CP4-HW-OT



Programmable RF Cylinder Thermostat & Receiver

Installation and Operation Guide

EPH CONTROLS

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RFRP-HW-OT Cylinder Thermostat

Installation Instructions

Factory Default Settings

Temperature indicator:	˚C
Switching differential:	5˚C
In built frost protection:	5˚C - Not adjustable
Clock:	24 hours
Keypad lock:	OFF
Operating mode:	5/2 day
Default temperature setpoint:	60˚C

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 cylinder temperature falls below 5°C.

Specifications

Power supply:	2 x AA Alkaline Batteries
Power consumption:	2 mW
Battery replacement:	Once a year
Temp. control range:	5 … 90˚C
Ambient temperature:	0 … 45˚C
Dimensions:	130 x 99 x 25mm
Temperature sensor:	NTC 100K Ohm @ 25˚C
External sensor length:	1950mm ± 80mm
Temperature indication:	˚C
Switching differential:	5˚C
Frost protection:	Only operational in OFF mode
Pollution degree:	Pollution degree 2

How your cylinder thermostat works

When the thermostat is in the AUTO mode, it will operate according to the times that have been programmed. The user can select from 6 different programs per day - each with a time and a status of ON or OFF.

When program is scheduled to be ON, it will remain on until the next OFF program.

During this time the thermostat will remain ON until the temperature setpoint is reached.

There is only one temperature setpoint which is applied to all programs. The default temperature setpoint is 60˚C.

60˚C is the temperature level required in order to prevent the build up of legionella bacteria.

Mounting of temperature sensor

ON CYLINDER: To ensure accurate control of your cylinder, the temperature sensor should be mounted on the bottom 1/3 of the cylinder. It is essential that the sensing element is in direct contact with the cylinder and that there is no insulation between it and the cylinder. The temperature sensor can be fixed to the cylinder using the provided foil tape.

ON PIPEWORK: To ensure accurate control, the temperature sensor should be mounted on the pipework as tightly as possible. It is essential that the sensing element is in direct contact with the pipework and that there is no insulation between it and the pipework. The temperature sensor can be fixed to the pipework using foil tape.

IN THERMAL POCKET: To ensure accurate control, the temperature sensor should be inserted into the thermal pocket. It is essential that the sensing element is inserted as far as possible. The temperature sensor can be fixed using the provided foil tape.

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 the section.

This thermostat can be mounted directly on the wall using the plate included.

Mounting & Installation (Continued)

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

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

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

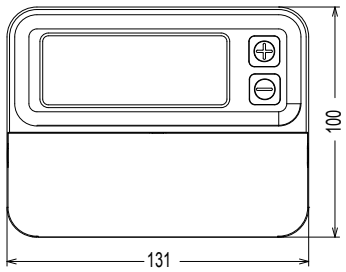
3) Fix the mounting plate directly to the wall with the screws provided.

4) Attach the thermostat to the mounting plate.

5) Lower the flap at the front of the thermostat. There is a battery compartment located below the buttons. Apply downward pressure to remove the cover.

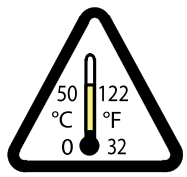
6) Insert the 2 x AA batteries and the thermostat will turn ON. Close the battery compartment.

1



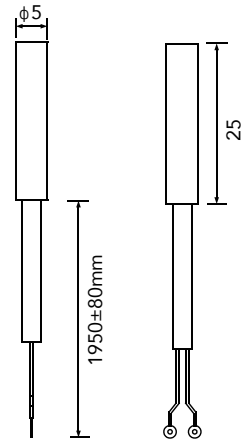
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EN60730

