

CP4



Programmable RF Thermostat & Receiver

Installation and Operation Guide

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RFRP-OT Room Thermostat **Installation Instructions**

Factory Default Settings



Temperature indicator:	°C
Switching differential:	0.4°C
In built frost protection:	5°C - Not adjustable
Clock:	24 hours
Keypad lock:	Off
Operating mode:	5/2 day

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.

Specifications

Power supply:	2 x AA Alkaline Batteries
Power consumption:	2 mW
Battery replacement:	Once a year
Temp. control range:	5 ... 35°C
Ambient temperature:	0 ... 45°C
Dimensions:	130 x 99 x 25mm
Temperature sensor:	NTC 100K Ohm @ 25°C
Temperature indication:	°C
Switching differential:	0.4°C
Frost protection:	Only operational in Off mode
Pollution degree:	Pollution degree 2

How your programmable thermostat works

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.

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.

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 in the following ways:

- 1) Directly mounted on wall**
- 2) Free standing - Stand Included**

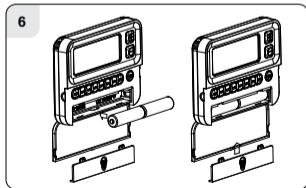
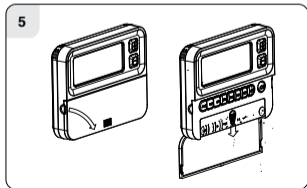
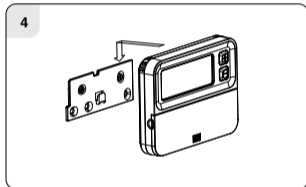
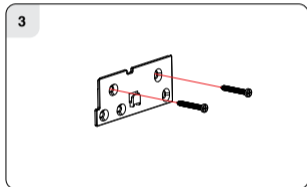
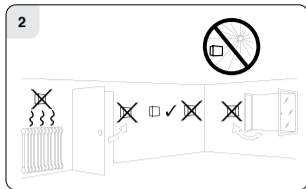
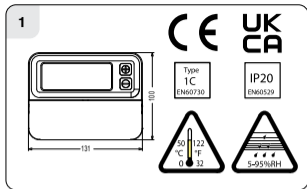
Mounting & Installation (Continued)

- 1) The mounting height should be 1.5 metres above the floor level.
- 2) The thermostat should be wall mounted 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) 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.



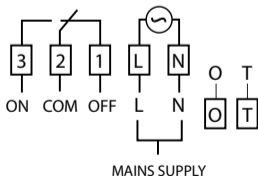


RF1A Wireless Receiver **Installation Instructions**

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.Q
Appliance classes:	Class II appliance <input type="checkbox"/>
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.

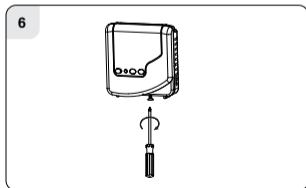
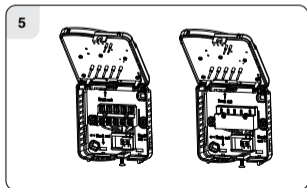
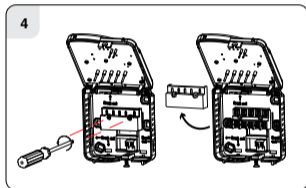
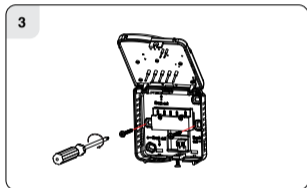
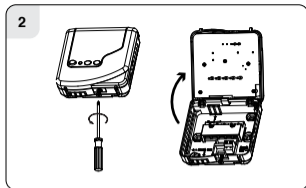
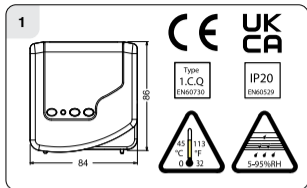
Important: Do not connect Mains Voltage to OpenTherm® terminals.

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 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.

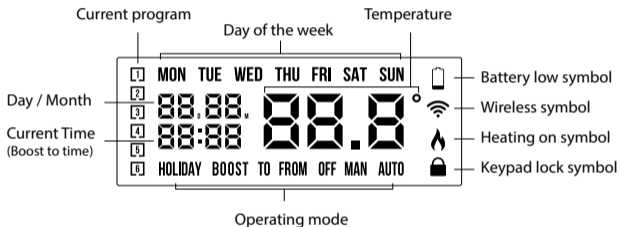
- 2) Slacken the fastening screw on the bottom of the receiver with a philips screwdriver. The receiver is hinged and can be opened 180 degrees.
- 3) Screw the receiver to the wall with the screws provided.
- 4) Remove the protective cover on the terminal block.
- 5) Insert wires into terminal block in accordance with the wiring diagram.
- 6) Close the cover and tighten the fastening screw.



