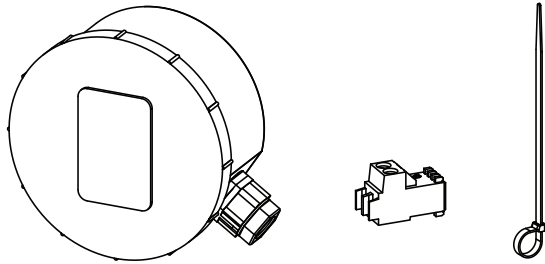


# INSTRUCTIONS:

## OUTSIDE TEMPERATURE SENSOR

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### ICCS OUTSIDE TEMPERATURE SENSOR INSTALLATION



- A. Instruction leaflet
  - B. Outside Temperature Sensor
  - C. Outside Temp. (System or Boiler HCs) RAST5 connector plug
  - D. Cable tie
- 

### FITTING THE KIT

1. The sensor should be located on an external wall of the building to be heated. Fix the sensor to a north/north-east facing wall to avoid direct radiation from the sun. The sensor should be located to avoid any heating effect from the boiler flue or other heat source.
2. To fix the sensor to the wall, unscrew the sensor box plastic cover and screw/plug the sensor body to the wall. Wire a twin core 0.5mm<sup>2</sup> cable to the sensor the via cable gland provided. The cable length between the sensor and the boiler should be no greater than 20m. Avoid running this cable alongside mains voltage cables. Use a screened cable in electrically noisy environments.

# EVOMAX 2 OPERATION

## WIRING THE SENSOR TO THE BOILER

Switch off and isolate the electricity supply to the boiler and any external controls.

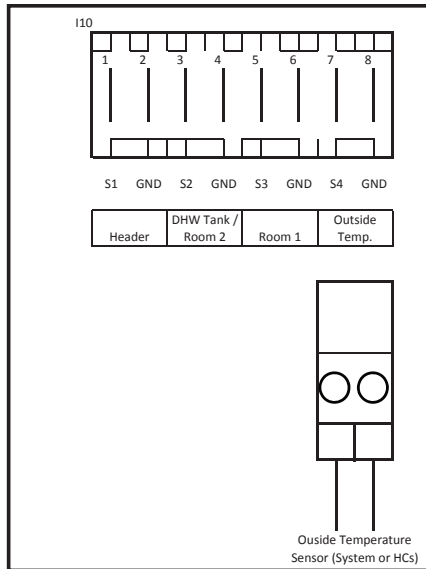
To access boiler wiring connections, refer to Boiler Installation Instructions.

## EVOMAX 2 RANGE WIRING

The outside sensor is compatible with the new *iCCS* based Evomax 2 and optional Extension module. It is also backwards compatible with the previous sensor applications.

### A. Boiler CH Circuits

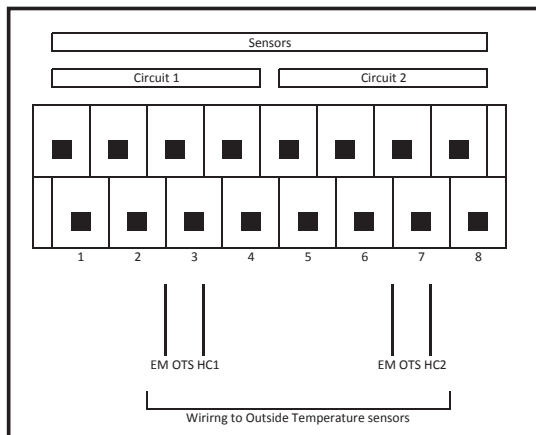
1. Determine the position for the outside sensor on a N or NE facing wall.
2. Mount and secure the outside sensor to the wall using the fixings provided, and wire back to the boiler as required.
3. Route the sensor cable in through the slotted access port on the RHS of the boiler bulkhead, secure with the cable tie provided.
4. Connect the wiring for the outside sensor to the connector plug and locate into installer wiring connector I10 as shown below:



5. Once connected, select during configuration of the of the boiler.

### B. Extension Module Heating Circuits

1. Determine the position for the outside sensor on a N or NE facing wall.
2. Mount and secure the outside sensor to the wall using the fixings provided, and wire back to the EM as required.
3. Connect the wiring for the outside sensor/s to the wiring screw terminals Installer wiring connection/s, 3 and or 7, as shown below:



4. Snap out the plastic exit point/s and secure the cables with the supplied cable retention clamps. Ensure that isolation is maintained between any single insulated mains voltage and SELV wiring.
5. Once connected, select during configuration of the Extension Module.

