure the pins and the backplate contacts are making a sound connection. Push the receiver flush to the surface and tighten the screws of the backplate from the bottom. (See page 12)

1



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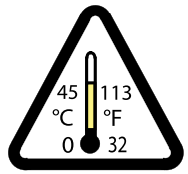
EN60730

IP20
EN60529



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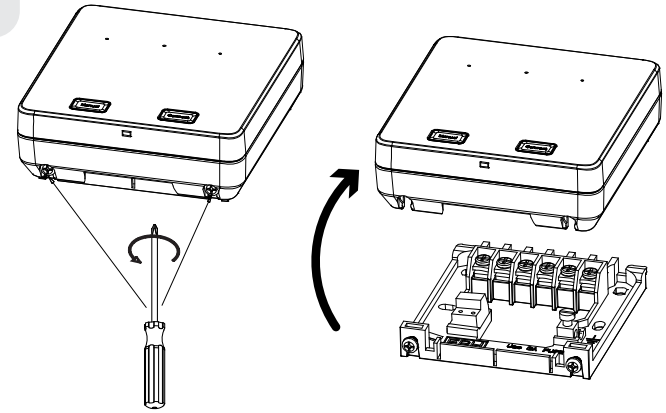

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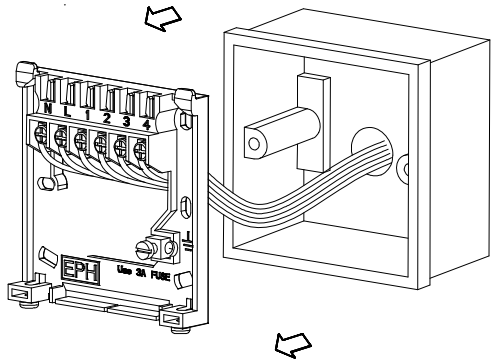

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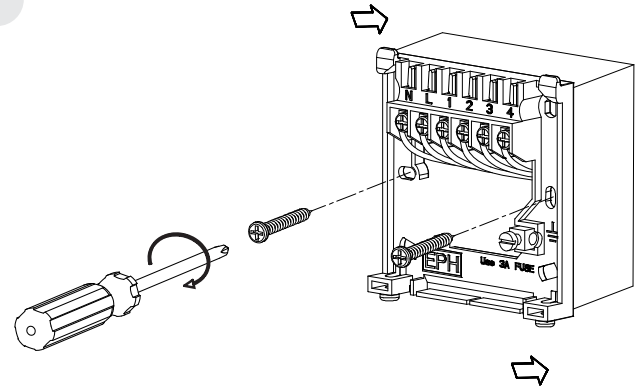

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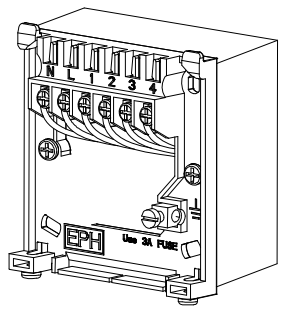