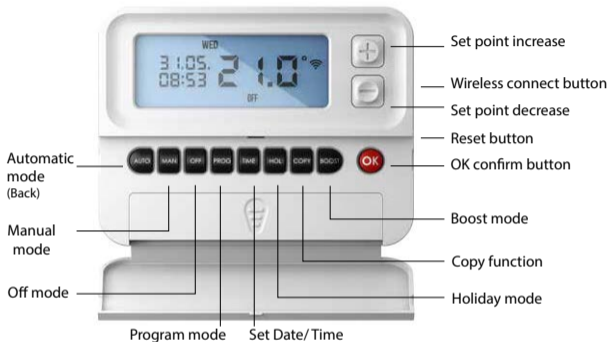


RFRP-OT Room Thermostat **Operating Instructions**

LCD Symbol Description



Button Description



Automatic mode



Set Date / Time



Set point increase



Manual mode



Holiday mode



Set point decrease



Off mode



Copy function



Confirm button



Program mode




Boost mode



Reset button


Resetting the thermostat

Press the  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  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  button once, the year will begin flashing.



Press the  or  buttons to adjust the year. Press .

Press the  or  buttons to adjust the month. Press .


Press the  or  buttons to adjust the day. Press .

Press the  or  buttons to adjust the hour. Press .

Press the  or  buttons to adjust the minute. Press .

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  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	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

7 Day						
	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

24 Hour						
	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

Programming Modes

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

5/2 Day mode Programming Monday to Friday as one block and Saturday and Sunday as a 2nd block.

Each block can have 6 different times and temperatures.

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 time and temperatures.




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.


Adjust the program setting in 5/2 Day mode

Press the  button once.




Programming for Monday to Friday is now selected.




Press the  or  buttons to adjust the P1 time. Press .

Press the  or  buttons to adjust the P1 temp. Press .

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

Programming for Saturday to Sunday is now selected.

Press the  or  buttons to adjust the P1 time. Press .

Press the  or  buttons to adjust the P1 temp. Press .

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

Press the  button to return to automatic mode.


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

While in PROG Mode pressing the  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 and temperatures for the day that you wish to copy from in programming mode.


When still on the day press the  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  button when copying has been completed.


Temporary Override



When in AUTO mode, press the  or  buttons to adjust the temperature setpoint. 'OvEr' will appear on the screen.


Press  or after 5 seconds the thermostat will operate in this temperature, until the next switching time.



To cancel temporary override, press the  button and then press the  button to return to the automatic mode.

Permanent Override

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


Press the  or  buttons to adjust the temperature setpoint.

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



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


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  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  button the temperature will now flash. You can edit the temperature if you press the  or  buttons.

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


Press the  or  buttons to adjust the year. Press  .

Press the  or  buttons to adjust the month. Press  .

Press the  or  buttons to adjust the day. Press  .

Press the  or  buttons to adjust the hour. Press  .


'HOLIDAY TO' will appear on screen.

Press the  or  buttons to adjust the day. Press  .

Press the  or  buttons to adjust the month. Press  .

Press the  or  buttons to adjust the year. Press  .

Press the  or  buttons to adjust the hour. Press  .

The thermostat will now return to the mode it was in before the Holiday settings were entered. To cancel Holiday mode, press the  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  button for 5 seconds.

Press either the  or  buttons to select the OFF or AUTO mode.

Press the  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

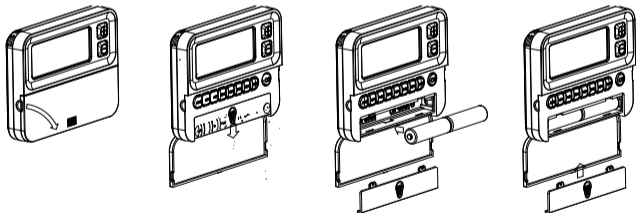
Lower the flap at the front of the thermostat.

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  to navigate and select.

Use ,  or  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

P0 6: Exit

Installer menu **OpenTherm®** Instructions

P0 6: Setting DHW temperature

P0 7: OpenTherm® Information

P0 8: DHOP

P0 9: Set OpenTherm® Parameters

Exit

PO 1 Operating Mode (Normal / Optimum Start / TPI)

Nor (Normal Mode)


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.

OS (Optimum Start Mode)

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, 20, 25 or 30. This will allow the thermostat 10, 15, 20, 25 or 30 minutes to increase the room temperature by 1°C.

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

PO 1 Operating Mode (Normal / Optimum Start / TPI)

OS (Optimum Start Mode)



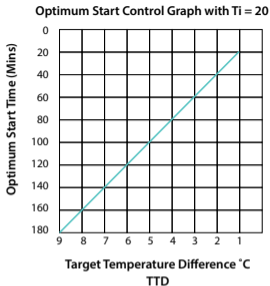
(Continued)

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.

