# CDT2-RF




EPH CONTROLS

Mains RF Room Thermostat

Installation and Operation Guide

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# Mains RF Room Thermostat

## Installation Instructions

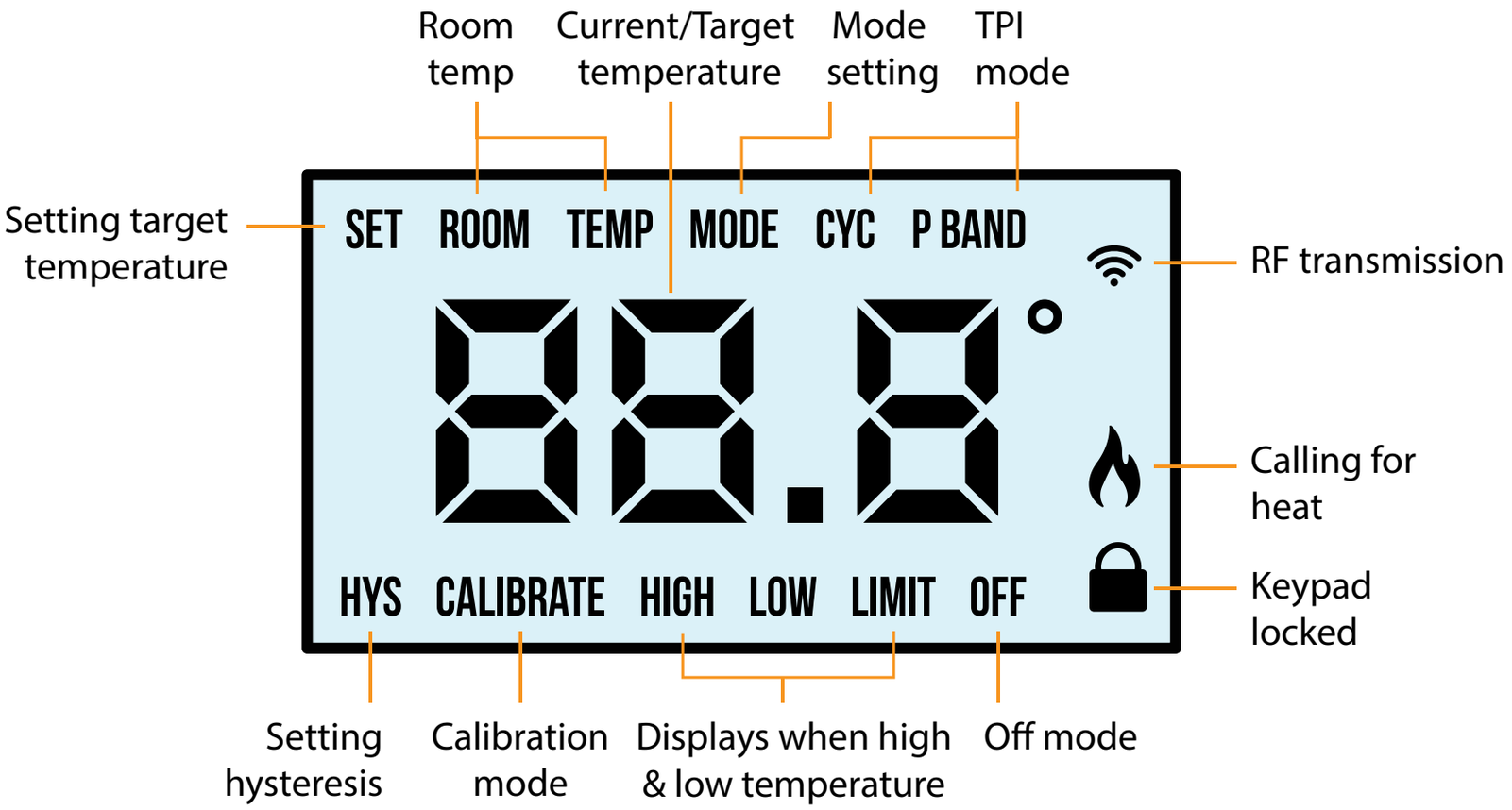
# Factory Default Settings

| | |
|---|---|
| Temperature indicator: | ˚C |
| Keypad lock: | Off |
| Backlight: | Auto |
| Operating mode: | Normal |
| High and low Limits: | OFF |
| Hysteresis: | 0.4˚C |
| Setback temperature: | 0˚C |
| AFS - Air/Floor/Sensor: | 01 Internal Air Sensor |
| FHL - Floor High Limit: | 26˚C |