IP20
EN60529

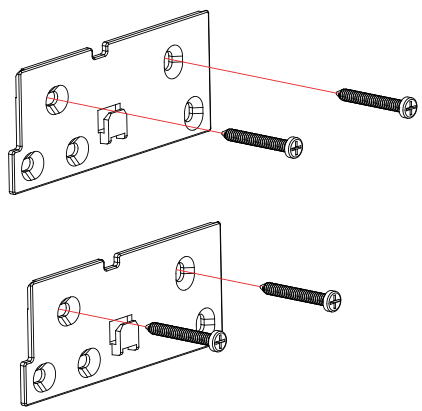




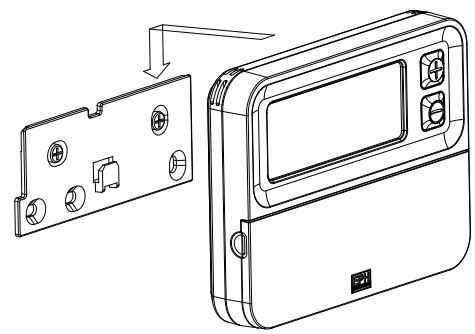
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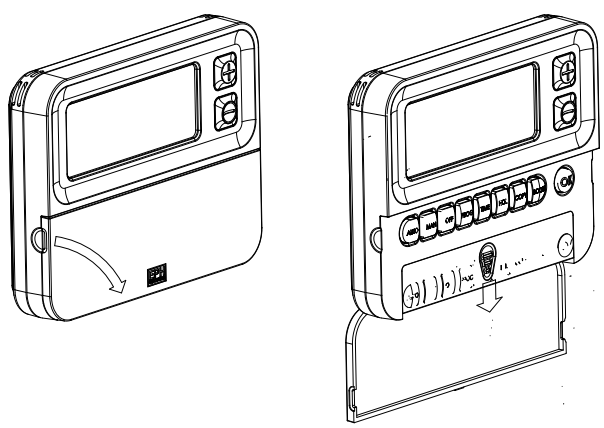
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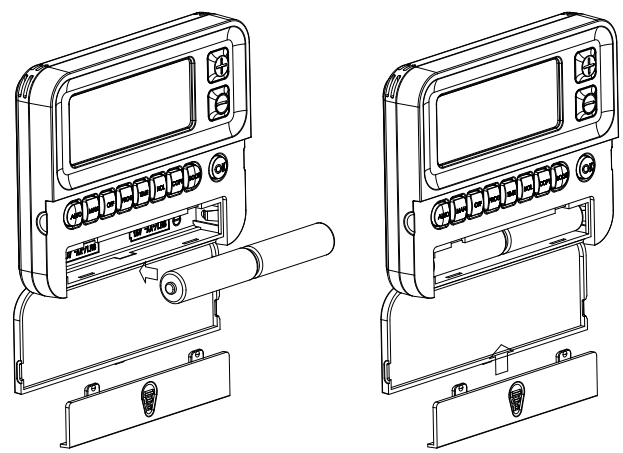
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5



6





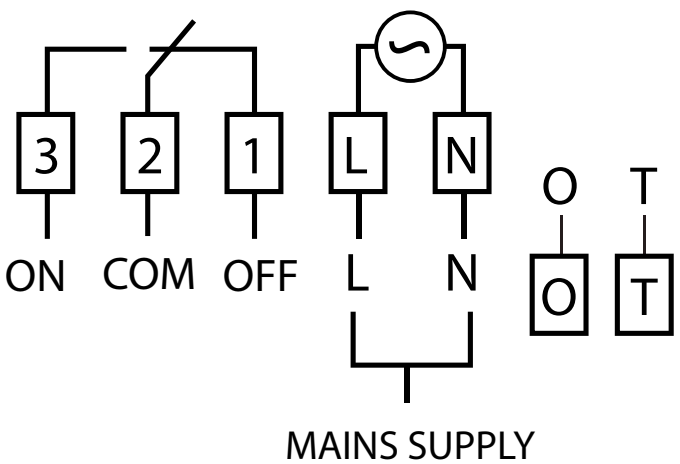
RF1A-OT Wireless Receiver

Installation Instructions

Specifications & Wiring

Power supply:	200 - 240Vac 50-60Hz
Contact rating:	230 Vac 10(3)A
Ambient temperature:	0 … 45˚C
Automatic action:	Type 1.C.Q
Appliance classes:	Class II appliance ⧈
Pollution degree:	Pollution degree2
IP Rating:	IP20
Rated Impulse Voltage:	Resistance to voltage surge 2500V as per EN 60730

Internal wiring diagram for RF1A-OT



* If mains voltage output is required, terminals L & 2 must be electrically linked.

Important: Do not connect Mains Voltage to OpenTherm® terminals.

Mounting & Installation

1) The RF1A-OT 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 300mm 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.

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.

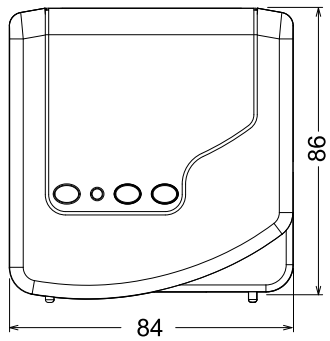
3) Screw the receiver to the wall with the screws provided.

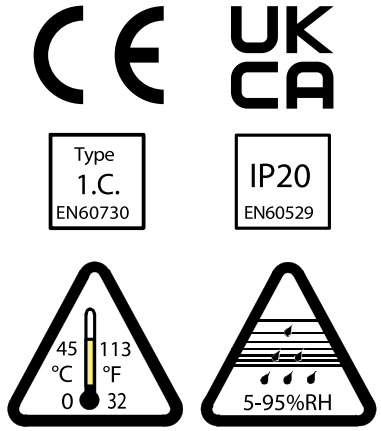
4) Remove the protective cover on the terminal block.

