# Advance MVHR

## Interim Controls Guide

Original Instructions

**PLEASE READ THESE INSTRUCTIONS CAREFULLY ALONGSIDE YOUR INSTALLATION & USER GUIDE BEFORE COMMENCING INSTALLATION OR OPERATION.**

**PLEASE REFER TO ACCOMPANYING DOCUMENTATION FOR INFORMATION SPECIFIC TO YOUR UNIT.**

**PLEASE RETAIN THESE INSTRUCTIONS WITH THE PRODUCT.**

- Do not install this product in areas where the following may be present or occur:
    - Excessive oil or a grease laden atmosphere.
    - Corrosive or flammable gases, liquids or vapours.
    - Subject to direct water spray from hoses.
    - Ambient temperatures higher than 40°C and lower than -20°C.
    - Possible obstructions that may hinder access to or removal of the unit.

- All wiring must be in accordance with the current IET wiring regulations BS7671, or appropriate standards of your country. Installation should be inspected and tested by a suitably qualified person after completion.
- Ensure the mains supply (voltage, frequency and phase) complies with the rating label.
- The unit should be provided with a local double pole fused spur fitted with a 3A fuse having a contact separation of at least 3mm. If a unit fitted with a preheater is being installed, a 13A fuse should be used.
- These units must be earthed.
- Precautions must be taken to avoid the backflow of gases into the building from the open flue of gas or other fuel-burning appliances.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Young children should be supervised to ensure that they do not play with the appliance.
- The installer is responsible for the installation and electrical connection of the sentinel system on site. It is the responsibility of the installer to ensure that the equipment is safely and securely installed and left only when mechanically and electrically safe.
- All regulations and requirements must be strictly followed to prevent hazards to life and property, both during and after installation, and during any subsequent servicing and maintenance.
- The unit’s condensate drain must be connected to the building’s wastewater drainage system.
- Certain applications may require the installation of sound attenuation to achieve the sound levels required.
- The unit must not be connected directly to a tumble drier.
- The supply and exhaust valves must be fully opened prior to commissioning.
- The intake air must be drawn from the exterior of the property.
- The unit should be allowed to stabilise during commissioning for a minimum period of 5 minutes when changing between boost and normal speeds.
- External grilles should be positioned in accordance with your local building regulations, however as a minimum we recommend that the inlet grille is kept 2m from any discharge grille or flue outlet.
- This product and associated duct installation should be carried out in accordance with the Domestic Ventilation Compliance Guide.

### UK Building Regulations (Part F) Declaration of Conformance

The unit conforms to the 2010 Building Regulation (Part F - Means of Ventilation, F1(1), F(2)) requirements for fixed systems for mechanical extract fans when installed in accordance with the instructions in this document and the Domestic Ventilation Compliance Guide

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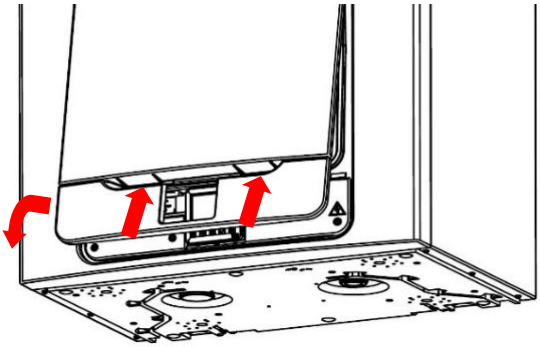
## Electrical Installation

**WARNING**

**ENSURE THE ELECTRICAL SUPPLY AND CONTROLS ARE ISOLATED FROM THE MAINS POWER SUPPLY BEFORE REMOVING ACCESS COVERS**

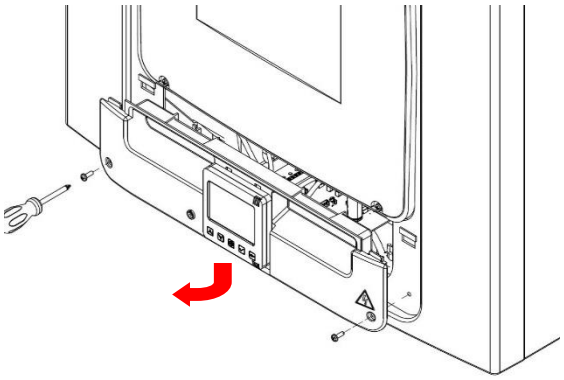
**Step 1**: Remove the front cover by pressing the tabs either side of the control module and lifting the cover outwards from the bottom edge.



