CP3

**Wireless Room
Thermostat & Receiver**

Installation and Operation Guide

Table of contents

RFRA^{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 pre fixed at 5℃ and is not adjustable.

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

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
Switching differential:	Adjustable 0.0 … 1.0˚C

How your RFRA^{V2} Room Thermostat works

When your RFRA^{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) **To a recessed conduit box**
2) **To a surface mounted box**
3) **Directly mounted on a wall**
4) **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

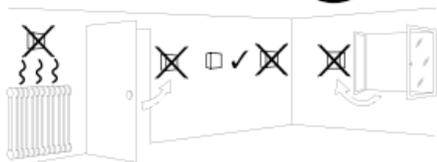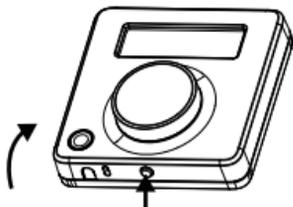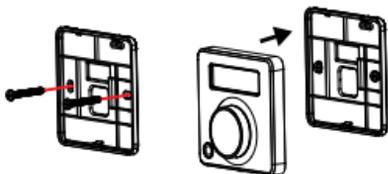CE UK CA

Type 1C EN60730

IP20 EN60529

50 122 °C °F 0 32

5-95%RH

2

3

4

5 Wall mounted

6 Table mounted
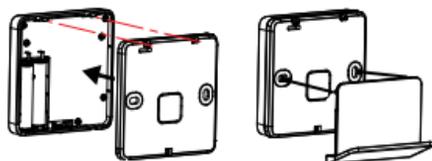
RF1^{V2} Wireless Receiver
Installation Instructions

Specifications & Wiring

Power supply:	200 - 240Vac 50-60Hz
Contact rating:	250 Vac 10(3)A
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 RF1^{V2}

3	2	1	L	N
ON	COM	OFF	L	N

MAINS SUPPLY
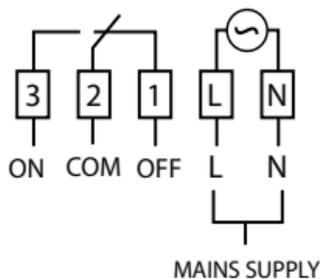
Switching Options

Mains Switching
- Link L to 2.

Low Voltage Switching
- Remove the external controls link from the boiler PCB.
- Connect 2 and 3 to these terminals.

Mounting & Installation

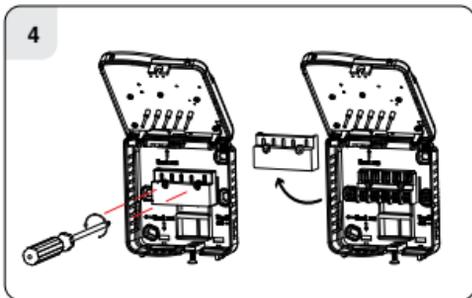1) The RF1^{V2} receiver should be wall mounted in an area within 20 metres distance of the wireless thermostat. It is important that the receiver is mounted more than 1 metre away from metal objects as this will affect communication with the thermostat. The receiver should be installed at least 1 metre 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) Slacken the fastening screw on the bottom of the receiver with a philips screwdriver. The receiver is hinged and can be opened 180 degrees.

3) Screw the receiver to the wall with the screws provided.

4) Remove the protective cover on the terminal block.

5) Insert wires into terminal block in accordance with the wiring diagram and refit the protective cover on the terminal block.

6) Close the cover and tighten the fastening screw.