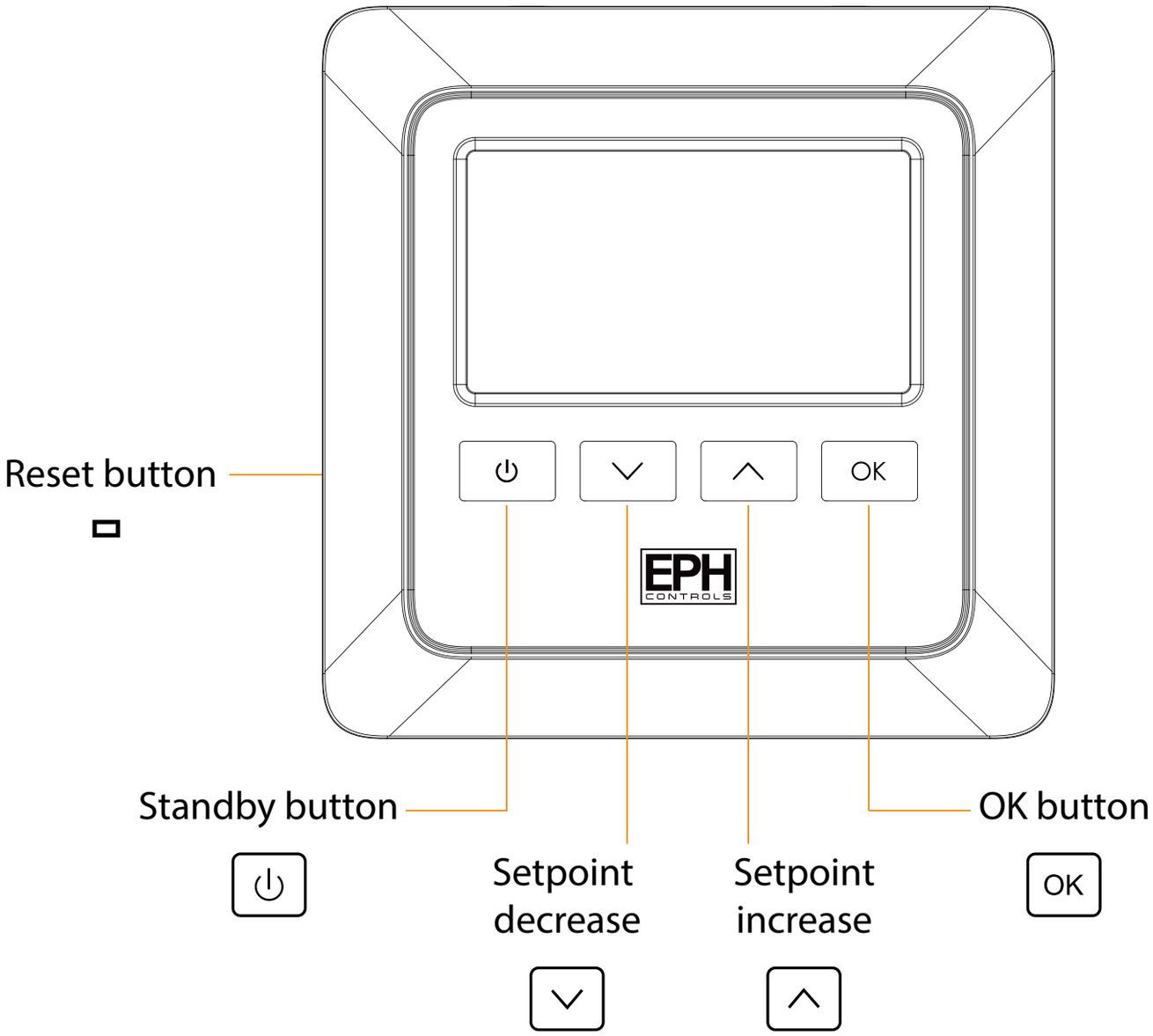
# Specifications

| | |
|---|---|
| Power supply / Input: | 230Vac |
| Power consumption: | 1.1W |
| Temperature range: | 5…35˚C |
| Ambient temperature: | 0…45˚C |
| Ambient admissible humidity: | 5-95% RH |
| Dimensions: | 91 x 91 x 26mm |
| Internal temperature sensor: | NTC 100K |
| Backlight: | White |
| IP rating: | IP20 |
| Pollution degree: | 2 |
| Hysteresis (Switching differential): | Adjustable from 0 to 1°C<br>0.1°C increments |
| Automatic action: | 1C |
| Setback temperature: | Adjustable 0˚C to 10˚C |

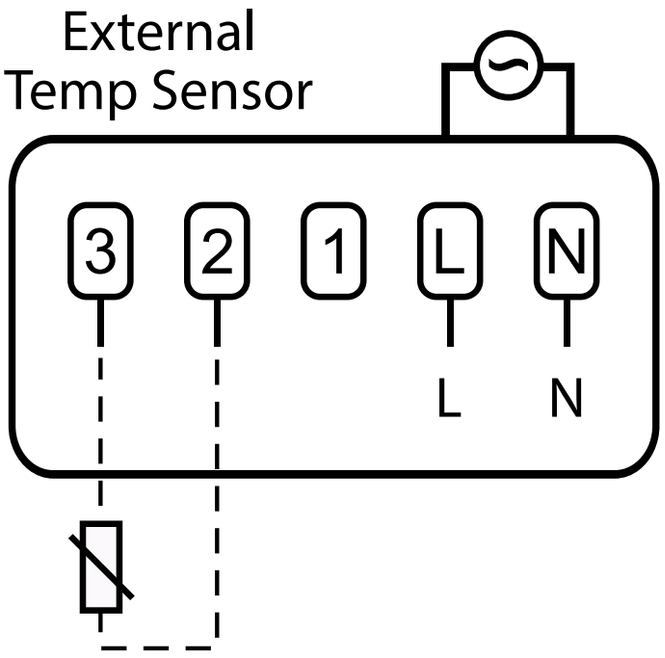
# LCD Display


Room temp
Current/Target temperature
Mode setting
TPI mode
Setting target temperature
SET ROOM TEMP MODE CYC P BAND
RF transmission
Calling for heat
Keypad locked
HYS CALIBRATE HIGH LOW LIMIT OFF
Setting hysteresis
Calibration mode
Displays when high & low temperature
Off mode

# Buttons


Reset button
OK
EPH
CONTROLS
Standby button
Setpoint decrease
Setpoint increase
OK button
OK

