CRT2



EPH CONTROLS

Room Thermostat

Installation and Operation Guide

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Battery operated non-programmable Room Thermostat

Installation Instructions

Factory Default Settings

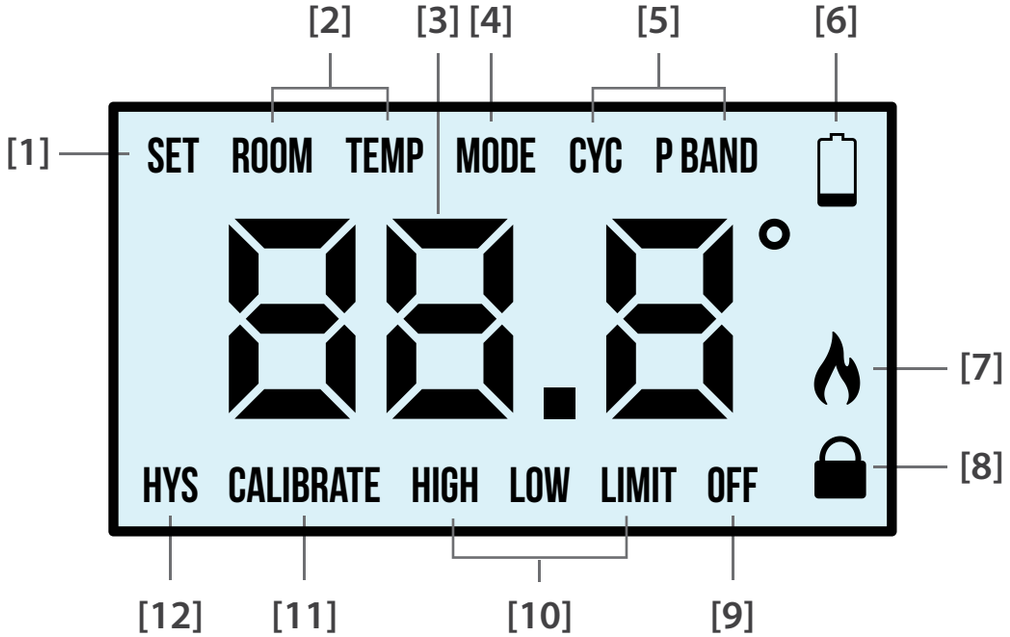
High and Low Temp. limitation:	Off
Keypad lock:	Off
Operating mode:	Normal
Temperature indicator:	˚C
HYS On:	0.4˚C
HYS OFF:	0.0˚C

Specifications

Contacts:	Volt Free
Power supply / Input:	2 x AA Alkaline Batteries
Power consumption:	Operating 30mW
	Standby <0.5mW
Temperature range:	5 … 35˚C
Ambient temperature:	0 … 45˚C
Ambient admissible humidity:	5-95%RH
Contact rating:	8(3)A, 230Vac
Switch output:	SPDT Volt Free
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
	0.1°C increments
Automatic action:	1C

LCD Display

[1] Displays when setting target temperature.
[2] Displays current room temperature.
[3] Displays current / target temperature.
[4] Displays when changing mode setting.
[5] Displays when setting in TPI mode.
[6] Displays when the batteries need to be replaced.
[7] Displays when the thermostat is calling for heat.
[8] Displays when keypad is locked.
[9] Displays when thermostat is in the OFF mode.
[10] Displays when setting HIGH and LOW temperature limit.
[11] Displays during calibration mode.
[12] Displays when setting hysteresis.



Buttons



Reset Button

Standby Button

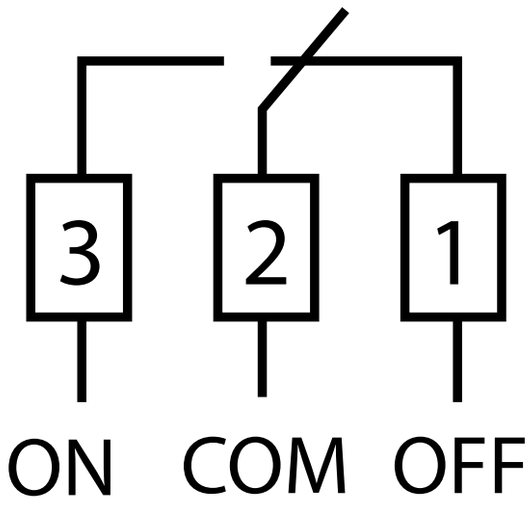
Down Button

Up Button

OK Button

OK

Wiring



Terminal Connections

Terminal 1	OFF	- N/C Normally closed connection
Terminal 2	COM	- Common connection
Terminal 3	ON	- N/O Normally open connection

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 recessed conduit box**
3) **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 metres above the floor level.
   - Prevent direct exposure to sunlight or other heating / cooling sources.