RF1ᵛ² Wireless Receiver

CP3
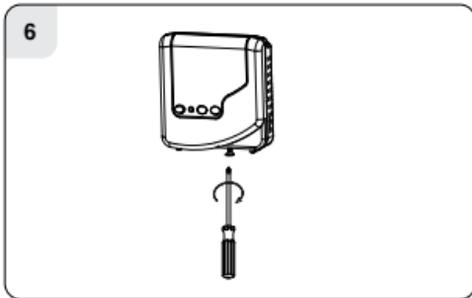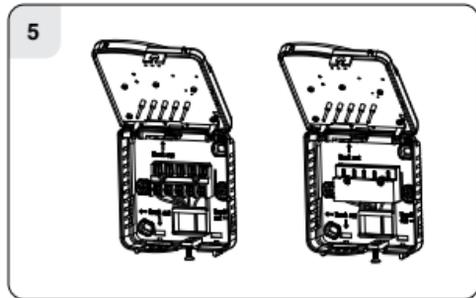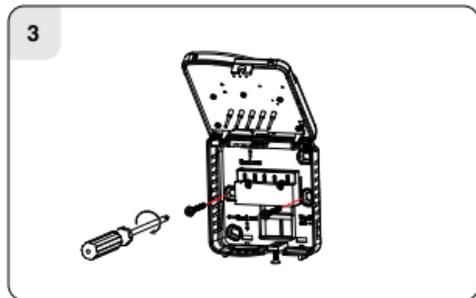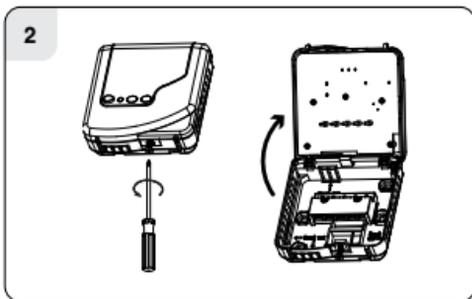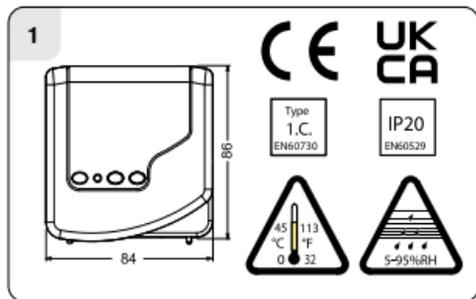
RFRA^{V2} Room Thermostat
Operating Instructions

