ecoStat 3 PRE5203EC3

3 Stage Infrared settable intelligent microwave sensor thermostat with user adjust.

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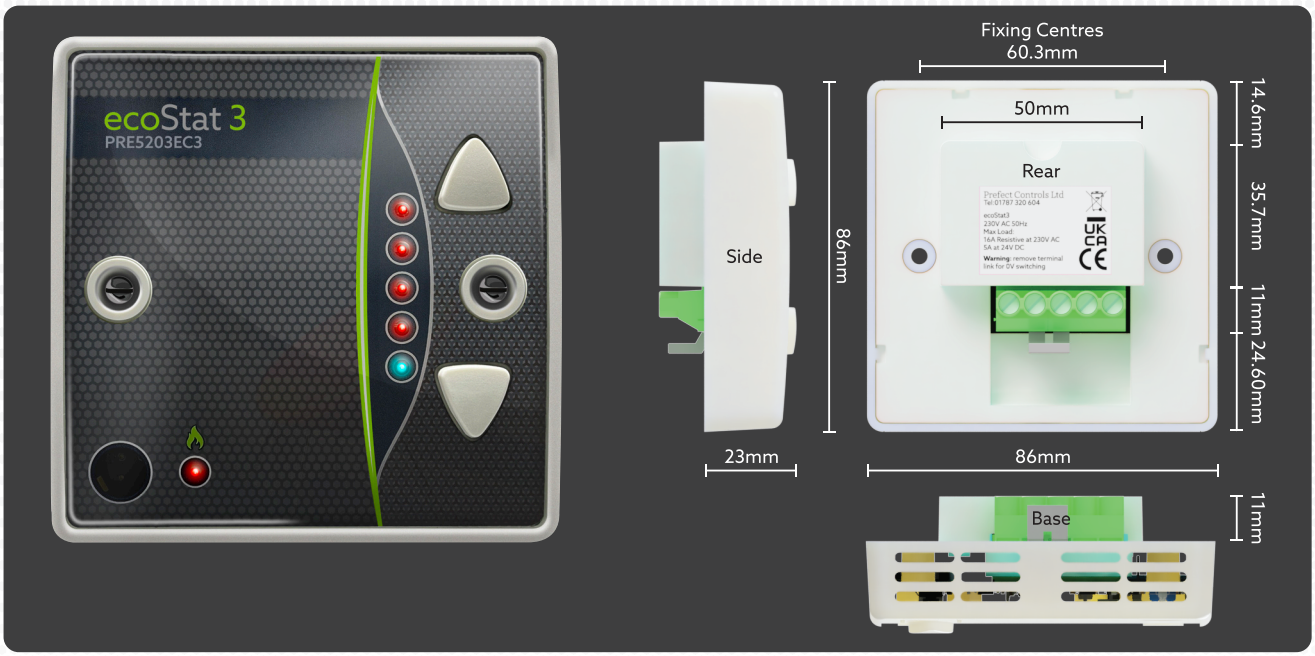

SPECIFICATION

Size
Standard single gang plate size. Requires a 30mm deep surface pattress or 25mm or greater sunken box. When mounting into a sunken wall box or metal clad box remove the top and bottom mounting lugs of the box.

Supply voltage
216-253V AC at 50Hz.

Load
16A Resistive at 230V AC, 5A at 24V DC not suitable for use with quartz heaters. No controls heaters only.

Electrical connections
Live in (L), Neutral (N), Common (COM), Normally open/live out (Swout), 230V AC 50Hz Boost Trigger (TRIG).

Terminal capacity
6mm² Maximum cable CSA, internal terminal size 2.9mm x 4mm.

Indicators
Heating Active, Frost, Setback, Boost Minimum, Boost Medium, Boost Maximum.

Adjustment
Programme selection with temperature adjustment, button selected.

Programs
Boost, Setback, Frost.

Detection modes
Absence, Presence, Disabled selectable.

Detection range
5m maxmium (theoretical)

Timing range
Boost 0-999 minutes,
Setback 0 minutes to 100 hours,
Occupancy time-out 0-30minutes.

Temperature range
Boost, Setback and Frost 1-40°C.

Schedule
Two Boost Schedules per day, 7 day programmable.

Clock range
23 hours, 59 minutes. (00:00 Disabled)

Clock cell
CR2032 3V factory fitted.

Clock cell life expectancy
10 Years.

Programming method
Secure infrared programming via the PRE5904 handset.

Conformance
EMC 2014/30/EU, LVD 2014/35/EU, RED 2014/35/EU, UKCA ECR 2016, EES 2016, RER 2017.

Microwave Module Standard
ETSI EN 300 440, RED 2014.

ERP Class
ErP Class 1.

Casing material
PC/ABS.

Temperature Range
0°C to 40°C.

Temperature accuracy
+/- 0.5°C.

IP Rating:
IP3X.

Operating environment
0-40°C, 20-90% RH non-condensing.

Ecodesign Lot 20 Compliant
Yes.

Warranty
5 Years.

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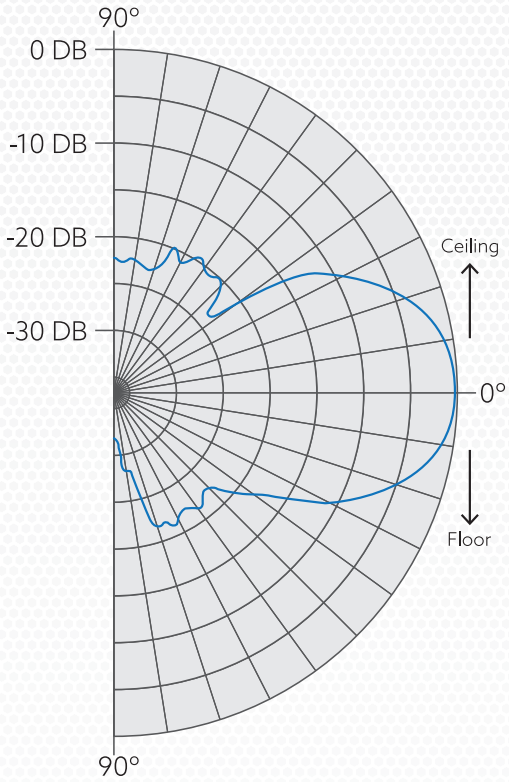
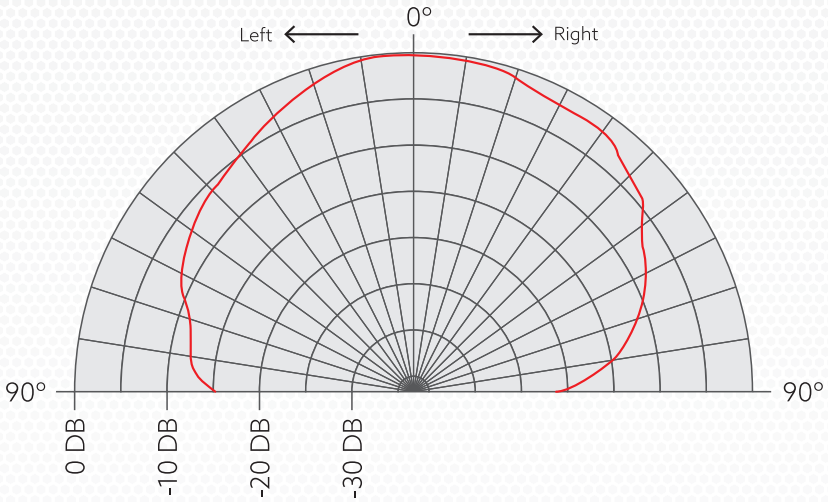
INDEX

OCCUPANCY DETECTION



DETECTION PATTERN



The unit utilises a microwave Occupancy sensor to detect movement of occupants. The position of the unit is vital to correct operation.

Place the unit in such a position that the detector has a clear line of sight of the required detection area while ensuring the unit is correctly positioned for temperature sensing.

Metallic objects in front or beside the unit will inhibit the detector, objects behind the unit will not affect performance e,g metal back boxes. Do not mount on a flexible or vibrating surface as this will cause false detections.

Do not apply any additional labelling to the unit, foil backed labels and some metallic inks can inhibit the detector. See page 13 for Occupancy mode operation.

The Occupancy detector range and detection speed can be altered for the installation environment. The detector has the ability to detect through thin walls and doors, take this into account when siting the unit, the range can be set to - short 2m / medium 3m / or long 5m. These range measurements are approximate. Set the range to the minimum required level to avoid false detections. Where thin walls are present place the unit facing an outside or non shared wall.

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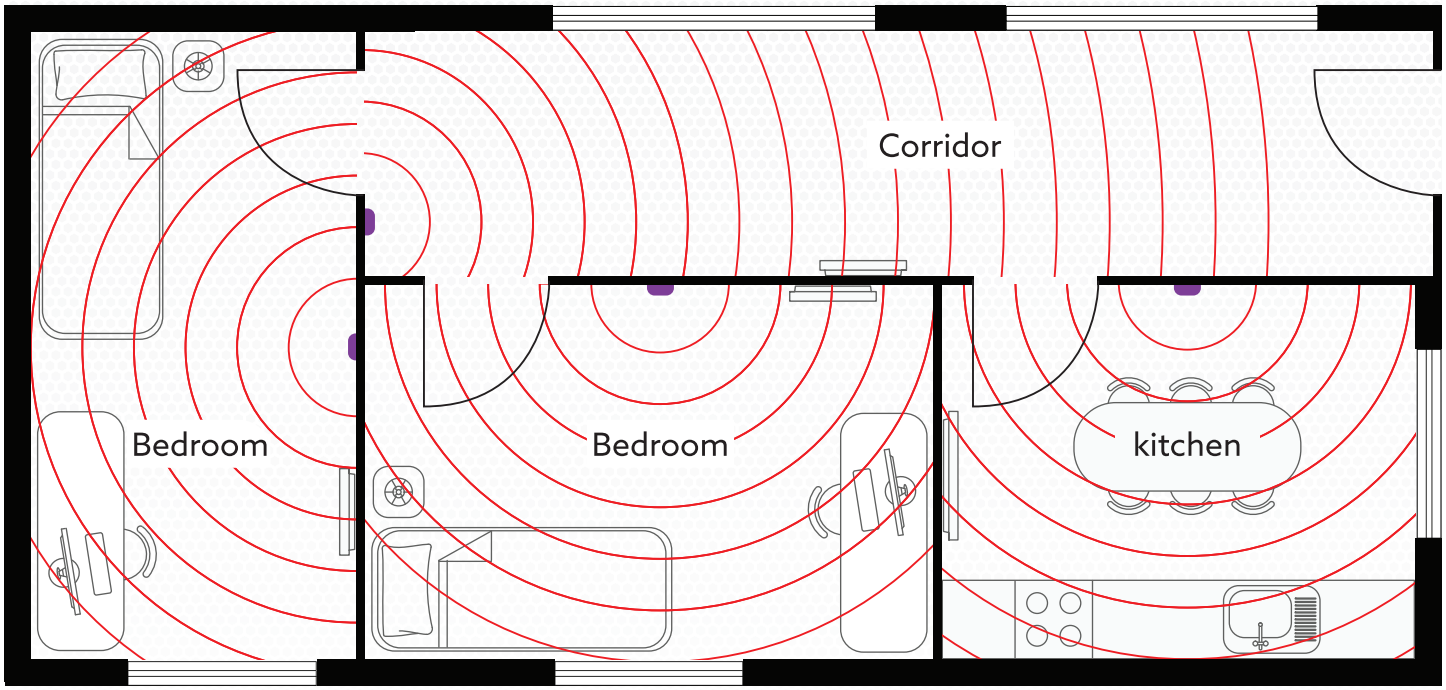
When installing in a corridor, site the unit at one end facing down the corridor as shown below.

When installing in communal areas where the door may be left open to a corridor, and passing traffic could trigger the detector, site the unit facing away from the entrance door as shown in the kitchen below.

The detection speed setting is how quickly the sensor reacts to movement, a slow setting will ignore a brief detection, for instance an occupant walking past, but will detect an occupant moving within the room. A fast setting is more suited to corridors, medium setting for rooms, and slow setting for communal areas depending on the requirements. The slow setting can be beneficial for communal areas were the door to a corridor may be left open and passing traffic can be detected. A slow setting can aid in reducing false detections.