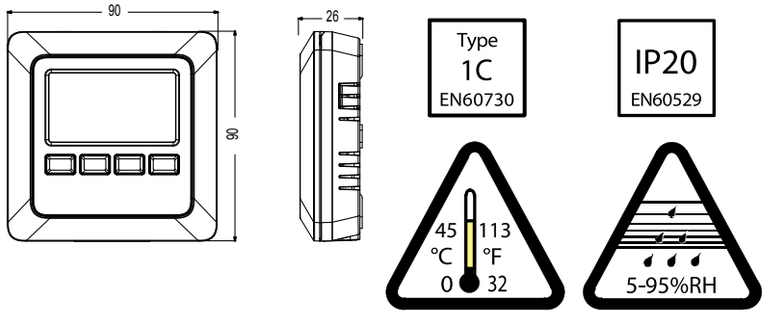
3) Use a philips screwdriver to loosen the screw on the bottom of the thermostat to open the front housing.

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

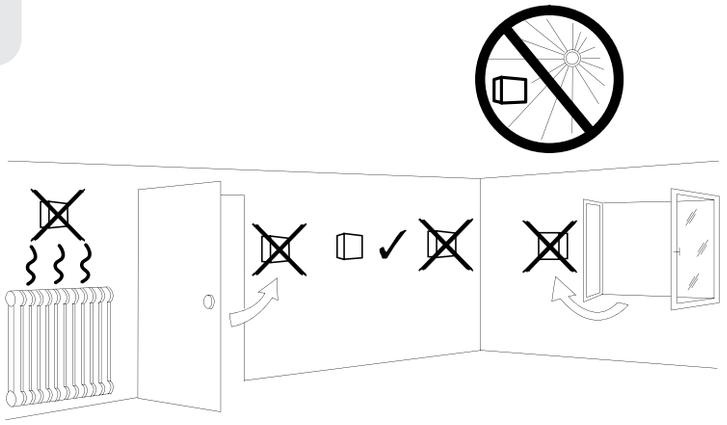
5) Screw the backplate onto a back box or directly to the surface.

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

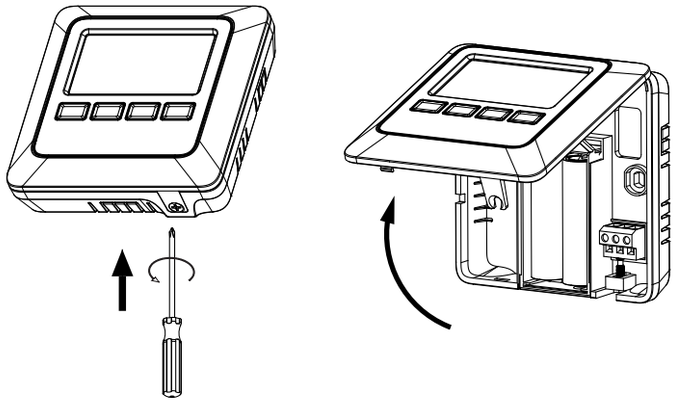
1


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

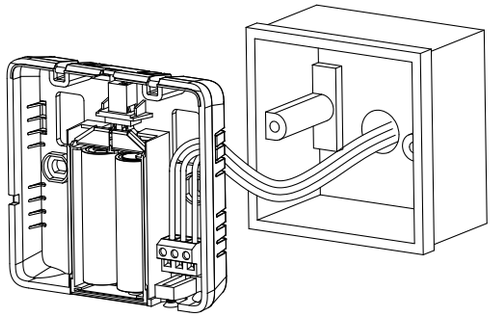
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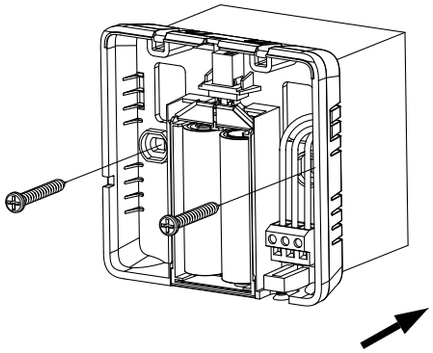
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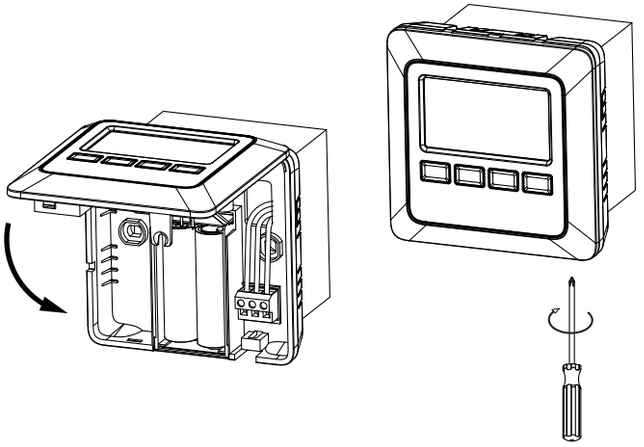
4



