

Instruction Manual

RF Programmable Room Thermostat

Warning - Please read this manual prior to installation or use.

Shock Hazard 

This unit must be installed by a competent person, in accordance with BS 7671 (the IEE Wiring Regulations), or other relevant national regulations and codes of good practice.

Always isolate the AC Mains supply before installing this unit.



Manual Issue No. IM-T105NP-002

INTRODUCTION

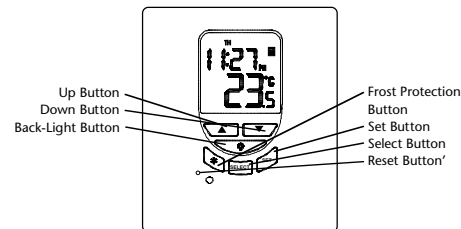
INTRODUCTION

This thermostat can replace most common residential thermostats and is designed to be used with electric, gas or oil heating control system or cooling system.

Unlike ordinary single unit design thermostats, This is a new type of thermostat separating the operational functions into two units. The Receiver serves for wiring connections and heat/cool on/off control. The Control Centre serves as user interface and temperature sensing/control. The two units are linked by Radio Frequency.

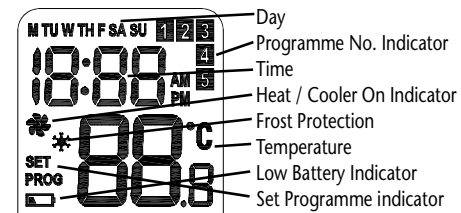
The advantage is that user can put the Control Centre nearby and can read/control the temperature of the actual living area.

Outlook of Control Centre:

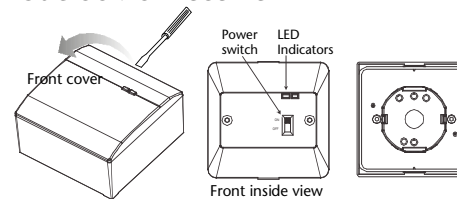


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LCD Display:



Outlook of receiver



Features:

Several useful function and operating modes have been incorporated to suit a variety of customer needs besides all the features associated with the state of the art programmable thermostat.

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Control Centre:

- Can be placed anywhere in the home to detect and control the temperature of an area of the user's choice. Not limited by power control wiring locations.
- Link with the Receiver via RF. Control distance 60M open site
- LCD shows the "need to know" information only, which is easier to understand.
- Real time clock with day of the week display
- Room temperature display
- Programme set-point display
- Simplified temperature adjustment - Simplified programming procedure
- Default factory preset programme from start up or reset
- 5-2 or 7 day programming
- Frost Protection preset at 5°C
- Temporary override set-temperature
- User selectable temperature span
- User selectable heater/cooler operation mode
- Battery level detection
- 2 AA size alkaline batteries
- Slim housing design
- EL backlight

Receiver:

- Linked with Control Centre via RF.
- Power control rating 230V AC up to 16A resistive.
- Powered by line voltage only. No battery required.
- Two LED indicators for power and output status.

3**INSTALLATION OF RECEIVER****Caution :**

- 1) Remember to Isolate AC mains supply, note this must be 230V AC and fused at 13 amps max.
- 2) Select a suitable indoor location free from water and moisture.
- 3) The receiver should not be shielded from the RF signal in any way, follow 'Testing the RF Transmission' section of this manual before deciding on a final location for the receiver and control centre units.
- 4) To access the wiring terminals carefully prize off the front cover from the top middle of the receiver with a flat head screw driver and remove the 2 screws underneath as illustrated in the diagram on page 2 of this Manual.
5. Observe the nation regulation for the wiring. A qualified electrician is recommended for installation and servicing.

This thermostat has been designed for simple and quick installation requiring only a few tools. Only the Power Control Unit needs to be installed.

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Required Tools

- Hammer • Masking tape • Screwdriver
- Drill and 3/16" drill bit
(if not installed on a junction box)

RF Address Code Setting

If there is another user nearby, e.g. in the next house, your receiver may be triggered by their transmitter. You may select a different RF address code to prevent this. The receiver can only response to RF coding with the same address code setting as its own.

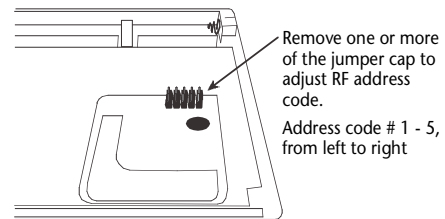
1. To adjust address code of Receiver, simply push up one or more of the 5 dip switch levers .
2. To adjust the address code of the Control Centre, open the housing of control centre as illustrated in the diagram on page 10 of this manual.
3. Remove one or more of the jumper caps as shown in the diagram on page 6.