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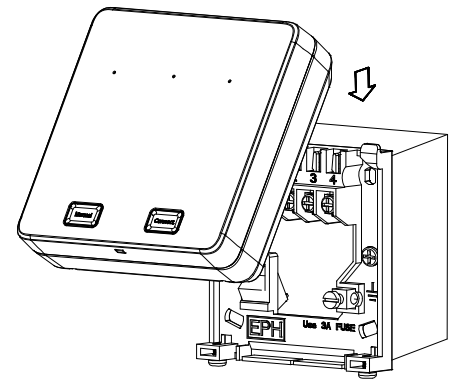
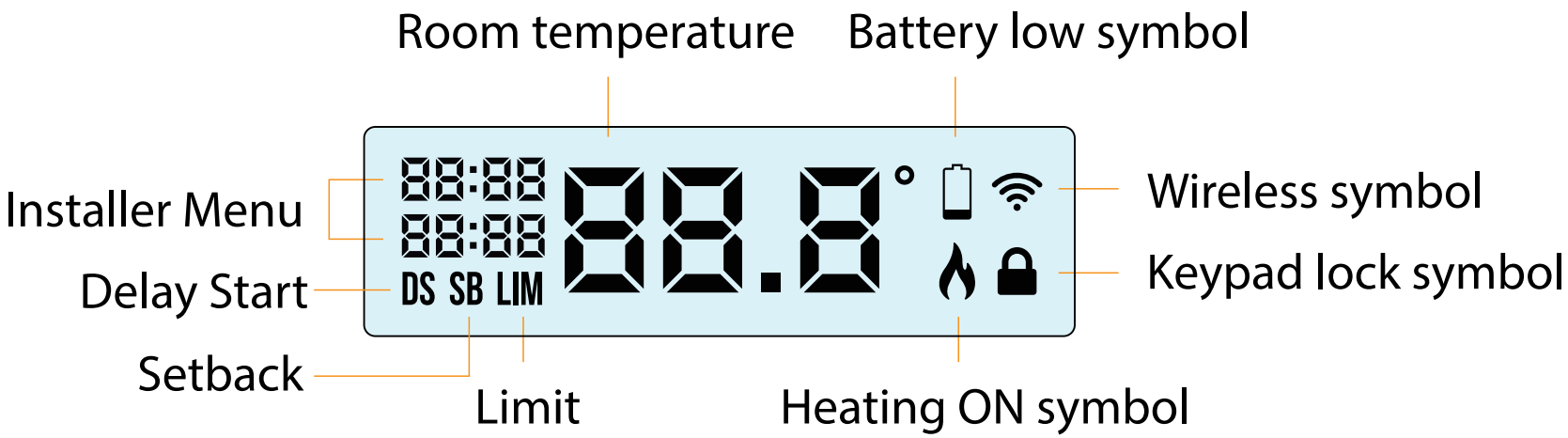