Settings can be altered via the handset, navigate to: ***ecoStat3 > View / Edit Settings > Advanced > Occupancy Settings.***



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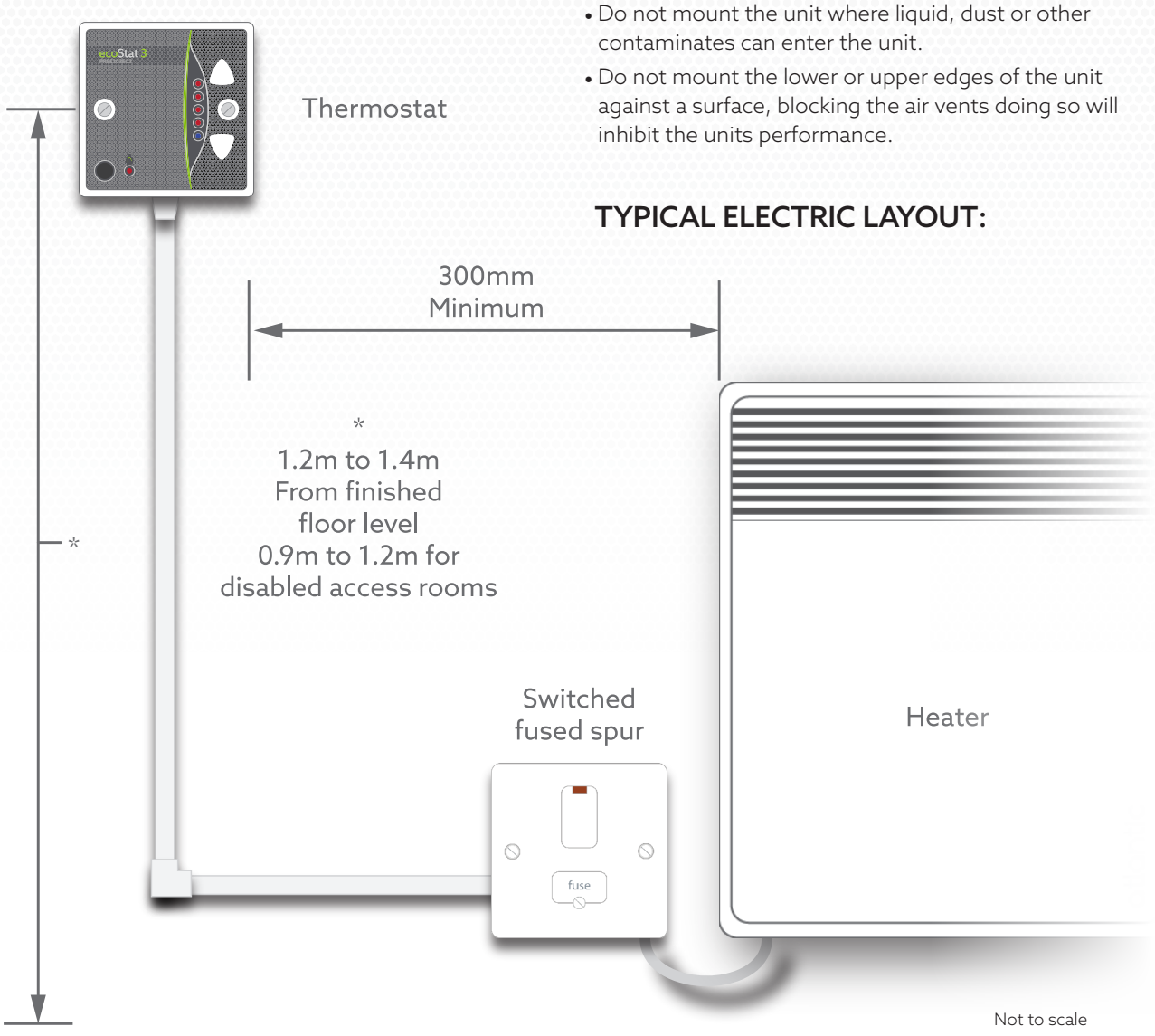
ELECTRIC HEATER INSTALLATION

- All installation and wiring works must be completed by a competent person/s and conform to relevant regulations in-force at time of installation.
- Locate the unit at least 300mm away from the nearest edge of the heater. Ensure the unit is placed where it cannot be affected by extraneous heat sources, for example: televisions, desktop computers, fridges. Doing so will cause the unit to function incorrectly.
- Do not mount the unit above a heater. Mount at the centre point of the room where possible. Do not mount behind curtains or room dividers.
- The unit is equipped with a microwave sensor for Occupancy detection. For the detector to function correctly the unit must be sited in a suitable location, see page 4 for details.
- Mount the unit between 1.2m and 1.4m from finished floor level. Special consideration should be made for rooms designed for disabled occupants, mounting height of 900-1200mm from FFL is recommended. The unit should be mounted at least 350mm from a room corner to allow access for wheel chair users. See page 18 for further details.
- Ensure the unit has a local means of safe isolation. A double pole isolator must be used. A suitbably rated double pole switched fused spur is recommended.
- The unit can be mounted in a surface or sunken 1G box. When mounting into a metal clad pattress or sunken box the upper and lower box lugs must be removed.
- Ensure the unit is not mounted within 1m of forced heating or ventilation systems.
- Ensure the unit is not in a position to be covered or isolated from the room environment. Do not mount directly next to a window.
- Ensure the unit is easily accessible and does not put occupants or service engineers at risk of injury.
- Do not mount the unit where liquid, dust or other contaminates can enter the unit.
- Do not mount the lower or upper edges of the unit against a surface, blocking the air vents doing so will inhibit the units performance.

TYPICAL ELECTRIC LAYOUT:



Not to scale

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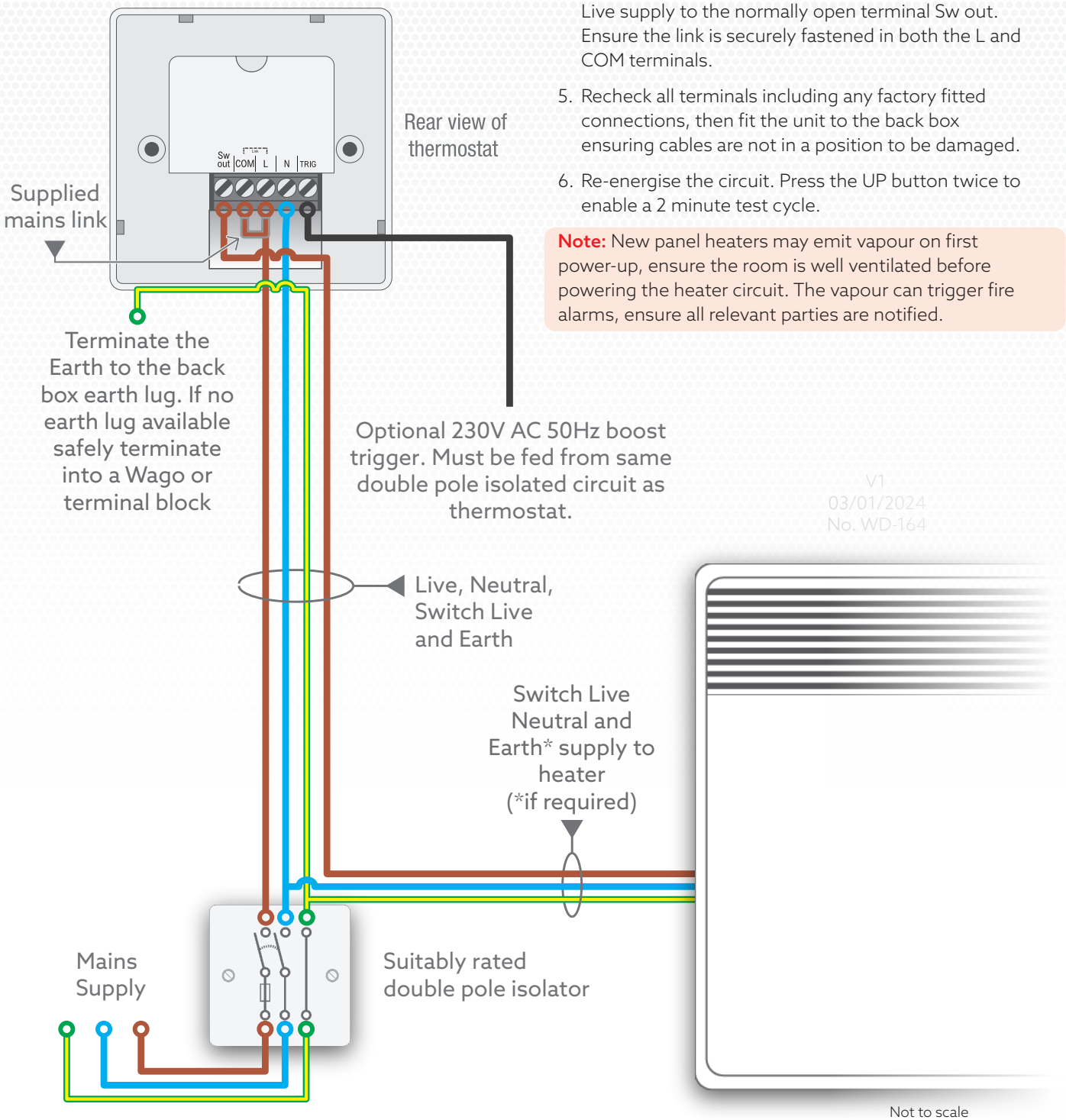
WIRING

Electric panel or oil filled heater

1. All wiring works should be completed by a competent person/s. Isolate the appropriate circuit that the unit is to be supplied from. Perform safe isolation procedure to ensure the circuit is completely isolated. Ensure the supply has been locked in the off position. Always ensure safe working practices.
2. Make any circuit adjustments required in accordance with current regulations.
3. If the trigger terminal is to be used ensure the trigger supply is fed from the same double pole isolated circuit as the unit to conform with current regulations.
4. Connect the Live and Neutral supply to the unit, note that the load Neutral must be fitted with the supply Neutral. Ensure the supplied mains link is fitted between L and COM terminals, terminate the loads Live supply to the normally open terminal Sw out. Ensure the link is securely fastened in both the L and COM terminals.
5. Recheck all terminals including any factory fitted connections, then fit the unit to the back box ensuring cables are not in a position to be damaged.
6. Re-energise the circuit. Press the UP button twice to enable a 2 minute test cycle.

Note: New panel heaters may emit vapour on first power-up, ensure the room is well ventilated before powering the heater circuit. The vapour can trigger fire alarms, ensure all relevant parties are notified.



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ATLANTIC HEATERS WITH ENERGY LOCK

ENERGY LOCK

When using an Atlantic heater with Prefect Energy Lock, a key (Fig 1) needs to be installed before the heater can be used.

- Holding the key with the tooth at the top, note the T shape of the tooth. On the top right hand side of the heater is a plastic cover, on this cover you will see a corresponding T slot. Locate the key into the T slot on the heater (see fig. 2).
- When the key is located into the T slot, push the key home until it is flush (see fig 3). When the key is fitted the heater will be able to operate when the unit is calling for heat.

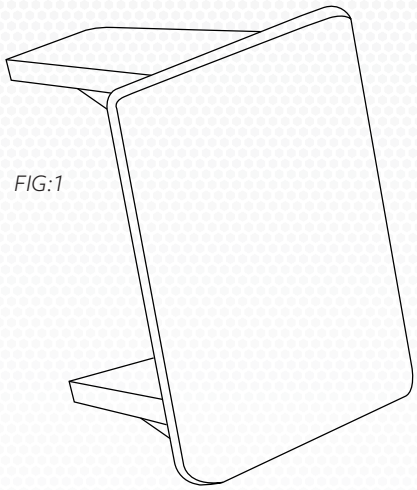

FIG:1

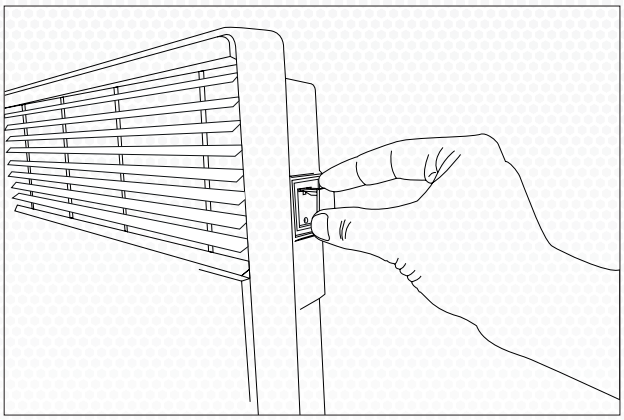

FIG:2

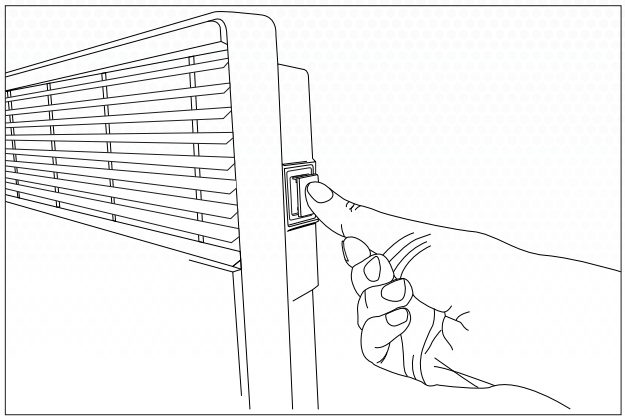

FIG:3

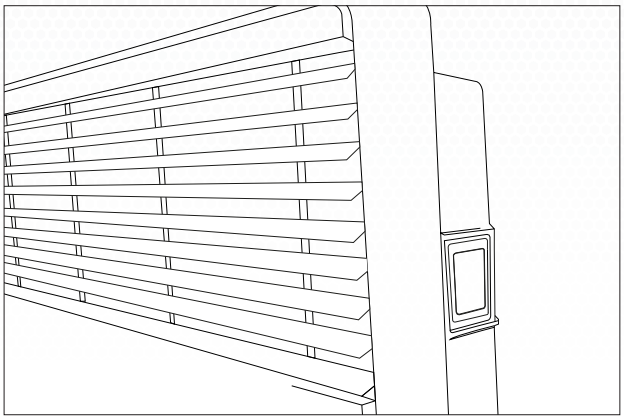

FIG:4

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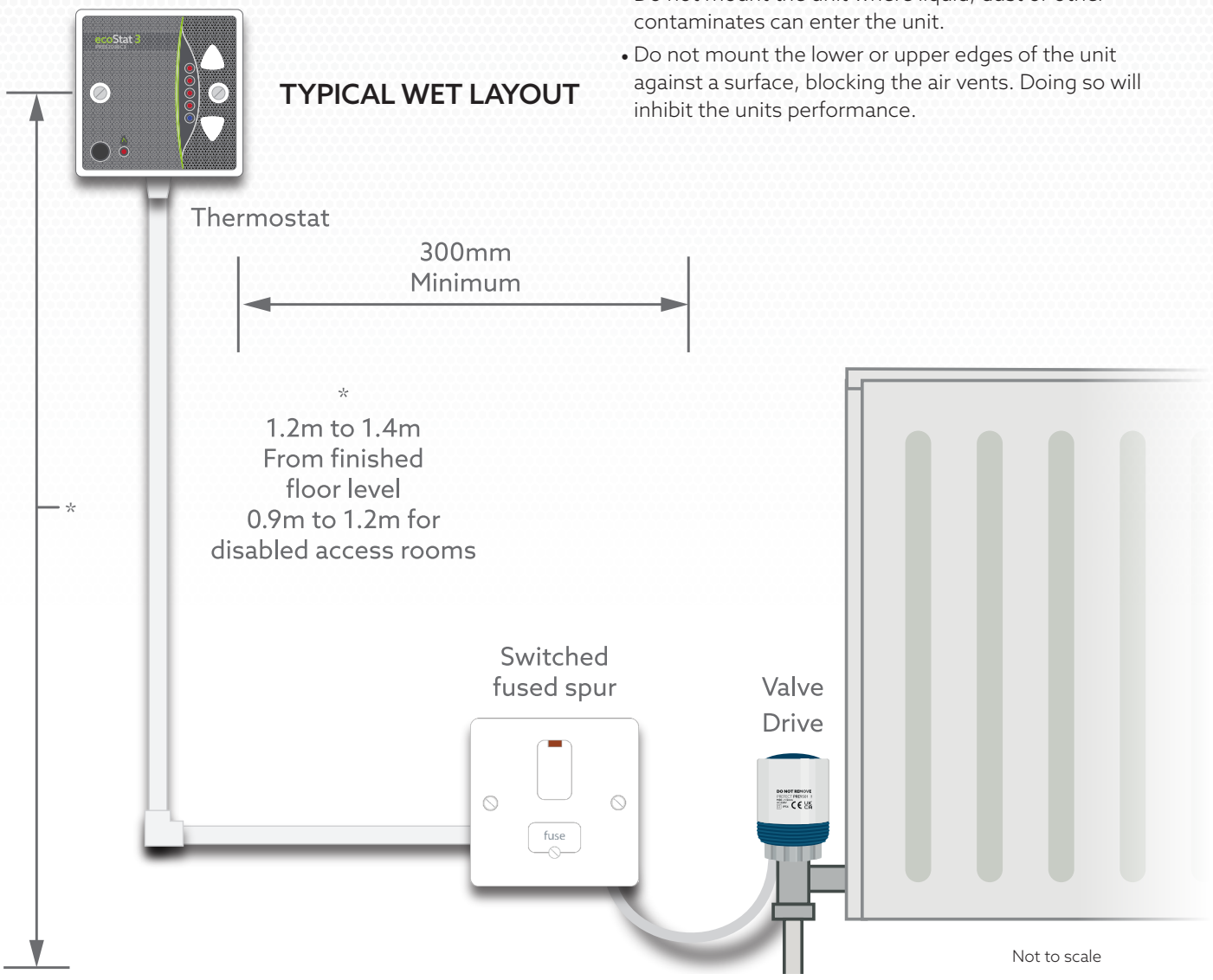
WET RADIATOR INSTALLATION