5) Insert wires into terminal block in accordance with the wiring diagram.

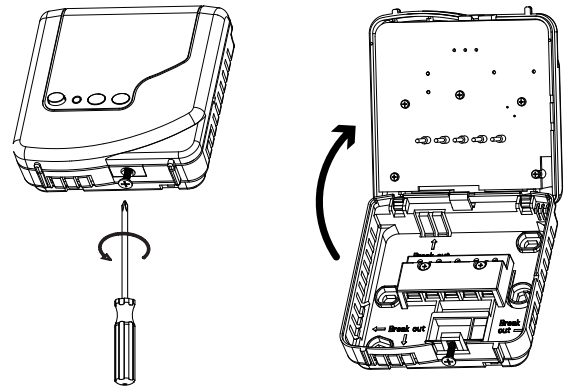
6) Close the cover and tighten the fastening screw.

1

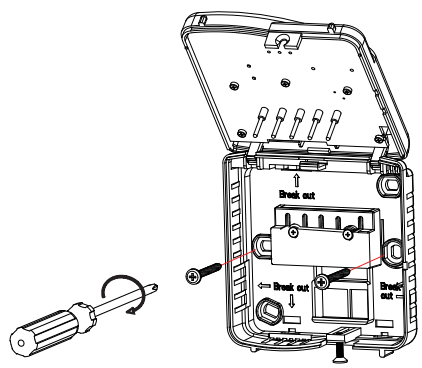

86
84


Type
1.C.
EN60730
IP20
EN60529
45
°C
113
°F
0
32
5-95%RH

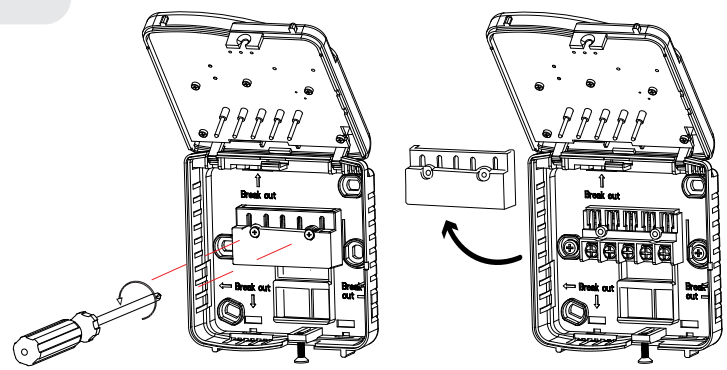
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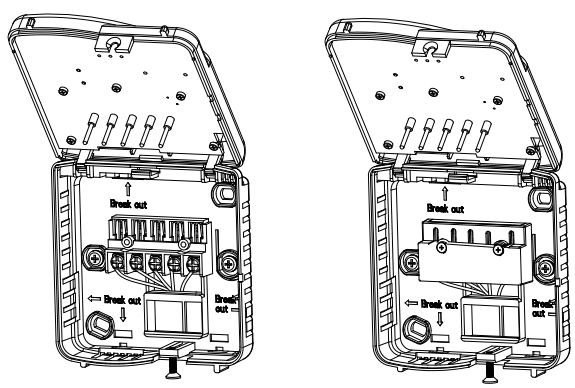
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Break out
Break out
Break out