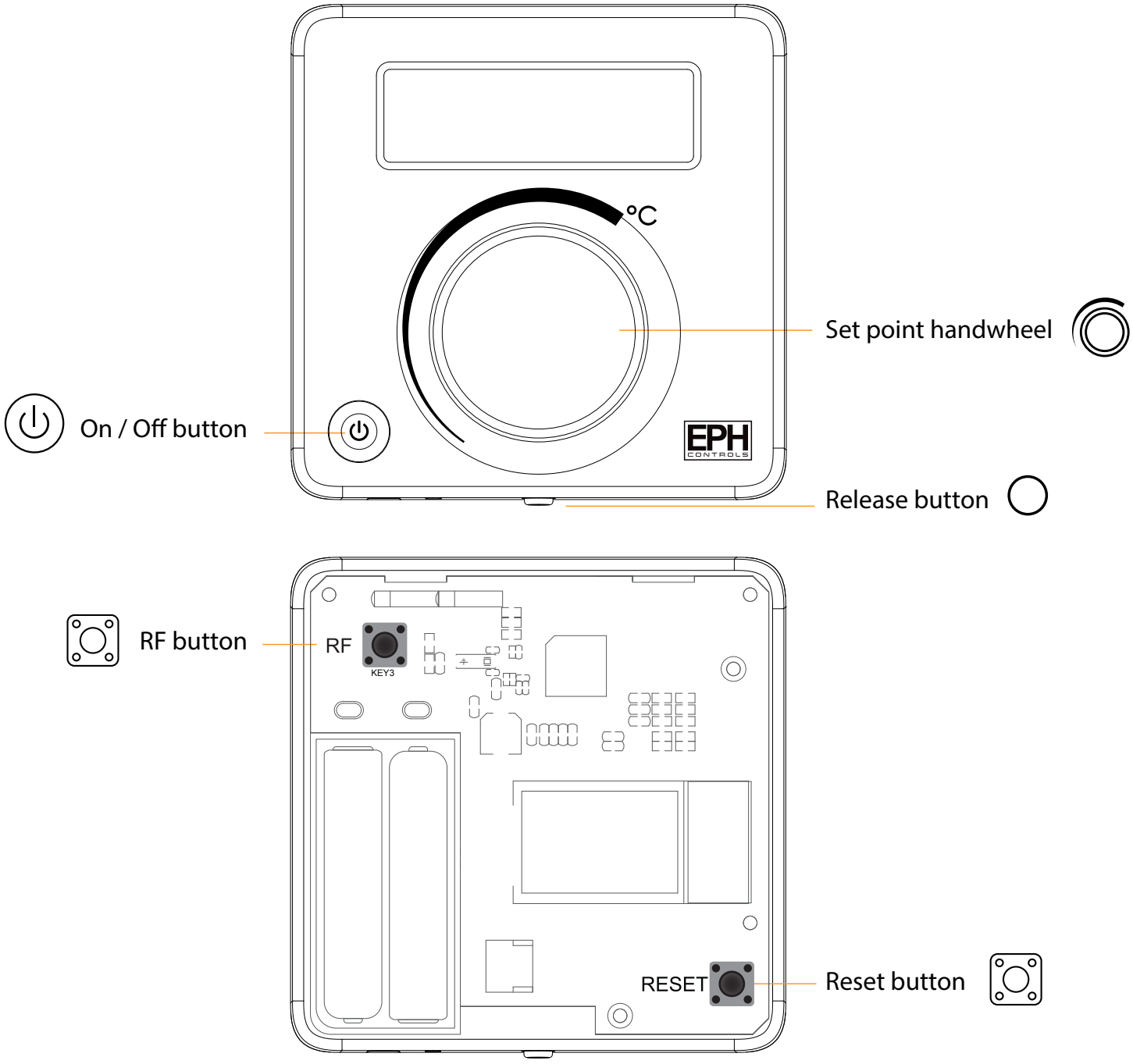
RFRB^{V2} Room Thermostat

Operating Instructions

LCD Symbol Description



Button Description

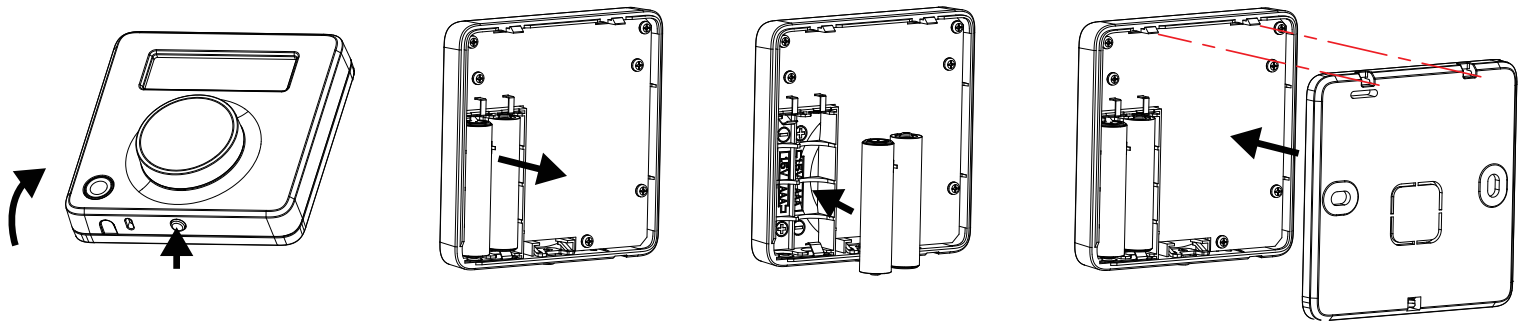


Replacing the Batteries

Press and hold ◯ on the bottom of the thermostat, while holding ◯ , pull from the bottom to detach the front housing from the baseplate.

Insert the 2 x AAA batteries and the thermostat will turn on.

Close the battery compartment.



On / Off Function

Press ⏻ to turn the thermostat On or Off.

When the thermostat is turned on, it will display the current room temperature.

When the thermostat is turned off, it will display the current room temperature and the word **'OFF'**.

Battery Low Warning

When the batteries are almost empty, the symbol will appear on the screen. The batteries must now be replaced or the unit will shut down.

Note: Good quality batteries are essential to ensure the correct operation of this product. EPH recommend using Duracell or Energiser batteries.

Locking the Keypad

To lock the thermostat, press and hold for 10 seconds.

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

To unlock the thermostat, press and hold for 10 seconds.

will disappear from the screen. The buttons are now enabled.

Adjusting the Target Temperature

Rotate clockwise to increase the target temperature.

Press or wait 5 seconds. The target temperature is now saved.

Rotate anti-clockwise to decrease the target temperature.