LCD Symbol Description

Room temperature

Battery low symbol

Installer Menu

Wireless symbol

Keypad lock symbol

Limit

Heating ON symbol

Button Description

Set point handwheel

On / Off button

Release button
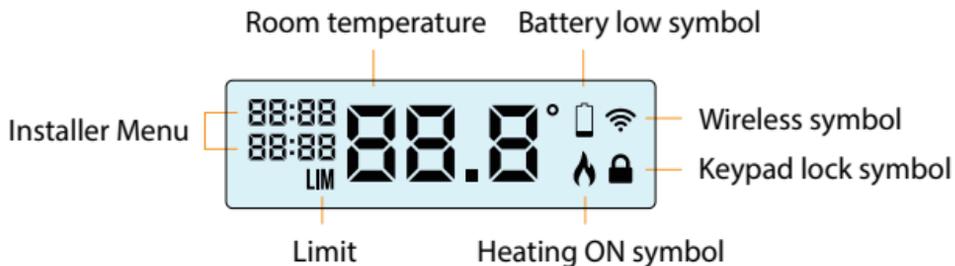
RF button

Reset button
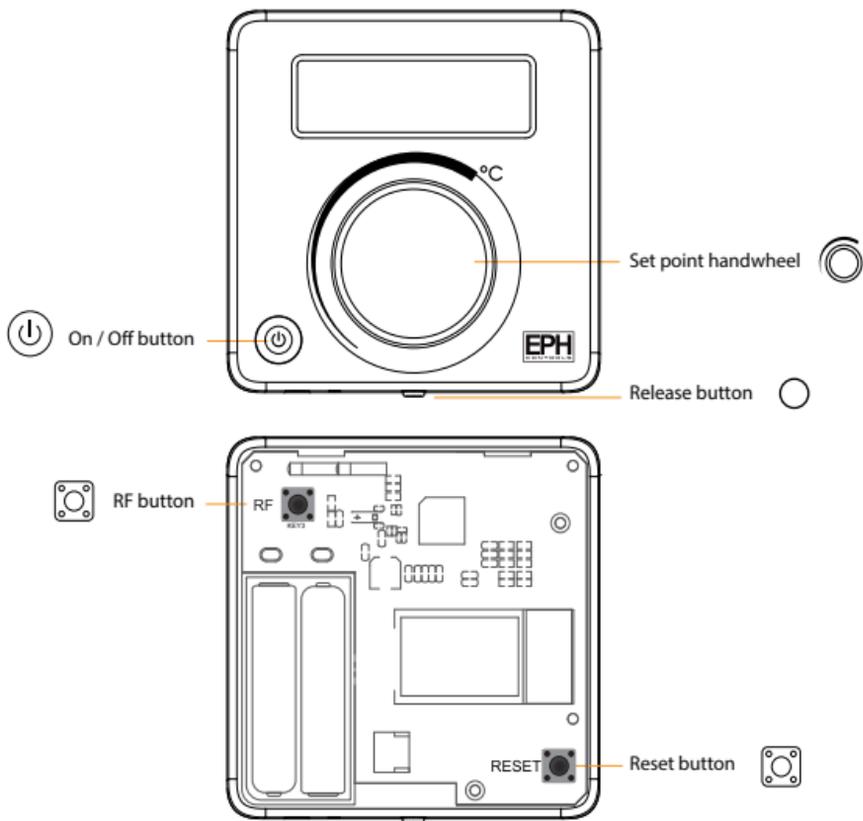
Replacing the Batteries

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.
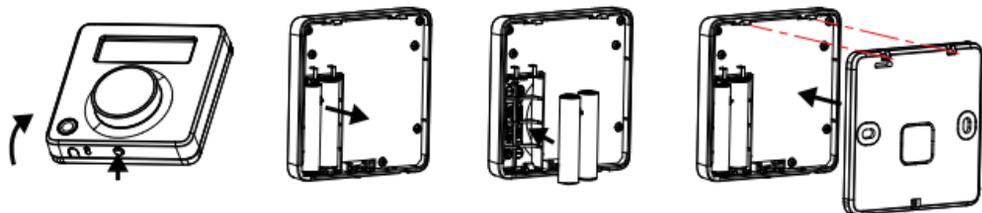
On / Off Function

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.

Locking the Keypad

To lock the thermostat, press ◎ for 10 seconds.

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

To unlock the thermostat, press ◎ 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 Function

This menu allows the user to adjust additional functions.

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 the ⓞ 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)

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 (19.1): On / Off Control

Target Temperature
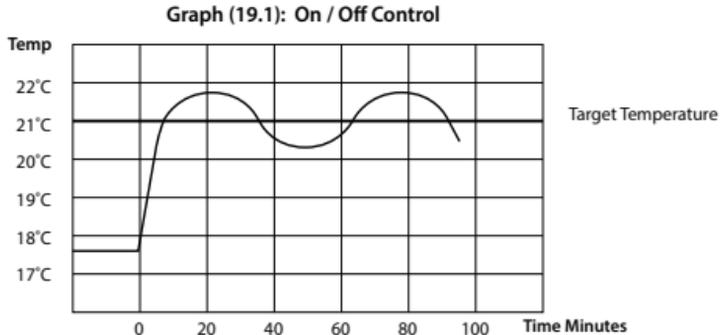
P0 1 – Operating Mode (Normal 🕰 / Delay Start / TPI)

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 (20.1): Delay Start Control
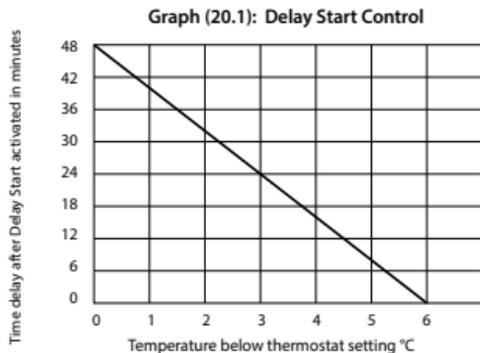
E.g: If the temperature is 6°C below the thermostat target, the thermostat will call for heat immediately.

