ecoStat 3 PRE5003EC3

3 Stage Infrared settable intelligent thermostat with user adjust.

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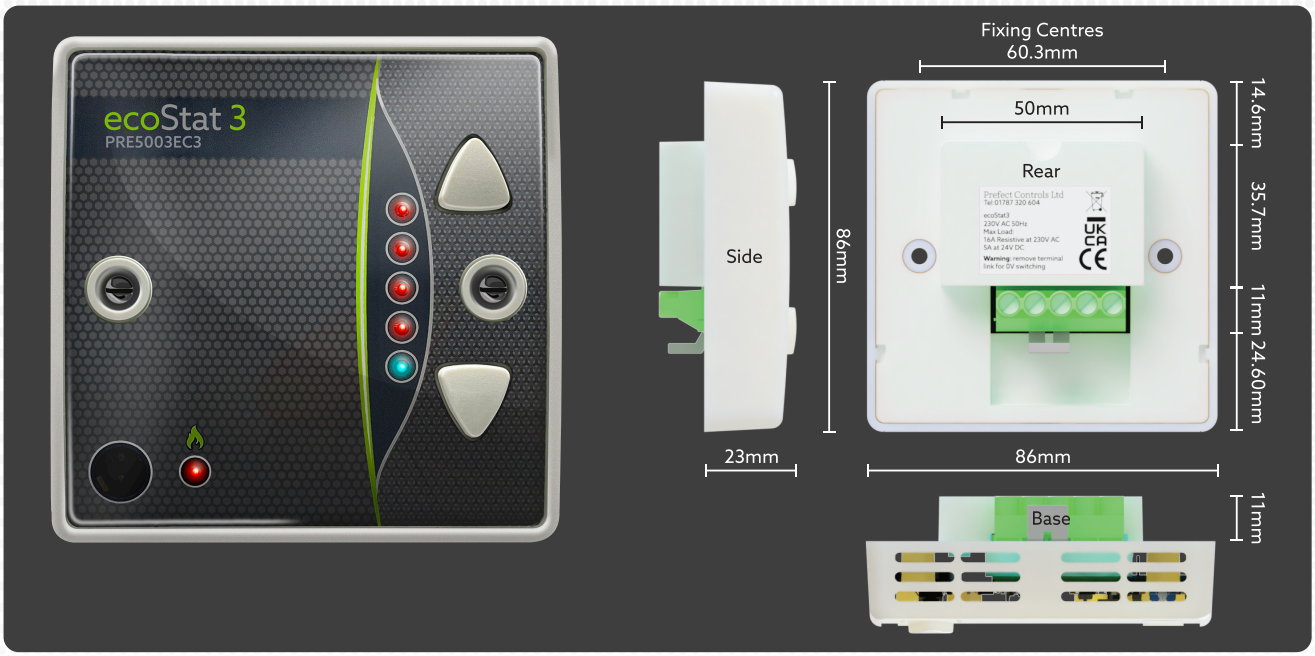

SPECIFICATION

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 ('Sw out'), 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.

Programmes
Boost, Setback, Frost.

Timing range
Boost 0-999 minutes,
Setback 0 minutes to 100 hours.

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, UKCA ECR 2016, EES 2016.

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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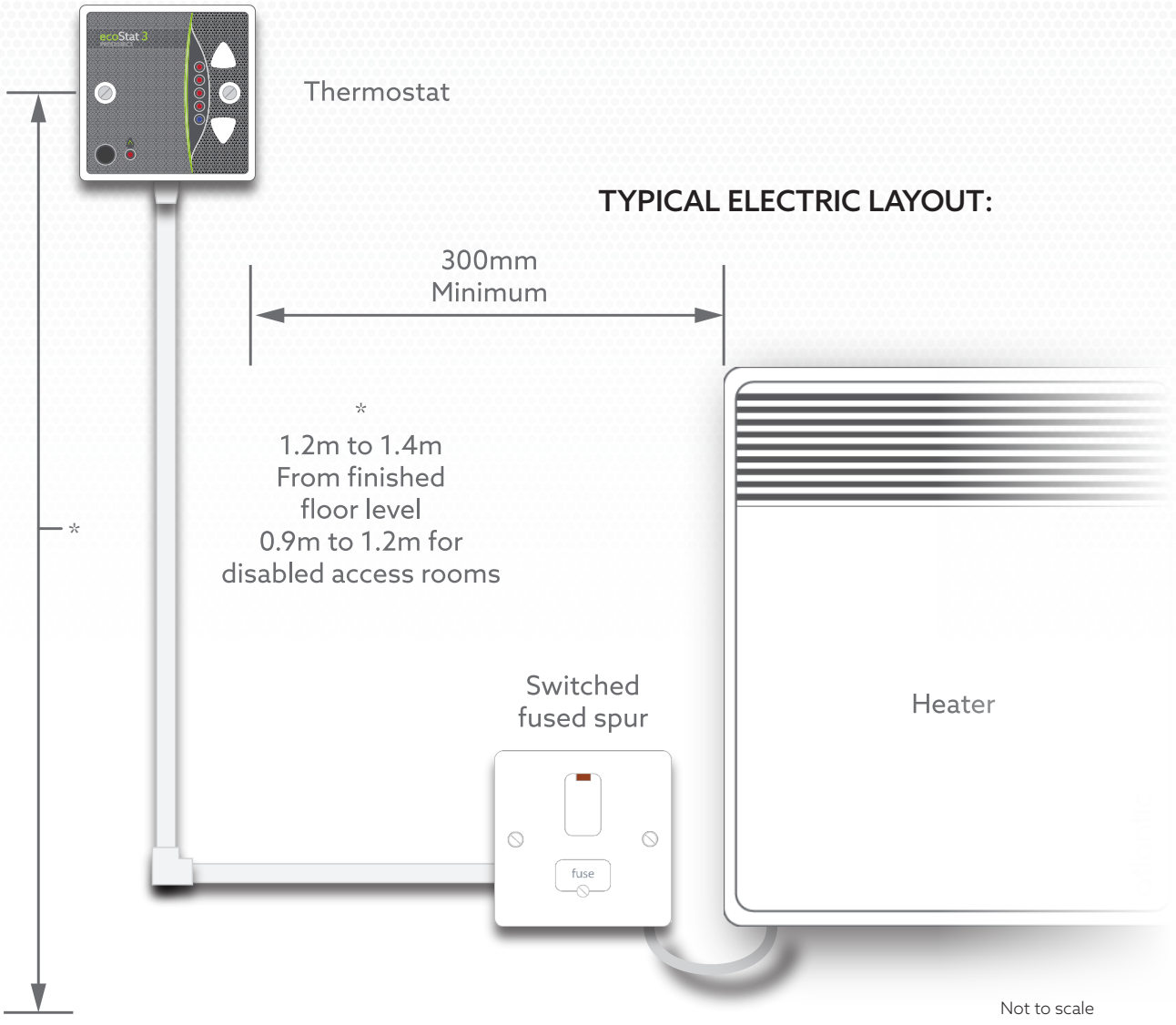
ELECTRIC HEATER INSTALLATION