Press or wait 5 seconds. The target temperature is now saved.

Menu

This menu allows the user to adjust additional functions.

P0 1: Operating Modes

P0 2: Setting High and Low limits

P0 3: Hysteresis HOn & HOFF

P0 4: Calibration

P0 6: Setback (This function will not operate when connected to an RF1C)

P0 7: AFS Air / Floor Sensor

P0 8: FHL Floor High Limit

P0 9: Resetting the Thermostat

P0 1 Operating Mode (Normal / Delay Start / TPI)

There are three settings for selection, Normal, Delay Start or TPI mode.
The default setting is Normal.

Press and hold and together for 5 seconds,

'P01' will appear on the screen,

Press to select.

Rotate to select between

Nor (Normal mode)

dS (Delay start mode)

tPi (Time proportional integral mode)

Press to confirm the mode.

Press to return to normal operation.

P0 1 Operating Mode (Normal / Delay Start / TPI)

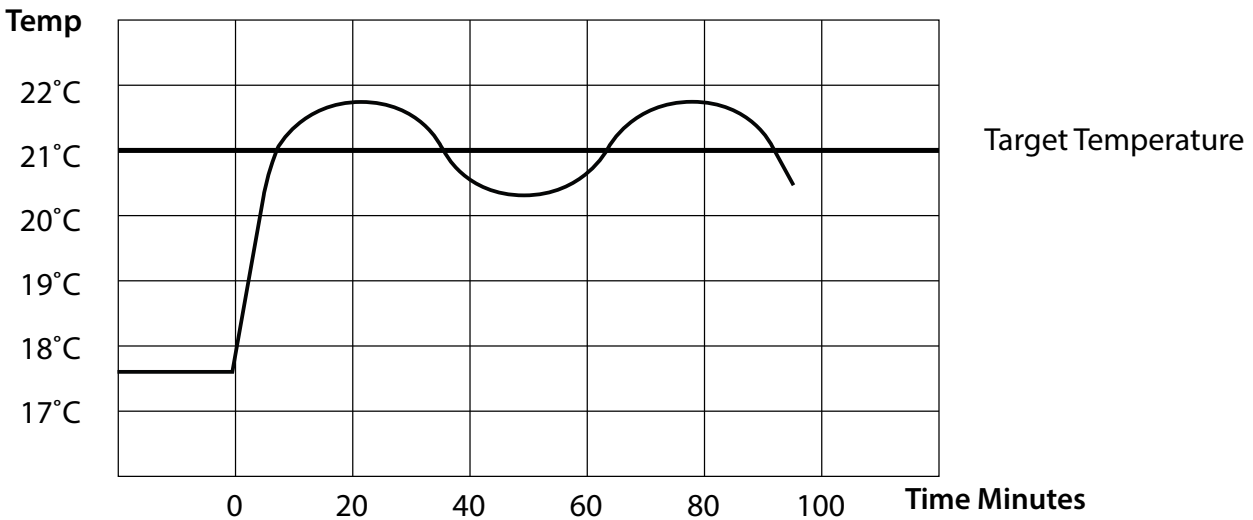
Continued

Nor (Normal Mode)

When the temperature falls below the target temperature, 🔥 will appear and the thermostat will activate the demand for heat.

When the temperature rises above the target temperature, 🔥 will disappear, and the thermostat will cancel the demand for heat.