Caution :

1. Address code of Control Centre must be the same as address code of Receiver. For any jumper cap removal of address code # in Control Centre, same address code # of Receiver must be put to the UP position.
2. Disconnect AC power and remove batteries before adjusting address code.

Note that RESET button must be pressed after removing any of the jumpers on the Control Centre.

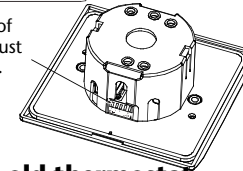
5



Remove one or more of the jumper cap to adjust RF address code.

Address code # 1 - 5, from left to right

Push up one or more of the white levers to adjust Receiver address code. Address code # 1 - 5, from left to right.



Removing your old thermostat

CAUTION : to avoid electric shock, isolate the power of the heating/cooling system at the main power box in your home. Read the following instructions carefully before disconnecting the wires.

1. Turn off your old thermostat.
2. Remove the cover from the old thermostat.
3. Unscrew the old thermostat from the wall plate.
4. Now find the screws attaching the wall plate to the wall, and remove them. You should now be able to pull the wall plate a small distance from the wall. Do not disconnect any wire yet, simply locate the wires.

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WARNING: After removing the wall plate, if you find that it is mounted on a junction box (e.g. a box similar to one behind a light switch or electric outlet), high voltage circuit may be present and there is a danger of electric shock. Please consult a qualified electrician.

Choosing a Location for the Control Centre

The Control Centre can be mounted to a wall using the screws provided or can left in a convenient location to monitor your living area using the units integrated stand.

It is advisable to choose a location about five feet (1.5 metre) above the floor in an area with good air circulation and away from.

1. Drafts.
2. Air ducts.
3. Radiant heat from the sun or appliances.
4. Concealed pipes and chimneys.

Your chosen location should allow a clear signal to reach your receiver with nothing interrupting or interfering with the RF transmission. Please follow 'Testing the RF Transmission' section of this manual when considering where to locate your Control Centre.

Mounting the Receiver onto the wall/junction box:

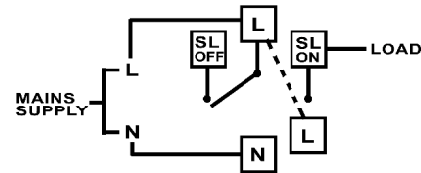
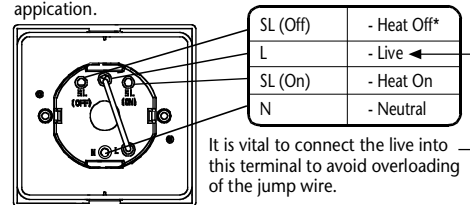
1. Remove the front cover of the Receiver. (go to step 4 if installed on a junction box)
2. Mark the holes position.
3. Drill two holes and insert the plastic anchors carefully into the holes until they are flush with the wall.
4. Connect the wires - see wiring diagram.
5. Push on the wires in the wall.
6. Securely fasten the Receiver to the wall with the two screws.
7. Replace the front cover and installation is completed.

Mounting the Receiver onto the optional wall box :

1. Remove the front cover of the Receiver.
2. Mark the holes position for the wall box.
3. Drill two holes and insert the plastic anchors carefully into the holes until they are flush with the wall.
4. Pull the wires into the wall box and fasten the wall box onto the wall.
5. Connect the wires - see wiring diagram.
6. Push on the wires in the wall box.
7. Securely fasten the Receiver to the wall box with the two screws.
8. Replace the front cover and installation is completed.

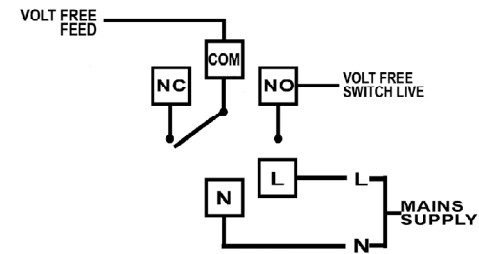
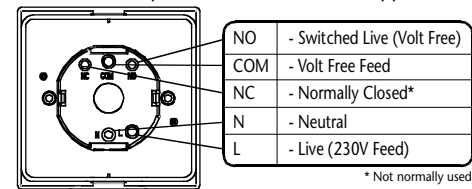
WIRING DIAGRAM FOR 230V APPLICATION

The unit is default 230V, if volt free application is required you must remove link & follow wiring diagram for volt free application.