# Wiring




## Terminal Connections

| | |
|---|---|
| N | Neutral In |
| L | Live In |
| 2 & 3 | External Temperature Sensor |

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

# 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 thermostat.
- If the thermostat is 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 this section.
- Before commencing installation, the thermostat must be first disconnected from the mains.

**This thermostat can be mounted in the following ways:**

1) **Directly mounted on wall**
2) **To a surface mounting box**

# Mounting & Installation Continued

1) Remove the thermostat from its packaging.

2) Choose a mounting location so that the thermostat can measure the room temperature as accurately as possible.
   - Mount the thermostat 1.5 meters above the floor level.
   - Prevent direct exposure to sunlight or other heating / cooling sources.

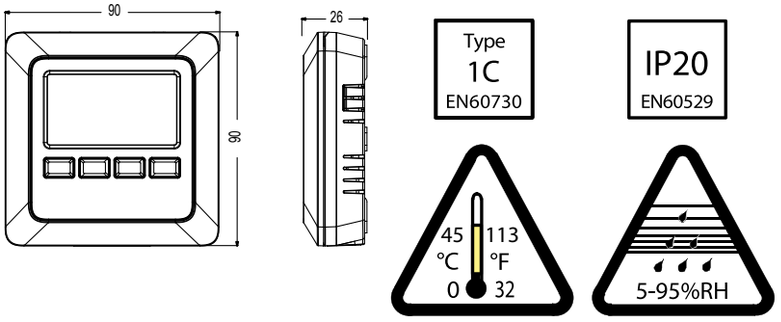
3) Use a philips screwdriver to loosen the screw on the bottom of the thermostat to open the front housing.