Graph (20.1): On / Off Control

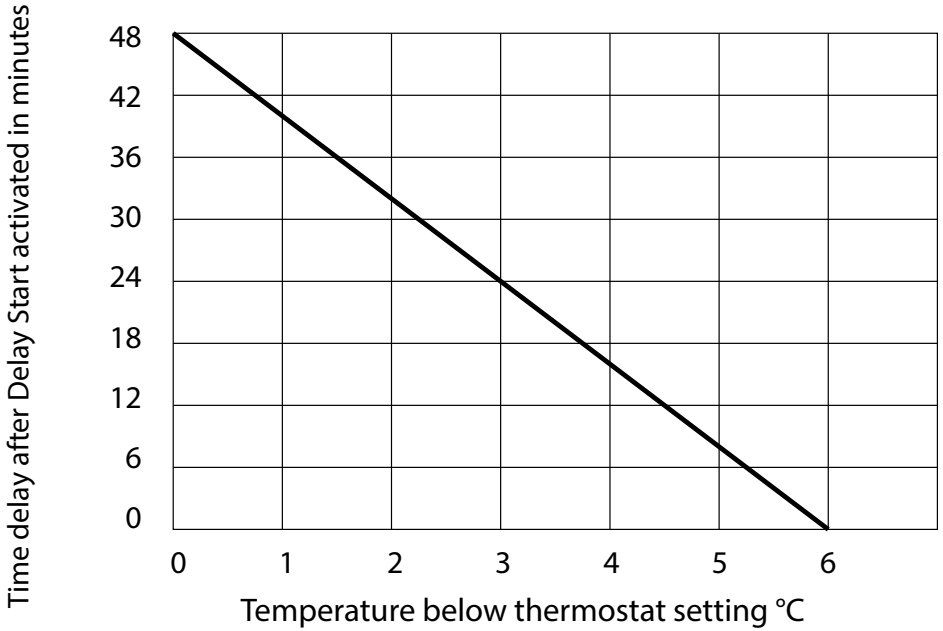


Delay Start Control (On/Off)

When the delay start mode is active, **'dS'** will appear continuously on the screen. When in this mode the thermostat is delayed by a variable time depending on the current temperature, target temperature and also the fall in temperature from when the delay start has activated.
The 🔥 will flash until the thermostat activates.

When activated the thermostat will allow the heating system time to reach the target and delay start will remain inactive until it reaches this target.

Graph (21.1): Delay Start Control



E.g: If the temperature is 6˚C below the thermostat target, the thermostat will call for heat immediately.

If the temperature is 2˚C below the target, the thermostat will not call for heat for 32 minutes.

P0 1 Operating Mode (Normal / Delay Start / TPI)
Continued

Delay Start can be reactivated by:

1. Lower the target below the current temperature.
2. Press to set the temperature.
3. Increase the target above the zone temperature within 6° .
4. Press to confirm.

The heating will be delayed as per the graph on page 20.

If the difference between the actual temperature and the target is 1°C the thermostat will delay starting for circa 40 minutes.

If the difference between the actual temperature and the target is 3°C the thermostat will delay starting for circa 24 minutes.

If the difference is 6°C or more then the thermostat will be switched on immediately.

The time delay will change if the temperature drops from the original calculation.

Time Proportional Integral Mode (TPI)

When the thermostat is in TPI mode and the temperature is rising in the zone and falls into the Proportional Bandwidth section, TPI will start to affect the thermostats operation. The thermostat will turn on and off as it gains heat so that it doesn't overshoot the target by too much. It will also turn on if the temperature is falling so it doesn't undershoot the target which will leave the user with a more comfortable level of heat.

There are 2 settings that will affect the thermostats operation.

1. The number of heating cycles per hour.
2. The Proportional Bandwidth.

CyC – Number of Heating Cycles per hour **6 Cycles**

This value will decide how often the thermostat will cycle the heating on and off when trying to achieve the target temperature. You can select 2/3/6 or 12.

