CP4M Room Thermostat
Hardwired   Open Therm®

BOILER PLUS

Operating Instructions

Contents

CAUTION!

Before commencing, disconnect the device from the mains. There are parts that carry mains voltage behind the cover. Never leave unsupervised when it is open. (Prevent non specialists and especially children from gaining access to it.)

Never remove this product from the electrical baseplate. Disconnect from mains supply in the event of any damage to any buttons. Do not use sharp tools to push any button.

How your programmable thermostat works

Prior to setting the thermostat, it is neccessary to complete all required settings described in this section.

When the thermostat is in the AUTO mode, it will operate according to the times and temperatures that have been programmed. The user can select from 6 different programs per day - each with a time and a temperature.
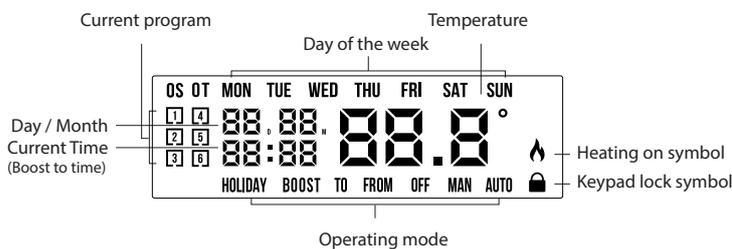
There is no OFF time, only a higher and a lower temperature setpoint.

If the user wants the thermostat to be OFF at a certain time, set the temperature for this time to be low. The thermostat will turn ON if the room temperature is lower than the setpoint for the current period.
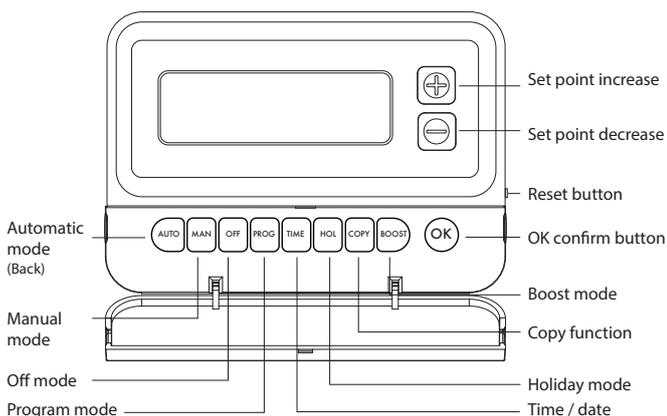
Example: If P1 is set to be 21°C at 6am, and if P2 is set to be 10°C at 8am, the thermostat will look for the temperature to be 21°C between 6am and 8am.

1. LCD Symbol / button description

1.1 LCD Symbol description

Current program
Temperature
Day of the week
Day / Month
Current Time (Boost to time)
Heating on symbol
Keypad lock symbol
Operating mode

1.2 Button description

Set point increase
Set point decrease
Reset button
Automatic mode (Back)
OK confirm button
Manual mode
Boost mode
Off mode
Copy function
Program mode
Holiday mode
Time / date

2. Resetting the thermostat

Press the ■ RESET button on the side of the thermostat.

'**rst no**' will appear on the screen.

Press the ⊕ button.

'**rst yes**' will appear on the screen.

Press the '**OK**' button to reset the thermostat.

3. Setting the date, time and operating mode

Press the '**TIME**' button once, the year will begin flashing.

Press the ⊕ or ⊖ buttons to adjust the year.   Press the '**OK**' button.

Press the ⊕ or ⊖ buttons to adjust the month.   Press the '**OK**' button.

Press the ⊕ or ⊖ buttons to adjust the day.   Press the '**OK**' button.

Press the ⊕ or ⊖ buttons to adjust the hour.   Press the '**OK**' button.

Press the ⊕ or ⊖ buttons to adjust the minute.   Press the '**OK**' button.

Press the ⊕ or ⊖ buttons to adjust from 5/2d to 7d or 24h mode.

Press the ⊕ or ⊖ buttons to turn DST (Day Light Saving Time) On or Off.

Press the '**AUTO**' button or wait 5 seconds and the thermostat will return to normal operation.

4. Factory program settings   5/2d

	5/2D					
	P1	P2	P3	P4	P5	P6
Mon-Fri	06:30	08:00	12:00	14:00	17:30	22:00
	21°C	10°C	10°C	10°C	21°C	10°C
Sat-Sun	08:00	10:00	12:00	14:00	17:30	23:00
	21°C	10°C	10°C	10°C	21°C	10°C

	7D					
	P1	P2	P3	P4	P5	P6
Mon-Fri	06:30	08:00	12:00	14:00	17:30	22:00
	21°C	10°C	10°C	10°C	21°C	10°C
Sat-Sun	08:00	10:00	12:00	14:00	17:30	23:00
	21°C	10°C	10°C	10°C	21°C	10°C

	24H					
	P1	P2	P3	P4	P5	P6
Everyday	06:30	08:00	12:00	14:00	17:30	22:00
	21°C	10°C	10°C	10°C	21°C	10°C

5. Adjusting the program settings for 5/2d

Press the '**PROG**' button once.