4) Wire the thermostat according to the wiring diagram on page 6.

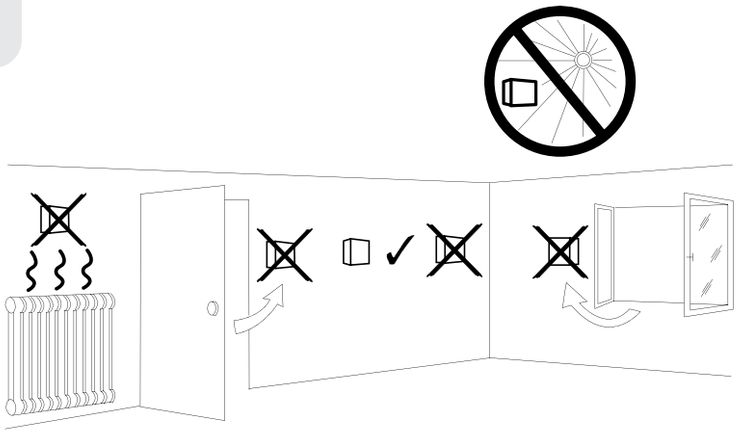
5) Screw the backplate onto a back box or directly to the surface.

6) Close the front housing and tighten the screw on the bottom of the thermostat.

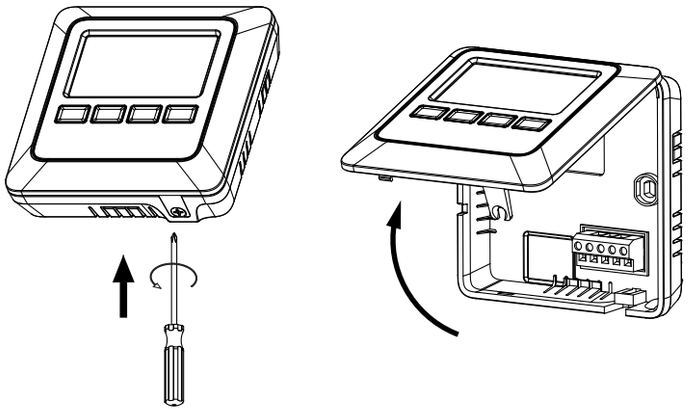
**1**


90
26
90
UK CA
CE
Type 1C EN60730
IP20 EN60529
45 °C 0
113 °F 32
5-95%RH

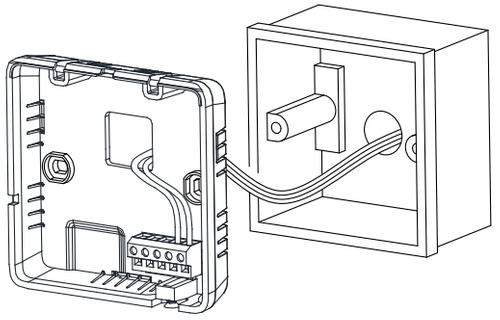
**2**



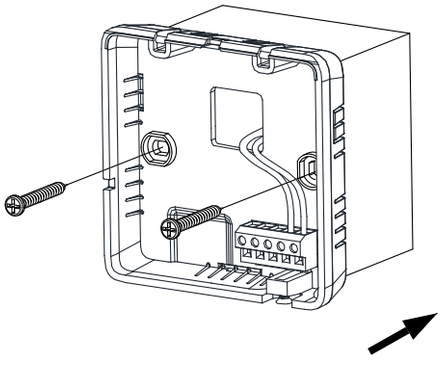
**3**



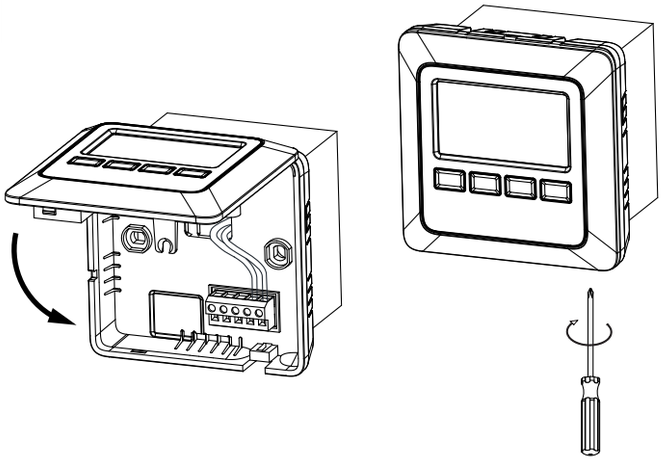
**4**



**5**



**6**






# Mains RF Room Thermostat

## Operating Instructions

# On / Off Function

Press ⏻ to turn the thermostat On or Off.

When OFF is displayed on the screen the thermostat and zone will be set to OFF.

**Note:** If the zone is in the constant OFF mode and the ON/OFF button is pressed, this will change the mode of the zone to constant ON.

# Adjusting the Target Temperature

Press ^ to increase the target temperature from 5-35˚C.

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

Press v to decrease the target temperature from 5-35˚C.

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

# Locking the Keypad

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

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

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

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

# Backlight AUTO

There are three settings for selection.

**‘AUt’** The backlight is on for 5 seconds when any button is pressed.

**‘OFF’** The backlight is permanently off.

**‘ON’** The backlight is permanently on.

To adjust the backlight setting, press and hold OK for 10 seconds.

**‘AUt’** appears on the screen.

Use ∨ and ∧ to change the mode between AUTO, ON and OFF.

Press OK to confirm selection and to return to normal operation.

# Menu

This menu allows the user to adjust additional functions.

Press and hold ⏻ and OK together for 5 seconds to access the menu.