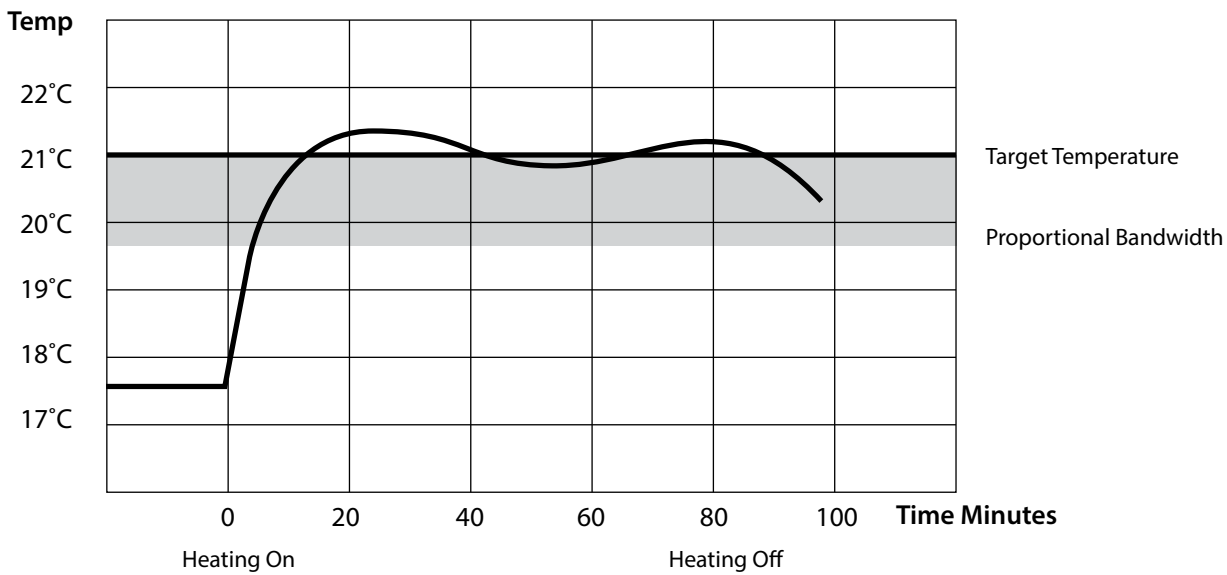
P0 1 Operating Mode (Normal / Delay Start / TPI)

Continued

Pb -Proportional Bandwidth 2°C

This value refers to the temperature below the target at which the thermostat will start to operate in TPI control. You can set this temperature from 1.5°C to 3.0°C in 0.1°C increments.

Graph (24.1): TPI Control



P0 2 – Setting High and Low Limits Hi 35°C Lo 5°C

This menu allows the installer to change the minimum and maximum temperatures that the thermostat can operate between.

To access this setting press and hold and together for 5 seconds.

'P01' will appear on the screen. Rotate clockwise.

'P02 & HI LO' will appear on the screen. Press to select.

'OFF' & 'LIM' will appear on the screen.

Rotate to select **'ON'** and press to confirm.

'Hi LIM' will appear on the screen and the temperature will begin to flash.

Rotate to select the high limit for the thermostat.

Press to confirm.

'LO LIM' will appear on the screen and the temperature will begin to flash.

Rotate to select the low limit for the thermostat.

Press to confirm. The settings will be saved and the user will be returned to the previous screen.

Press to return to normal operation.

P0 3 – Hysteresis HOn & HOFF HOn 0.4°C HOFF 0.0°C

This menu allows the installer to change the hysteresis of the thermostat when the temperature is rising and falling.

If HOn is set to 0.4˚C, this will allow a temperature drop of 0.4˚C below the target temperature, before the thermostat turns on again.

If HOFF is set to 0.0˚C, this will allow the temperature to rise 0˚C above the target temperature before the thermostat turns off.

To access this setting press and hold and together for 5 seconds.

'P01' will appear on the screen.

Rotate clockwise until **'P03 & HOn'** appears on the screen.

Press to select.

'HOn' will remain on the screen and the temperature will begin to flash.

Use to select the **'HOn'** temperature, press to confirm.

'HOFF' appears on the screen and the temperature will begin to flash.

Use to select the **'HOFF'** temperature, press to confirm.

The settings will be saved and the user will be returned to the previous screen.

Press to return to normal operation.

P0 4 – Calibration

This menu allows the installer to calibrate the temperature of the thermostat.

To access this setting press and hold and together for 5 seconds.

'P01' will appear on the screen.

Rotate clockwise until **'P04 & CAL'** appears on the screen.

Press to select.

Current actual temperature will appear on the screen.

Rotate clockwise or anti clockwise to calibrate the temperature.

Press to confirm the temperature.

The current temperature will be saved and the user will be returned to the previous screen.

Press to return to normal operation.

P0 6 – Setback Mode

This function will not operate when connected to an RF1C.

P0 7 – AFS Air / Floor Sensor 01 Internal air sensor

This function allows the user to select between 3 different temperature sensor options.

01 Internal air sensor – This option allows the user to record the room temperature using the internal sensor. This is the default option.