- 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.
- 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 people that use wheelchairs. See page 16 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 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:



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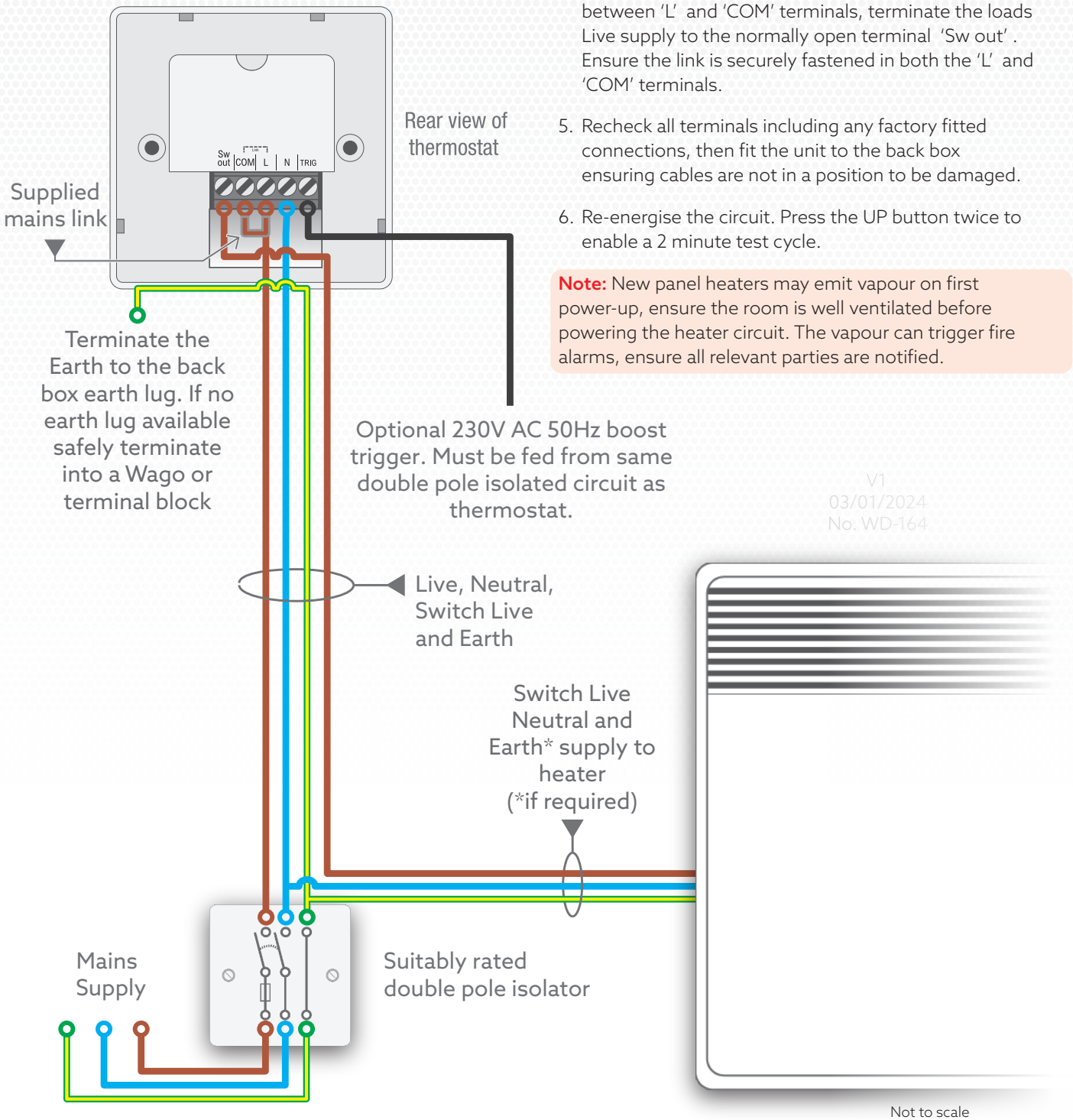
WIRING

Electric panel heater and oil filled radiator

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 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.