5



6



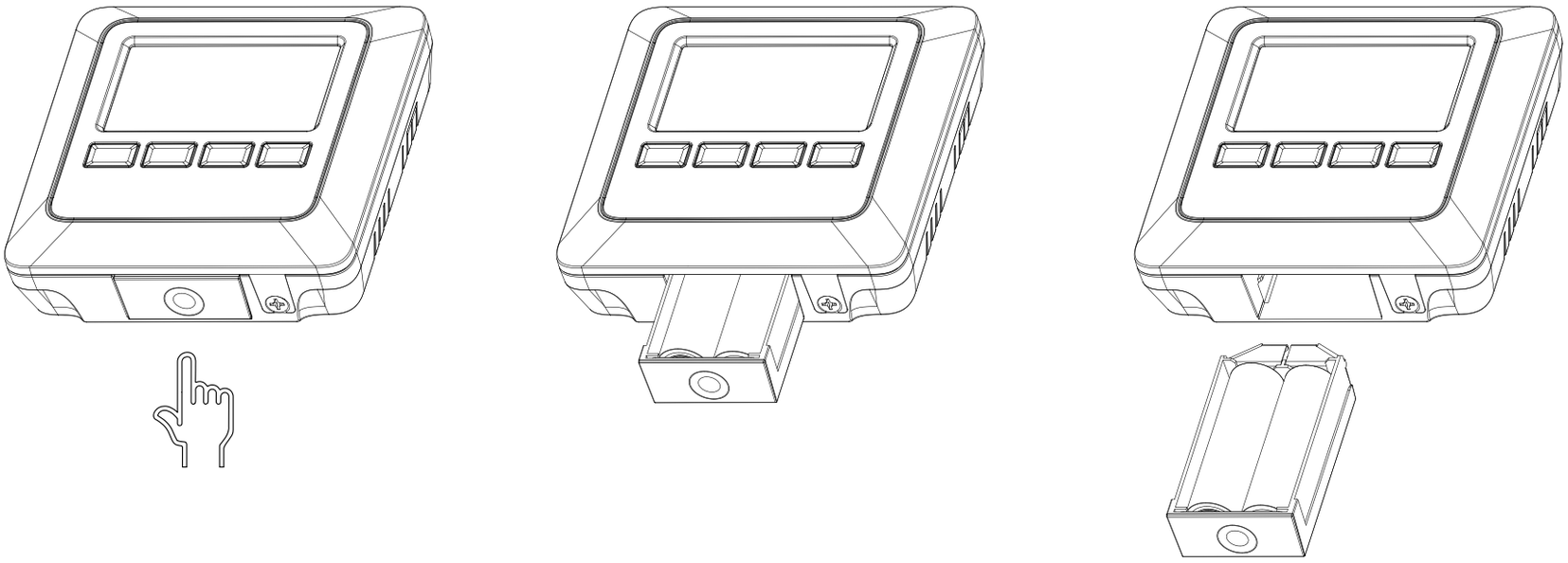
Replacing the batteries

1) is displayed when the batteries need to be replaced.

2) Push in the battery compartment to release it.

3) Replace the batteries with 2 x AA Alkaline batteries.

4) Re-insert the battery compartment. Push it until it clicks into place.





Battery operated non-programmable Room Thermostat

Operating Instructions

On / Off Function

Press [⏻] to turn the thermostat On or Off.

When in the ON mode the thermostat will display the current room temperature.

When in the OFF mode the thermostat will display the current room temperature and the word '**OFF**'.