# P01 Connecting a CDT2-RF

This function allows the user to connect a CDT2-RF to a UFH10-RF or a R_7-RF$^{V2}$ programmer.

# To connect a CDT2-RF to a UFH10-RF

## 1. On the UFH10-RF:

Press MENU , **'P01 rF COn'** will appear on the screen.

Press  , **'RF CONNECT'** will appear solid on the screen.

Rotate  to choose the zone you would like to connect to.

Press  to confirm. The zone will stop flashing and appear solid.

## 2. On the CDT2-RF:

Press and hold ⏻ and OK buttons together for 5 seconds.

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

Press OK to select.

Wait for **'r01'** to appear solid.

Press OK to confirm the thermostat is connected.

## 3. On the UFH10-RF:

Rotate  to choose another zone you would like to connect to or press MENU twice to return to normal operation.

**Note:** When pairing additional zones to a UFH10-RF, **'r02'**, **'r03'**, **'r04'** ...**'r10'** can appear on the thermostat screen.

# To connect a CDT2-RF to a R_7-RF$^{V2}$

### 1. On the R_7-RF$^{V2}$:

Press [MENU], **'P01 rF COn'** will appear on the screen.

Press [OK], **'RF CONNECT'** will appear solid on the screen.

### 2. On the CDT2-RF:

Press and hold the [⏻] and [OK] buttons together for 5 seconds.

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

Press [OK] to confirm.

### 3. On the R_7-RF$^{V2}$:

Once **'ZONE'** flashes, press [Select] on the desired zone.

### 4. On the CDT2-RF:

Wait for **'r01'** to appear.

Press [OK] to confirm the thermostat is connected.

*If there are multiple CDT2-RF thermostats to be connected, repeat steps 2, 3 and 4.

### 5. On the R_7-RF$^{V2}$:

Press [OK] to return to the main screen when thermostat pairing is complete.

**Note:** When pairing additional zones to an R_7-RF$^{V2}$, **'r02'**, **'r03'**, **'r04'** can appear on the thermostat screen.

# P02 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 OK together for 5 seconds.

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

Press ∧ until '**P02**' appears on the screen.