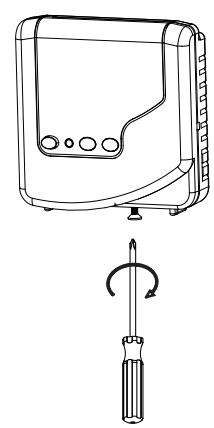
4


Break out
Break out
Break out
Break out
Break out
Break out

5


Break out
Break out
Break out
Break out

6

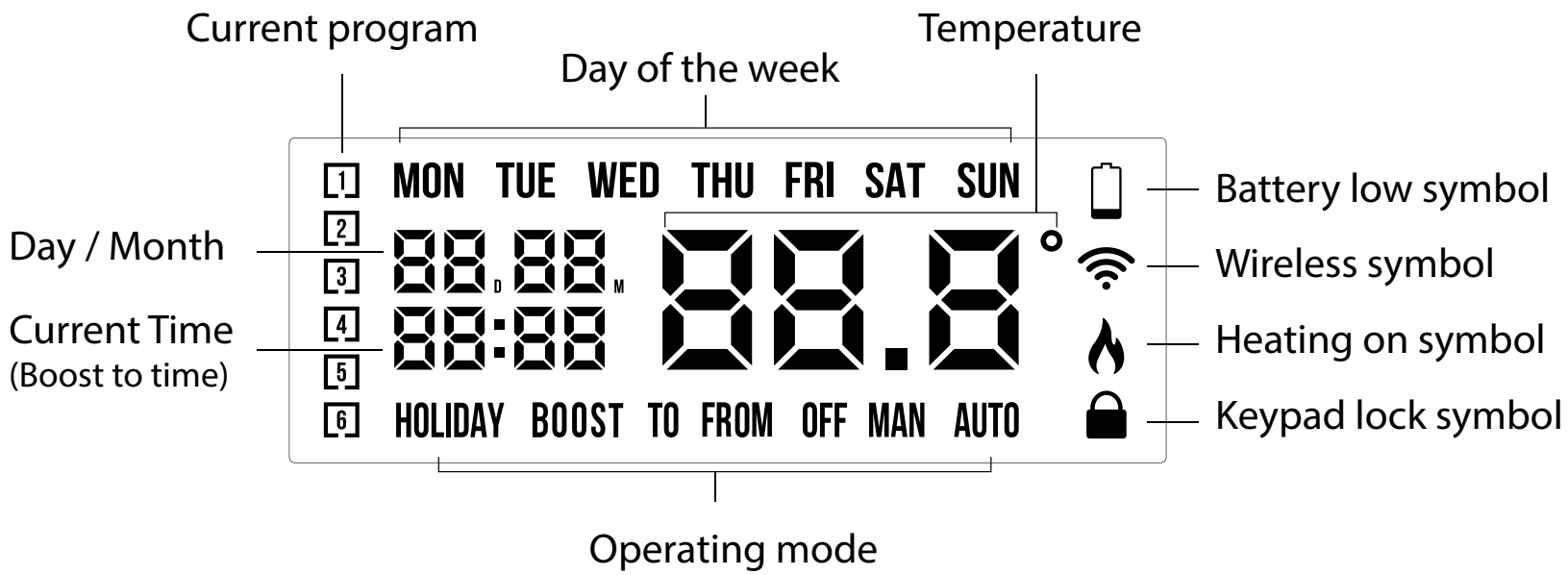




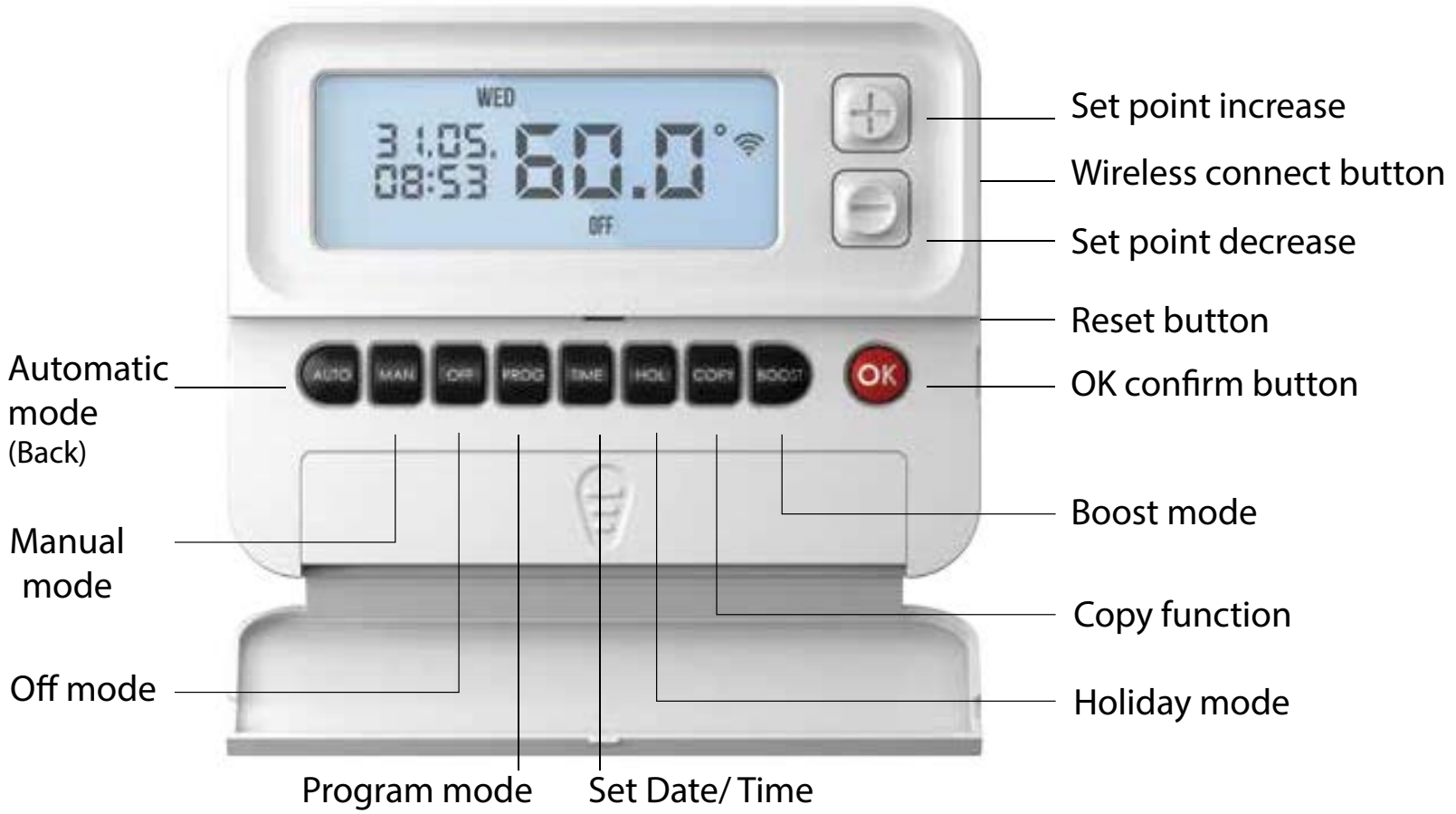
RFRP-HW-OT Cylinder Thermostat

Operating Instructions

LCD Symbol Description



Button Description



AUTO Automatic mode

MAN Manual mode

OFF Off mode

PROG Program mode

TIME Set Date / Time

HOL Holiday mode

COPY Copy function

BOOST Boost mode

Set point increase

Set point decrease

OK Confirm button

RESET Reset button

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.

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.

Setting the date, time and programming mode

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

Press the ⊕ or ⊖ buttons to adjust the year. Press OK.

Press the ⊕ or ⊖ buttons to adjust the month. Press OK.

Press the ⊕ or ⊖ buttons to adjust the day. Press OK.

Press the ⊕ or ⊖ buttons to adjust the hour. Press OK.

Press the ⊕ or ⊖ buttons to adjust the minute. Press OK.

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.

Factory Program Setting

5/2d

	5/2 Day					
	P1	P2	P3	P4	P5	P6
Mon-Fri	06:30	08:00	12:00	14:00	17:30	19:00
	ON	OFF	OFF	OFF	ON	OFF
Sat-Sun	08:00	10:00	12:00	14:00	17:30	19:00
	ON	OFF	OFF	OFF	ON	OFF

	7 Day					
	P1	P2	P3	P4	P5	P6
Mon-Fri	06:30	08:00	12:00	14:00	17:30	19:00
	ON	OFF	OFF	OFF	ON	OFF
Sat-Sun	08:00	10:00	12:00	14:00	17:30	19:00
	ON	OFF	OFF	OFF	ON	OFF

	24 Hour					
	P1	P2	P3	P4	P5	P6
Everyday	06:30	08:00	12:00	14:00	17:30	19:00
	ON	OFF	OFF	OFF	ON	OFF

Programming Modes

The RFRP-HW-OT Cylinder Thermostat has the following programming modes available:

5/2 Day mode	Programing Monday to Friday as one block and Saturday and Sunday as a 2nd block. Each block can have 6 different times and a status of ON or OFF.
7 Day mode	Programming all 7 days individually with different times and temperatures.
24 Hour mode	Programming all 7 days as one block with the same times.

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

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