- All installation and wiring works must be completed by a competent person/s and conform to relevant regulations in-force at time of installation.
- Locate the unit at least 300mm away from the nearest edge of the radiator. Ensure the unit is placed where it cannot be affected by extraneous heat sources, for example: televisions, desktop computers, fridges. Doing so will cause the unit to function incorrectly.
- Do not mount the unit above a heater. Mount at the centre point of the room where possible. Do not mount behind curtains or room dividers.
- The unit is equipped with a microwave sensor for Occupancy detection for the detector to function correctly the unit must be sited in a suitable location, see page 4 for details.
- Mount the unit between 1.2m and 1.4m from finished floor level. Special consideration should be made for rooms designed for people with disabilities, mounting height of 900-1200mm from FFL is recommended. The unit should be mounted at least 350mm from a room corner to allow access for wheel chair users. See page 20 for further details.
- Ensure the unit has a local means of safe isolation. A double pole isolator must be used. A suitably rated double pole switched fused spur is recommended.
- The unit can be mounted in a surface or sunken 1G box. When mounting into a metal clad pattress or sunken box the upper and lower box lugs must be removed.
- Ensure the unit is not mounted within 1m of forced heating or ventilation systems.
- Ensure the unit is not in a position to be covered or isolated from the room environment. Do not mount directly next to a window.
- Ensure the unit is easily accessible and does not put occupants or service engineers at risk of injury.
- Do not mount the unit where liquid, dust or other contaminates can enter the unit.
- Do not mount the lower or upper edges of the unit against a surface, blocking the air vents. Doing so will inhibit the units performance.

TYPICAL WET LAYOUT



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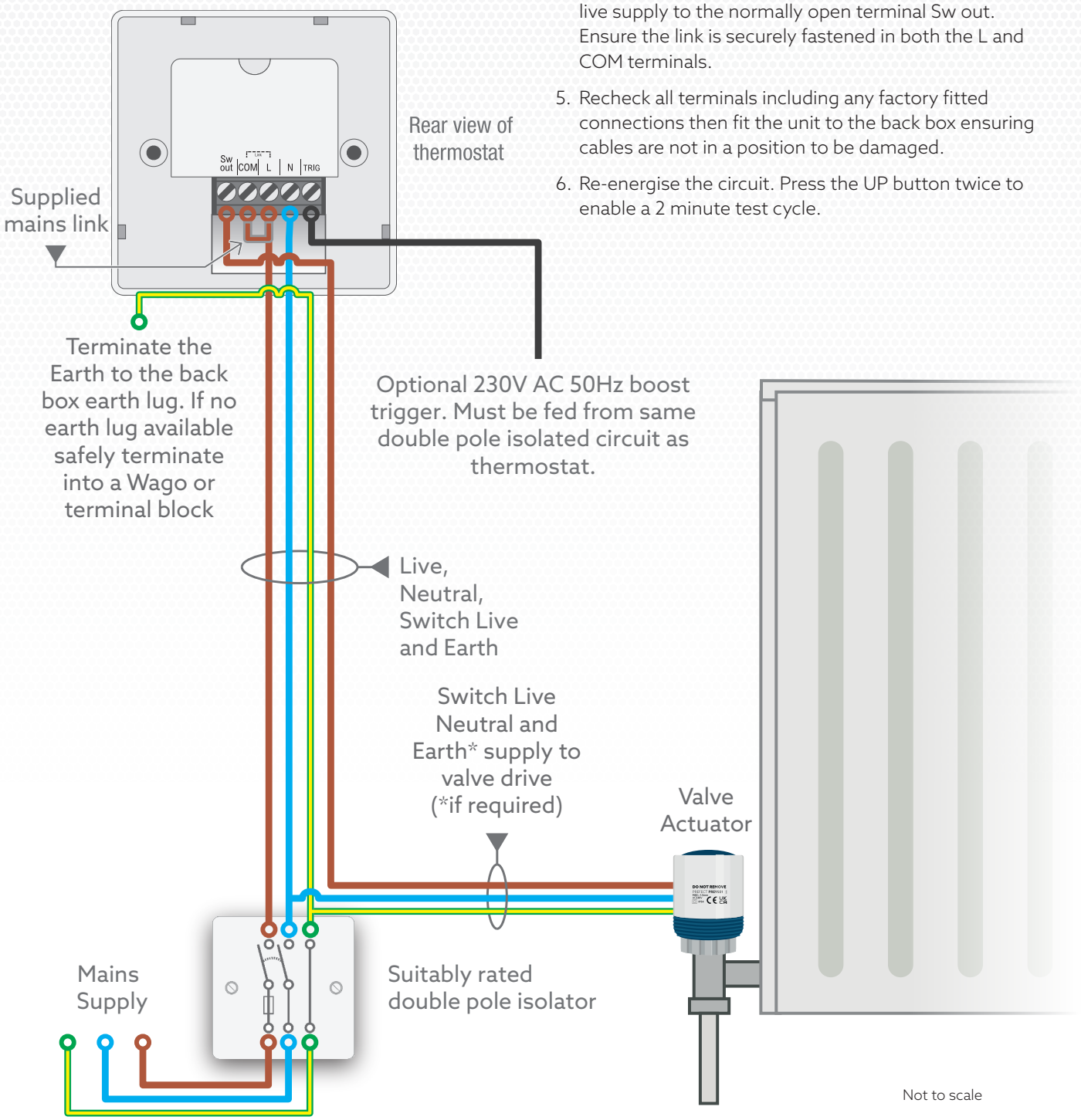
WIRING

Wet radiator with mains drive valve

1. All wiring works should be completed by a competent person/s. Isolate the appropriate circuit that the unit is to be supplied from. Perform safe isolation procedure to ensure the circuit is completely isolated. Ensure the supply has been locked in the off position. Always ensure safe working practices.
2. Make any circuit adjustments required in accordance with current regulations.
3. If the trigger terminal is to be used ensure the trigger supply is fed from the same double pole isolated circuit as the unit, to conform with current regulations.
4. Connect the Live and Neutral supply to the unit, note that the load Neutral must be fitted with the supply Neutral. Ensure the supplied mains link is fitted between L and COM terminals, terminate the loads live supply to the normally open terminal Sw out. Ensure the link is securely fastened in both the L and COM terminals.
5. Recheck all terminals including any factory fitted connections then fit the unit to the back box ensuring cables are not in a position to be damaged.
6. Re-energise the circuit. Press the UP button twice to enable a 2 minute test cycle.



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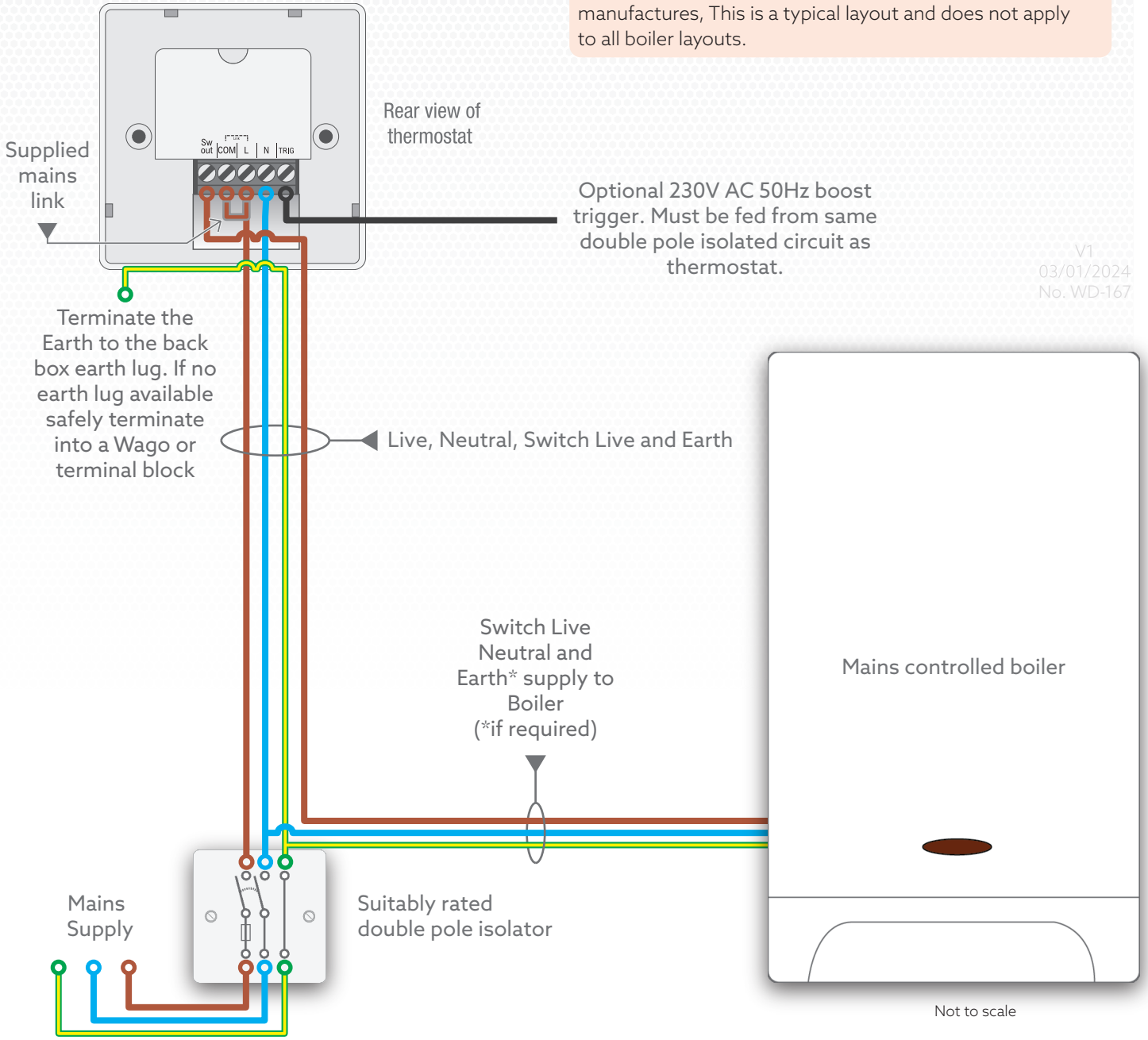
WIRING

Mains controlled boiler

1. All wiring works should be completed by a competent person/s. Isolate the appropriate circuit that the unit is to be supplied from. Perform safe isolation procedure to ensure the circuit is completely isolated. Ensure the supply has been locked in the off position. Always ensure safe working practices.
2. Make any circuit adjustments required in accordance with current regulations.
3. If the trigger terminal is to be used ensure the trigger supply is fed from the same double pole isolated circuit as the unit to conform with current regulations.
4. Connect the Live and Neutral supply to the unit, note that the load Neutral must be fitted with the supply Neutral. Ensure the supplied mains link is fitted between L and COM terminals, terminate the loads Live supply to the normally open terminal Sw out. Ensure the link is securely fastened in both the L and COM terminals.
5. Recheck all terminals including any factory fitted connections then fit the unit to the back box ensuring cables are not in a position to be damaged.
6. Re-energise the circuit. Press the UP button twice to enable a 2 minute test cycle.

Note: Connection methods differ between boiler manufactures, This is a typical layout and does not apply to all boiler layouts.