**Step 2:** Remove the two screws on either side of the access panel. Lift the panel outwards from the bottom edge to remove.

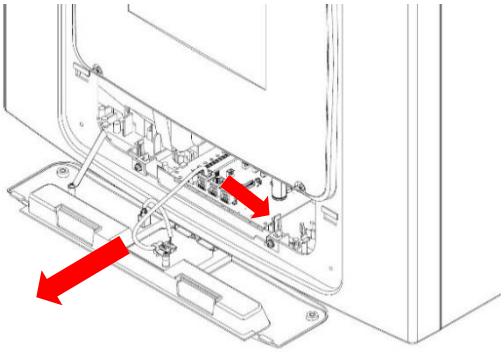
**Note:** The access panel is tethered on the left-hand side.

**Note:** All printed circuit boards are ESD sensitive. Always ensure the correct ESD protection is used.



**Step 3:** Push the locking tab away from the printed circuit board and slide it outwards to access the terminals.

**Note:** The printed circuit board will relock after 60mm.



## Connecting Switches and Sensors

The unit can be switched to boost by applying 240V to the LS input.

**For good EMC engineering practice, any sensor, switched live or Volt free cables should not be installed within 50mm of other cable or on the same metal cable tray as other cables.**

Connect any switches or sensors required to control the unit by connecting to the terminal connectors at the bottom of the control unit as shown on the next page in Table 1. If necessary, contact your distributor regarding the wiring and fixing of accessories and sensors.
When fitting external controls, all cables should be routed through the two cable channels on the underside of the unit shown below.