Adjust the program setting in 5/2 Day mode

Press the PROG button once.

Programming for Monday to Friday is now selected.

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

Press the ⊕ or ⊖ buttons to select ON or OFF. Press OK.

Repeat this process to adjust P2 to P6 times. Press OK.

Programming for Saturday to Sunday is now selected.

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

Press the ⊕ or ⊖ buttons to select ON or OFF. Press OK.

Repeat this process to adjust P2 to P6 times.

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 time.

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

Copy Function

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

Set the times 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.

Permanent Override

Press the MAN button to enter the manual mode (Permanent Override), **'MAN'** will appear on the screen.

Press the ⊕ or ⊖ buttons to adjust the temperature setpoint.

Press OK or after 5 seconds the thermostat will operate in this permanent override.

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

Boost Function

The thermostat can be boosted 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.

Press the OK button or wait for 5 seconds for the boost to activate.

'**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.

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 OK .

Press the ⊕ or ⊖ buttons to adjust the month. Press OK .

Press the ⊕ or ⊖ buttons to adjust the day. Press OK .

Press the ⊕ or ⊖ buttons to adjust the hour. Press OK .

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

Press the ⊕ or ⊖ buttons to adjust the day. Press OK .

Press the ⊕ or ⊖ buttons to adjust the month. Press OK .

Press the ⊕ or ⊖ buttons to adjust the year. Press OK .

Press the ⊕ or ⊖ buttons to adjust the hour. Press OK .

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.

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.

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 or AUTO mode.

Press the OK button.

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.