Press OK to select.

Use ∨ and ∧ to select between:

**nOr** (Normal mode)

**dS** (Delay Start mode)

**tPi** (Time Proportional Integral mode)

Press OK to confirm the mode.

Press ⏻ to return to the home screen.

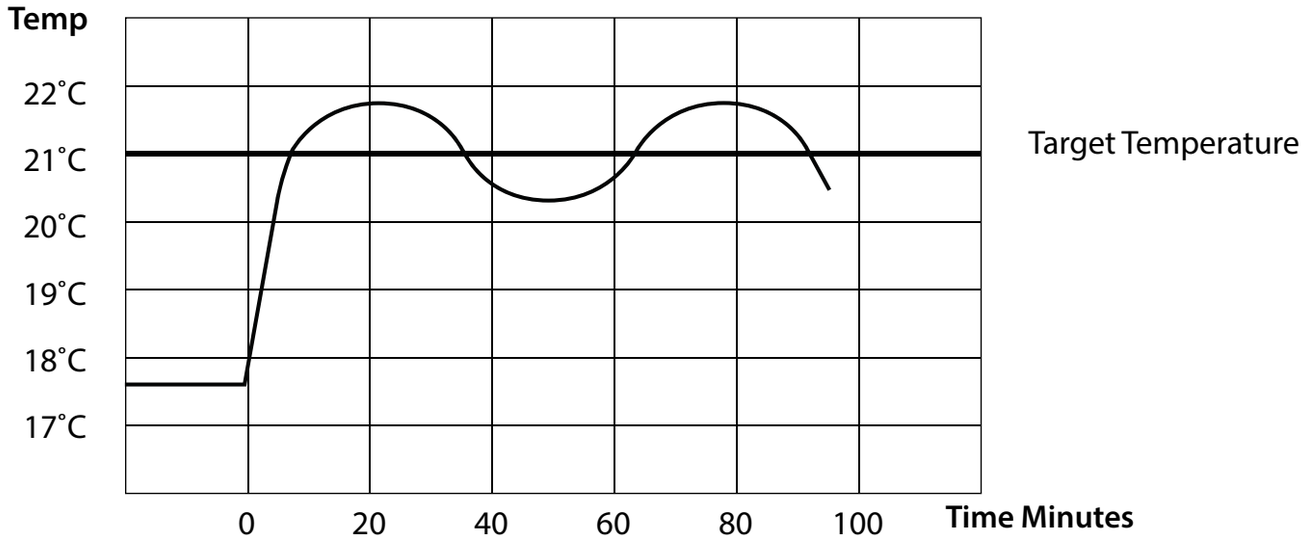
# P02 Operating Mode continued

## 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 (16.1): On / Off Control**



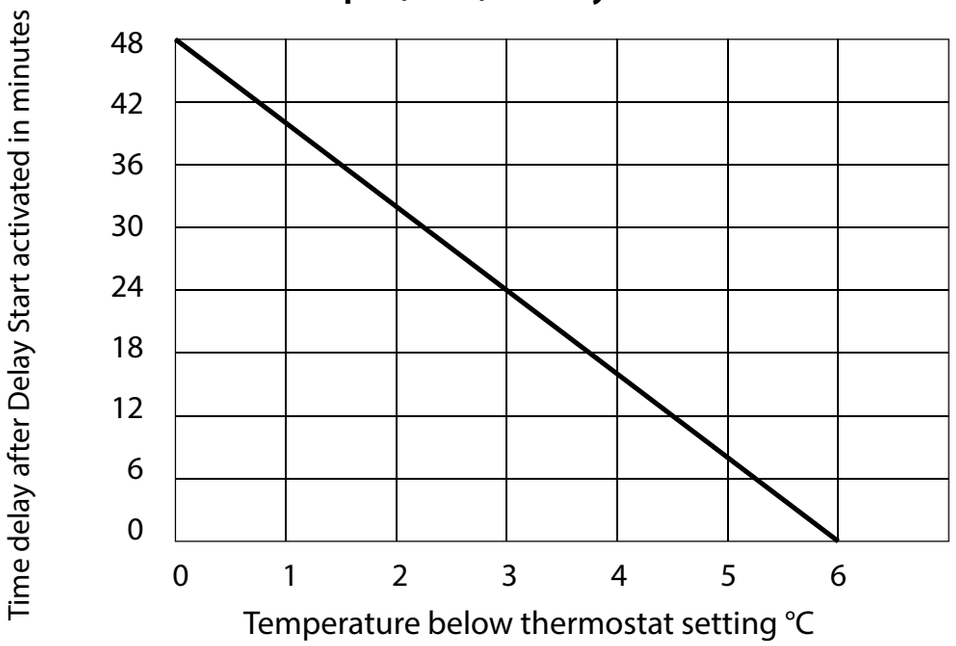
## Delay Start Control (On/Off)