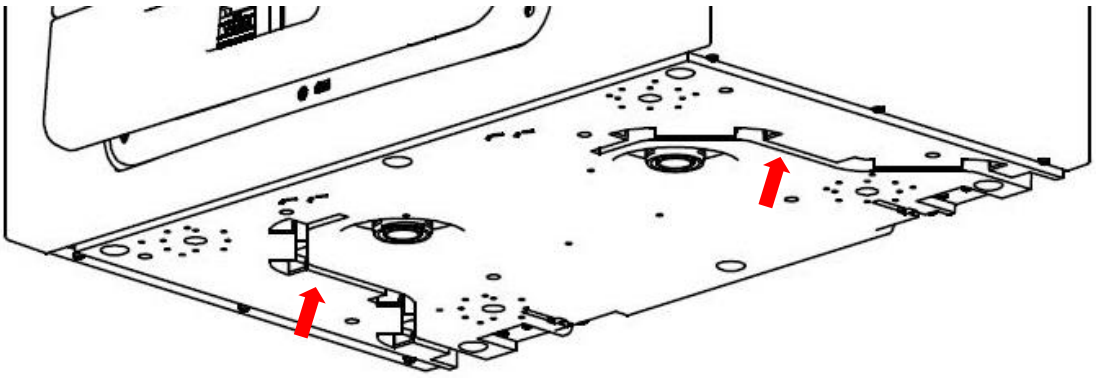
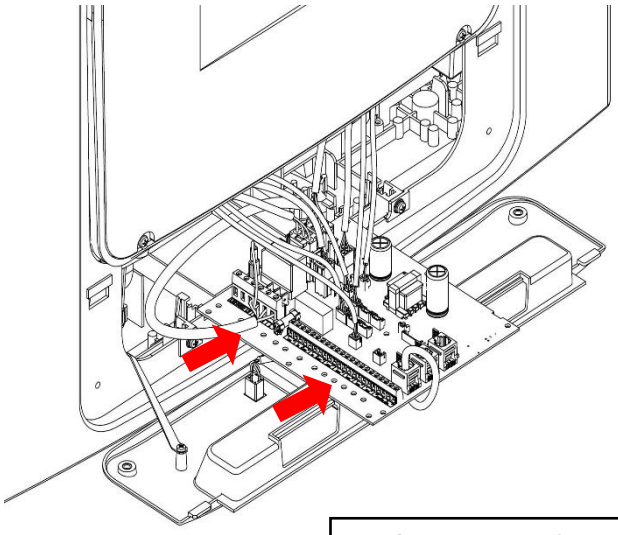
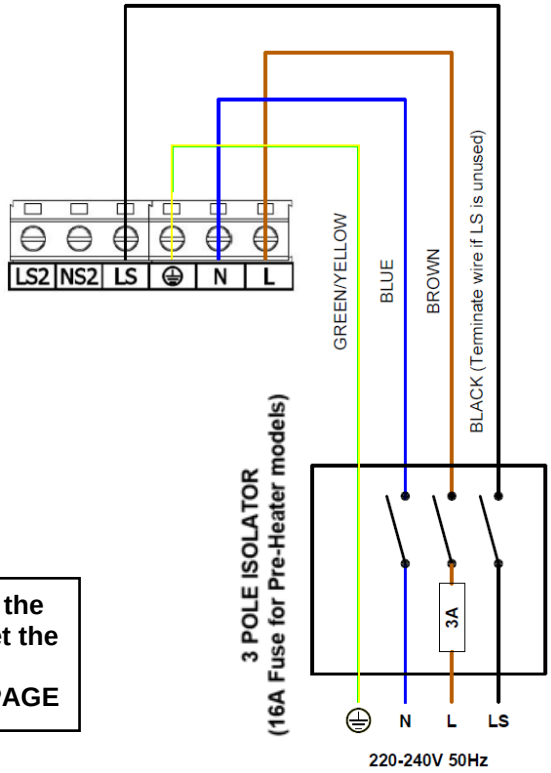
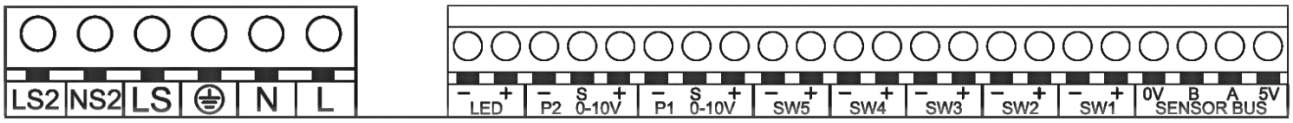


Figure 4: cable channels






**Other means of connecting the unit may be used if they meet the local wiring regulations.**
**SEE NOTES ON THE NEXT PAGE**




| Terminal No. | Name | Description |
|---|---|---|
| LS2 | Switched Live 2 | 220-240 V AC, 50 Hz input |
| NS2 | Switched Neutral 2 | 220-240 V AC, 50 Hz input |
| LS | Switch Live | Switch Live (Common neutral with Mains Supply) |
| ⏚ EARTH | Mains Earth | Earth connector |
| N | Mains Neutral | 220-240 V AC, 50 Hz input |
| L | Mains Live | 220-240 V AC, 50 Hz input |
| LED | Red Light Emitting Diode Output | A LED driving signal output between the - and + terminals that enables remote indication of a unit fault. See the Control Panel for fault code (see on page 26). May also be used for a connection to a BMS or similar. |
| P2 -s+<br>P1 -s+ | 0-10V | 0-10V sensor input with 24V supply terminal |
| SW 1-5 | Switch 1 to 5 | Volt-free contact for sensor input between - and + terminals |
| 0V, B, A, 5V | Sensor Bus | RS485 Termination for remote wired sensors/Controller |