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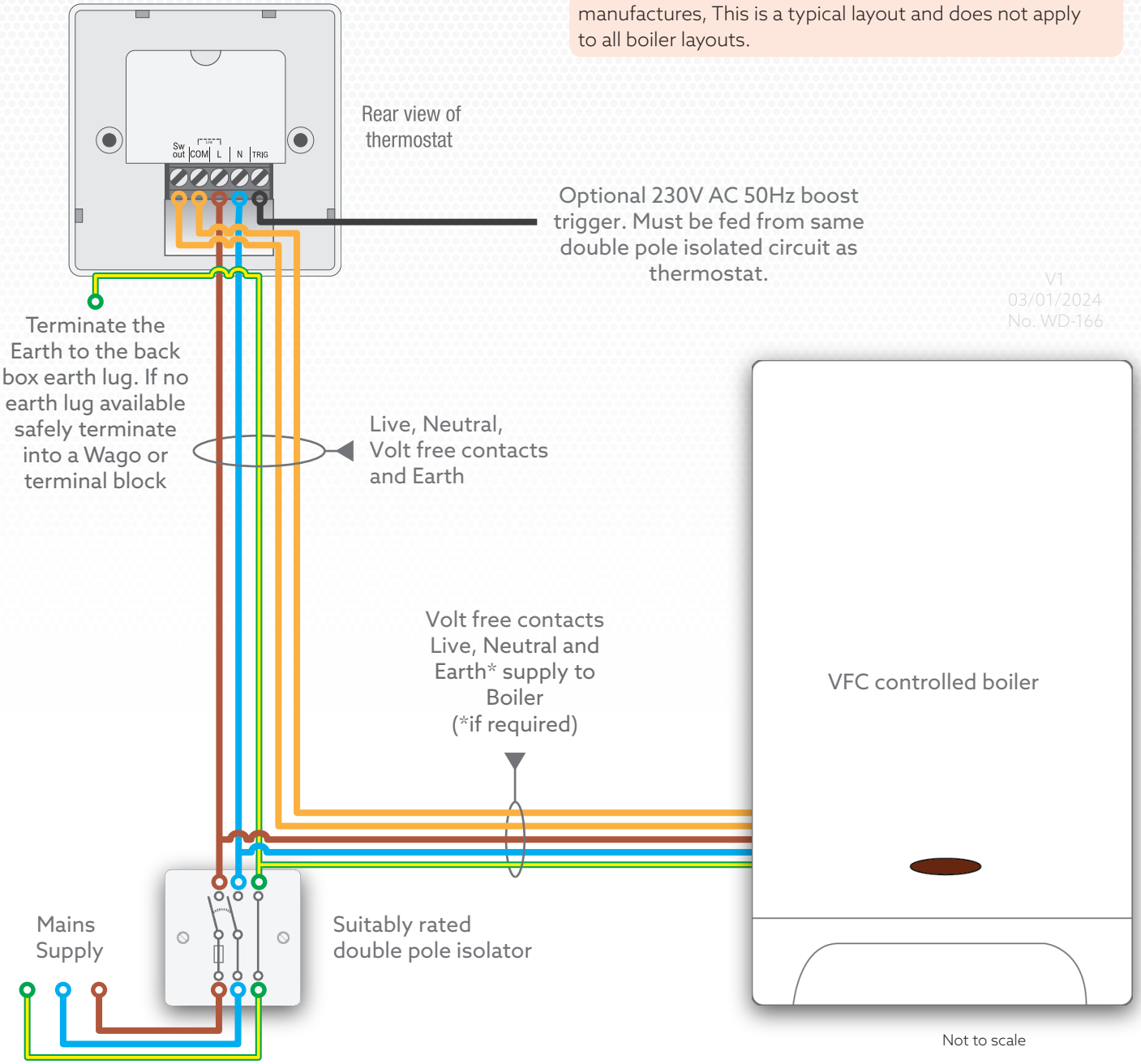
WIRING

Volt Free Contact controlled boiler

1. All wiring works should be completed by a competent person/s. Isolate the appropriate circuit that the unit is to be supplied from. Perform safe isolation procedure to ensure the circuit is completely isolated. Ensure the supply has been locked in the off position. Always ensure safe working practices.
2. Make any circuit adjustments required in accordance with current regulations.
3. If the trigger terminal is to be used ensure the trigger supply is fed from the same circuit as the unit supply, to conform with current regulations.
4. Terminate the Live and Neutral supply to the unit. Ensure the supplied mains link is **REMOVED.**
5. Terminate the loads output contact cable to the common (COM) terminal. Terminate the load return cable to the normally open terminal (Sw out).
6. Recheck all terminal connections and fit the unit to the back box ensuring cables are not in a position to be damaged.
7. Re-energise the circuit. Press the UP button twice to enable a 2 minute test cycle.

Note: Connection methods differ between boiler manufactures, This is a typical layout and does not apply to all boiler layouts.



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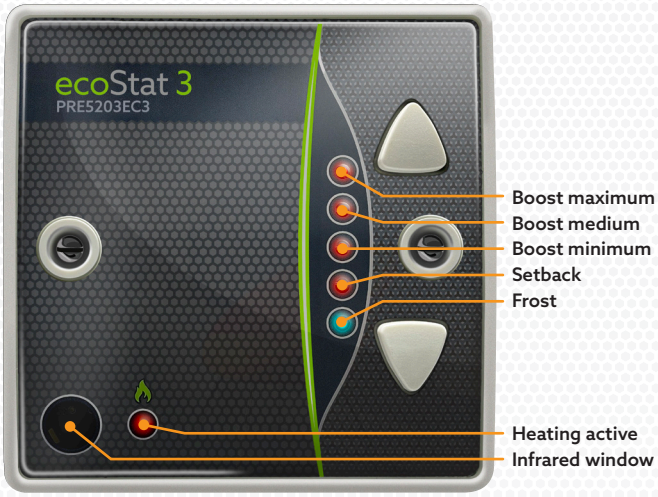
PROGRAMME CHARACTERISTICS

The time and temperature settings of the unit are factory set to a default setting, however further adjustments can be made on site via the PRE5904 programming handset (Please note the PRE5901 and PRE5903 are not compatible with the ecoStat3 range).

When the unit has been wired and fitted as instructed in this manual, power-up the unit. The unit will be in start up mode for 1 minute after initial power-up to allow the unit to stabilise.

LED INDICATORS



Operation modes

BOOST

This mode is typically a relatively short run time 45 to 120 minutes is recommended with a comfortable room temperature used when the room is occupied usually 23°C. The Boost mode is activated by:

- Occupancy detection
- UP Button Press
- 230V Mains Trigger input
- Scheduled Boost

Using the UP and DOWN buttons the room occupant can adjust the Boost level between 3 levels maximum, medium and minimum. Boost maximum is the Boost temperature, Boost medium and minimum temperatures are spaced equally between the Boost and Setback temperature. For example setting Boost temperature to 23°C and Setback to 20°C would result in maximum Boost being 23°C Boost medium 22°C and Boost minimum 21°C.

SETBACK

This mode typically uses a medium length run time, 12 to 48 hours with a temperature of 20-30% less than the Boost temperature. This setting is used when the room is empty for short periods 6 to 12 hours. Setback mode is enabled when the Boost run time has elapsed.

Setback mode can also be selected with the UP/DOWN buttons either raising the temperature from Frost or cancelling the Boost cycle by pressing the DOWN button.

FROST

This mode is used when the room is empty for long periods days or weeks. A temperature of 5°C is recommended to protect the fabric of the building. Frost is activated once the Setback time has elapsed. Frost mode can also be selected by pressing the DOWN button until only the blue LED is lit.

USER ADJUSTMENT

The occupant can adjust the rooms temperature by using the UP and DOWN buttons. The occupant can only adjust the temperature level between the preset levels, the maximum setting the occupant can set is the Boost temperature and the minimum temperature is the Frost setting.

TEST MODE/PRE -HEAT

When the unit is Boosted by either Occupancy detection or an UP button press the unit will enter Boost mode. For the first 2 minutes of the Boost cycle temperature sensing is omitted and the unit will heat regardless of temperature. After 2 minutes has elapsed temperature sensing is re-enabled and the unit will continue the Boost cycle. This cycle can take place only once during a Boost cycle and only once in a 25 minute period. This does not apply to Scheduled events or 230V Mains Trigger.

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BOOST MODE TRIGGERS

Occupancy modes

The Occupancy sensor has two modes of operation Presence or Absence. Presence is best for occupant comfort, absence is best for energy saving.

Presence mode

When movement is detected the unit automatically enters Boost mode. As long as movement is detected the unit will remain in Boost mode. When movement is no longer detected the Boost Timeout will begin. When the Timeout has elapsed the unit will enter Setback mode and begin to run the Setback Timeout, if no movement is detected within the Setback Timeout the unit will enter Frost mode. The unit will remain in Frost mode until movement is detected and the unit enters Boost mode.

When the unit is in Boost mode the occupant can adjust the Boost levels using the UP/DOWN buttons or returned to Setback or Frost mode.

When Occupancy is detected the Boost Timeout will start from the detection point, any previously active Boost cycles will be overridden.

The Boost level the unit enters when movement is detected can be set via the handset. The Boost level can be set to min, med or max.

Presence mode is the best option for occupant comfort but less energy efficient than Absence mode. Presence mode may be beneficial for rooms intended for people with disabilities.

Absence mode

In Absence mode the unit will remain dormant until the UP button is pressed, the unit will enter Boost mode and begin the Boost Timeout. If the room is occupied for the duration of the Boost Timeout the unit will remain in Boost mode until the Boost Timeout has elapsed.

When the Boost Timeout has elapsed the unit will enter Setback mode. If the unit is in Boost mode and the room is vacated the unit will start the Occupancy Timeout setting. The Occupancy Timeout setting is the length of time the unit will stay in Boost mode when the room has been vacated during a Boost cycle. For example if the Boost Timeout is set to 30 minutes and the Occupancy Timeout is set to 5 minutes, the unit will stay in Boost mode while the room is occupied for 30 minutes. If during the 30 minute Boost Timeout the room is vacated the Occupancy Timeout will begin. If no movement is detected during the 5 minute Timeout the unit will enter Setback mode cancelling the Boost Timeout early. If movement is detected at any time during the 5 minutes, the Occupancy Timeout will be reset to zero and begin counting down again. If the room is occupied for 1 hour, the Boost cycle will be active for the selected 30 minutes then enter Setback mode.

In absence mode Boost Timeout is how long the unit will stay in Boost mode if the room is occupied. Occupancy Timeout is how long the unit stays in Boost mode when the room is vacated during a Boost cycle. If you wish to have the Boost cycle complete regardless of Occupancy during the Boost Timeout, set the Occupancy Timeout to the same value as the Boost time.

When the unit is in Boost mode the occupant can adjust the Boost levels using the UP/DOWN buttons or returned to Setback or Frost mode.

Absence mode is the best option for energy saving.

Disabled

The Occupancy detector can be set to disabled. When set to disabled all Occupancy detector functions are disabled and the unit will continue to operate via the Buttons, Schedule or Mains Trigger.

Occupancy settings can be found at:

ecoStat3 > View/Edit Settings > Advanced > Occupancy Settings.

230V AC REMOTE TRIGGER

The remote Mains Trigger can be used to enter the unit into Boost from an external source for example a room key card reader or an external timer. The trigger terminal can also be used with a momentary push to make switch to allow the unit to be Boosted from another room or a more convenient location.

When 230V AC 50Hz mains voltage is applied for less than 30 seconds the unit will enter Boost mode and complete the Boost Timeout. When the voltage is applied for more than 30 seconds the unit will stay in Boost mode until the trigger voltage is discontinued. When the trigger has been discontinued, the unit will immediately enter Setback mode and resume the normal programme cycle. When the trigger voltage is active Occupancy detection is omitted. The Boost level selected by the Mains Trigger can be selected via the handset. The unit can be triggered into Boost Min, Med or Max. While the trigger is applied the end user can select the Boost level by using the UP/DOWN buttons. For example if set to trigger at Max Boost the end user can turn down the unit to Med or Min Boost if desired. The 2 minute preheat/test cycle does not apply to the Mains Trigger.

When the Mains Trigger is applied for less than 30 seconds, the Boost Timeout is started from 0, for example if a Boost cycle is currently active and is mid way through the Timeout period and the Mains Trigger is applied the Boost Timeout will be restarted.

Note: The Mains Trigger input voltage must be present for a minimum of 2 seconds to activate the trigger.

If required, the Mains Trigger input can be disabled using the handset, this may be useful if the device supplying the trigger voltage becomes faulty or is no longer required, this setting can be found at:

ecoStat3 > View / Edit Settings > Advanced > Misc.

It is not compulsory to use the Mains Trigger, if not required the TRIG terminal is left empty. The feature does not need to be disabled if TRIG terminal is not connected.

SCHEDULES

Schedule can trigger the unit into Boost mode at 1 or 2 points during each day 7 days a week. The Schedule feature is programmed using the handset. The real time must be set in the unit for Schedule to function correctly, the real time is set by the handset whenever the handset sends data to the unit, it is therefore important to set the clock correctly in the handset (see PRE5904 instructions for clock setup) the handsets current time is displayed on the dashboard . When programmed the unit will start Boost automatically at the set time and run the Boost Timeout.

Note: The Schedules simply activates Boost mode at a scheduled time, this is not a start and stop timer.

The Occupancy detection is omitted during the Scheduled Boost, meaning that the unit will enter Boost whether movement is detected or not.

When the Schedule has triggered the unit will run the Boost Timeout, any active Boost cycles will be overridden. The 2 minute pre heat/test cycle does not apply. The level of Boost that is triggered is selectable. When a Scheduled Boost is active the end user can alter the Boost level, if desired they can also cancel Boost mode by selecting Setback or Frost mode. If a Scheduled Boost is required for more than the Boost time, two time events can be combined to make 1 extended time event. For example if Boost Timeout is set to 60 minutes and Boost mode is required to be active from 09:00 until 10:30 set the first time event for 09:00 then set the second time event at 09:30 this will achieve a 90 minute run time.

Note: the Schedule events only activate when the unit is in Boost or Setback modes, Schedules DO NOT occur when the unit is in Frost mode.

Schedule settings are found at:

ecoStat3 > View / Edit Settings > Advanced > Schedule.

Schedules are disabled as default, setting the event time to 00:00 disables that event.