## FROST PROTECTION

With an outside air sensor fitted, the boiler will switch on the circulating pump whenever the outside air temperature falls below the value set in the boiler user interface.

## FLOW TEMPERATURE COMPENSATION

### OUTLINE

The desired flow temperature of a Heating Circuit can be compensated about the defined set point in order to allow for both the Outside temperature and the Room temperature.

If an outside sensor is fitted then the HC configuration will allow for 'WEATHER' control.

If a room sensor is fitted then the HC configuration will allow for 'ROOM' control.

If both are fitted then either of the above can be used, or the HC configuration will allow for 'WEATHER and ROOM' control.

Each HC can have its own independent Room and outside temperature sensor, the system can also have one common outside sensor configured as a System Outside sensor.

## WEATHER COMPENSATION

When an outside sensor is fitted then the HC can use this temperature to contribute to the resultant flow temperature set point. The adjustment compensates this by use of a fixed heat slope which is weighted for curvature along with an average outside temperature period. The resultant calculation is then offset with the parallel shift between the reference room temperature and the required room temperature.

## ROOM COMPENSATION

When a room sensor is fitted then the HC can use this temperature to determine the response of the actual room temperature in relation to the HC flow temperature to create a flow bias offset, a fixed heat slope is then used to compensate from this in conjunction with the calculated room influence factor. The resultant calculation is then offset with the parallel shift between the reference room temperature and the required room temperature.

## WEATHER AND ROOM COMPENSATION

When both sensors are fitted this allows for the adjustment to be compensated with both the room temperature and outside temperature influences. The resultant compensation of flow temperature can therefore be determined over a range of outside temperature for a given room set point. The resultant calculation is then offset with the parallel shift between the reference room temperature and the required room temperature.

# WEATHER COMPENSATION OPERATION

The compensation function within the Commercial Control System uses an intelligent algorithm to adjust the heating circuit flow temperature requirement in line with the desired set points, an initial heat curve, the thermal gains and losses in the consumer circuit.

The system is also capable of determining an estimate of what the current heating circuit room temperature is, it uses this in addition to offset the heating circuit flow temperature set point.

If a room sensor is also included, then compensation based upon both outside temperature and room temperature can be made.

All these adjustments are time dependent.