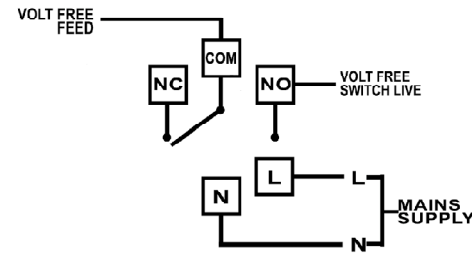
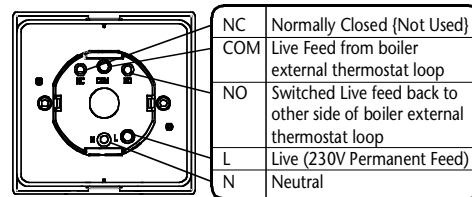
WIRING DIAGRAM FOR VOLT FREE APPLICATION (Remove Link!!!)

The unit still requires a 230V feed for V.F. applications



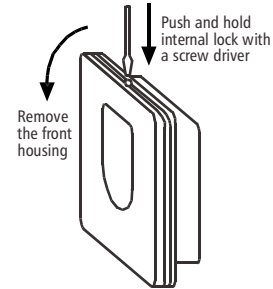
WIRING INTO THE EXTERNAL THERMOSTAT LOOP OF A BOILER
(Remove Link on Receiver & External Thermostat Link on Boiler!!!)

The unit still requires a 230V Permanent Live feed



SETTING OF CONTROL CENTRE

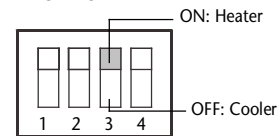
Before making any selection in the control centre, it's back housing must be removed as follows :



Inside the Control Centre after back housing is removed, you can find the DIP switch. These four switches are used to control the span, heat/cool mode and 7 or 5/2 program selection.

Heater/Cooler Selection

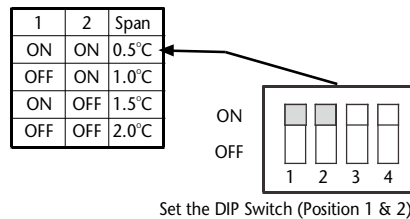
Set the DIP switch (position 3) according to your selection of heater system or cooler system as indicated in the following diagram.



Set the DIP Switch (Position 3)

Temperature Span Selection

Span is the temperature difference between the turn on temperature and turn off temperature. For example, in heating system, if you set temperature to 20°C and span to 1°C, the heater will operate when the room temperature drops to 19.5°C and turns off when the temperature rises to 20.5°C. Set the DIP switch (position 1 & 2) according to your selection of temperature span as indicated in the following diagram.

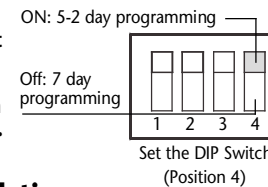


5-2 or 7 Day Programme Selection

The Control Centre is capable of operating with a 5-2 or 7 day program setting. 5-2 allows you to set one program for weekdays and another for the weekend. 7 day programming allows a different program to be set for each day of the week. Set the DIP switch (position 4) according to your selection of program as indicated in the following diagram.

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Note that the RESET button must be pressed after altering any DIP switch position on the Control Centre.

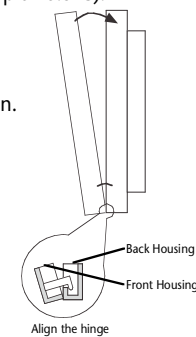


Battery Installation

Your thermostat uses 2 x "AA" size Alkaline batteries to operate. To power-up the unit, insert two "AA" batteries into the battery compartment of the front housing. When power is applied for the first time, the display must show time and the day as well as the room temperature (for example 28.5°C).

If the display is different, press the RESET button. Use a fine probe such as straightened paper clip to gently push the RESET button.

After installation of the batteries, push back the rear housing to the control centre and then the stand. Before turning on the main switch of the system, press the reset button once. The thermostat is ready for use.