TRIGGER BOOST LEVELS

The level of Boost entered when Boost mode is initiated by Occupancy, Schedule or Mains Trigger is selectable via the handset. The Level of Boost the unit enters via each of the 3 aforementioned modes can be set to min, med or max Boost level. The Trigger Boost level settings can be found at:

ecoStat3 > View / Edit Settings > Advanced > Trigger Boost Levels

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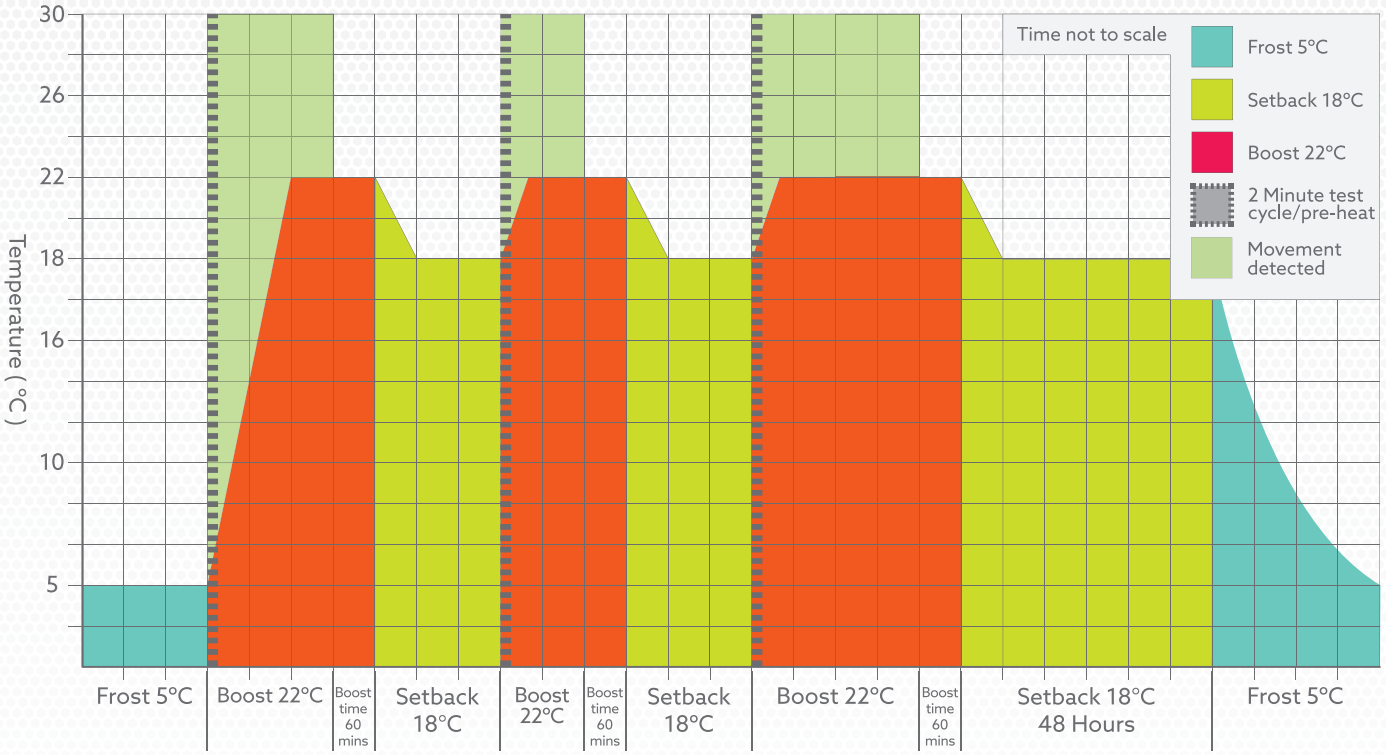
PROGRAMME GRAPHS - **STANDARD PRESENCE ACTIVATED**

The below graphs indicate the units 3 mode temperature set points: Boost, Setback and Frost modes. The graphs also show how the unit is triggered by the 4 Boost triggers, these being a Button Press, Mains Trigger, Scheduled Boost or Occupancy detection.

The graphs time is not to scale.



This graph shows how the unit reacts to movement, for this example the unit is set to the following settings:

Frost TEMP.	Setback TEMP.	Setback TIMEOUT	Boost TEMP.	Boost TIMEOUT	DETECTION MODE	SCHEDULE
5°C	18°C	48 Hours	22°C	60 Minutes	Presence	Disabled

When movement is detected the unit enters Boost mode indicated in orange first running the 2 minute test cycle, the unit heats raising the temperature from 5°C to 22°C. When movement is no longer detected the unit will start the Boost Timeout for 60 minutes. When the Boost Timeout expires and no movement is detected the unit turns down to Setback mode indicated in green and allows the temperature to drop to 18°C. The unit is now maintaining 18°C, the Setback Timeout is now active and counting down the Setback Timeout of 48 hours. Before the Setback Timeout has elapsed movement is detected again, the unit enters Boost mode first running the 2 minute test/preheat. The unit remains in Boost mode while movement is detected then starts the 60 minute Boost timout, once complete the unit enters Setback mode and maintains 18°C, in the following 48 hours no movement is detected, once 48 hours has elapsed the unit enters Frost mode indicated in blue.

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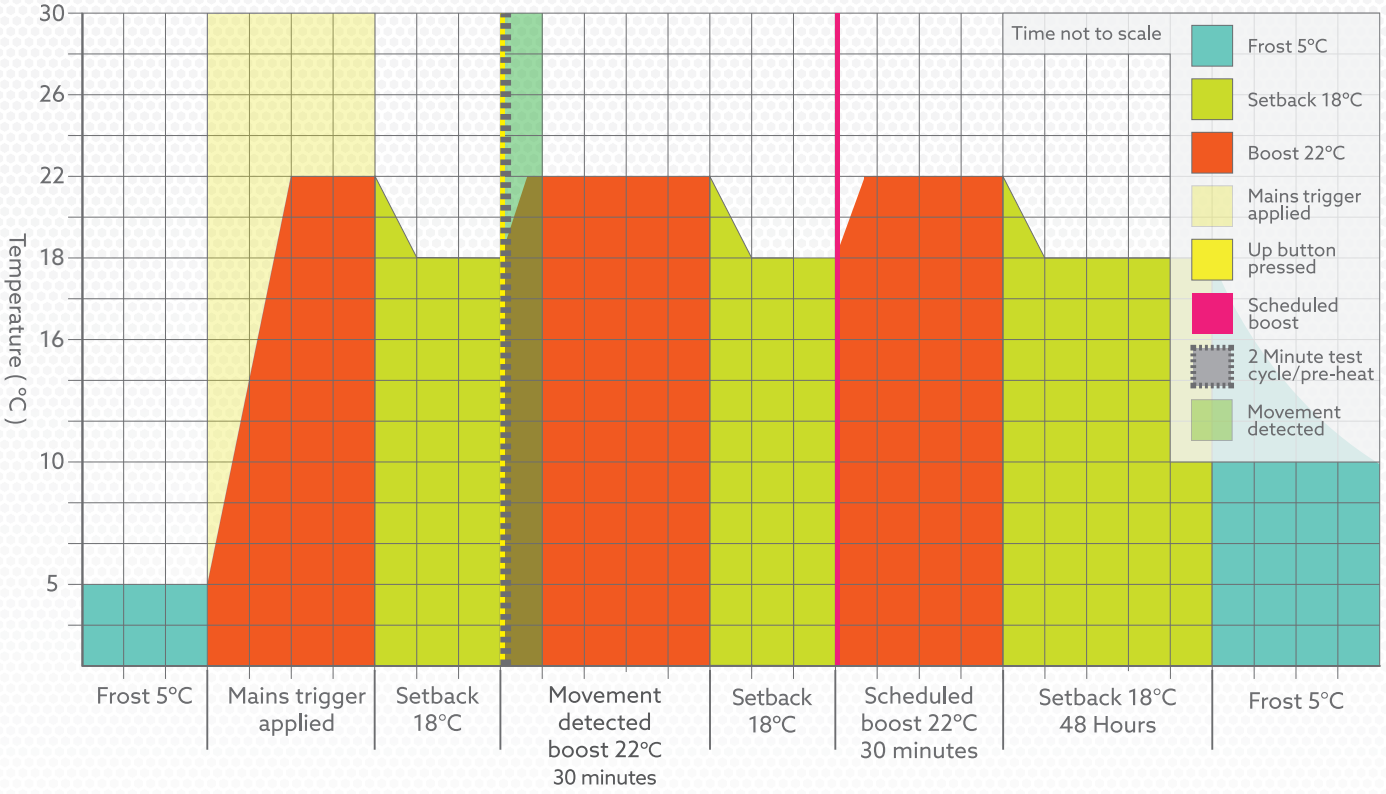
PROGRAMME GRAPHS - **STANDARD PRESENCE, SCHEDULE AND TRIGGER ACTIVATED**



This graph shows how the unit reacts to Button Press, movement, Schedule and Mains Trigger for this example the unit is set to the following settings:

Frost TEMP.	Setback TEMP.	Setback TIMEOUT	Boost TEMP.	Boost TIMEOUT	DETECTION MODE	SCHEDULE
5°C	18°C	48 Hours	22°C	30 Minutes	Presence	Enabled

Starting from Frost mode the unit is triggered into Boost mode by a Mains Trigger. The Mains Trigger is present for more than 30 seconds meaning the unit will stay in Boost mode maintaining 22°C until the Mains Trigger is removed. When the trigger is removed the unit returns to Setback mode. This allows the room temperature to drop to 18°C. The unit is once again triggered into Boost mode when movement is detected, the unit begins the Boost Timeout of 30 minutes when movement is no longer detected. When elapsed, the unit enters Setback mode at 18°C. A Schedule event then triggers the unit into Boost mode for 30 minutes at 22°C. Once again the unit returns to Setback mode at 18°C, there are no triggers for 48 hours the unit enters Frost mode.

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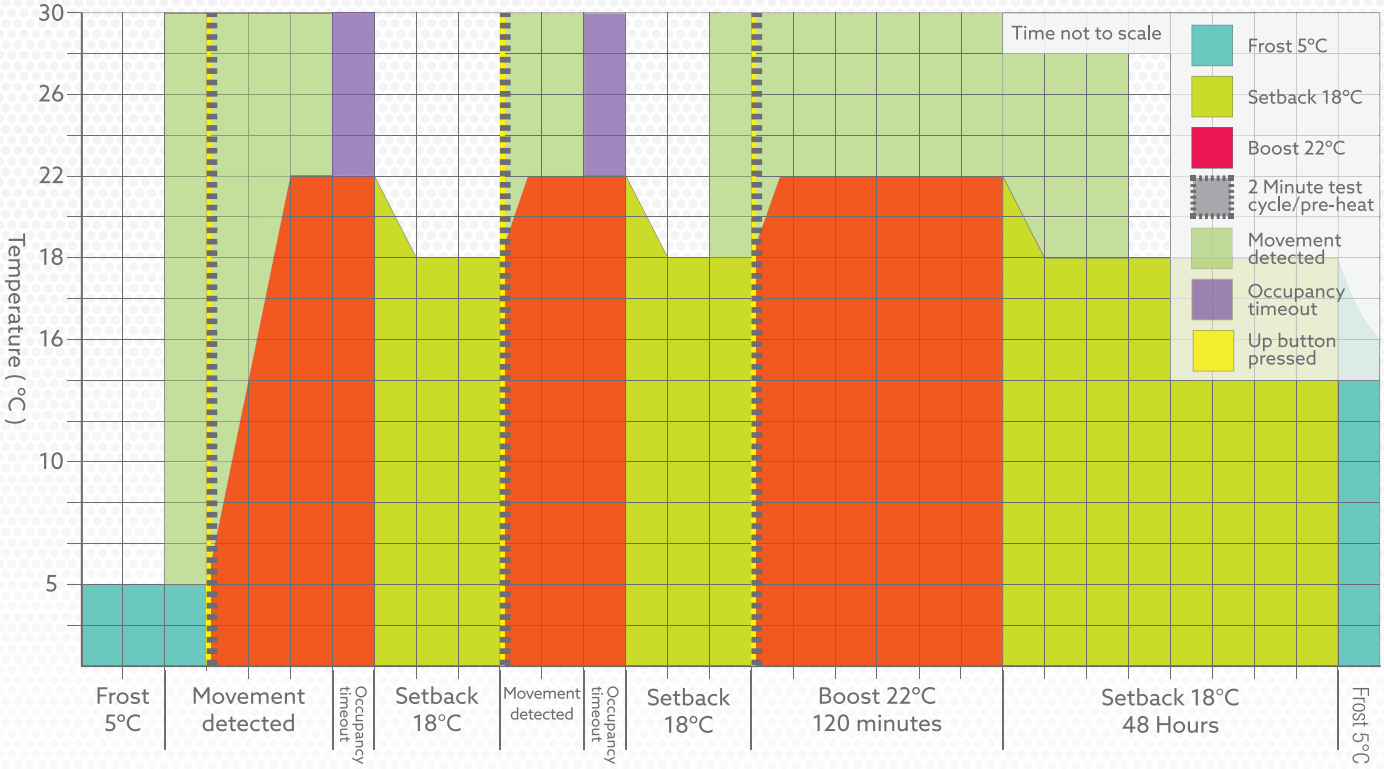
PROGRAMME GRAPHS - **STANDARD ABSENCE ACTIVATED**



This graph shows how the unit reacts to absence, for this example the unit is set to the following values:

Frost TEMP.	Setback TEMP.	Setback TIMEOUT	Boost TEMP.	Boost TIMEOUT	DETECTION MODE	Occupancy TIMEOUT	SCHEDULE
5°C	18°C	48 Hours	22°C	120 Minutes	Absence	20 Minutes	Disabled

The unit starts in Frost mode. When movement is detected the unit takes no action. If the unit was set to Presence mode the unit would have entered Boost mode at this point. The UP button is then pressed 4 times, Boosting the unit to the maximum level of 22°C, the Boost Timeout starts running, in this example 120 minutes. After a short period, movement is no longer detected, the unit will start the Occupancy Timeout setting, in this example 20 minutes. Occupancy Timeout is the settable length of time the unit will stay in Boost mode before cancelling the Boost Timeout early, and returning to Setback when movement is no longer detected. When set to presence mode the unit would continue to run the full Boost time. The Occupancy Timeout elapses and the unit turns down to Setback mode at 18°C. The Setback Timeout starts running. Before the Setback time has completed, the UP button is pressed 3 times, again Boosting the unit to maximum. When movement is no longer detected, the unit runs the Occupancy Timeout. When elapsed, the unit once again enters Setback mode. Movement is detected the unit takes no action. The UP button is pressed 3 times again, Boosting to maximum. This time movement is detected for the duration of the Boost Timeout. The unit remains in Boost completing the full 120 minute run time, then returns to Setback mode.