*Table 1: Terminal Connections*

## Connecting the Power Supply and Light Switch

**WARNINGS**

1. **MAINS SUPPLY VOLTAGES (220-240 V AC) ARE PRESENT IN THIS EQUIPMENT, WHICH MAY CAUSE DEATH OR SERIOUS INJURY BY ELECTRIC SHOCK. ONLY A SUITABLY QUALIFIED PERSON SHOULD CONNECT THE POWER SUPPLY TO THIS UNIT.**
2. **THIS UNIT MUST BE CORRECTLY EARTHED.**
3. **ALL EXTERNAL WIRING MUST BE FIXED WIRING**

This unit is designed for operation from a single-phase alternating current source (220-240 VAC).

A 1.5m cable is connected internally to the unit for connection to an isolator switch.

If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent.

To connect the power supply:

Ensure the local AC power supply is switched off.

One end of the power cable supplied is already connected to the unit in the manner shown above.

Connect the other end of the cable to the switched fused spur.

Use cable clamps and clips to secure the cable, as appropriate.

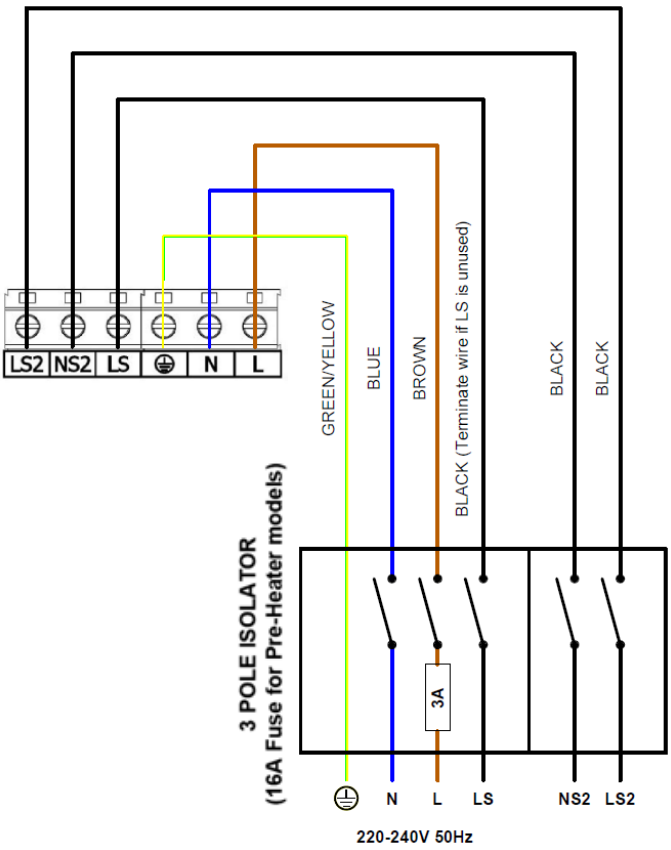
### Connecting a Boost (Light) Switch

A Switched Live LS may be used to boost the airflow when a light is turned on, for instance in a bathroom or kitchen. If the LS core of the mains cable is not used it should be terminated in an appropriate manner.

**The LS connection should only be used if the switch live is on the same circuit as the unit.**

### Connecting a Boost (Light) Switch from a different circuit

If the supply used for the Switched Live is on a different circuit to the power connections, the connections LS2 and NS2 should used, via a separate isolator.



## Powering up the Unit

### Switching On

To switch the unit on:

1. Switch on the power at the mains supply isolator feeding the unit.
2. Following switch-on, after initialisation (up to 2 minutes) the fan motors will start and the Control Unit will display the home screen.