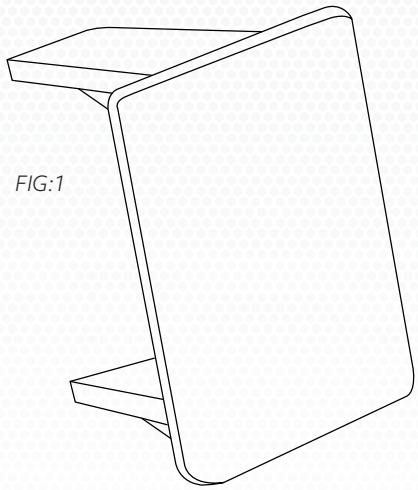

FIG:1

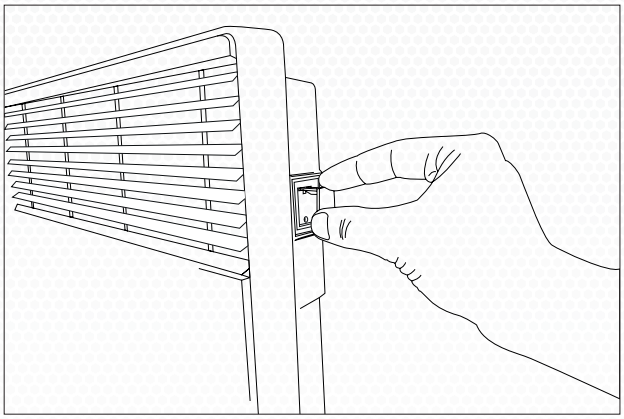

FIG:2

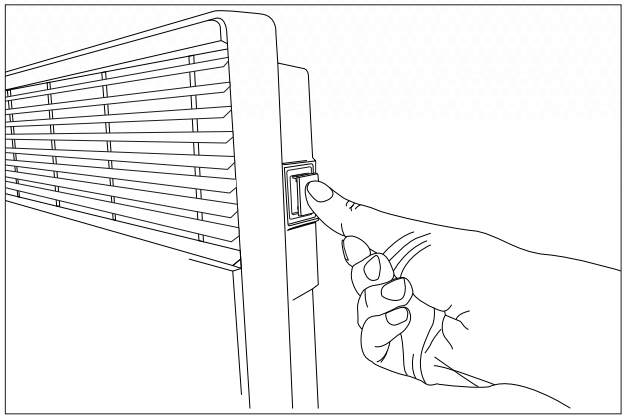

FIG:3

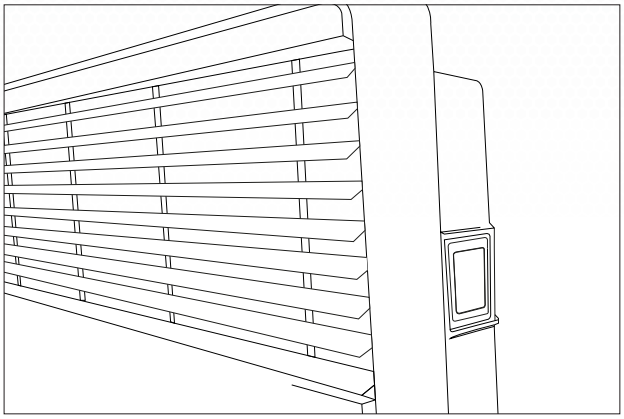

FIG:4

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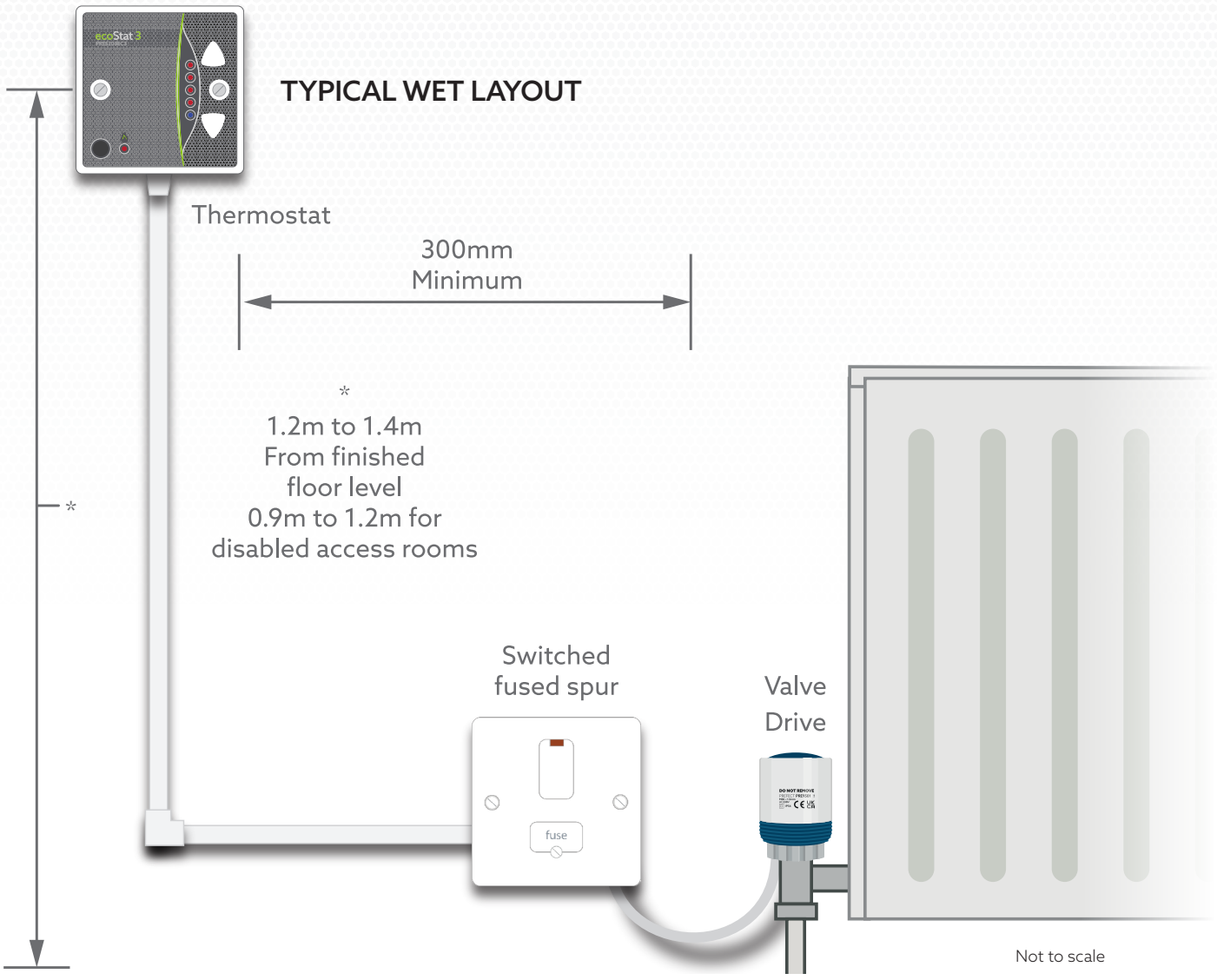
WET RADIATOR INSTALLATION

- 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.
- 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 people that use wheelchairs. See page 16 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 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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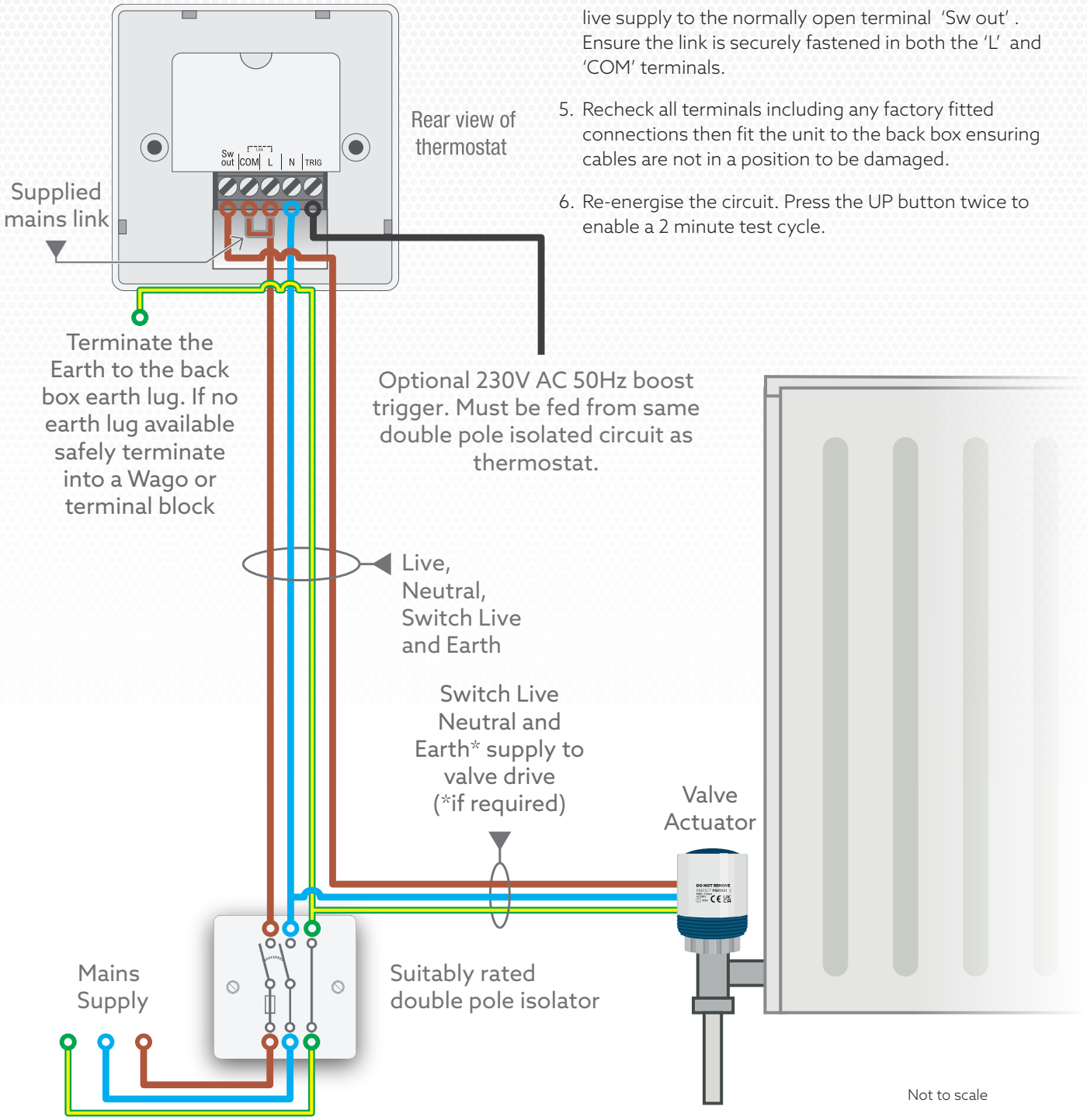
WIRING