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AUXILIARY FUNCTIONS - **WINDOW OPEN DETECTION**

The Window Open detection feature recognises an unusual drop in temperature caused by an open window, and limits the output to the load. Temperature is monitored over a set period of time. If during this time the room temperature drops below a set level, the unit will enter Window Open detection mode.

There are 3 settings for this feature: Detection Time (mins), Temperature Drop (°C) and Cycle Time (mins).

Detection Time

The Detection Time setting is the length of time in the past the current room temperature is compared with. This time is split into tenths which is the sampling rate. The sampling rate is how often the unit compares the temperatures. For example, when the Detection Time is set to 30 minutes, the unit will record the temperature every 3 minutes, the unit will compare the current room temperature with that recorded 30 minutes prior. This check will be performed every 3 minutes. If the current room temperature is below the Temperature Drop setting of that recorded 30 minutes prior a 10 minute fixed time will start. This fixed time of 10 minutes is the filter time. The filter time helps to avoid nuisance tripping caused by temperature fluctuations. If the current room temperature remains below the temperature drop level for 10 minutes Window Open mode will be activated.

Temperature Drop

The Temperature Drop setting is the degrees centigrade drop below the current room temperature or the current set boost level whichever is lowest within the selected Detection Time to activate Window Open detection mode.

Cycle Time

Cycle time is the duration the load can be ON when Window Open mode is active. During Window Open mode the load will cycle ON and then OFF for this time. During the ON time the unit will try and reach the boost temperature setpoint. If the boost setpoint is not reached within this time the load will switch OFF for the cycle time duration before trying again. If during the ON cycle the boost temperature is reached window open mode will be cancelled and normal operation will be resumed.

The cycle time should be set to a duration that is sufficient to allow the room to reach Boost temperature from the Temperature Drop value. For example if the Boost temperature is set to 22°C with a Temperature drop setting of 2°C, If when the window is closed the room takes 5 minutes to heat from 20°C to 22'C set the duty cycle to 5 minutes + 30% to allow for environmental changes. This ensures that when Window Open mode is active and the window is then closed the room has sufficient time to reach the boost temperature during the ON cycle and Window Open will be deactivated. If this time is set too short the room cannot retore room temperture before the next cyle and Window Open mode will remain active.

Window Open detection mode only functions during the Boost cycle, it is not active in Setback or Frost mode, Any active window open modes will be reset when the unit enters Setback mode.

When active the top and bottom scale LEDs will flash alternately. Window open mode will activate as many times as necessary during the boost cycle.

The occupant can override window open mode by pressing the up button once. When the up button is pressed, the unit will start heating. The unit will heat for the cycle time duration. If the boost temperature is reached within this time, Window Open mode is cancelled and normal operation is resumed. If the boost temperature is not achieved within this time, Window Open mode is reactivated.

The settings menu can be found on the handset at:

Ecostat 3 > View/Edit settings > Advanced > Window Detection.

This feature is enabled by default, it can be disabled in the aforementioned menu.

Window Open mode may be falsely triggered by environmental factors, such as the unit being mounted on a cavity wall with cool air draught, or being mounted too close to a doorway or forced ventilation outlet. In these situations the settings can be altered to alleviate false detections.

If the unit is mounted next to a door that enters a cooler area, set the detection temperature lower than the ambient temperature of the cooler area.

If the unit is mounted on a draughty wall or near a ventilation outlet, increasing the Temperature Drop value can help to alleviate the problem. A shorter Detection Time is more sensitive to sudden temperature changes. A longer Detection Time is less sensitive to sudden temperature changes.

If the room the unit occupies is slow to heat and the unit does not exit Window Open mode when the window is closed, increase the duty cycle time. This allows the room more time to restore the boost temperature after the window has been closed.

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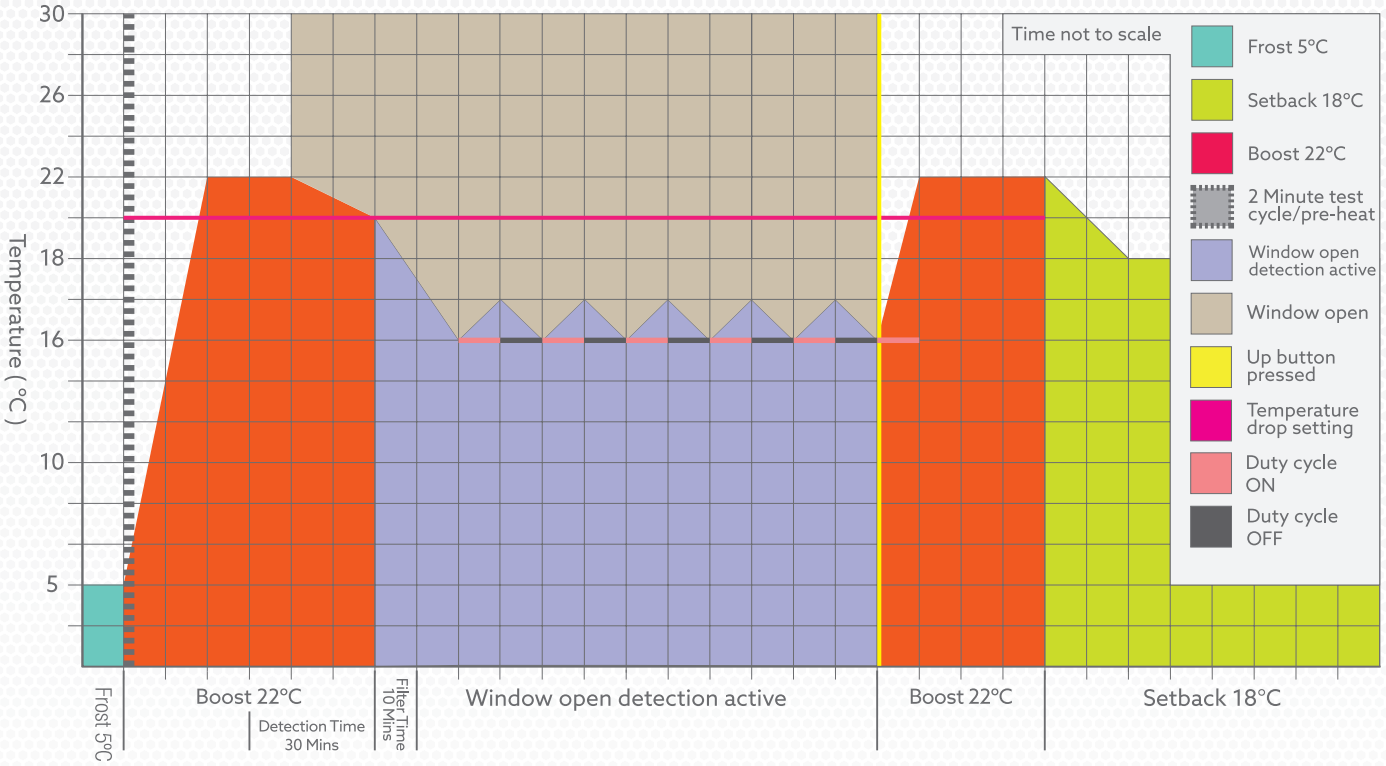
AUXILIARY FUNCTIONS - **WINDOW OPEN DETECTION** /CONTINUED



This graph shows how Window Open detection operates. For this example the unit is set to the following values:

Frost Temp.	Setback Temp.	Boost Temp.	DETECTION TIME	TEMPERATURE DROP	CYCLE TIME
5°C	18°C	22°C	30 Minutes	2°C	5 Minutes

The unit is boosted to 22°C. During the Boost cycle the window is opened indicated in brown. The temperature has dropped 2°C compared to the temperature recorded 30 minutes prior. This activates Window Open detection mode. The unit limits output to 5 minutes ON, 5 minutes OFF. During the 5 minute ON time the Boost temperature is not reached thus Window Open mode continues to cycle. When the window is closed and the UP button is pressed, indicated by the yellow line, Window Open detection mode heats for the duty cycle on time, since the window is now closed the room reaches temperature within the duty cycle time, Window Open mode is then deactivated. 22°C is then maintained for the remainder of the Boost cycle. Programme operation continues as normal.

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VALVE SERVICE CYCLE

The Valve Service Cycle is a feature that allows a connected heating control valve actuator to operate periodically to maintain movement and prevent the valve from seizing. The Valve Service Cycle can be set from 1 to 30 days. The unit will operate the valve over 5 minutes in the following sequence: 90 seconds on - 90 Seconds off - 90 Seconds on. This will occur once in the set time period. The Valve Service Cycle is disabled as default, to enable the feature use the handset and navigate to:
ecoStat3 > Advanced > Misc > Valve Service
select the required time interval in days.

Warning: Valve Service Cycle is intended for use with control valve drives only, do not enable when the ecoStat3 is connected to any other load type.

LED FALLBACK BRIGHTNESS

The LED indicators on the unit will illuminate to maximum brightness when either button is pressed or the unit enters Boost mode. The LEDs will dim after the mode change.

The duration the LEDs stay at maximum brightness before dimming and how far the LEDs dim is settable using the handset. Using the handset navigate to:

ecoStat3 > Advanced > Misc.

The LED Fallback Brightness setting is the percentage the LEDs will dim to, a lower percentage meaning a dim LED, setting Fallback Brightness to 0 will result in the LEDs dimming to off. This value is settable from 0 to 100% brightness 100% being the brightest.

LED Fallback Time (seconds) is the duration of time the LEDs will stay at maximum brightness (100%) after a mode change, this is settable between 10 and 120 seconds.

USERS WITH DISABILITIES

When installing the ecoStat3 into a room designed for disabled users considerations should be made for the installation and setup of the unit.

INSTALLATION CONSIDERATIONS:

Mount the unit at a suitable height for the intended occupant, for wheel chair users the recommended height is 900-1200mm from finished floor level.

Note: Mounting the unit lower may result in the thermostat reading a lower temperature, The temperature offset setting can be used to correct this.

Using the Handset navigate to:

ecoStat3 > Advanced > Misc > Temperature Sensor Offset

Here the ecoStat3 temperature sensor can be adjusted to compensate for a cold or warm reading, Add a + value if the sensor reads cold, add a - value if the sensor reads warm. The room temperature can be read from the ecoStat3, navigate to:

ecoStat3 > Advanced > About > Read Temperature

- Ensure the Occupancy sensor has a clear view of the required detection area.
- Mount the unit at least 350mm from a room corner to allow access for occupants using mobility aids.
- Ensure the unit is mounted at a level where the LEDs are clearly visible.
- Ensure the unit is mounted in position that the buttons can be accessed comfortably and safely.
- Do not mount the unit or it's connected load in a position where it may hinder access to and from the room.
- Check the room heater requirements, a low surface temperature heater may be required.
- The 230V Mains Trigger input can be utilised to aid usability. A momentary switch can be used in conjunction with ecoStat3 to Provide a remote Boost switch.

SETTINGS CONSIDERATIONS:

- Presence mode does not require direct user input and may benefit a disabled user.
- If using absence mode, the Occupancy Timeout may need to be increased to allow more time for occupants of decreased mobility.
- If accessing the unit is difficult, longer Timeouts should be used setting the Occupancy sensor to presence mode may also benefit the user.
- Scheduled Boost events can be used to automate heating.
- Alter LED brightness and fallback where appropriate.
- Window Open detection settings should be altered to compensate for entrance doors being open for longer than normal periods. Increasing the Temperature Drop setting or disabling Window Open detection is recommended.

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SENDING AND READING SETTINGS

All unit settings are set via the PRE5904 programming handset. Other Prefect IR handsets are not compatible with the ecoStat3 range. For full handset instructions please see the PRE5904 instructions.

Note: Customer settings can be pre-installed at point of order if required.

Setting changes are 'Sent' from the handset. Settings can also be 'Read' back from the ecoStat3. The settings can be sent/read by either Infrared "IR" or near field contact "NFC". The handset product interface setting selects which type of interface is used IR or NFC, by default the handset is set to IR mode as this is the recommend option for most uses.

SELECTING PRODUCT INTERFACE

Power on the handset and navigate to the home screen. From the home screen select ***Handset Settings*** the window shown in Fig 1 will display.

Select the drop down for product interface and select the desired option. The current interface* selection is displayed on the bottom of the handset dashboard at all times.