**N.B. If you are intending to carry out work or maintenance inside the unit, isolate the supply to the unit before removing any covers.**

### Switching Off

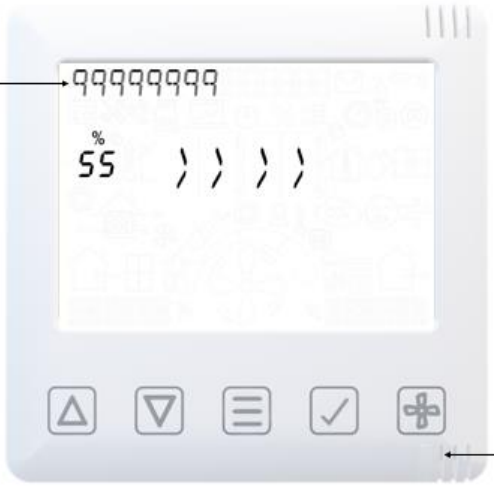
To switch the unit off:

1. Turn the power off at the mains supply isolator.

## Initialisation/Loading Screen

Firmware version
1 – HMI
2 – Bluetooth & WiFi
3 – PCB Main Board

The Initialisation can take 2 minutes to complete.




Primary Devices
Idle White LED indicates primary HMI, this device supports Bluetooth/Wifi connection (see Smart Device Pairing)

Additional Devices (If purchased)
Idle Green LED indicates secondary HMI device, no Bluetooth/WiFi support. (Refer to Pairing Sensors)

## Serial number on initialisation

Serial number displayed after initialisation is complete.

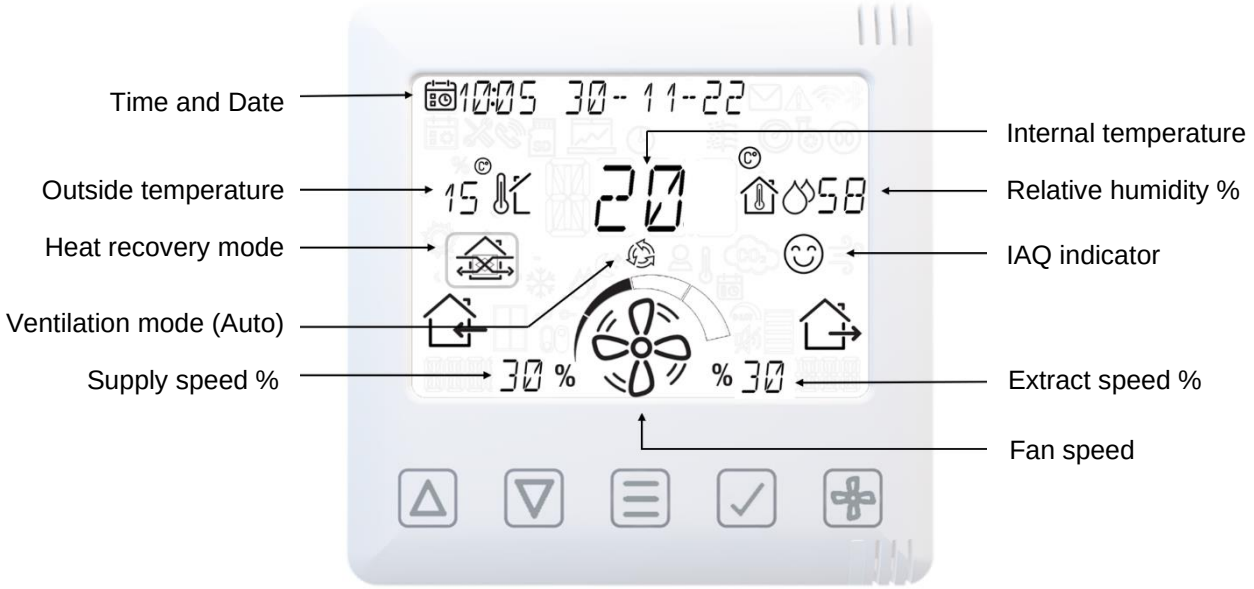
## Overview

The instructions in this section are intended to provide configuration and operation information for setting up the equipment. In the event of problems, see Diagnosing a Problem on page 26.