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

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.

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

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 Bandwith 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 Bandwith

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.

Pb -Proportional Bandwith 🔆 **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 (23.1): TPI Control
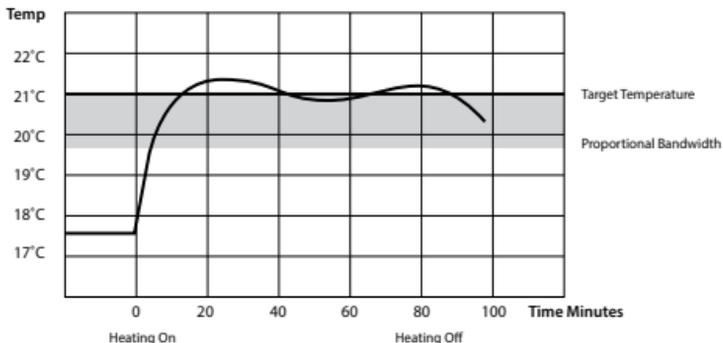
P0 2 – Setting High and Low limits 🖐️ Hi 35°C Lo 5°C

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 5 – Frost Protection 🌡️ On

Frost protection is built into this thermostat, it is pre fixed to 5°C and is not adjustable.

It will only be activated when the thermostat is in the standby mode and the temperature drops below 5°C.

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

'P01' will appear on the screen.

Rotate ◎ clockwise until 'P05 & Fr' appears on the screen.

Press ◎ to confirm.

Rotate ◎ to switch between ON and OFF.

Press ◎ to confirm selection.

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

Press ⏻ to return to normal operation.

P0 7 – 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 'P07 & 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.

RF1^{V2} Wireless Receiver
Operating Instructions

Button / LED Description

Wireless Connect button

Manual override

System ON (Green LED)

Reset button

Wireless connect indicator (Red LED)

Manual
○ Manual override

■ Reset button

Press to reset the receiver

Wireless connect:

Once voltage has been applied this button may be pressed to initialise the pairing process with the wireless thermostat. Once pressed the red LED will begin to flash.

LED Description

Description	Green LED	Red LED
Heating ON	ON	OFF
Heating OFF	OFF	ON
Thermostat disconnected	ON or OFF	Flashes twice per second
Pairing mode	OFF	Flashes once per second

Note:

The red LED will blink quickly every few minutes when communicating with the thermostat. This is normal operation.

To connect the RFRA^{V2} Thermostat to an RF1^{V2} Receiver

Please note: If you are installing a CP3 the RFRA^{V2} thermostat and the RF1^{V2} receiver are pre-paired. The below procedures are not required.

On the RF1^{V2} receiver:

Press the ⚬ button.

The red light will begin to flash.

On the RFRA^{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 the ◎ 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 RFRA^{V2} Thermostat from an RF1^{V2} Receiver

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

On the RF1^{V2} receiver:

Press the ⓧ once, the red light will flash.

Press and hold ⓧ for 10 seconds until the red light stops flashing.

The RF connection is now cleared.

On the RFRA^{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 the ◯ twice to confirm.

The thermostat is now disconnected from the receiver.

EPH Controls IE

technical@ephcontrols.com
www.ephcontrols.com/contact-us
T +353 21 471 8440

EPH Controls UK

technical@ephcontrols.co.uk
www.ephcontrols.co.uk/contact-us
T +44 1933 322 072