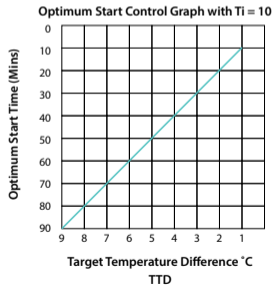
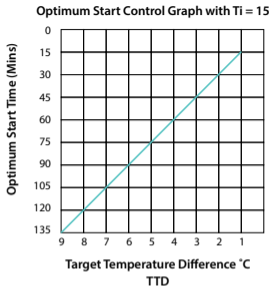


▲ Example when $T_i = 20$

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 @ $T_i=20$.

Example when $T_i = 10$ ▶

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 @ $T_i=10$.



PO 1 Operating Mode (Normal / Optimum Start / TPI)

TPI (Time Proportional & Integral Mode)

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:

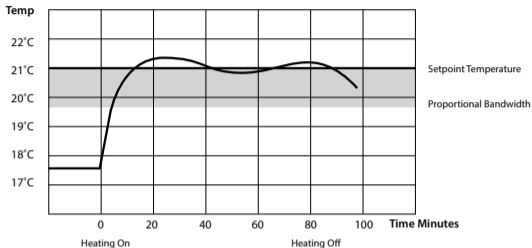
1. **CYC** - No. of Heating Cycles per Hour:  6 Cycles

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.

2. **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.

TPI Control



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 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.

PO 2 Setting high & low limits



Hi 35°C and Lo 5°C

This menu allows the installer to change the min. and max. temperature range that the thermostat can be set at.



PO 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.

PO 4 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 .

PO 5 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.

PO 6 Exit

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

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

PO 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  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).

PO 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	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


PO 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®

PO 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  or  buttons.

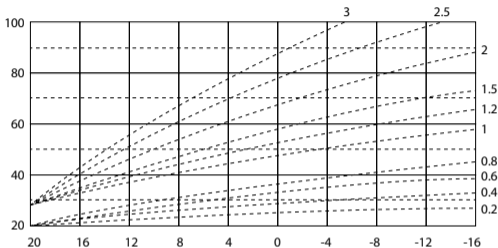
Press  to confirm.

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.		

PO 9 Set OpenTherm® parameters

Climatic Curve



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 CombiPack4-OT

It is possible to have 6 CombiPack4-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 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.

Controlling an OpenTherm® Boiler with multiple CombiPack4-OT (Continued)

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.

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 51.

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 Sec) and go to P07 - Info.

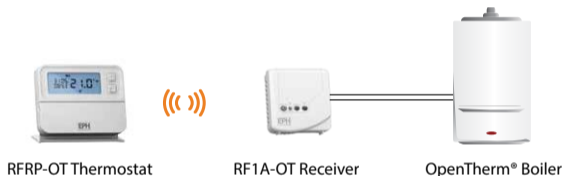
If the installer menu is only showing P01 – P05, the thermostat and/or receiver has not been successfully paired.

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

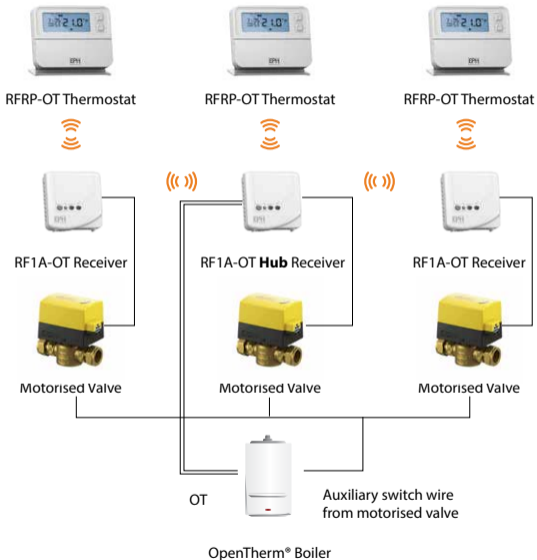
System architecture

Example A 1 no. Thermostat controlling OT Boiler



Example B 3 no. Thermostats controlling OT Boiler >>

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





RF1A Wireless Receiver **Operating Instructions**

Button / LED Description



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 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-OT thermostat to an RF1A-OT receiver

Please note, If you are installing a CombiPack4 the RFRP-OT thermostat and 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-OT thermostat:

Press the  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  button to finish the process.


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


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

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


On the RFRP-OT thermostat:

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

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

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

On the RF1A receiver:

Press the  button, the red light will flash.

Red & green lights if using as a hub receiver.

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

The RF connection is now cleared.

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