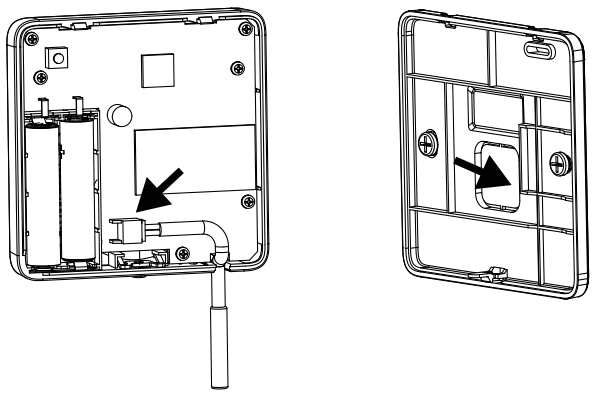
02 External air sensor – This option allows the user to record the temperature of an adjacent room **(NTC10K temperature sensor required)**

03 Internal a sensor with an External high limit sensor.

This option allows the user to record the room temperature with the internal sensor while having the external sensor record the floor temperature to prevent overheating. **(NTC10K temperature sensor required)**

Note: The temperature sensor should be ran through the breakout on the rear housing.

Temperature Sensor



To access this setting press and hold and together for 5 seconds.

'P01' will appear on the screen.

Rotate clockwise until **'PO7 & AFS'** appears on the screen.

Press to select.

'01' will flash on the screen.

Rotate to choose between options 01, 02 & 03.

Press to confirm.

Press to return to normal operation.

Note: NTC10K plug temperature sensor can be bought separately as an accessory.

P0 8 – FHL Floor High Limit 26°C

This function allows the user to select the high limit temperature of the external sensor. Selectable temperature range 5°C – 45°C.

Temperature Sensor 03 must be selected, See Page 28 and 29 PO7 AFS.

To access this setting press and hold the and together for 5 seconds.

'P01' will appear on the screen.

Rotate clockwise until **'PO8 & FHL'** appears on the screen.

Press to select.

The high limit temperature will flash on the screen.

Rotate to choose the desired high limit temperature.

Press to confirm the temperature.

Press to return to normal operation.

P0 9 – Resetting the Thermostat

This menu allows the user to reset the thermostat to factory settings.

To access this setting, press and hold and together for 5 seconds.

'P01' will appear on the screen

Rotate until **'P09 & rSt'** appears on the screen.

Press to confirm.

'rSt' will appear on the screen an **'nO'** will flash.

Rotate clockwise.

'rSt' will remain and **'YES'** will flash on the screen.

Press to confirm.

The thermostat will restart and revert to its factory defined settings.