Programming for Monday to Friday is now selected.

Press the ⊕ or ⊖ buttons to adjust the P1 time. Press the '**OK**' button.

Press the ⊕ or ⊖ buttons to adjust the P1 temp.   Press the '**OK**' button.

Repeat this process to adjust P2 to P6 times and temperatures.

Press the '**OK**' button.

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5. Adjusting the program settings for 5/2d (Continued)

Programming for Saturday to Sunday is now selected.

Press the ⊞ or ⊟ buttons to adjust the P1 time.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the P1 temp. Press the '**OK**' button.

Repeat this process to adjust P2 to P6 times and temperatures.

Press the '**AUTO**' button to return to automatic mode.

While in PROG Mode pressing the '**PROG**' button will jump from P1-P2 etc without changing the temperature.

While in PROG Mode pressing the '**TIME**' button will jump to the next day (block of days).

If 7 D mode is selected, you can program each day of the week with 6 individual times and temperatures.

If 24H mode is selected, you can only program each day of the week with the same 6 times and temperatures.

6. Copy function

Copy function may only be used if the thermostat is in the 7d mode.

Set the times and temperatures for the day that you wish to copy from in PROG Mode.

When still on the day press the '**COPY**' button.

The day of the week that you have selected will be shown with '**COPY**' below it.

The next day will begin to flash on the top of the screen.

Press the ⊞ button to copy the times and temperatures to that day.

Press the ⊟ button to skip a day.

You can copy to multiple days using the ⊞ button.

Press the '**OK**' button when copying has been completed.

7. Temporary override

When in AUTO mode, press the ⊞ or ⊟ buttons to adjust the temperature setpoint.

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

Press '**OK**' or after 5 seconds the thermostat will operate in this temporary override, util the next switching time.

To cancel temporary override, press the '**OFF**' buttton and then press the '**AUTO**' button to return to the automatic mode.

8. Permanent override

Press the '**MAN**' button to enter Manual Mode (Permanent Override).

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

Press the ⊞ or ⊟ buttons to adjust the temperature setpoint.

Press '**OK**' to confirm the temperature selection or after 5 seconds the thermostat will operate in this permanent override.

The thermostat will operate in MAN mode until the mode is changed.

To cancel permanent override, press the '**OFF**' button and then press the '**AUTO**' button to return to automatic mode.

9. Boost function

The thermostat can be boosted to a specific temperature for 1, 2 or 3 hours while the thermostat is operating in all modes except for holiday mode.

Press the '**BOOST**' button 1, 2 or 3 times, the time that the boost will be activated to will flash on the screen.

If you do not press any other button the boost will activate to the temperature displayed on the screen after 5 seconds.

If you press the '**OK**' button the temperature will now flash. You can edit the temperature if you press the ⊞ or ⊟ buttons.

Press the '**OK**' button or wait for 5 seconds to enter BOOST Mode.

'**BOOST TO**' will now be displayed on the screen with the time that it is activated to displayed above this text.

Press the '**BOOST**' button again to deactivate the boost.

10. Holiday function

This will switch your heating system off between the start and end times you select .

Press the '**HOL**' button, '**HOLIDAY FROM**' will appear on screen.

Press the ⊞ or ⊟ buttons to adjust the year.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the month.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the day.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the hour.   Press the '**OK**' button.

'**HOLIDAY TO**' will appear on screen.

Press the ⊞ or ⊟ buttons to adjust the year.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the month.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the day.   Press the '**OK**' button.

Press the ⊞ or ⊟ buttons to adjust the hour.   Press the '**OK**' button.

The thermostat will now return to the mode it was in before the Holiday settings were entered.

To cancel Holiday mode, press the '**HOL**' button.

11. Keypad lock and unlock 🔒 OFF

To lock the keypad, press and hold the ⊞ and ⊟ buttons for 10 seconds. 🔒 will appear on the screen. The keypad is now locked.

To unlock the keypad, press and hold the ⊞ and ⊟ buttons for 10 seconds. 🔒 will disappear from the screen. The keypad is now unlocked.

12. Backlight mode selection 🔒 AUTO

There are two settings for selection. The factory default setting is **AUTO**.

OFF   The backlight is permanently OFF.

AUTO   On pressing any button the backlight stays on for 5 seconds.

ON   The backlight is permanently ON.

To adjust the backlight setting, lower the cover on the front of the unit.

Press the '**OK**' button for 5 seconds.

Press either the ⊞ or ⊟ buttons to select the **OFF**, **AUTO** or **ON** mode.