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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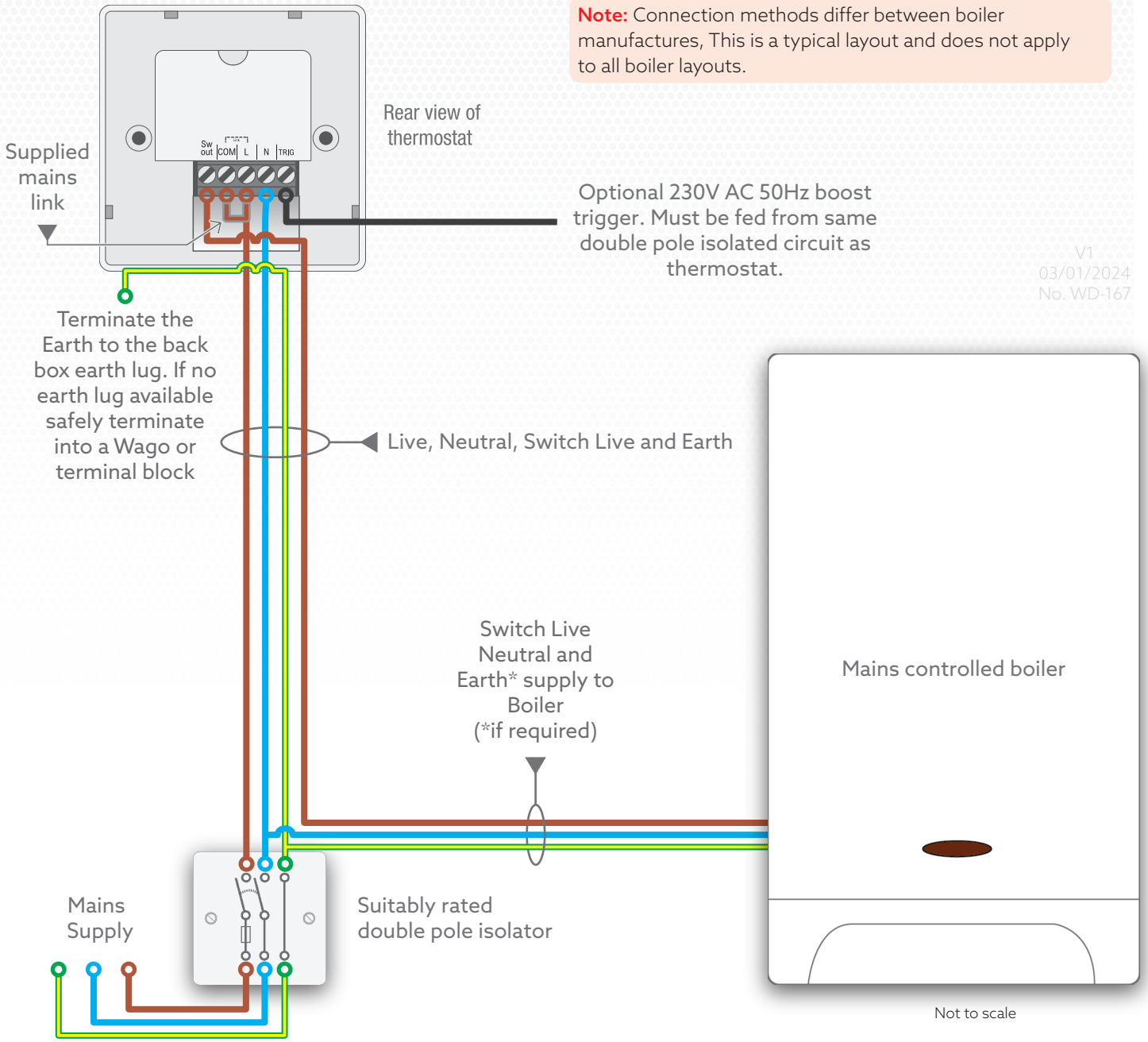
WIRING