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 ⌄ and ⌃ for 10 seconds.

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

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

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

Backlight  AUTO

There are two settings for selection.

'AUt' The backlight is on for 5 seconds when any button is pressed.

'OFF' The backlight is permanently off.

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 and OFF.

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

Menu

This menu allows the user to adjust additional functions.

To access the menu, press and hold ⏻ and OK together for 5 seconds.

HYS – Hysteresis HOn and HOf

 **HOn 0.4°C HOff 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.

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

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

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

Press OK and temperature will begin to flash.

Use ∨ and ∧ to select the '**HOn**' temperature, press OK to confirm.

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

Press [OK] and the temperature will begin to flash.

Use [∨] and [∧] to select the '**HOF**' temperature, press [OK] to confirm.

Press [⏻] to return to normal operation.

Calibrate

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

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

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

Press ^ until '**CALIBRATE**' flashes on the screen.

Press OK to select.

The actual temperature will flash on the screen.

Press v and ^ to calibrate the temperature.

Press OK to confirm the temperature.

Press ⏻ to return to normal operation.

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 be set at.

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

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

Press ^ until '**LIMIT**' flashes on the screen.

Press OK to select.

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

Use ˅ 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 ˅ 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.

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.

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

Press ^ until '**MODE**' 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)

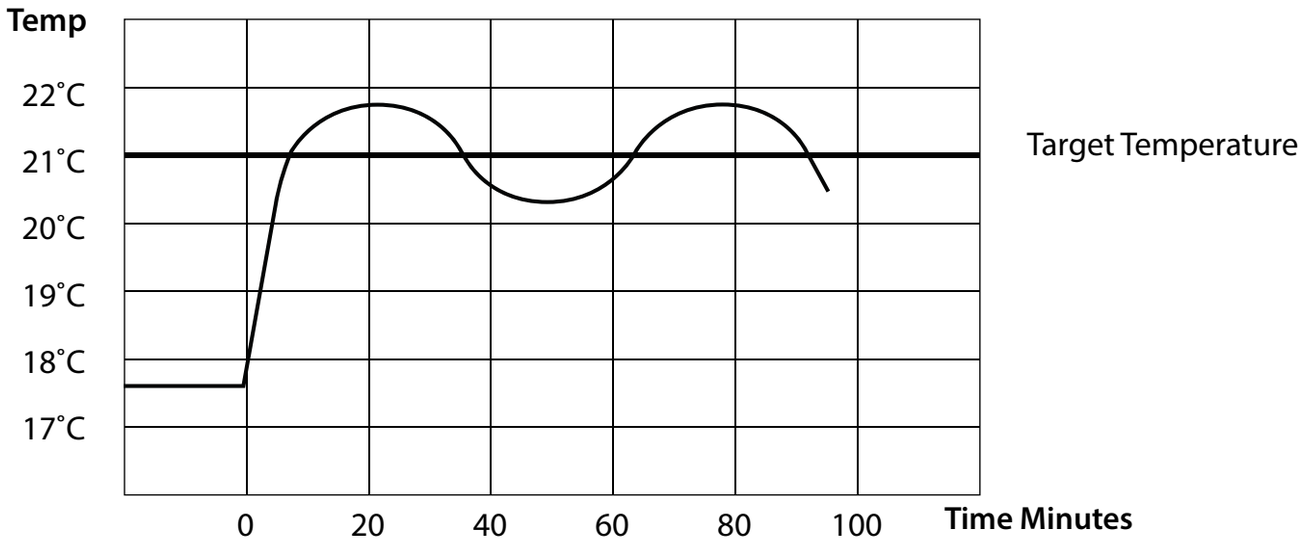
Press OK to confirm the mode.