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 (17.1): 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.

# P02 Operating Mode continued

**Delay start can be reactivated by:**

1. Press [∨] to lower the target below the current temperature.
2. Press [OK] to confirm.
3. Press [∧] to increase the target temperature above the zone temperature within 6°C .
4. Press [OK] to confirm.

The heating will be delayed as per the graph on page 17.

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.

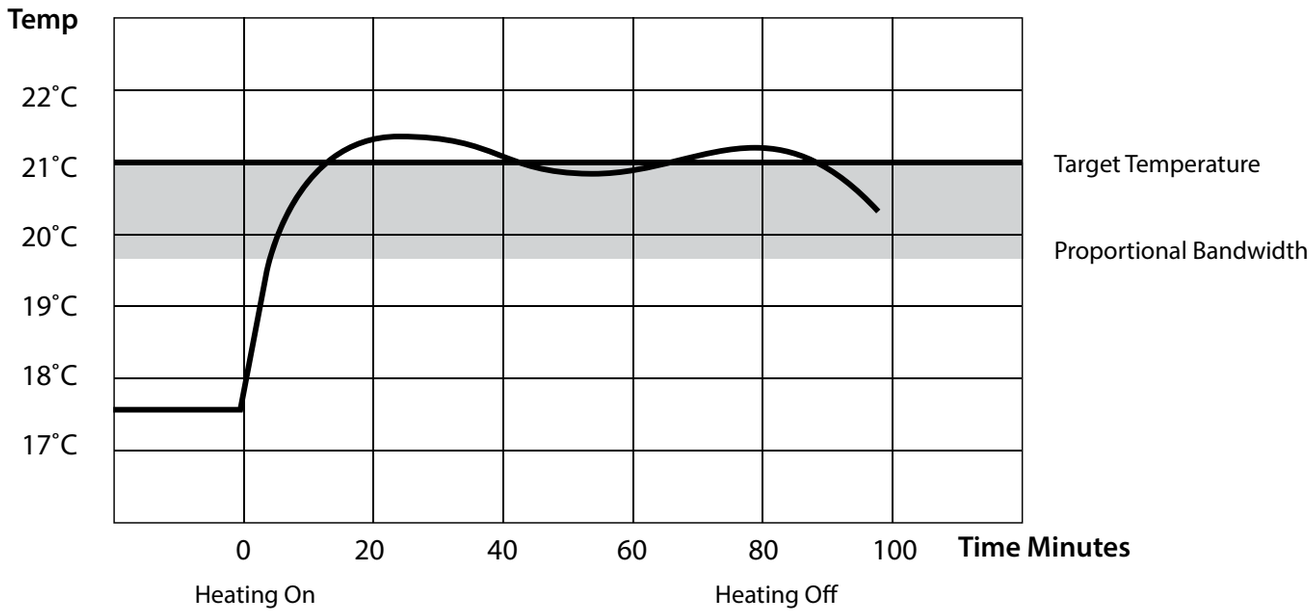
# P02 Operating Mode continued

## Time Proportional Integral Mode (TPI)

### 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 (20.1): TPI Control**



## Time Proportional Integral Mode (TPI)

Once TPI mode is selected, '**CYC**' and '**06**' will appear on the screen.

Use  and  to select from 2, 3, 6 or 12.

Press  to confirm.