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The following table is the setting of the thermostat after reset or Power on:

Function	Status after Reset or Power on
Operation Mode	Normal mode
Room Temperature	22.0°C, to be renewed within 5 seconds
°C indicator	On
Clock	12:00
AM/PM indicator	AM
Day of Week indicator	M
Program	Default factory setting
Set-point Temperature	Default factory setting
Program indicator	Number 1
SET indicator	Off
PROG indicator	Off
Frost Protection indicator	Off
Heat indicator	Off
Low-Battery Warning indicator	Off, to be renewed within 5 seconds
Output Relay	Off

After reset or power on, the thermostat will operate in Normal mode. Set-point temperature is reset to default setting. Room temperature is updated in 5 seconds and the control process starts. Program Number is updated to indicate the running program.

Key Function Guide

	Increase Set-point Temperature
	Decrease Set-point Temperature
	Turn on backlight for 5 seconds
	Activate/Deactivate Frost Protection
SET	SET Key for Clock/Program settings
SELECT	SELECT Key for Clock/Program settings

Setting The Clock

- Press and hold **SET** and **SELECT** in Normal mode for 3 seconds to enter Clock setting mode.
- Clock, Day-of-Week, and "SET" are displayed. All other indicators are cleared. "Hour" is flashing indicate that it is the selected item to be adjusted.



- Release **[SELECT]**, press **[▲]** or **[▼]** to increase or decrease the "hour" respectively.
- Press and release **[SELECT]**, press **[▲]** or **[▼]** to increase or decrease the "minute" respectively.
- Press and release **[SELECT]**, press **[▲]** or **[▼]** to cycle the Day of Week from "M" to "SU".
- Press and release **[SELECT]** to allow change of "hour" again.
- Press and hold **[▲]** or **[▼]** for 2 seconds to enter fast advance in 4Hz.
- Selected item will stop flashing when a key is pressed. The selected item will flash again once the key is released.
- Press **[SET]** at any time to confirm the setting and return to normal mode.
- Thermostat will return to normal mode if no key pressed for 15 seconds, Clock is also updated with the latest setting.

Programming Your Thermostat

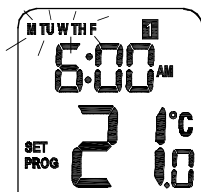
The control Centre has a built in factory default program setup which is operational after initial power up or reset. The default program is as follows.

Program	Weekday (M to F)	Weekend (SA to SU)
1	Time: 6:00am Set-point Temp: 21°C	Time: 6:00am Set-point Temp: 21°C
2	Time: 8:00am Set-point Temp: 17°C	Time: 8:00am Set-point Temp: 21°C
3	Time: 4:00pm Set-point Temp: 21°C	Time: 4:00pm Set-point Temp: 21°C
4	Time: 6:00pm Set-point Temp: 21°C	Time: 6:00pm Set-point Temp: 21°C
5	Time: 10:00pm Set-point Temp: 17°C	Time: 10:00pm Set-point Temp: 17°C

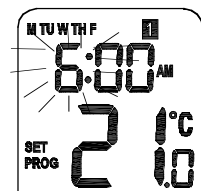
Setting Your own Program

5-2 days programming selected

- 5 different sets of Time and Set-point temperature can be set for the Weekdays or the Weekend.
- To review or change program, press **[SET]** in Normal mode to enter Program Setting mode. Program 1 of the Weekday, and "SET PROG" are displayed. All other indicators are cleared. "Weekday" is flashing to indicate that it is the selected item to be adjusted.



- Press **▲** or **▼** to scroll between Weekday & Weekend pressing **[SELECT]** to begin reviewing or adjusting the time and temperature settings. "Hour" is now flashing to indicate that it is the selected item to be adjusted.



- Use **▲** or **▼** to change any settings as required before pressing **[SELECT]** to scroll to the next setting.
- The time and set-point temperature settings will be scrolled through in the below sequence.

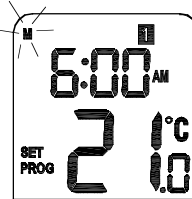
(Program 1) "Hour" → "Minute" → Set-point temp →
(Program 2) "Hour" → "Minute" → Set-point temp →
(Program 3) "Hour" → "Minute" → Set-point temp →
(Program 4) "Hour" → "Minute" → Set-point temp →
(Program 5) "Hour" → "Minute" → Set-point temp →
and then cycle back to (Program 1)

Press **[SET]** at any time to confirm the settings and return Weekday/Weekend selection, pressing **[SET]** again will accept settings and exit programming.

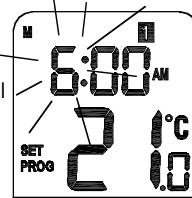
7 Days Program Selected

- 5 different sets of Time and Set-point temperature can be set for each individual Day of the Week.
- To review or change the program, press **[SET]** in Normal mode to enter Program Setting mode. Program 1 of Monday, and "SET PROG" are displayed. All other indicators are cleared. "Day of Week" is flashing to indicate that it is the selected item to be adjusted.