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



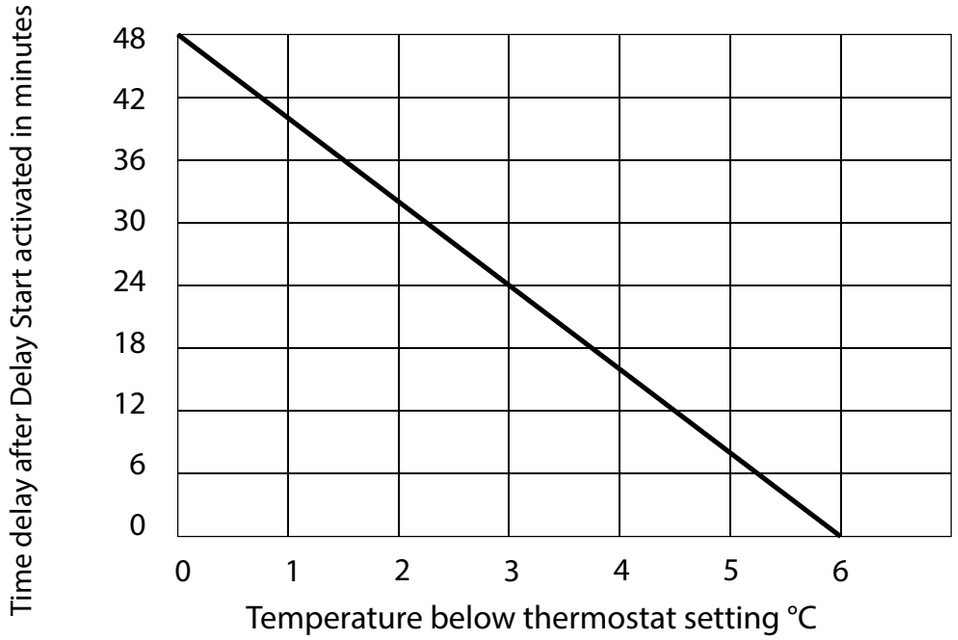
Operating Mode (Normal / Delay Start / TPI) continued

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 (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 Control (On/Off) 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 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.

Operating Mode (Normal / Delay Start / TPI) continued

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**

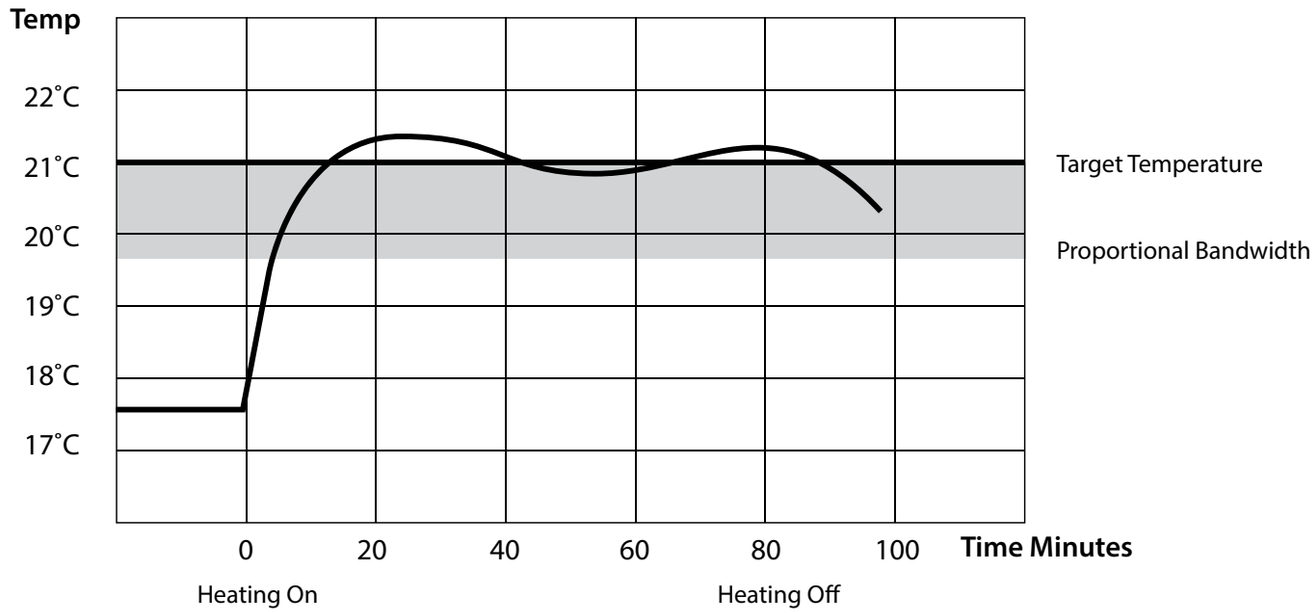
This value will decide how often the thermostat will cycle the heating on and off when trying to achieve the target temperature. You can select 2/3/6 or 12.

Time Proportional Integral Mode (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 (23.1): TPI Control



Operating Mode (Normal / Delay Start / TPI) continued

Time Proportional Integral Mode (TPI) Continued

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

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

Press OK to confirm.

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

Use ⌄ and ⌃ to select from 1.5 to 3.0.

Press OK to confirm.

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.

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