Press the '**OK**' button.

13. Frost protection 🔒 5°C

Frost protection is built into this thermostat.

It is pre 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.

14. Installer menu (without OpenTherm® connected)

To access the installer menu, you must hold Prog and OK for 5 seconds.

When in the installer menu, press ⊞ , ⊟ and **OK** to navigate and select. Use AUTO, MAN or OFF to go back a step.

P0 1: Mode (Normal / Optimum Start / TPi)
P0 2: Hi Lo (Limiting the thermostat)
P0 3: Hysteresis (Differential)
P0 4: Calibration
P0 5: Frost Protection
  Exit

P0 1: Mode (Normal / Optimum Start / TPi)

▪ Normal Mode (Nor)

When the thermostat is in Normal mode, the thermostat will try to reach the target temperature after the program changes.

Example: Program 1 on the thermostat is 21°C for 06:30am and the room temperature is 18°C. The thermostat will start the heating at 06:30am and the room temperature will start to increase then.

▪ Optimum Start Mode (OS)   **BOILER PLUS** ✓

When the thermostat is in Optimum Start mode, the thermostat will try to reach the target temperature by the start time of the next switching time. This is done by setting the Ti (time interval) on the thermostat in this menu to 10, 15 or 20. This will allow the thermostat 10 mins, 15 mins or 20 mins to increase the room temperature by 1°C.

Ti can be set when OS is selected in the installer menu. 🏭 20°C

To achieve the target temperature when the program starts, the thermostat will read:

1. The Room Temperature (RT)
2. The Setpoint Temperature (ST)
3. The Target Temperature Difference (TTD) is the difference between the setpoint temperature and the room temperature .

The time (in minutes) that it will take to overcome (TTD) is called Optimum Start Time (OST) and its maximum value is 3 hours = 180 mins. This is subtracted from the start time.

As the temperature increases the thermostat will recalculate the OST if the temperature is increasing too quickly.

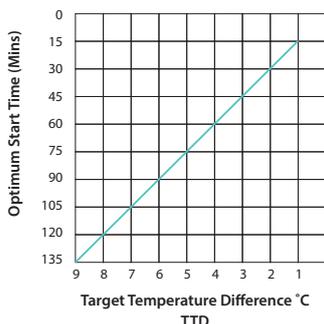**Optimum Start Control Graph with Ti = 20**
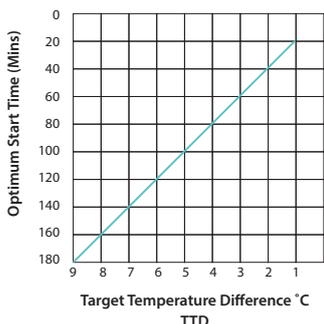
Example when Ti = 20

Program 1 on the thermostat is 21°C for 06:30am and the room temperature is 18°C. The thermostat will start the heating at 05:30am to reach 21°C for 06:30am @ Ti=20.

Example when Ti = 10 ▶

Program 1 on the thermostat is 21°C for 06:30am and the room temperature is 18°C. The thermostat will start the heating at 06:00am to reach 21°C for 06:30am @ Ti=10.
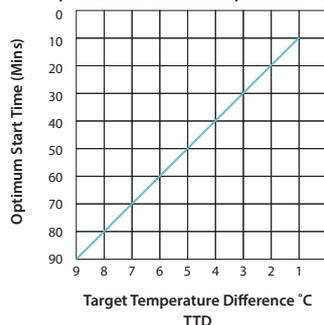
Optimum Start Control Graph with Ti = 15

Optimum Start Control Graph with Ti = 10

▪ 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 setpoint by too much. It will also turn on if the temperature is falling so it doesn't undershoot the setpoint 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 setpoint temperature. You can select 2/3/6 or 12.

Pb - Proportional Bandwidth: 🏭 2°C

This value refers to the temperature below the setpoint 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.
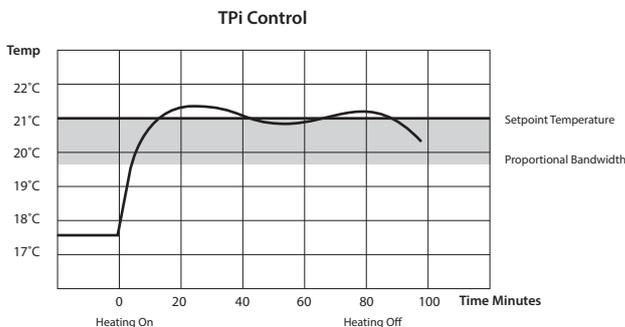
Example – Program 1 on the thermostat is 21°C for 06:30am and the room temperature is 18°C. The thermostat will start the heating at 06:30am and the heat will start to increase then but will switch itself off before it reaches temperature and allow the room temperature to increase naturally – this cycle may begin again if the thermostat isn't reaching temperature.