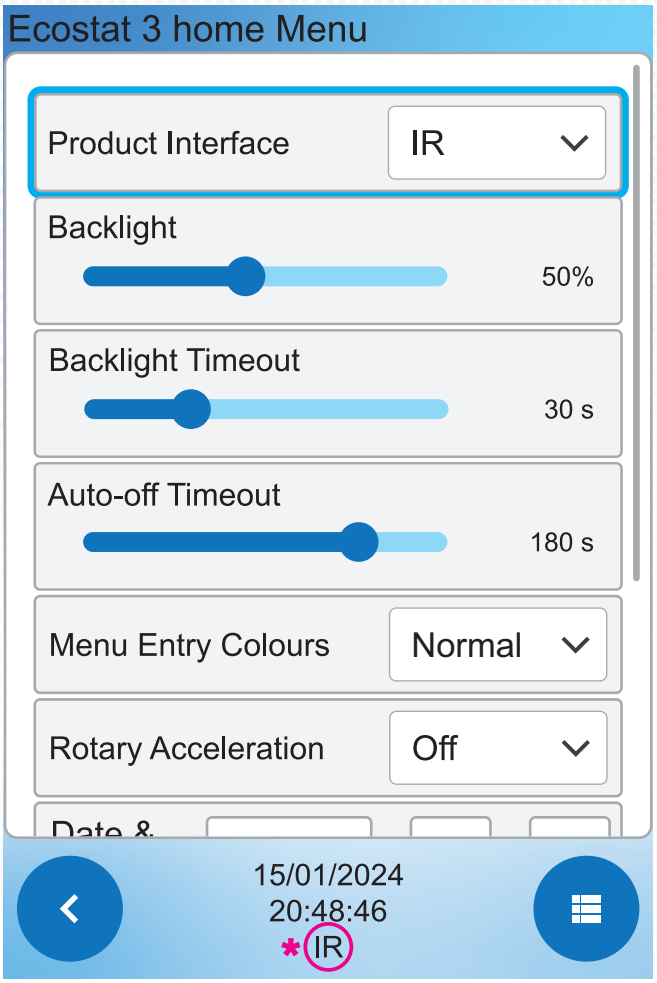

Fig 1

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SENDING AND READING SETTINGS / CONTINUED

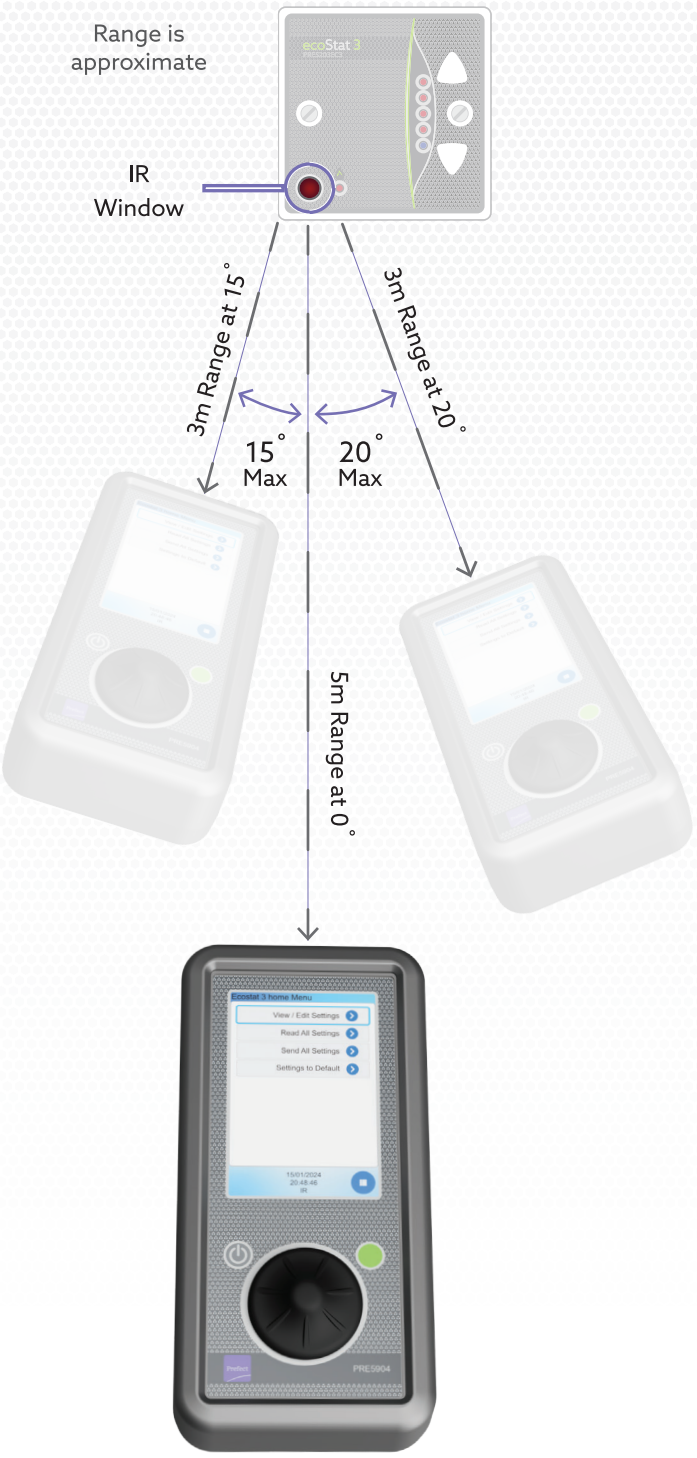
IR MODE

Infrared communicates via direct line of sight with a range of up to 5m, this operates like a TV remote and is recommended for most situations. The settings are sent from an IR transmitter on the top of the handset and are received by an IR receiver on the lower left corner of the ecoStat3. The IR is direct line of sight, meaning there must be a clear path between the handset and the IR windows. For settings to be sent/read the unit must be powered. Settings can be sent/read at any time regardless of the ecoStat3's current mode. Setting changes are immediate.

USING THE HANDSET WITH ecoStat3 IN IR MODE

Ensure the ecoStat3 is powered indicated by one or more lit LEDs, Point the top of handset at the IR window of the ecoStat3. Hold the handset from 30cm to 5m away from the control. The handset only needs to be pointed at the unit while the settings are being transmitted, a status window on the handset screen displays progress. Keep pointing towards the unit until the Read/Send function is complete. A bleep will confirm all parameters have either been read or sent successfully. The ecoStat3 will blink it's scale LEDs to confirm infrared contact. If the LEDs do not flash during a send/read the infrared signal is not being received, move closer and try again until the LEDs start to flash. If the LEDs still fail to flash check product interface setting on the handset dashboard is displaying ***IR***.

When reading settings from ecoStat3 the button LEDs will flash sequentially downwards, when sending the LEDs will flash upwards.



INFRARED LOCK

The ecoStat3 IR can be disabled if necessary. This may be required if there are ecoStat3 units in close proximity or in rare circumstances where the unit is being affected by another IR device in the room.

When locked, the ecoStat3 will not accept settings and settings cannot be read. When locked all LEDs will flash when a send/read is attempted from the handset

LOCKING IR:

To lock IR navigate to:
ecoStat3 > View / Edit Settings > Advanced > Misc.
Here there a setting ***Lock / Unlock IR*** select Locked. Press the green button on the handset to enter the sub menu. Hold down both buttons on the ecoStat3 then click ***Send*** on the handset to lock the IR. When send is complete release the buttons.

To unlock the IR select ***Unlocked*** and repeat the above process.

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SENDING AND READING SETTINGS / CONTINUED

NFC MODE

NFC communicates via short range magnetic field and requires the rear of handset to be touching the ecoStat3. This operates much like a contact-less credit card.
NFC can be beneficial if there are multiple ecoStat3's mounted in close proximity, and IR could inadvertently communicate with other units. The main benefit of NFC is that it does not require the ecoStat3 to be powered, settings can be Read/Sent with the ecoStat3 powered down. Units can also be set before they are installed.

USING THE HANDSET WITH ecoStat3 IN NFC MODE

NFC requires the handset to be placed in contact with the front of the ecoStat3, as shown in Fig 2. The ecoStat3 does not need to be powered to Send or Read settings.

Place the rear top quarter of the handset on the front lower right of the ecoStat3, roughly aligning the NFC antennas that are shown in Fig 1.

When in place, settings can be Sent/Read. The handset only needs to be held against the unit while the settings are being transmitted. A status window on the handset screen displays progress. Keep the handset in place until the Read/Send function is complete. A bleep will confirm all parameters have either been Read/Sent successfully.

The ecoStat3 will blink it's scale LEDs to confirm NFC communication. If the LEDs do not flash during a Send/Read the NFC signal is not being received, reposition the handset and try again until the LEDs start to flash. If the LEDs still fail to flash, check the product interface setting on the handset dashboard is displaying ***NFC***.

When reading settings from ecoStat3, the scale LEDs will flash sequentially downwards. When sending, the LEDs will flash upwards.

Settings can be Sent/Read at any time regardless of the ecoStat3's current mode. Setting changes are immediate.

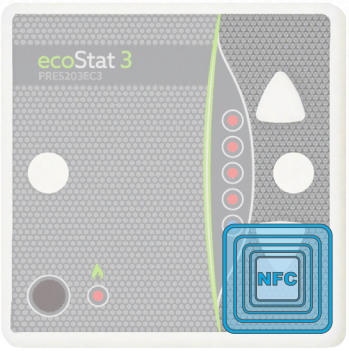

Fig 1 **Antenna Locations**

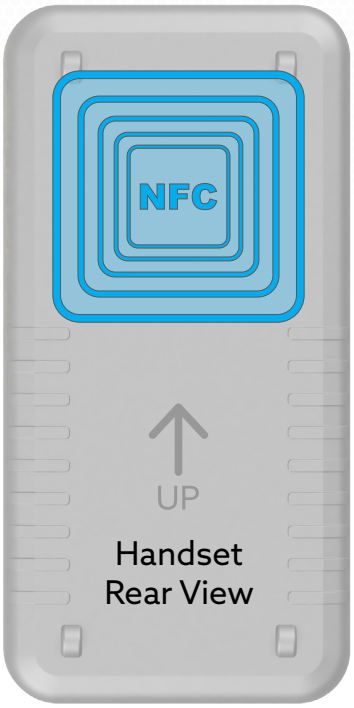

Fig 2 **Placement for transmission**

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ECOSTAT3 SETTINGS AND DEFAULTS

Parameter	Value	Default	Description
Temperature			
Boost Temp	0-40°C	22°C	Maximum Boost mode temperature.
Setback Temp	0-40°C	18°C	Setback mode temperature.
Frost Temp	0-40°C	5°C	Frost mode temperature.
Boost Timeout	1-999 Hours	45 minutes	Time the unit will remain in Boost mode before entering Setback mode.
Setback Timeout	1-999 hours	12 hours	Time the unit will remain in Setback mode before entering Frost mode.
Occupancy Settings			
Occupancy mode	Presence, Absence, disabled	Absence	Microwave Occupancy sensor detection mode, See page 13 for details. Setting to disabled deactivates all Occupancy detection.
Sensor Range	Short, Medium, long	Short	Occupancy sensor detection range. See pages 3-4 for details.
Sensor Speed	Slow, Medium, Fast	Medium	How quickly the Occupancy sensor reacts to movement. See page 4 for details.
Absence Timeout	5-30 Minutes	5 Minutes	Absence mode only, how long the unit remains in Boost mode when the room becomes unoccupied. See page 13 for details.
Trigger Boost Levels			
Occupancy Trigger	Min, Med, Max	Min	The Boost level the unit will enter when triggered by movement. See page 14 for details.
Schedule Trigger	Min, Med, Max	Max	The Boost level the unit will enter when triggered by a Schedule event. See page 14 for details.
Mains Trigger	Min, Med, Max	Max	The Boost level the unit will enter when triggered by a 230V Mains Trigger input. See page 14 for details.
Window Detection			
Enable	On, Off	On	Enable or disable Window Open detection.
Detection Time	5-60 Minutes	30 Minutes	Duration of Temperature Drop detection period.
Temperature Drop	1-10°C	3°C	Required Temperature Drop within the detection time to trigger Window Open. See pages 18-19 for details.
Cycle Time	5-60 Minutes	5 Minutes	When the window is open, this is the amount of time the load will cycle on then off.
Schedule			
Days A	00:00-23:59	00:00 (Disabled)	Time of day to trigger the first Boost cycle. See page 14 for details.
Days B	00:00-23:59	00:00 (Disabled)	Time of day to trigger the second Boost cycle. See page 14 for details.

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ECOSTAT3 SETTINGS AND DEFAULTS

Parameter	Value	Default	Description
Misc			
Mains Trigger	Disable, Enable	Enable	Enable or disable the 230V Mains Trigger functionality. See page 14 for details.
Lock/Unlock IR	Unlocked, Locked	Unlocked	Setting to lock or unlock the IR. When locked the ecoStat3 will not communicate with the handset. See page 22 for details.
Temperature Sensor Offset	-/+ 3.0°C, Off	Off	Temperature sensor offset, allows the sensor to be offset to compensate for installation environment. + if sensor reads cold, - if sensor reads warm. See page 20 for details.
Valve Service	Disabled-30 Days	Disabled	Number of days between Valve Service cycles. **Warning:** only for use when ecoStat3 is connected to a control valve. See page 20 for details.
Led Fallback Brightness	0(OFF)-100%	2%	Brightness level LEDs dim to after fallback Time. See page 20 for details.
LED Fallback Time	10-120 Seconds	10 Seconds	Time LEDs will remain at full brightness before dimming. See page 20 for details.
About			
Product ID	00	N/A	Product ID (read only).
Firmware Version	0.00	N/A	The units firmware version (read only).
Bootloader Version	0.00	N/A	The units Bootloader version (read only).
Read Temperature	°C	N/A	Current temperature as measured by the ecoStat3. **Note:** the ecoStat3 temperature sensor will self calibrate when the unit is powered up. The sensor will read high/low for several minutes after initial start up until the calibration is complete.
Date & Time	Year, Month, Day, Hour, Minutes, Seconds	N/A	Real time clock and date, read to check ecoStat3 time. Send to set ecoStat3 clock.

RESETTING ECOSTAT3 TO DEFAULT SETTINGS

Power-on the handset and navigate to the ecoStat3 home menu. Select and click the ***Settings to Default*** button. A window will display with ***Cancel*** or ***OK***, Select ***OK***. This restores all the ecoStat3 settings to default within the handset. These default settings can then be Sent to the ecoStat3. Select the ***Send All Settings*** and using the method described on page 18, Send the default settings to the ecoStat3

If the ecoStat3 Flashes all LEDs simultaneously, this means the IR is locked. Hold down both buttons on the ecoStat3 Then repeat the ***Send All*** command, this will unlock the IR and install the default settings.

Note: Selecting the "Settings to Default" only applies to the ecoStat3 settings within the handset, other product settings are no affected.

Warning: Resetting settings to default will clear Schedule events if set. The real time clock is not affected.

CARE AND MAINTENANCE

When undertaking any care or maintenance work the unit **MUST** be safely isolated. To clean the unit use a damp cloth with a mild detergent, do not allow any moisture to enter the unit. Ensure when surrounding areas walls/carpets/ceilings are cleaned that no liquid or vapour can enter the unit.

Do not use any solvent based cleaners as these may damage the unit. If the room is to be painted the unit must be isolated and either removed from the wall by a qualified person or correctly masked. If paint or debris are allowed into the unit or the vents become blocked this will stop the unit from working correctly. Under no circumstances is the unit to be dismantled, dismantling the unit will void the warranty.