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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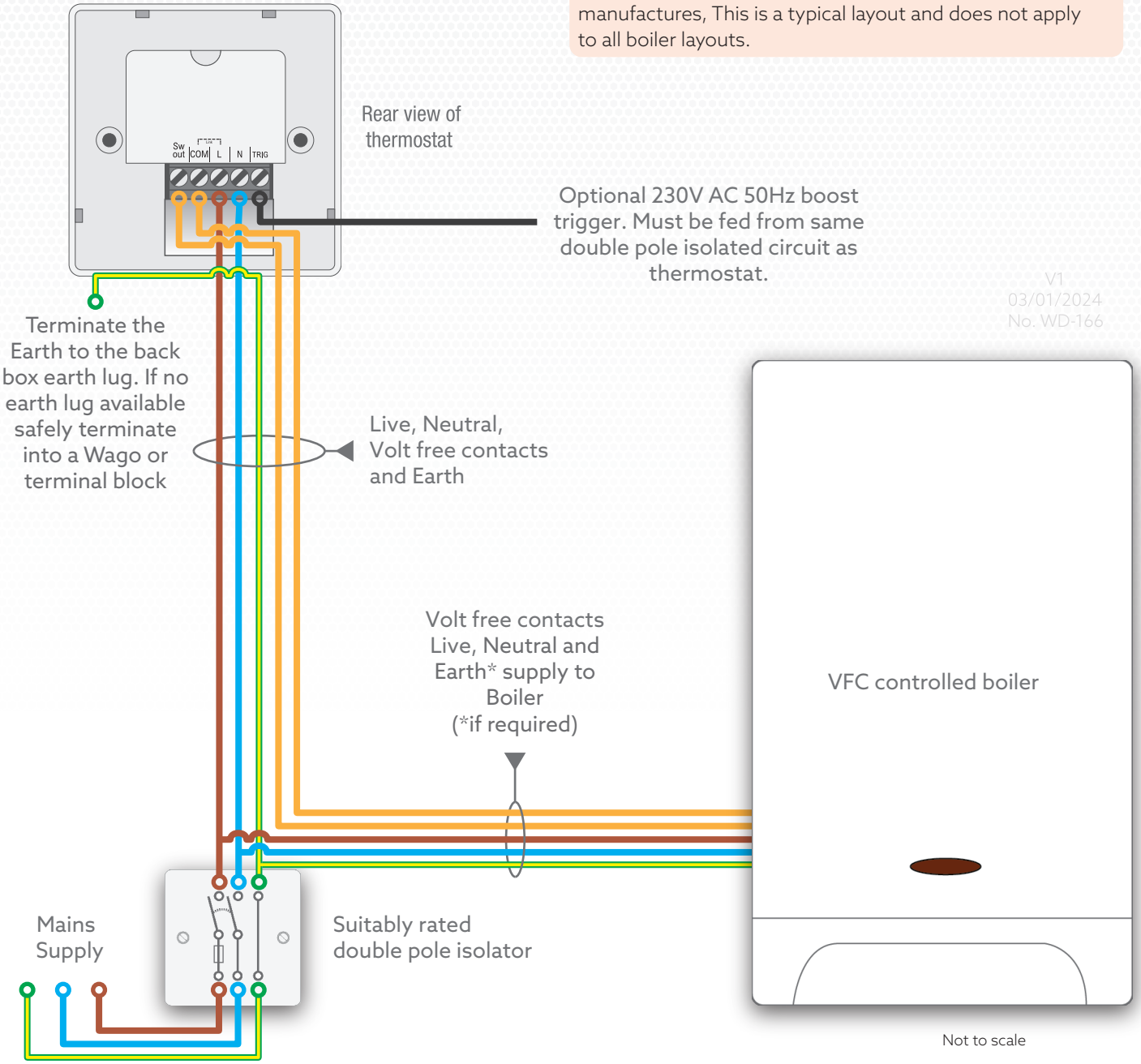
WIRING

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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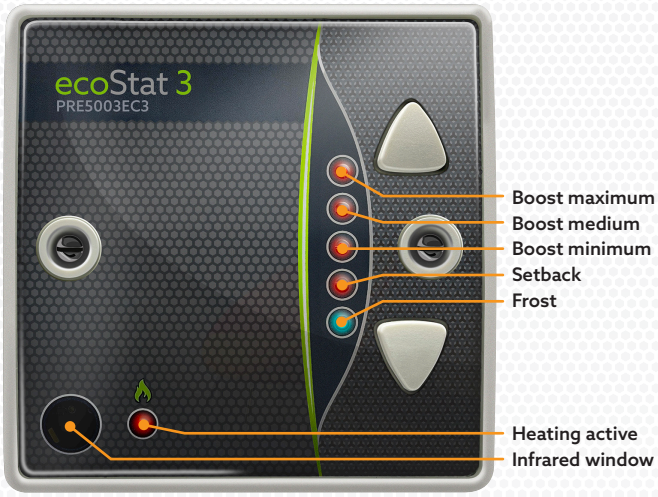
PROGRAMME CHARACTERISTICS

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:

- 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 e.g. days or weeks. A temperature of 5°C is recommended to protect the fabric of the building. Frost is activated when 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 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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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, enabling the unit to be boosted from another room or a more convenient location.

When 230VAC 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. The Boost level selected by the Mains Trigger can be adjusted via the handset. The unit can be triggered into Boost Min, Med and 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 fewer 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 on 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: Schedule simply activates Boost mode at a scheduled time, this is not a start and stop timer.

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: 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 Schedule or Mains Trigger is selectable via the handset. The Level of Boost the unit enters via each of the 2 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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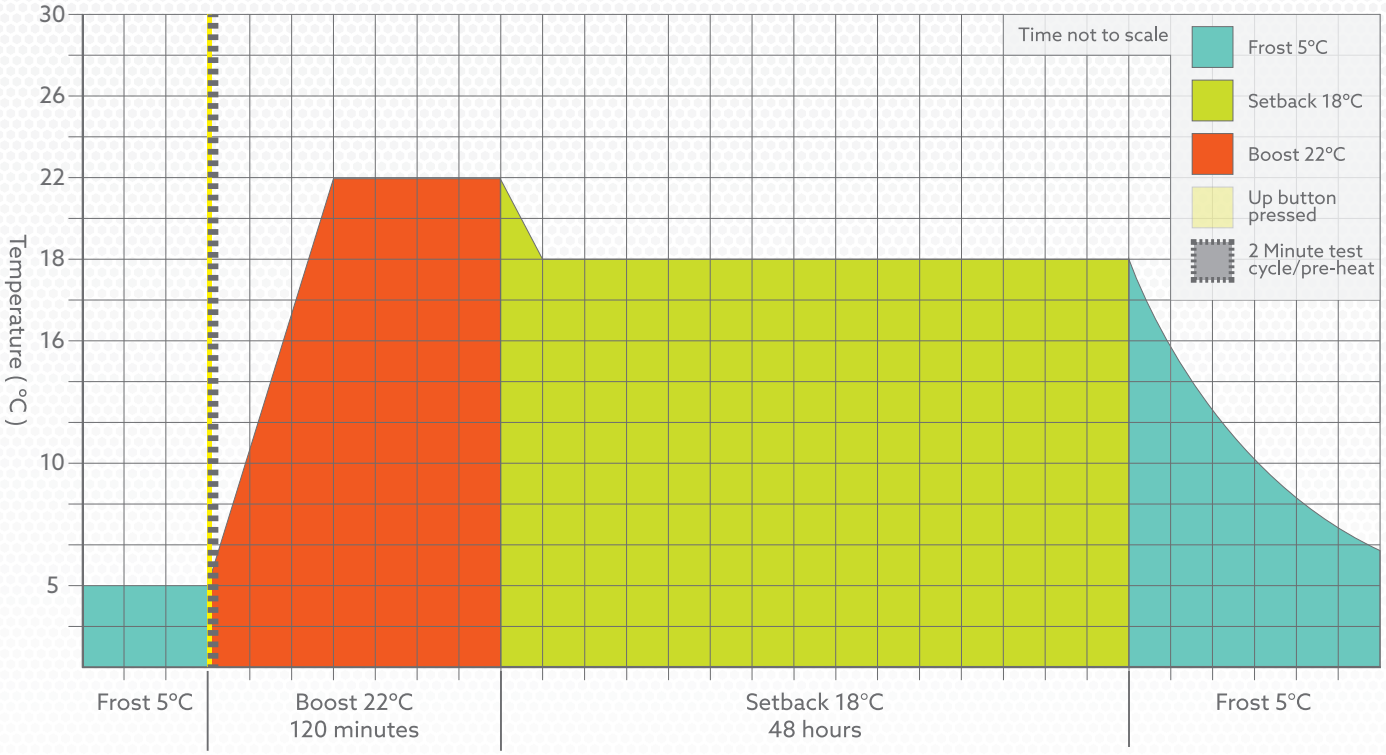
PROGRAMME GRAPHS - **STANDARD BUTTON ACTIVATED**

The following graphs indicate the unit's 3-mode temperature set points: Boost, Setback and Frost modes. The graphs also show how the unit is triggered by the 3 Boost triggers, these being a Button Press, Mains Trigger or Schedule Boost.