'**P Band**' and '**2.0**' will appear on the screen.

Use  and  to select from 1.5 to 3.0.

Press  to confirm.

Press  to return to normal operation.

# P03 Setting High and Low limits  OFF

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

Press and hold ⏻ and OK together for 5 seconds.

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

Press ^ until '**P03 & LIMIT**' appears on the screen.

Press OK to select.

Use v and ^ to select '**ON**'.

Press OK to select. '**HIGH LIMIT**' will appear on the screen, the temperature will begin to flash.

Use v and ^ to select the high limit for the thermostat.

Press OK to confirm. '**LOW LIMIT**' will appear on the screen, the temperature will begin to flash.

Use v and ^ to select the low limit for the thermostat.

Press OK to confirm.

Press ⏻ to return to normal operation.

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

# P04 HYS - Hysteresis HOn 0.4°C HOF 0°C

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

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

If '**HYS OFF**' is set at 0.2˚C and the setpoint is 20˚C, then the thermostat will switch off when the temperature reaches 20.2˚C.

Press and hold ⏻ and OK together for 5 seconds.

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

Press ^ until '**P04 & HYS**' appears on the screen.

Press OK to select. '**HOn**' will appear on the screen.

Press OK and temperature will begin to flash.

Use v and ^ to select the '**HOn**' temperature, press OK.

'**HOF**' appears on the screen.

Press OK and the temperature will begin to flash.

Use v and ^ to select the '**HOF**' temperature, press OK.

Press ⏻ to return to normal operation.

# P05 Calibrate

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

Press and hold ⏻ and OK together for 5 seconds.

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

Press ∧ until '**P05 & CALIBRATE**' appears on the screen.

Press OK to select.

The actual temperature will flash on the screen.

Use ∨ and ∧ to calibrate the temperature.

Press OK to confirm the temperature.

Press ⏻ to return to normal operation.

# P06 Setback Mode  (0°C / Off )

In Setback mode, the thermostat reduces the temperature setpoint by 0°...10°C which is predetermined by the user. The factory default setting is set to (0°C / OFF) and needs to be activated to function. Setback mode will only work when the zone is timed off. This can only happen when the zone is in the AUTO OFF or ALL DAY OFF mode.

Press and hold ⏻ and OK together for 5 seconds.

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

Press ^ until **'P06 & SET'** appears on the screen.

Press OK to select. **'OFF'** will appear on the screen.

Use ^ and v to select **'On'.**

Press OK to confirm.

The setback temperature will begin flashing on the screen.

Use ^ and v to select setback temperature between 0°...10°C..

Press OK to confirm.

Press ⏻ to return to normal operation.

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

When in Setback mode **'LOW'** will appear on the screen.

# P07 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 air sensor with an external hight 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).**

Press and hold ⏻ and OK buttons together for 5 seconds.

**‘P01’** will appear on the screen.

Press ^ until **‘P07’** appears on the screen.

Press OK to select.

**‘01’** will flash on the screen.

Use ^ and v to choose between options 01, 02 or 03.

Press OK to confirm.

Press ⏻ to return to normal operation.

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

# P08 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...45°C.

**Temperature Sensor 03 must be selected,** See Page 26 P07 AFS.

Press and hold the ⏻ and OK together for 5 seconds.

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

Press ^ until **'P08'** appears on the screen.

Press OK to select.

The high limit temperature will flash on the screen.

Use ^ and v to choose the desired high limit temperature.

Press OK confirm the temperature.

Press ⏻ to return to normal operation.

# Resetting the Thermostat

To reset the thermostat to factory settings, locate the ▭ reset button on the left hand side of the thermostat.

Press the ▭ reset button and release it.

'**NO**' will flash on the screen.

Press [^].

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

Press [OK] to confirm.

The thermostat will restart and revert to its factory settings.

## EPH Controls IE

technical@ephcontrols.com

www.ephcontrols.com/contact-us

+353 21 471 8440

Cork, T12 F753

## EPH Controls UK

technical@ephcontrols.co.uk

www.ephcontrols.co.uk/contact-us

+44 1933 322 072

Harrow, HA1 1BD

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