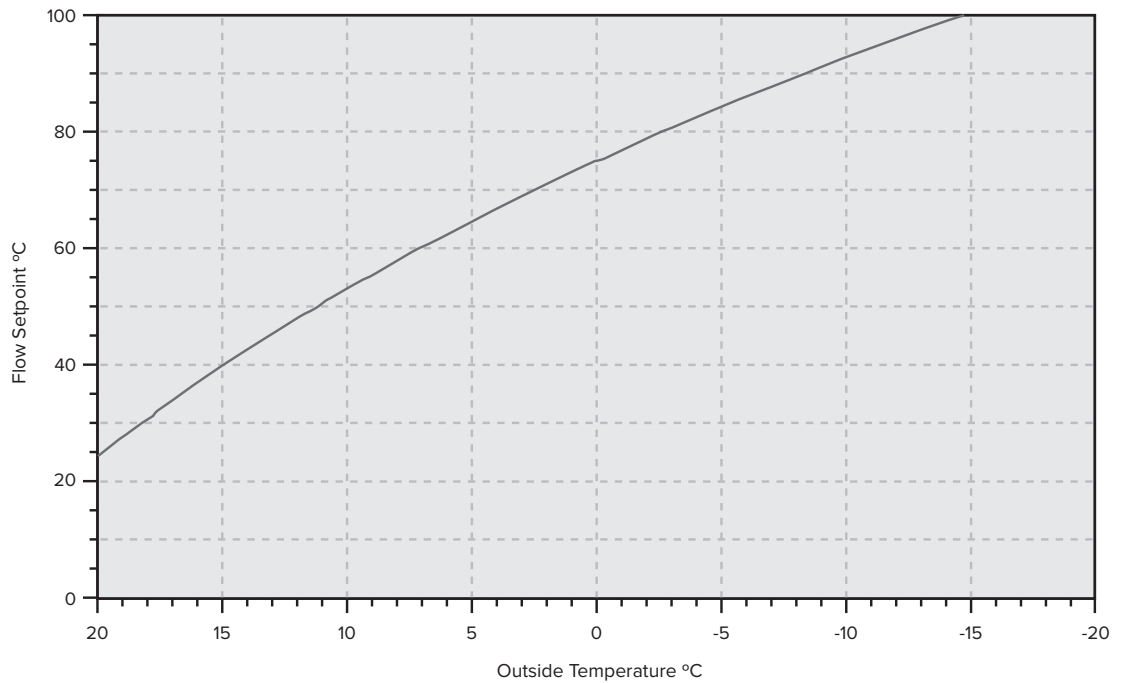
## Initial settings

This curve is based upon a starting point of:

Desired room temperature = 21 °C

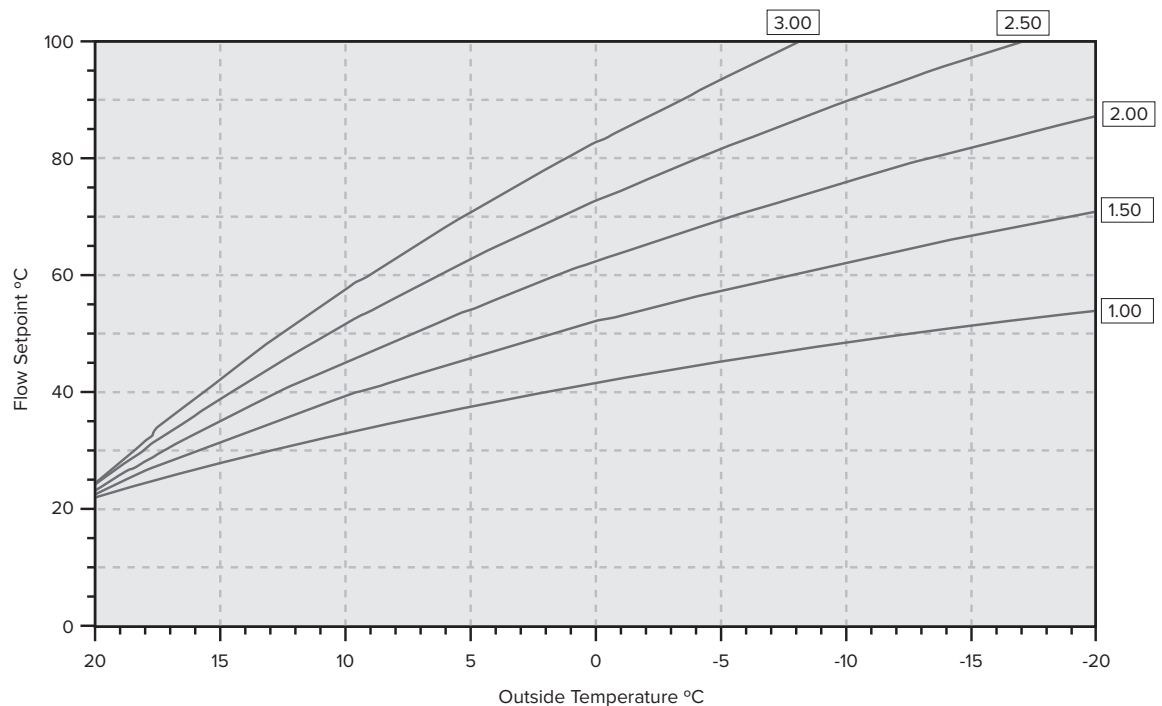
Initially the flow temperature into the heating circuit will follow this curve in relation to the outside temperature. At -5 °C the initial flow temperature will be 85 °C.

The slope can be adjusted to vary the effect of outside temperature on the flow set point.