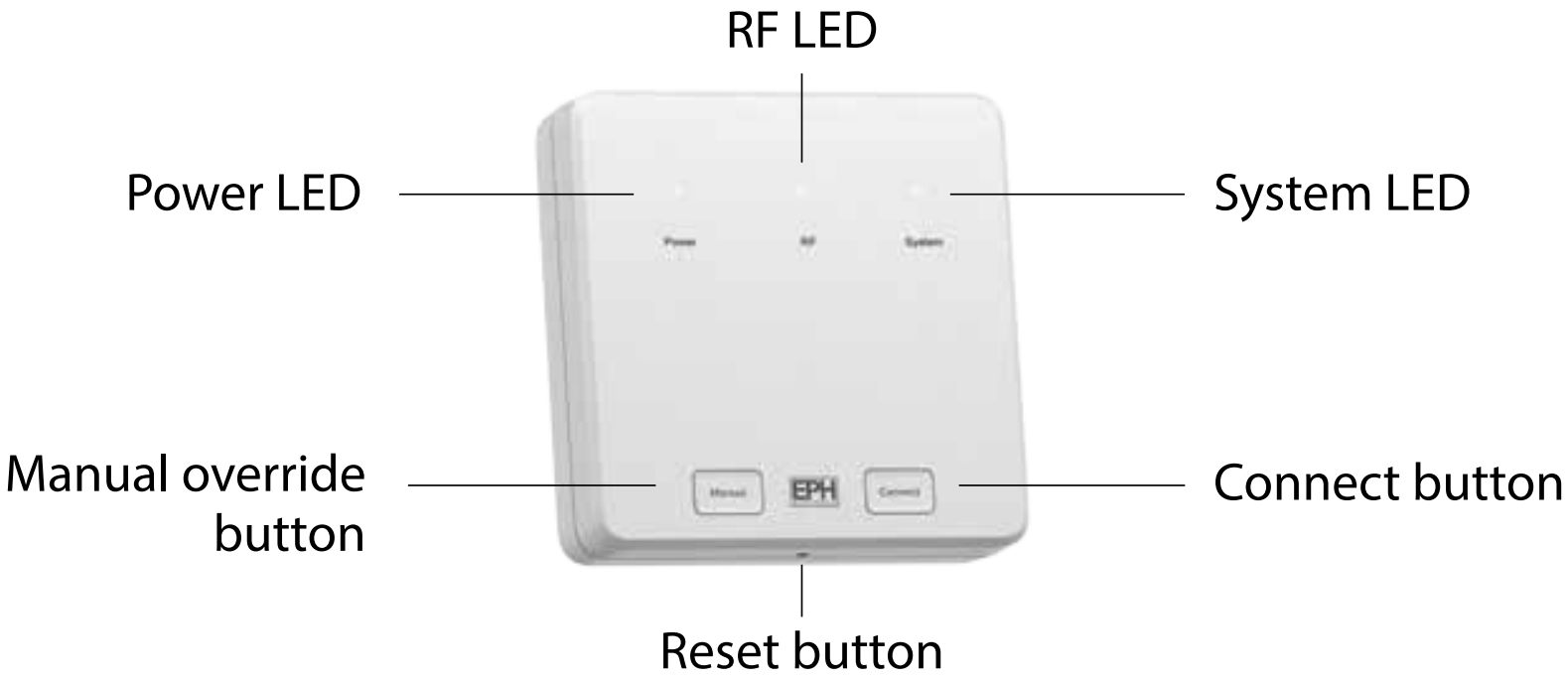
Note:

The thermostat may also be master reset by using the reset button located on the PCB inside of the thermostat. Press and follow the instructions above.

RF1C Receiver

Operating Instructions

Button / LED Description



Manual	Manual	Press to activate or deactivate the system.
Connect	Connect	Hold for 3 seconds to initialise the pairing process. The RF light will flash.
■	Reset	Press to reset the receiver.

Note: Please refer to Page 10 for wiring information.

LED Description

LED	Colour	Description
Power LED	Red	The receiver is powered.
RF LED	White	The thermostat is connected.
		The RF light will double flash when the thermostat is disconnected. Check thermostat pairing.
		Note: The RF light will blink intermittently when the system is sending and receiving a signal for communication.
		Note: The RF light will blink once every second when in RF pairing by holding Connect. Press Manual to exit from this state.
System LED	Red	The system is OFF.
	Green	The system is ON.

To connect the RFRB^{V2} Thermostat to an RF1C Receiver

Please note: If you are installing a CP3^{V2}, the RFRB^{V2} thermostat and the RF1C receiver are pre-paired. The below procedures are not required.

On the RF1C receiver:

Hold [Connect] for 3 seconds.

The RF light will begin to flash.

On the RFRB^{V2} thermostat:

Press and hold ◯ on the bottom of the thermostat, while holding ◯ , pull from the bottom to detach the front housing from the baseplate.

Press the RF button on the PCB.

'nOE' will appear on the screen followed by **'-- -'**.

The thermostat will count from 01 to 03.

When **'r1'** appears on the screen, press to confirm the pairing.

The thermostat and the receiver will return to normal operation.

The thermostat is now connected to the receiver.

To disconnect the RFRB^{V2} Thermostat from an RF1C Receiver

This can be done from either the thermostat or the receiver.

On the RF1C receiver:

Hold Connect for 3 seconds to enter pairing mode.

Hold Connect for 10 seconds until the red light stops flashing.

Press Manual to exit, the thermostat is now disconnected.

On the RFRB^{V2} thermostat:

Press and hold ◯ on the bottom of the thermostat, while holding ◯ , pull from the bottom to detach the front housing from the baseplate.

Press the RF button ⊡ once on the PCB.
'nOE' will appear on the screen followed by **'-- -'**.

Press and hold the RF button ⊡ for 10 seconds until **'Adr'** appears on the screen.
Press ◎ twice to confirm.
The thermostat is now disconnected from the receiver.

Notes

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