The graphs time is not to scale.



This graph shows how the unit reacts to a Button Press. For this example the unit is set to the following values:

Frost Temp.	Setback Temp.	Setback Timeout	Boost Temp.	Boost Timeout	Schedule
5°C	18°C	48 Hours	22°C	120 Minutes	Disabled

At the start of the graph the thermostat is in Frost mode indicated in blue, the thermostat is maintaining 5°C. The UP button is pressed triggering the thermostat into Boost mode, the yellow line shows the button has been pressed. The grey line indicates the 2 minute test cycle is active. The orange segment of the graph indicates Boost mode. The thermostat will heat until the Boost temperature is reached - in this case 22°C. The thermostat will remain in Boost mode for the Boost Timeout of 120 minutes. When this time has elapsed the thermostat will enter Setback mode, indicated in green. The thermostat will allow the room temperature to drop until the Setback temperature is reached in this case 18°C. The thermostat has not been touched for the Setback Timeout of 48 hours. The thermostat enters Frost mode and allows the temperature to drop to 5°C. The thermostat then maintains the Frost temperature.

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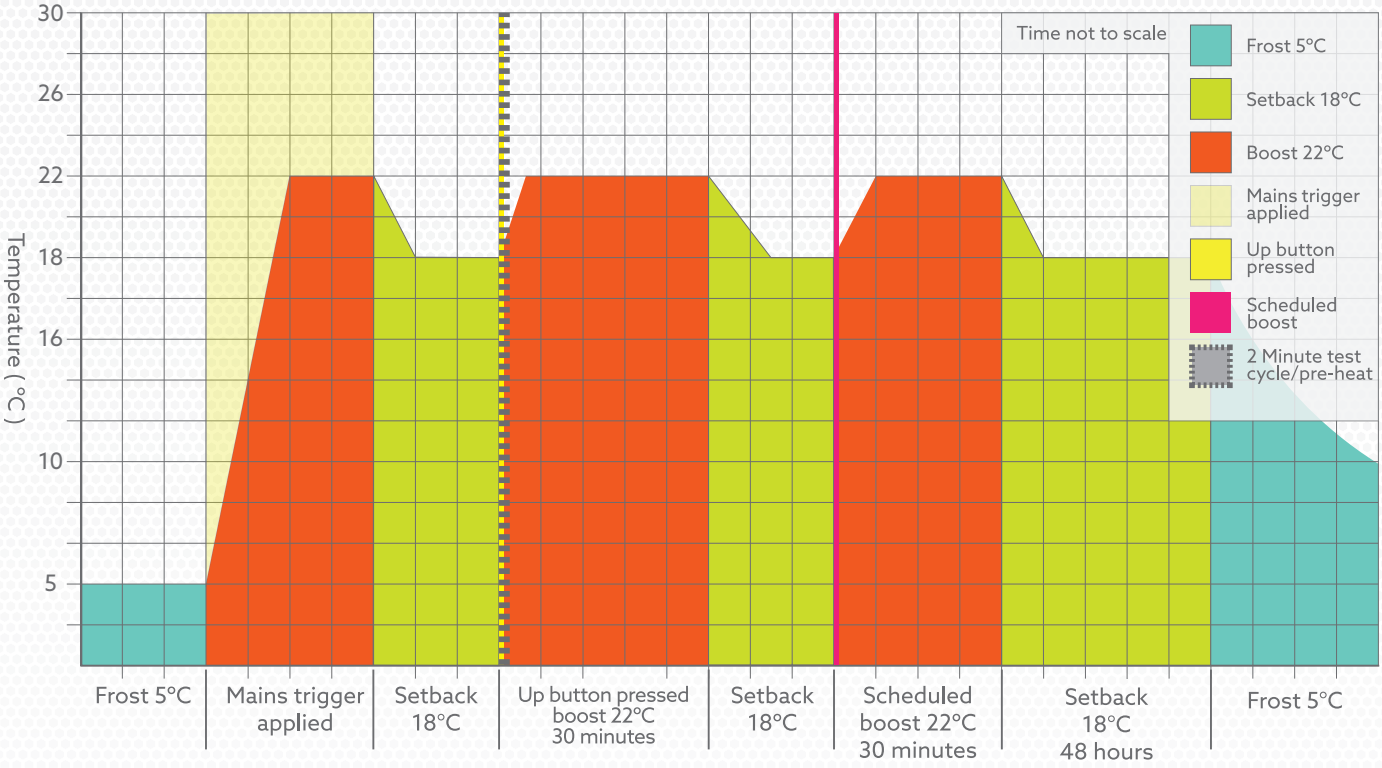
PROGRAMME GRAPHS - **TRIGGER, BUTTON AND SCHEDULE ACTIVATED**



This graph shows how the unit reacts to a Mains Trigger, Button Press and Scheduled Boost for this example the unit is set to the following values:

Frost Temp.	Setback Temp.	Setback Timeout	Boost Temp.	Boost Timeout	Schedule
5°C	18°C	48 Hours	22°C	30 Minutes	Enabled