## Compensation Curves

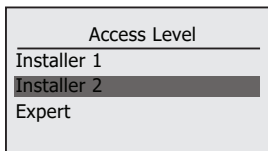
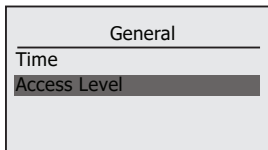
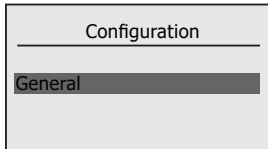
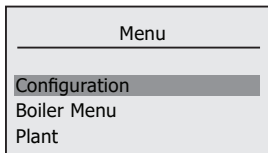
Example of the automated Weather Compensation



# WEATHER COMPENSATION OPERATION

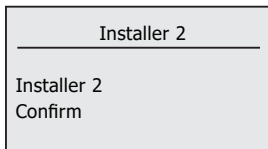
## Settings

To adjust the compensation settings, navigate to access level Installer 2 and enter default code "444":



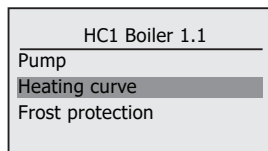
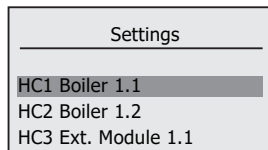
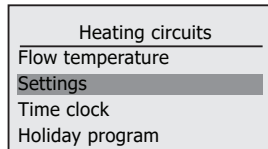
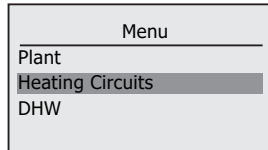
[ Default Code 444 ]

Once the code is entered successfully it will be confirmed.

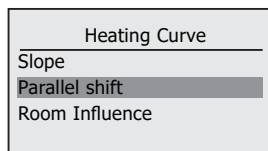
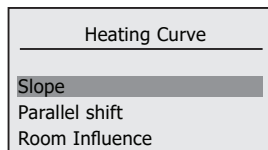


Installer access level 2 menu's and settings are now accessible for a period of 5 minutes.

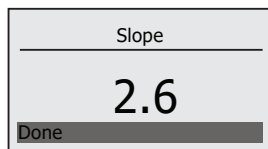
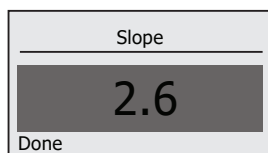
Once confirmed the heating circuit compensation menu is accessible:



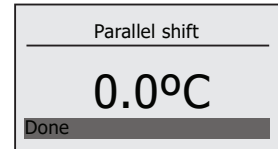
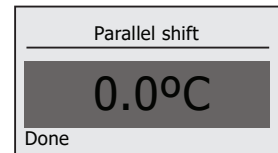
This menu allows adjustment of the heating curve parameters:



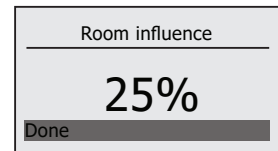
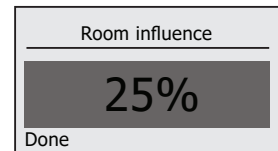
Slope adjustment; this allows the curve to be adjusted directly to compensate for the outside temperature, the gradient and shape of the curve are affected:



Parallel shift; this allows for the curve to be adjusted vertically on the axis by a temperature offset value:



Room influence; this allows for the actual room temperature to have an influence on the heating curve, this is typically used to compensate for defined thermal gain or loss within the heating circuit:



Additionally, the target room temperature has an influence the final calculated set point, along with the associated flow temperature in the heating circuit room temperature and flow temperature menus respectively.

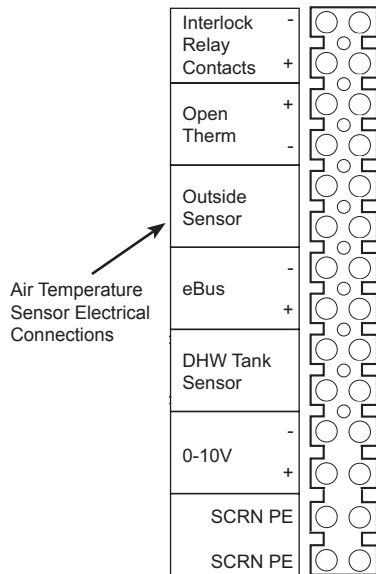
# EVOMAX & IMAX EL OPERATION

## EVOMAX WIRING

1. Route the sensor cable into the boiler control box via the cable gland fittings located on the bottom panel. Wire the cable directly to the boiler's installer connection rail as shown in the diagram.