P0 2:   Hi Lo (Limiting the thermostat)

This menu allows the installer to change the minimum and maximum temperature range that the thermostat can be set at. Defaults are 35°C for Hi and 5°C for Lo.

P0 3:   Hysteresis HOn and HOFF

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

HOn is the fall in temperature – Default – 0.4°C. This will allow a fall of 0.4°C from the setpoint before the thermostat turns on again.

HOFF is the rise in temperature – Default – 0.0°C. This will allow the temperature to rise 0°C above its setpoint.

P0 4:   Calibration

This menu allows the installer to re-calibrate the thermostat. The current temperature will be displayed on the screen and can be adjusted by pressing the up and down buttons.

P0 5:   Frost Protection 🏭 ON

This menu allows the installer to activate or de-activate frost protection. When frost protection is activated the thermostat will switch on the boiler when the temperature drops below 5°C.

Exit

This menu allows the installer to return to the main interface. It is also possible to exit the installer menu by pressing AUTO, MAN or OFF whilst in the installer menu.

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20190930_CP4M_OpIns_JW

15. Installer menu (with OpenTherm® connected)

P0 1 - P0 5 as per CP4M standard

P0 6:   Setting DHW temperature
P0 7:   OpenTherm® Information
P0 8:   DHOP
P0 9:   Set OpenTherm® Parameters
Exit

P0 6:   Setting DHW temperature

This menu allows the installer to change the DHW temperature of the boiler. The temperature can be set in 0.5°C increments by pressing the "+" or "-" buttons.

Press the "OK" button to select the desired temperature.

This menu is only available when the thermostat is connected to OpenTherm® and DHOP is ON (P08 OT installer menu).

P0 7:   OpenTherm® Information

This menu allows the installer to view information received from the OpenTherm® boiler. It may take a few seconds to load information relating to each parameter. The information that can be shown from the boiler is outlined in the table below.

Displayed on screen	Description	Remark
tSEt	Target water temp	
tFLO	Flow water temp	
trEt	Return water temp	
tdH	DHW temperature	This is only visible if DHOP is On (P08 OT Installer menu)
tFLU	Flue gas temperature	Dependent on boiler
tESt	Outdoor temperature	Dependent on boiler
nOdU	Modulation percentage	
FLOr	Water flow	This is only visible if DHOP is On (P08 OT Installer menu)
PrES	Water pressure	Dependent on boiler

P0 8:   DHOP

This menu allows the installer to activate or deactivate DHW target temperature control from the thermostat. This menu is only available when the thermostat is connected to OpenTherm®
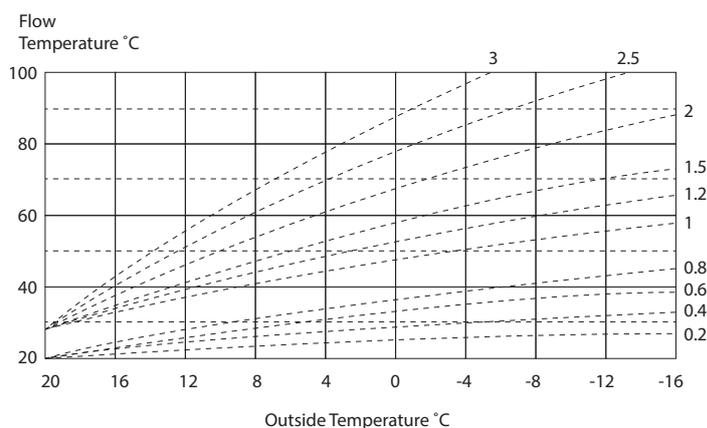
P0 9:   Set OpenTherm® Parameters

This menu allows the installer to configure the OpenTherm® parameters. To access the menu please enter the password "08" with the "+" and "–" buttons.

Press "OK" to confirm.

The parameters that can be set are outlined in the table below.

Param	Description	Range	Default
HHCH t-1	Maximum set point heating	45 - 85°C	85°C
LLCH t-2	Minimum set point heating	10 - HHCH°C	45°C
CLI t-3	This allows user to select different climatic curves for weather compensation. This only applies to boilers with an outside sensor connected.	0.2 - 3.0	1.2
InFL t-4	Influence of room sensor on modulation of the boiler. Recommended value is 10.	0 - 20	10
HHbO t-5	This is the target setpoint for your CH flow temperature. Note: This value must be within the range of HHCH and LLCH.	HHCH Max >=ID57 >=LLCH Min	85°C
Exit	Press OK button to turn back to main interface.		

Climatic Curve

Flow Temperature °C / Outside Temperature °C

Exit:

This menu allows the installer to return to the main interface.

It is also possible to exit the installer menu by pressing AUTO, MAN or OFF whilst in the installer menu.

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