The Graph begins with the thermostat in Frost mode indicated in blue. A Boost trigger is applied to the thermostat, indicated in yellow. The thermostat enters Boost mode indicated in orange. Room temperature is raised when the Boost temperature is reached - in this example 22°C. The thermostat will maintain the Boost temperature set point until the Boost trigger voltage is discontinued. The voltage is discontinued and the thermostat enters Setback mode, indicated in green. The thermostat allows the room temperature to fall. When the room temperature drops to the Setback temperature set point, the thermostat will maintain the Setback temperature - in this case 18°C. The UP button is pressed, indicated by the yellow line. The thermostat completes the 2 minute cycle and continues heating until the Boost temperature set point is reached. The thermostat maintains the Boost temperature for the Boost Timeout of 30 minutes. When 30 minutes has elapsed the thermostat returns to Setback mode. A Scheduled Boost starts, indicated by the purple line. This triggers the thermostat into Boost. During the Scheduled Boost event the thermostat maintains the Boost temperature for the preset Boost Timeout of 30 minutes. When the 30 minute Boost Timeout has elapsed the thermostat returns to Setback mode for 48 hours before entering Frost 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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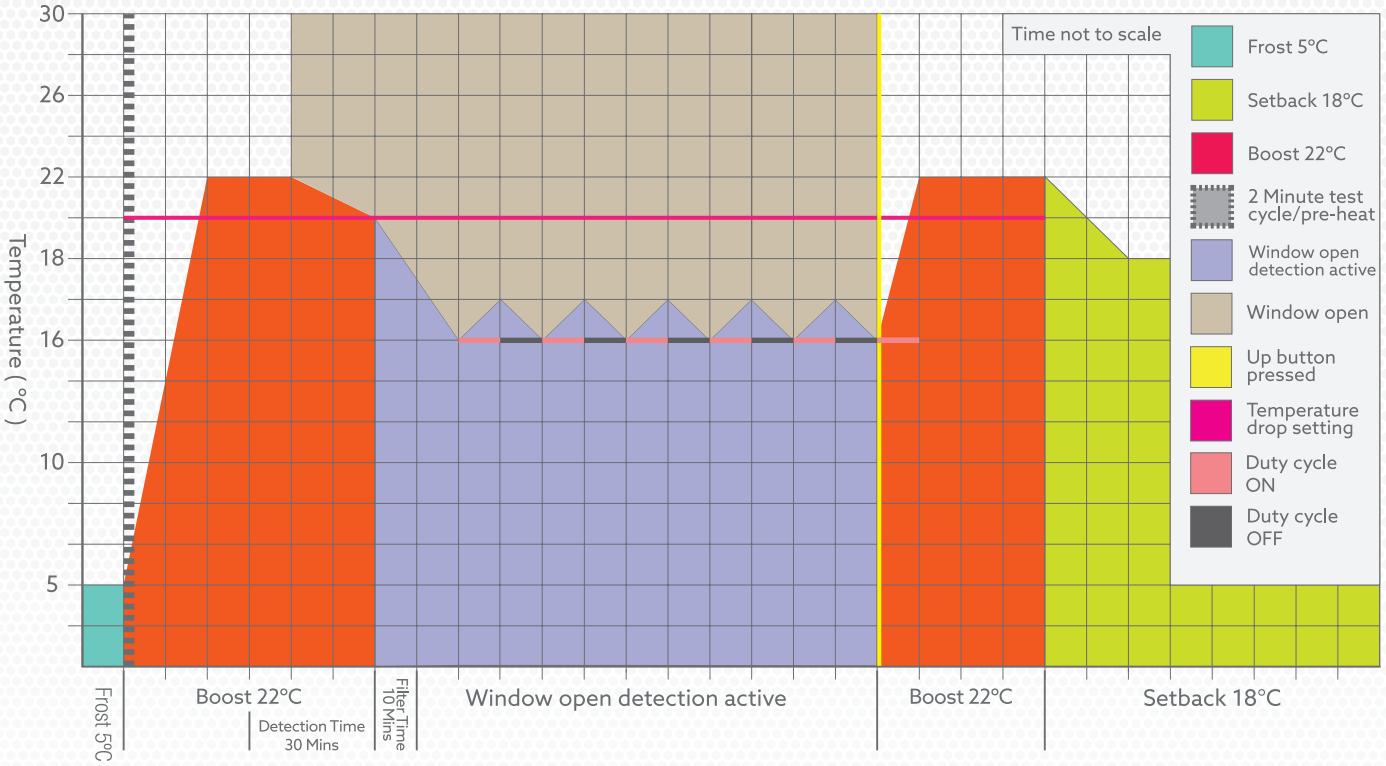
AUXILIARY FUNCTIONS - **WINDOW OPEN DETECTION** /CONTINUED



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: ***Ecostat 3 > Advanced > Misc > Valve Service*** to 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 that the LEDs stay at maximum brightness before dimming, and how far the LEDs dim, is settable using the handset. Using the handset navigate to:

Ecostat 3 > Advanced > Misc

The LED Fallback Brightness setting is the percentage the LEDs will dim. A lower percentage meaning a dimmer 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 within a room designed for people with disabilities, 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 rooms designed for people that use wheelchairs, 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:

Ecostat 3 > 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:

Ecostat 3 > Advanced > About > Read Temperature.

- 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 a position where 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:

- If accessing the unit is difficult, longer timeouts should be used.
- 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.

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 Communication (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 recommended 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.

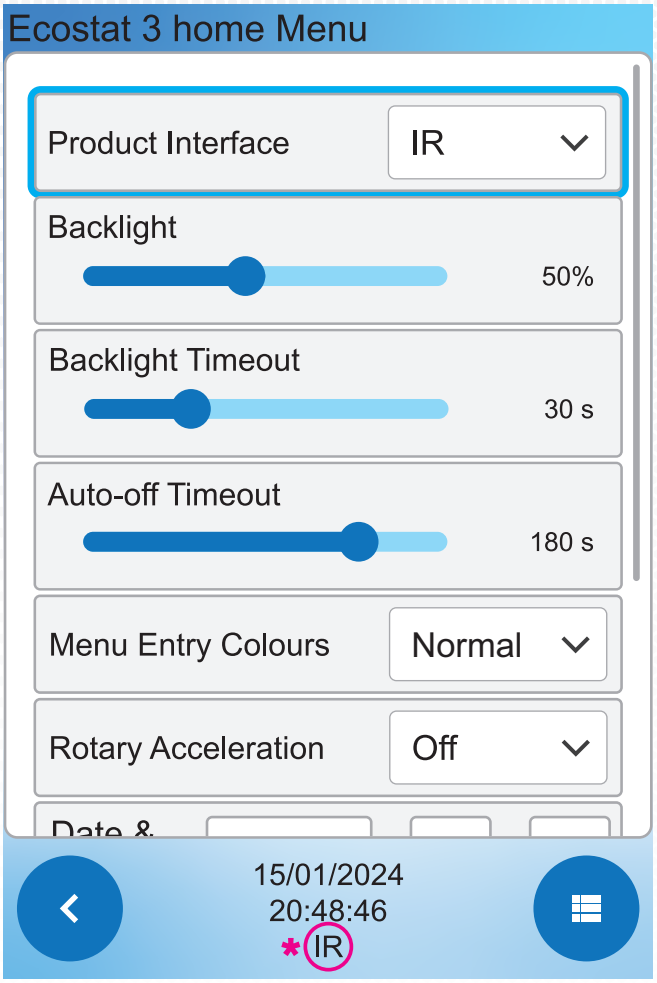


Fig 1

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, this is indicated by one or more lit LEDs. Point the top of handset at the IR window of the ecoStat3. Hold the handset between 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 the handset 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