**Note.** *The sensor operates irrespective of polarity.*

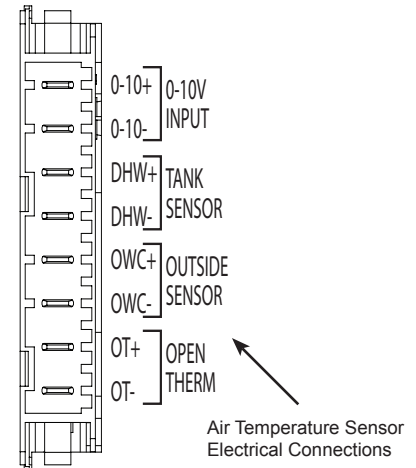
2. Re-assemble the boiler, refer to Boiler Installation Instructions.
3. Record your name and today's date on the enclosed label and adhere it to the boiler in a position which will be visible for future inspection.



## IMAX EL XTRA WIRING

1. Route the sensor cable onto the boiler control panel. Wire the cable directly to the terminals shown in the diagram. Anchor the cable using one of the cable clamps provided on the control panel.
2. Re-assemble the boiler, refer to Boiler Installation Instructions.

Rear panel SELV conduit to the front of the boiler



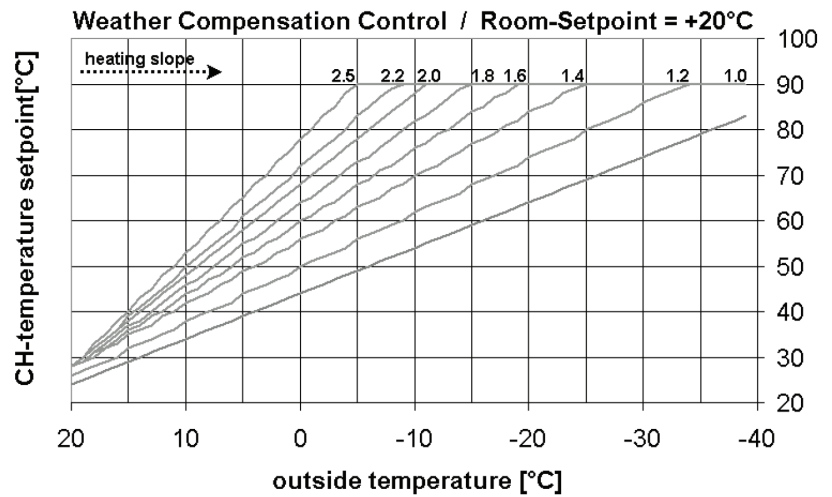
# EVOMAX & IMAX EL OPERATION

## BOILER CONTROL BY ROOM THERMOSTAT OR PROGRAMMABLE ROOM THERMOSTAT KIT AND OUTSIDE TEMPERATURE SENSOR KIT

Connection of the sensor is automatically detected. The set flow temperature is then calculated on the basis of measured outside temperature using the graph below.

The sensor can vary the set flow temperature between a minimum 30°C and a maximum of 80°C (Evomax) & 90°C (Imax Xtra EL), set using the boiler user interface.