Replacing the batteries

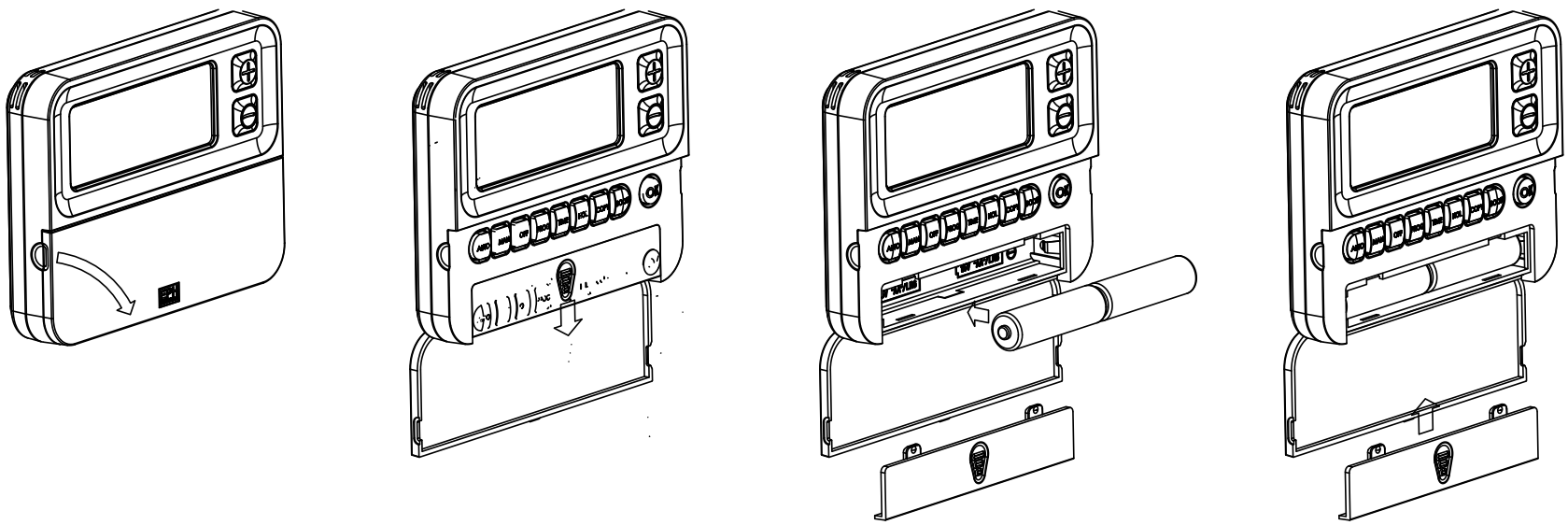
Lower the flap at the front of the thermostat.

There is a battery compartment located below the buttons.

Apply downward pressure to remove the cover.

Insert the 2 x AA batteries and the thermostat will turn ON.

Close the battery compartment.



Installer menu

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.

P01: Mode (Normal)

P03: Hysteresis (differential)

P04: Calibration

P05: Frost Protection

P06: Exit

Installer menu OpenTherm® Instructions

P07: OpenTherm® Information

Exit

P01 Operating Mode (Normal)

Nor (Normal Mode)

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

Example: P1 on the thermostat is for 06:30am with a status of ON. The thermostat will start heating the hot water to the target temperature until the next programmed OFF time.

P03 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 – 5.0°C. This will allow a fall of 5°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.

P04 Calibrate the thermostat

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 ⊕ or ⊖ buttons .

P05 Frost Protection  5˚C

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.

P07 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	Outlet 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

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.

Controlling an OpenTherm® Boiler with multiple CP4-OT / CP4-HW-OT

It is possible to have 6 CP4-OT/ CP4-HW-OT controlling 1 OpenTherm® boiler. To do this it is necessary to make one of the RF1A-OT receivers into a Hub Receiver. This Hub Receiver will receive data from all of the RFRP-OT and RFRP-HW-OT thermostats and relay this information to the boiler via OpenTherm®.

Note: The Hub Receiver should have a wired OpenTherm® connection to the boiler.

Making your RF1A-OT receiver into a Hub Receiver

1. Press the Reset ■ button on the receiver that you wish to make the Hub Receiver – Red and Green lights are both solid.
2. Immediately press and hold the 

and 

buttons for 5 seconds, the red light will start blinking.
3. Press the 

button and the Green light will be solid – this is now the hub receiver.
4. Press the 

button to exit to the normal interface.

Identifying if a receiver is a Hub Receiver

1. Press the 

button.
2. The Hub receiver will flash Green and Red.
3. The Normal receiver will just flash Red.
4. To exit to main interface press the 

button.