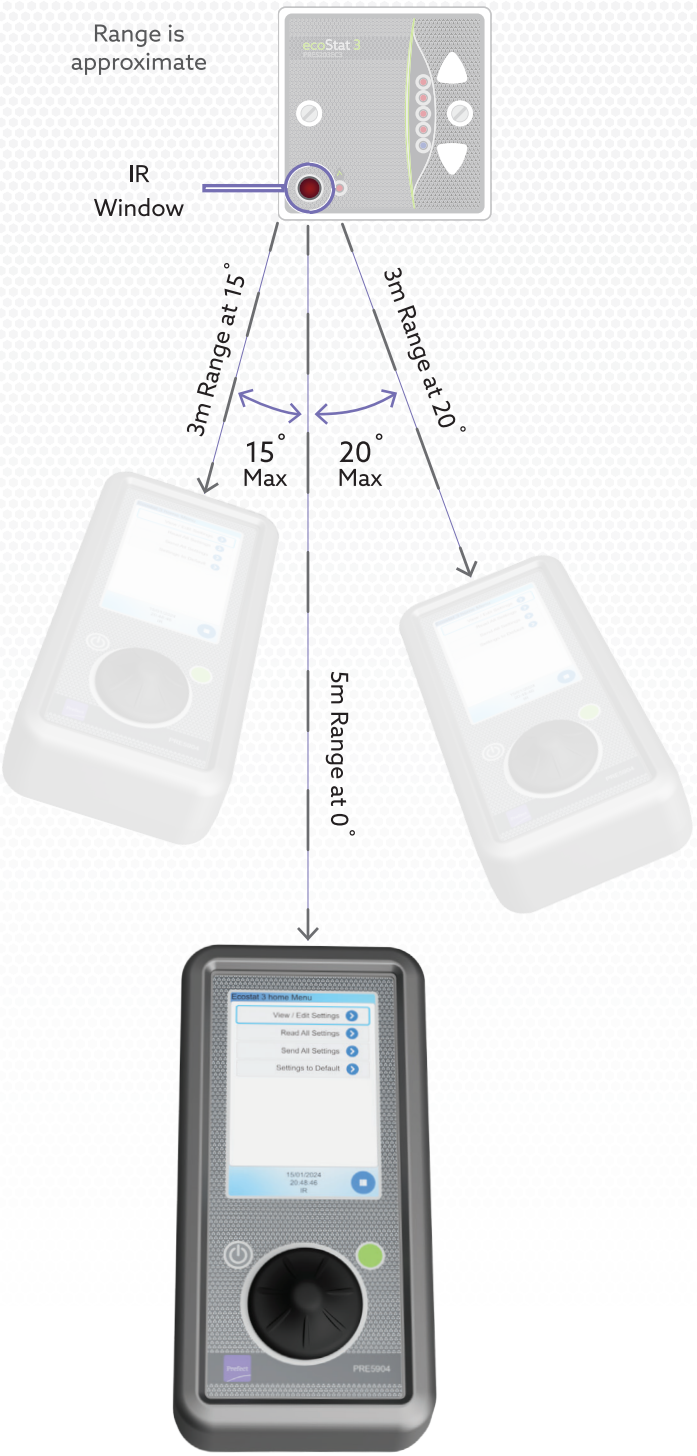
The ecoStat3 IR can be disabled if necessary. This may be required if there are ecoStat3 units in close proximity or in rare circumstances where the unit is being affected by another IR device in the room.

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 is a setting ***Lock / Unlock IR*** - select ***Lock***.
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 ***Unlock*** 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.

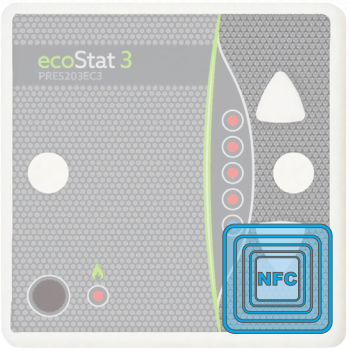

Fig 1 **Antenna Locations**

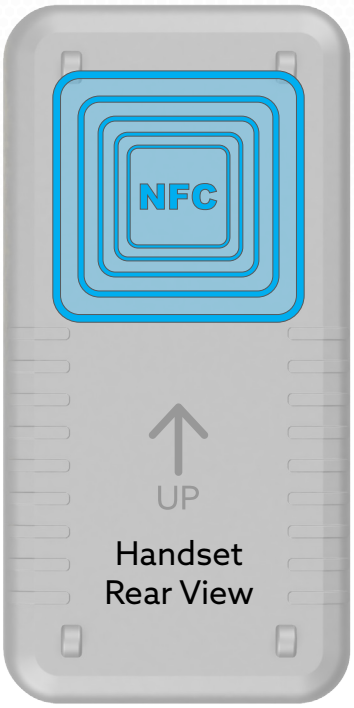

Fig 2 **Placement for transmission**

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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	**Greyed out Items below are not applicable to the PRE5003EC3 model**		
Occupancy mode	Presence, Absence, Disabled	Absence	Microwave Occupancy sensor detection mode, See page 13 of the PRE5203EC3 instruction document for details. Setting to disabled deactivates all occupancy detection.
Sensor Range	Short, Medium, Long	Short	Occupancy sensor detection range. See page 3-4 of the PRE5203EC3 instructions document for details.
Sensor Speed	Slow, Medium, Fast	Medium	How quickly the Occupancy sensor reacts to movement. See page 4 of the PRE5203EC3 instruction document 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 of the PRE5203EC3 instruction document for details
Trigger Boost Levels			
Occupancy Trigger	Min, Med, Max	Min	The Boost level that the unit will enter when triggered by movement. See page 11 for details.
Schedule Trigger	Min, Med, Max	Max	The Boost level that the unit will enter when triggered by a Schedule event. See page 11 for details.
Mains Trigger	Min, Med, Max	Max	The Boost level that the unit will enter when triggered by a 230V Mains Trigger input. See page 11 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 page 14-15 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 11 for details.
Days B	00:00-23:59 (Disabled)	00:00	Time of day to trigger the second Boost cycle. See page 11 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 11 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 18 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 16 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 16 for details.
LED Fallback Brightness	0(OFF)-100%	2%	Brightness level LEDs dim to after Fallback Time. See page 16 for details.
LED Fallback Time	10-120 Seconds	10 Seconds	The time LEDs will remain at full brightness before dimming. See page 16 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 3, 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 3, 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 real time has been set. See page 11 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 5 for details.
The load does not turn off	1. Check the unit is wired as per the wiring section starting on page 3, 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. Check that the Schedule function has not activated. See page 11 for details. 6. Check the trigger is not active, if 216-253VAC is supplied to the TRIG terminal the unit will stay in BOOST mode until the voltage is discontinued.

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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 10 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 16 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 3. 4. Inspect the connected load for any faults.
The 230V mains trigger is not working	1. Using the handset, check the Mains Trigger function is enabled. See page 11 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 - 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 18 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 18 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 19 for details. 6. Check handset model. The ecoStat3 can only be set by the PRE5904. Older PRE5901 and PRE5903 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 18 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 page16 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 were 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 a 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 also be wrongly set.

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FREQUENTLY ASKED QUESTIONS

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 rises above the set point Window Open would be cancelled.

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 16.

Can I use two units in the same room?

This is not recommended as the units will contradict each other. 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.

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.

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FREQUENTLY ASKED QUESTIONS

How do I change the settings?

Settings are changed via the PRE5904 programming handset. See page 17 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 with 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 14-15 for details.

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