- Press **↑** or **↓** to scroll through the days of the week pressing **SELECT** to begin reviewing or adjusting the time and temperature settings for that particular day. "Hour" is now flashing to indicate that it is the selected item to be adjusted.



- Use **↑** or **↓** to change any settings as required before pressing **SELECT** to scroll to the next setting.
- The time and set-point temperature settings will be scrolled through in the below sequence.



(Program 1) "Hour" → "Minute" → Set-point temp →
 (Program 2) "Hour" → "Minute" → Set-point temp →
 (Program 3) "Hour" → "Minute" → Set-point temp →
 (Program 4) "Hour" → "Minute" → Set-point temp →
 (Program 5) "Hour" → "Minute" → Set-point temp →
 and then cycle back to (Program 1)

Press **SET** at any time to confirm the setting and return to day selection, pressing **SET** again will accept settings and exit programming.

TESTING THE RF TRANSMISSION

It is important to site the Receiver and Control Centre in locations where the RF signal cannot be interrupted. The receiving range between Control Centre and Receiver is 60M in open area. Many factors can affect the RF transmission, shortening the operating distance e.g. shielding by thick walls, foil back plasterboard, metal objects such as filing cabinets, general RF interference etc. However, the range is enough for most household applications.

It is advisable to test the RF transmission from the intended Control Centre location to the Receiver location before fixing the Control Centre to the wall.

1. Press UP button until the set-point temperature is higher than room temperature by a few degrees.
2. Wait for a few seconds. The animated fan (heat/cool call indicator) should appear on the bottom left of the LCD on the control centre.
3. Check the green LED on the receiver unit. It should be illuminated.
4. Press Down button to adjust the set-point temperature to be lower than room temperature. Wait for a few seconds. The animated fan (heat/cool call indicator) should disappear and the green LED should switch off
5. If at step 3 the LED is not illuminated, Press Down button to adjust the set-point temperature to be lower than room temperature to stop the unit calling for heat. Try to place the Control Centre closer to the Receiver, repeating steps 1 to 4.
6. Alternatively you can try and alter the address code following the 'RF Address Code Setting' section of this manual, then repeat steps 1 to 4.

Note that the RESET button on the Control Centre should be pressed after altering the address code.

Multiple Thermostat Installations



Please note, if using more than one Thermostat in the same installation, be sure that there is at least a 1 metre gap between receiver units to avoid RF interference.

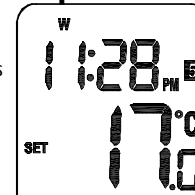
When installing multiple thermostats you should ensure that you assign different address codes for each unit following the 'RF Address Code Setting' section of this manual. Each thermostat should be introduced to the installation one at a time with all other receiver units switched off, also make sure that the batteries are removed from all other Control Centres.

Install each unit following the 'TESTING THE RF TRANSMISSION' section of this manual. Once you are happy with the operation of one unit you may install the next. Once all thermostats are installed, if one unit then seems to function abnormally, try changing the address code of the control centre & its corresponding receiver again taking care that the new code given is different to all others in the installation.

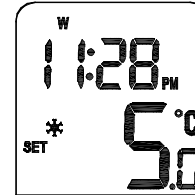
The control centre sends RF On/Off signals every 10 min to ensure the receiver is in the correct state. If for some reason the 1st RF signal is interrupted you may notice the control centre has started/stopped calling for heat but the receiver hasn't switched. Simply wait 10 minutes until the next RF signal is transmitted and the receiver unit should switch.



Reviewing Set-point Temperature:

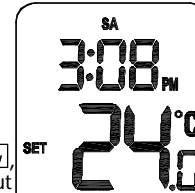
- Press  or  to review the Set-point temperature.
- When any of the programs are running, the LCD will show the program Set-point temperature with the "SET" indicator displayed.



- When operating in Frost protection mode, the LCD will show 5°C with the Frost Protection indicator displayed.
- When operating in Temporary Override mode, the LCD will show the temporary Set-point temperature.

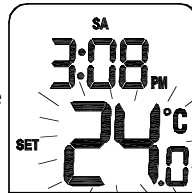


- Press any key except  or , or wait 3-4 seconds without key press to return to normal mode, room temperature will be displayed.