Pairing the RF1A-OT receivers together

1. Press the 

button on the Hub receiver. Red and Green lights will begin to flash.
2. Press the 

button on the next receiver to be paired. The Red light will flash 3 times and then stop.
3. Repeat this process to pair more, up to a maximum of 6 receivers.

Once all units have been paired, allow time for the receivers to begin to communicate and receive OpenTherm® information from the boiler. This may take approximately 2 – 5 minutes.

Controlling an OpenTherm® Boiler with multiple CP4-OT / CP4-HW-OT (Continued)

If the installer menu is only showing P01 - P03 then OpenTherm® is not communicating. Check pairing and OpenTherm® wiring.

You will see the red light flash on the Hub receiver and see a corresponding flash on the other receivers paired to the Hub Receiver when they are sharing information.

You may need to pair the receivers to the thermostats again.

If so, please refer to page 48.

You can tell if your thermostat is receiving OpenTherm® information from the boiler by entering the installer menu of the thermostat (Hold PROG and OK buttons for 10 Seconds) and go to P07 - Info.

If the installer menu is only showing P01 – P05, the thermostat and/or receiver has not been successfully paired.

Disconnecting the RF1A-OT receiver from Thermostats & other Receivers

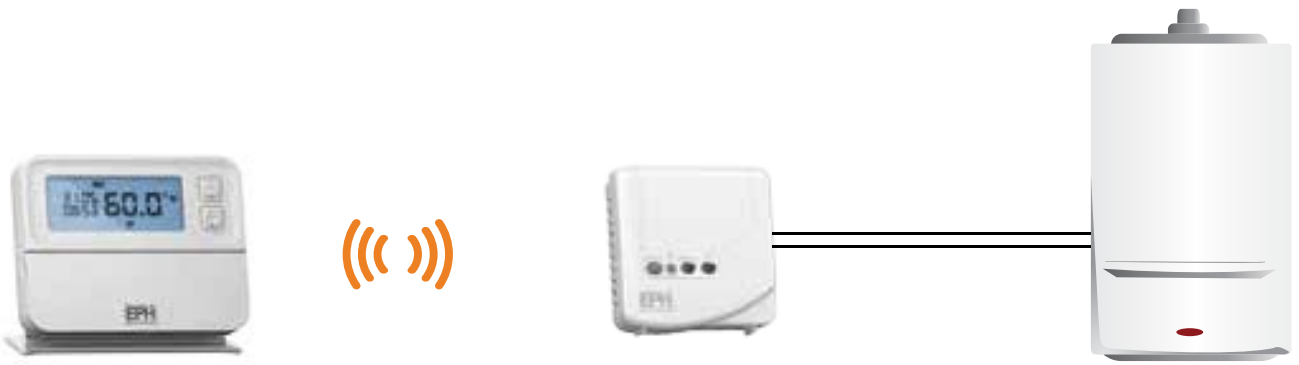
1. Press 

on the Receiver – the red light will flash (red and green light if using a hub receiver)
2. Press and hold 

for 10 seconds and the receiver will then stop flashing.
3. The RF connection is now cleared.