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TROUBLESHOOTING - HARDWARE

Fault	Checks/Comments
No LEDs are lit	1. Check the unit is wired as per the wiring section starting on page 6, or the wiring diagram document. 2. Check the mains supply voltage, ensure that 216-253V AC are present and stable between L and 'N' terminals. 3. The LEDs can be set to dim to 0% when not active, the unit may appear to be off.
The load does not turn on	1. Ensure there is power to the load if not fed by the unit, for example a volt free boiler connection. 2. Check the unit is wired as per the wiring section starting on page 6, or the wiring diagram document. 3. Check that the flame LED is lit. This LED will only light when the unit relay is closed. If the LED is off the relay is open. If the LED is lit the unit is calling for heat. 4. Check that the current room temperature is not above that of the unit set point. If the room temperature is above the temperature set point, the unit will not close it's relay to heat until the room temperature falls below the set point. 5. If wired in a mains output configuration ensure the mains link has been fitted between the COM and L terminals. 6. If the load is not turning on at a scheduled time, check that the Schedules have been correctly programmed into the unit. Check the current time has been set. See page 21 for details. **Note:** Schedules do not activate when the unit is in Frost mode. 7. If using a Prefect Atlantic heater ensure the energy lock key is fitted. See page 7 for details.
The load does not turn off	1. Check the unit is wired as per the wiring section starting on page 6, or the wiring diagram document. 2. Check that the flame LED is not lit. This LED will only light when the unit relay is closed. If the LED is off the relay is open. If the LED is lit the unit is calling for heat and therefore the load will not switch off until heating is complete. 3. Check that the current room temperature is not below that of the unit set point. If the room temperature is below the current temperature set point, the unit will not open it's relay to discontinue heating, until the room temperature is raised above that of the set point. 4. If wired in a volt free contact configuration ensure the mains link has been removed. 5. Movement is detected. If movement is detected the unit will stay in Boost mode holding a higher temperature set point, if you leave the room the time run will expire and the unit will turn down to setback mode. Occupancy sensor can be disabled for fault finding see page 4 for details. 6. Check that the Schedule function has not activated. See page 14 for details. 7. Check the trigger is not active, if 216-253V AC is supplied to the TRIG terminal the unit will stay in Boost mode until the voltage is discontinued. 8. The Occupancy sensor has the ability to detect through thin walls and doors, movement may be being detected outside the room. Reduce the sensor range see page 4 for details.

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TROUBLESHOOTING - HARDWARE / CONTINUED

Fault	Checks/Comments
LEDs flashing and the buttons do not work	This is normal after first power-up. The unit stays dormant for 1 minute while the unit stabilises. When this time has elapsed the unit will function as normal.
The load switches off after 2 minutes	The unit has a 2 minute test cycle/pre-warm, when the unit is Boosted from Setback or Frost, or triggered via the detector, the unit will heat regardless of temperature for 2 minutes. When this time run has elapsed the unit will resume temperature sensing. If the load is switching off after this time the Boost temperature set point is below that of the current room temperature meaning there is no need for the load to be on. See page 12 for details.
After a few seconds all LEDs turn off	1. If the LEDs light when the buttons are pressed, then switch off after a few seconds the LED Fallback setting is set to 0% meaning the LEDs will dim to off after a mode change. The unit is still operating. This setting can be changed via the handset see page 20 for details. 2. Check the power supply to the unit is 216-253VAC 50Hz and is stable. 3. Check the terminal connections are correct as per the wiring diagrams starting on page 6. 4. Inspect the connected load for any faults.
Occupancy is not being detected	1. Check the Occupancy settings, the detector can be set to Disabled, Absence, or Presence. When disabled the sensor will not detect. When set to Absence mode the detector only takes action when the unit has been manually entered into Boost. 2. Check the unit has a clear unobstructed view of the detection area. 3. Alter the Occupancy sensor settings. See page 4 for details. 4. Check for metallic objects beside or in front of the unit, metallic objects will inhibit performance. 5. Check for any non standard labelling on the unit, foil backed and metallic labels can inhibit performance. 6. Occupancy out of range. The maximum theoretical range is 5m however, this is dependant on installation conditions and environmental factors. Check the range setting see page 4 for details.
The 230V Mains Trigger is not working	1. Using the handset check the Mains Trigger function is enabled. See page 14 for details. 2. Check the voltage between the 'TRIG' terminal and 'N' is a stable 216-253VAC AC 50Hz when the trigger supply voltage is to be active. 3. Check the trigger voltage is present for 2 seconds or more.
The heating turns off before the room temperature is achieved	1. Check the connected load is functioning correctly. 2. Check the connected load does not have on-board controls that may be off or set low. 3. Check the connected load is suitably rated for the size and heat loss of the room. 4. The Boost or Setback Timeout may not be long enough for the connected load to heat the room. 5. If the ecoStat3 is mounted too close to the heater or another heat source the unit will read temperature incorrectly and turn off prematurely.

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TROUBLESHOOTING - OPERATION

Fault	Checks/Comments
The unit is always in Boost mode	1. A mains voltage is present at the trigger (TRIG) terminal, holding the unit in Boost mode. 2. A foreign substance is jamming the UP button. 3. A Scheduled Boost is active. Schedules can be Read using the handset. See page 18 for details.
The unit does not stay at set level	1. The current timeout has elapsed and the unit has changed to another mode. 2. A foreign substance is jamming one of the buttons. 3. A mains voltage is present at the trigger terminal (TRIG), changing the program to Boost mode. The unit will return to Setback mode when the voltage is discontinued. 4. A Scheduled Boost has been triggered. 5. Check Window Open mode has not activated, indicated by the top and bottom LEDs flashing.
The unit does not stay in Boost mode for the set time	1. Read the ecoStat3 settings and check the Boost Timeout is set correctly. 2. If Boost is triggered via a Mains Trigger, the unit will either run the Boost time or remain in Boost for the duration that the Mains Trigger is present. See page 11 for details.
Scheduled Boost not activating	1. Check the units mode when the Schedule is set to occur, a Scheduled Boost will not operate when the unit is in Frost mode. 2. Using the handset, navigate to ***Ecostat 3 > View / Edit Settings > Advanced > About*** Read the date and time from the ecoStat3, and set if necessary, **Note:** This is a 24hr clock. 3. Read the Schedule settings from the ecoStat3 and check the correct times/days are set. 4. If the ecoStat3 is not retaining time, the battery may need to be replaced. 5. Check the handset time is set correctly, whenever a setting is Sent from the handset the time and date is also Sent, if the handset time is incorrect the ecoStat3 will also be wrongly set.
I cannot turn the unit down below minimum Boost	A 230V Mains Trigger is present at the mains terminal holding the unit in Boost mode.
The unit enters Boost unexpectedly	1. A Scheduled Boost event is active. 2. A 230V Mains Trigger is present. 3. Check the buttons are moving freely and are not jammed by a foreign substance.
The Upper and lower scale LEDs are flashing	The unit has entered Window Open mode. See page 14-15 for details.
The flame LED is flashing	A flashing flame LED indicates the unit is running a Valve Service Cycle. See page 16 for details.
When the window is closed, Window open Remains Active	When the window is closed the room should reach the set boost level within the cycle time, If the boost temperture is not reached within this time window open will reactive. Increase the duty cycle time to allow the room enough time to recover once the window has been closed.

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TROUBLESHOOTING - OPERATION / CONTINUED

Fault	Checks/Comments
I cannot turn the unit down below minimum Boost	A 230V Mains Trigger is present at the mains terminal holding the unit in Boost mode.
The unit enters Boost unexpectedly	1. Occupancy has been detected and the unit has entered Boost mode. 2. A Scheduled Boost event is active. 3. A 230V Mains Trigger is present. 4. Check the buttons are moving freely and are not jammed by a foreign substance.
The Upper and lower scale LEDs are flashing	The unit has entered Window Open mode. See pages 18-19 for details.
The flame LED is flashing	A flashing flame LED indicates the unit is running a Valve Service Cycle. See page 20 for details.

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TROUBLESHOOTING - HANDSET

Fault	Checks/Comments
Sending and reading settings	
Read or Send failed	1. Check the handset is within the operating range and angle. See page 22 for details. 2. Check the ecoStat3 is powered and one or more LEDs are lit. 3. Ensure the ecoStat3 being read is an "ecoStat3" model and not an earlier "ecostat" or "ecostat2". 4. If all ecoStat3 LEDs flash simultaneously when attempting to Read/Send the IR lock is enabled, IR must be enabled to allow reading/sending. See page 22 for details. 5. Check the handset product interface setting, the handset can utilise IR or NFC interface, NFC only operates when the handset is touching the ecoStat3. The current interface setting is displayed at the bottom of the handset screen. See page 23 for details. 6. Check handset model, the ecoStat3 can only be set by the PRE5904, Older PRE5901 and 5903 handsets are not compatible with ecoStat3. 7. Check the IR window is clear and unobstructed. 8. The handset may have outdated firmware and requires an update, handset firmware can be downloaded from **prefectcontrols.com** alternatively contact Prefect Controls for assistance. 9. Check the ecoStat3 menu has been selected. The ecostat2 menu is not compatible with ecoStat3. 10. Check the handset silicone sleeve is not installed backwards covering the top black IR window and USB-C port. 11. Check the top black IR window on the handset is not obstructed.
The handset displays *Unverified*	When settings have completed sending the ecoStat3 will send a confirmation to the handset confirming all settings have been received, the handset will display ***Success***. if the handset displays ***Unverified*** this means the final confirmation was not received meaning settings may not have been completely received. In this instance move closer to the ecoStat3 and try again.
Only one setting is being sent/read	When using the Send or Read button this only Sends/Reads the highlighted setting. Using the Send All/Read All button from the home menu Sends/Reads all settings simultaneously. A Send All/Read All from within a menu sends/reads all settings within that menu.
The ecoStat3 LEDs all flash when I try to read or send	If all ecoStat3 LEDs flash simultaneously when attempting to Read/Send the IR lock is enabled, IR must be enabled to allow Reading/Sending. See page 22 for details.
When Send All is finished all the LEDs turn off	Check the LED fallback setting, when this setting is set to 0% the LEDs will turn off after the LED fallback time has elapsed. See page 20 for details.
After settings are sent the heating switches on/off	One of the settings that has been altered has changed how the unit operates. For example if the unit was in Boost mode with the heating off before the settings where sent, and the Boost temperature was increased as part of the settings changes, the heating may switch on when the new settings are implemented, as higher setting requires the heater to be on.
The time in the ecoStat3 is wrong	Check the handset time is set correctly, whenever a setting is sent from the handset, the time and date are also sent, if the handset time is incorrect the ecoStat3 will be set wrong also.

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FREQUENTLY ASKED QUESTIONS

When set to presence mode does the Boost Timeout reset every time movement is detected?

Yes, in presence mode the Boost Timeout will restart it's countdown whenever movement is detected.

When Window Open mode is active but the load does not need to be on will the Cycle Time still switch the load on and off?

No, Window Open mode will only be active when the ambient temperature is below the current set point, if the ambient temperature raises above the set point Window Open would be cancelled.

Will the unit stay in Boost mode if the room is occupied?

When set to presence mode the unit will remain in Boost mode while the room is occupied.

When set to absence mode the unit will run the Boost Timeout only.

When the Occupancy sensor is disabled the unit will run the Boost Timeout only

Can I mount the unit in a bathroom?

The unit is IP3X rated, therefore the unit can be mounted in zone 3.

Where do I mount the unit in a room used by people with disabilities?

See the users with disabilities section on page 20.

Can I use two units in the same room?

This is not recommended as the units will contradict each over. The recommended solution is to control multiple heaters with a singe unit. The unit can switch a combined heating load of up to 16A at 230V, a contactor must be used for loads above 16A.

Where do I mount the unit if it is controlling a boiler or heaters in multiple rooms?

When controlling multiple rooms mount the unit at the most central point between the rooms under control.

Can I mount the unit next to the heater/radiator?

This is not recommended however the unit can be mounted next to the heater/radiator but must not be mounted within 300mm of the nearest edge of the heater and must not be mounted above the heater.

Can I use the unit to control a LV or 0V circuit?

Yes. The unit has a volt free contact, remove the supplied mains link that is fitted between the L and COM terminals. Terminate your LV or 0V supply to the COM terminal. Terminate the return to the Sw out terminal.

Do I need any extra wiring accessories?

Yes. The unit must have a local means of safe double pole isolation. A double pole switched fused spur is recommended. The unit must be mounted in a suitable 30mm or greater surface or sunken single gang box.

What is the Mains Trigger for and do I have to use it?

When a mains voltage is applied to the trigger terminal the unit will enter Boost mode. This allows the unit to be Boosted by an external device such as a door switch, card reader or timer. This function is optional and does not need to be connected.

If I am not using the Mains Trigger do i have to disable it?

No. The Mains Trigger would only need to be disabled if the trigger terminal is connected and active but is no longer required or the equipment supplying the trigger voltage has a fault.

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FREQUENTLY ASKED QUESTIONS

Do I have to connect an earth to the ecoStat3?

The ecoStat3 unit does not have an earth connection as the unit is double insulated. Current regulations state that there should be an earth present at the back box. If available terminate the earth to the terminal in the back box if no such terminal is present safely terminate the earth into a terminal block or Wago and leave in the back box. When present ensure the load earth is suitably connected to the isolator.

What cable should I use to connect the unit?

Cable specification is dependant upon installation, ensure the cabling has appropriate load carrying capacity and conforms with regulations in force at time of installation. We recommend using a 3 and earth cable were suitable.

How do I change the settings?

Settings are changed via the PRE5904 programming handset. See page 21-22 for details.

How much control does the end user have?

The end user can only select temperature set points Frost, Setback or Boost level. The end user can only select temperatures between the levels set by the handset. The end user cannot select how long the unit heats for.

Can the end user change the settings?

No. The unit is tamper proof, the settings can only be changed by the handset.

Do I have to use the Schedule function?

No. Each time event can be activated or deactivated via the handset. All Schedules are disabled as default.

Do I have to use the Window Open detection?

No. The Window Open detection can be deactivated using the handset. See pages 18-19 for details.

Do I have to use the Occupancy sensor?

No. The Occupancy sensor can be disabled via the handset. See page 21-22 for details.

IF a Boost cycle is active and a Mains Trigger is applied will this override the current Boost cycle?

Yes. If the Mains Trigger is applied for less than 30 seconds the unit will run the Boost Timeout from 0. If the Mains Trigger is active for more than 30 seconds the unit will remain in Boost until the Mains Trigger is discontinued at which point the Boost cycle is ended regardless of the previous run time.