Temporary Override:

- Press \uparrow or \downarrow again when reviewing Set-point Temperature to enter Manual Override mode, the Set-point Temperature is increased or decreased by increments of 0.5°C accordingly.
- In Normal mode, press and hold \uparrow or \downarrow to display the Set-point temperature. After 2 seconds, the Thermostat will enter Manual Override mode and start fast advance at 4Hz. If buttons are released within 2 seconds, this is treated Set-point Temperature review only.
- Clock, Day-of-Week, and "SET" are displayed During temporary override with all other indicators cleared. The Set-point temperature will flash to indicate it can now be changed.

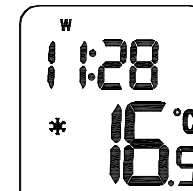


The setting range is 10°C - 35°C in increments of 0.5°C.

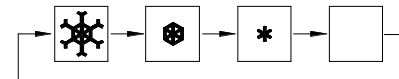
- Set-point Temperature will stop flashing when a key is pressed, then flashes again once the key is released.
- Press SET at any time to confirm the setting and return to normal mode.
- Thermostat will return to normal mode after 3-4 seconds if no key is pressed. Temporary override remains active until clock or program setting are adjusted, Frost protection is activated or the next program time / temperature set-point is reached.

Frost Protection (in Heat Control only):

- Press FROST in Normal mode to activate the Frost Protection.
- The Set-point temperature is automatically set to 5°C to prevent frosting.



- Whenever the Frost Protection is activated, the Frost Protection indicator is animated with the below sequence in 4Hz.



- Press FROST again to deactivate the Frost Protection, the Frost Protection indicator will turn off.

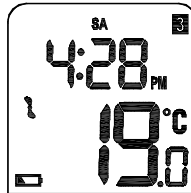
LCD Backlight:

- LCD backlight is activated when [BL] or any key is pressed. The backlight will automatically switch off after 5 seconds if no other button is pressed.
- LCD backlight will not operate when battery is low.
- LCD backlight is illuminated throughout the Clock, Program, and Temporary Override Temperature settings.

Low-Battery Detection:

- Battery voltage is sampled every minute. When the battery voltage drops to a certain level, the Low-Battery warning indicator appears.

The thermostat functions normally during battery low. However, user must change the batteries as soon as possible before the battery is too weak that normal operation cannot be assured.

**BATTERY REPLACEMENT**

It is recommended to replace the batteries when the display is showing the battery-low icon. To replace the battery,

1. Turn off the power of the Receiver first.
2. Remove the back housing (as illustrated on Page 10)
3. Replace the old batteries with 2 new AA alkaline batteries.
4. Replace the back housing and stand.
5. Press the reset button once and then turn on the power switch of the Receiver.

POWER SWITCH

There is a power switch on the Receiver. When there is no demand to turn on the heating/cooling device, e.g. when you go on holiday, it is recommended to turn the power switch to the Off position.

LED INDICATOR

There are two LED's on the Power Control Unit as status indicators:

1. The Red LED Illuminates when the unit is receiving A 230V AC feed and the power switch is in the On Position.
2. The Green LED Illuminates up on receiving a call signal from the Control Centre to indicate the heating/cooling device is energised.

SPECIFICATION

Physical Characteristics

Size:	Control Centre – 116 x 100 x 23.5 mm Receiver - 91.5 x 91.5 x 42 mm
Weight :	Control Centre - 126g Receiver - 176g

Electrical & General Characteristics

Power Supply:	Control Centre - 2 x AA size Alkaline batteries Receiver - 230V AC 50Hz
Switch Rating :	Volt Free Selectable 230V AC 16 (8)A max
Temperature Setting Range :	10°C - 35°C in 0.5°C increments
Temperature Control Accuracy :	+/- 0.5°C at 25°C
Operation temperature:	0°C to 50°C
Temperature Span Settings :	0.5,1.0,1.5 or 2°C
Frost Protection Temperature :	5°C

Time Display :	12 hour/24 hour
Clock Accuracy :	+/- 1 min/month
Air conditioner cycle time :	3 minutes
Memory :	Memory hold up: 5 minutes
Back Light :	Blue colour EL Panel
Battery Low Warning :	2.6 - 2.8V
Operating Humidity :	0 to 90% RH/non condensing
Protection :	Auto cut off at over 35°C (heating mode) Auto Cut of at under 10°C (cooling Mode)
Micro disconnection on operation :	Type 1.B control action
Rated Impulse Voltage :	4kV
Storage Conditions :	-20°C - 55°C to 90% RH/non condensing
Agency Approval :	CE