System architecture

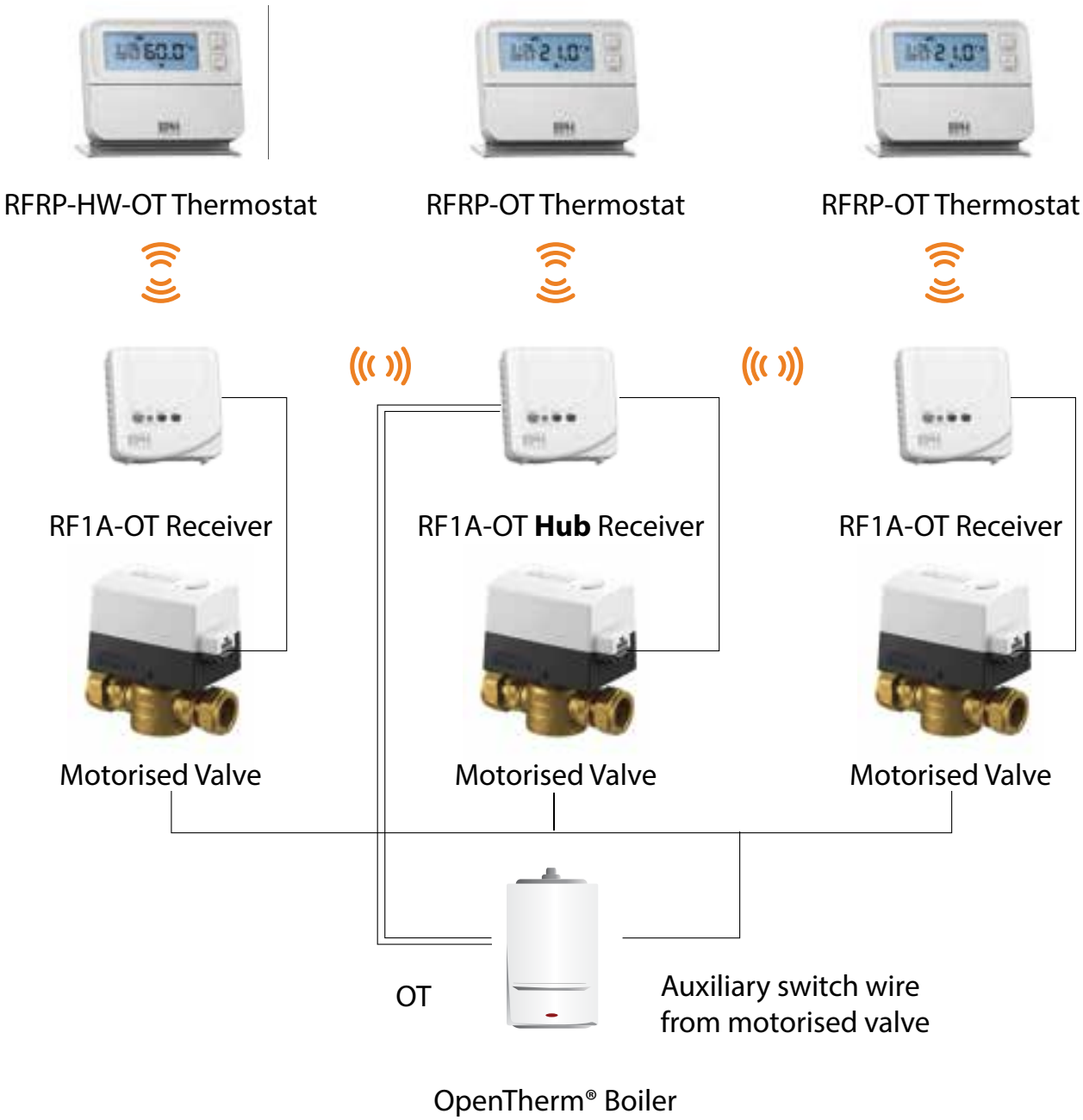
Example A 1 no. Thermostat controlling OT Boiler



RFRP-HW-OT Thermostat | RF1A-OT Receiver | OpenTherm® Boiler

Example B 3 no. Thermostats controlling OT Boiler >>

Note: A maximum of 6 thermostats can be used in the system.





RF1A-OT Wireless Receiver

Operating Instructions

Button / LED Description



Manual

Manual override

Reset button

Press to reset the receiver

Connect

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 and green LED will begin to flash.

LED Description

OT Connection Normal Operation	Green LED	Red LED
RF1A-OT ON	ON	OFF - will flash when communicating via RF
RF1A-OT OFF	OFF	ON - will flash when communicating via RF

OT Communication Error	Green LED	Red LED
RF1A-OT ON	Constant Flash	OFF
RF1A-OT OFF	Constant Flash	ON

RF Communication Error	Green LED	Red LED
RF1A-OT ON	ON	Constant Flash
RF1A-OT OFF	OFF	Constant Flash

Summary	Green LED	Red LED
RF Communication Error	OFF or ON	Constant Flash
OT Communication Error	Constant Flash	OFF or ON
Normal Operation RF1A ON	ON	OFF or Flashing
Normal Operation RF1A OFF	OFF	ON or Flashing

To connect the RFRP-HW-OT thermostat to an RF1A-OT receiver

Please note, If you are installing a CP4-HW-OT the RFRP-HW-OT thermostat & the RF1A-OT receiver will have a pre-established RF connection so it is not necessary to carry out the RF connection process below.

On the RF1A-OT receiver:

Press the 

button.

The red light will begin to flash.

On the RFRP-HW-OT thermostat:

Press the CONNECT button.

The thermostat will show **'nOE'** followed by **'---'**

Once an RF connection has been established the thermostat will show '**r01**' on the LCD screen.

Press the OK button to finish the process.

The thermostat is now connected to the RF1A-OT receiver.

To disconnect the RFRP-HW-OT thermostat from an RF1A-OT receiver

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

On the RFRP-HW-OT thermostat:

Press the CONNECT button. The thermostat will begin to search through the RF channels.

Press and hold the COPY button for 10 seconds. '**Adr**' will appear on the screen of the thermostat.

Press the OK button twice to complete the unpairing process. The thermostat RFRP-HW-OT is now disconnected from the receiver RF1A-OT.

On the RF1A-OT receiver:

Press the Connect button, the red light will flash.

If using as a hub receiver, the Red & Green lights will flash.

Press and hold connect for 10 seconds, the receiver will then stop flashing.

The RF connection is now cleared.

Notes

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