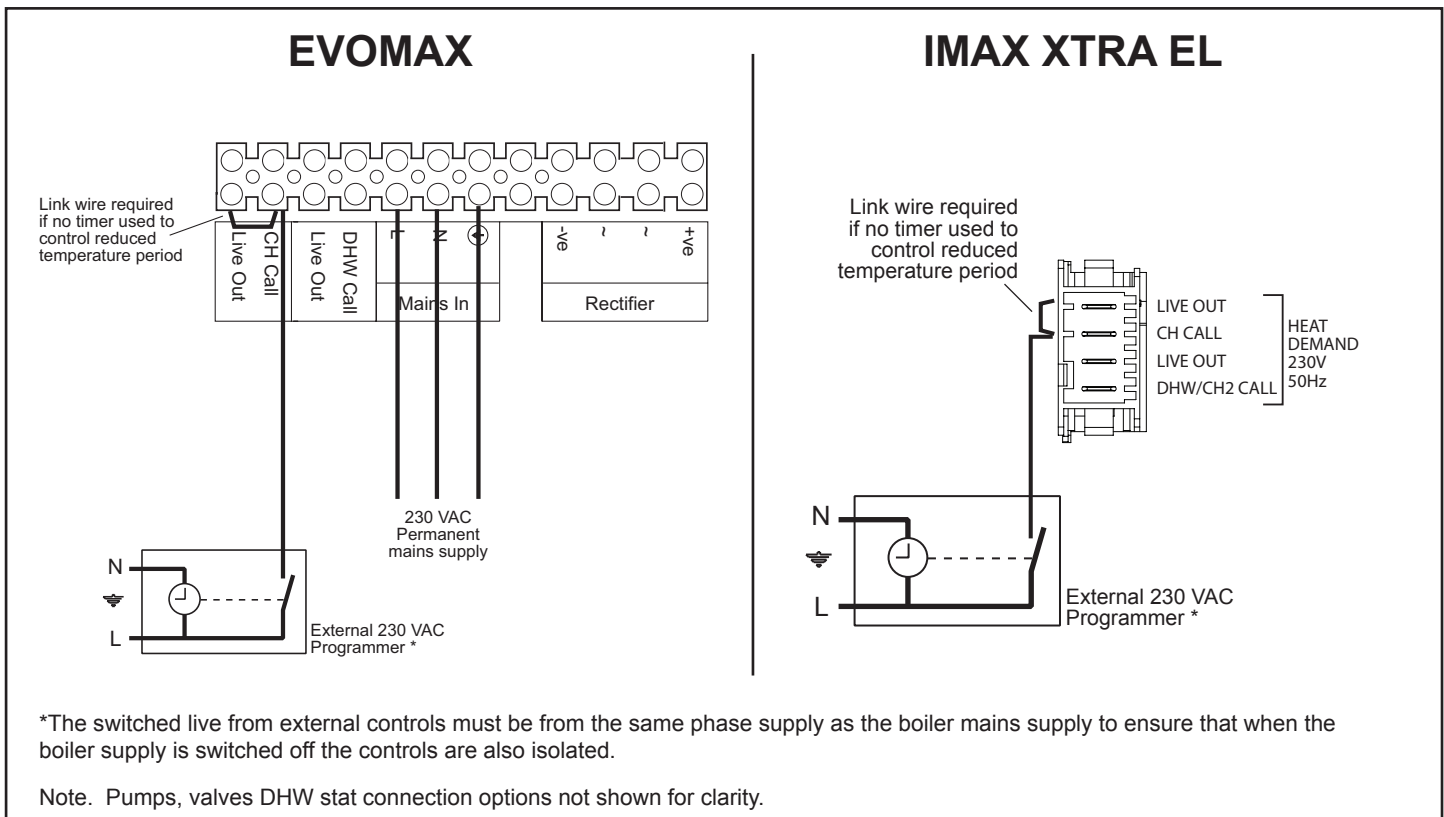
A booster function is also available with this controls configuration and can be enabled using the boiler user interface. The purpose of the booster function is to increase the set flow temperature by 10°C if the thermostat remains closed for >10mins. Once the thermostat contacts have opened, the set flow temperature will decrease to its original setting.



## BOILER CONTROL BY OUTSIDE SENSOR

A boiler can be controlled by outside temperature measurement without room thermostats.

To control periods of reduced temperature (i.e. night time) a timer should be used to open and close the mains voltage circuit shown below. Open circuit enables a CH reduced flow temperature. If this feature is not required then an internal link wire should be fitted between the terminals shown.





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February 2022 UIN 221246 A03



**Ideal Boilers Ltd.** pursues a policy of continuing improvement in the design and performance of its products. The right is therefore reserved to vary specification without notice.