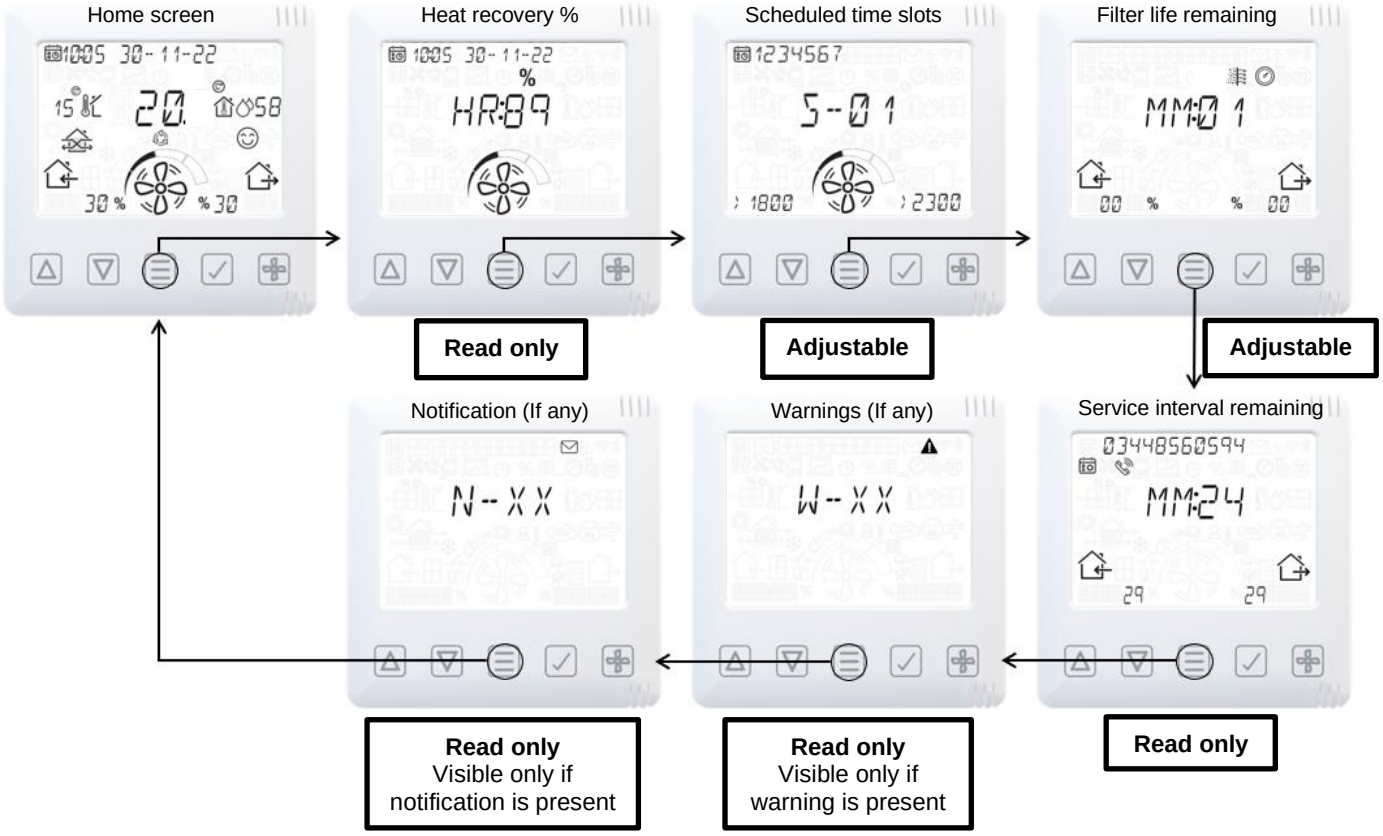
Follow good practice when commissioning the unit. Ensure that the system is installed according to the system designer's intent incorporating any acoustic ducting, that all joints are airtight, ducting is well supported, bends are avoided close to vents, and that the vent valves are fully open at the start of the commissioning process.

**Commissioning of the unit should be done via the App. See page 12 for Smart Device Pairing.**

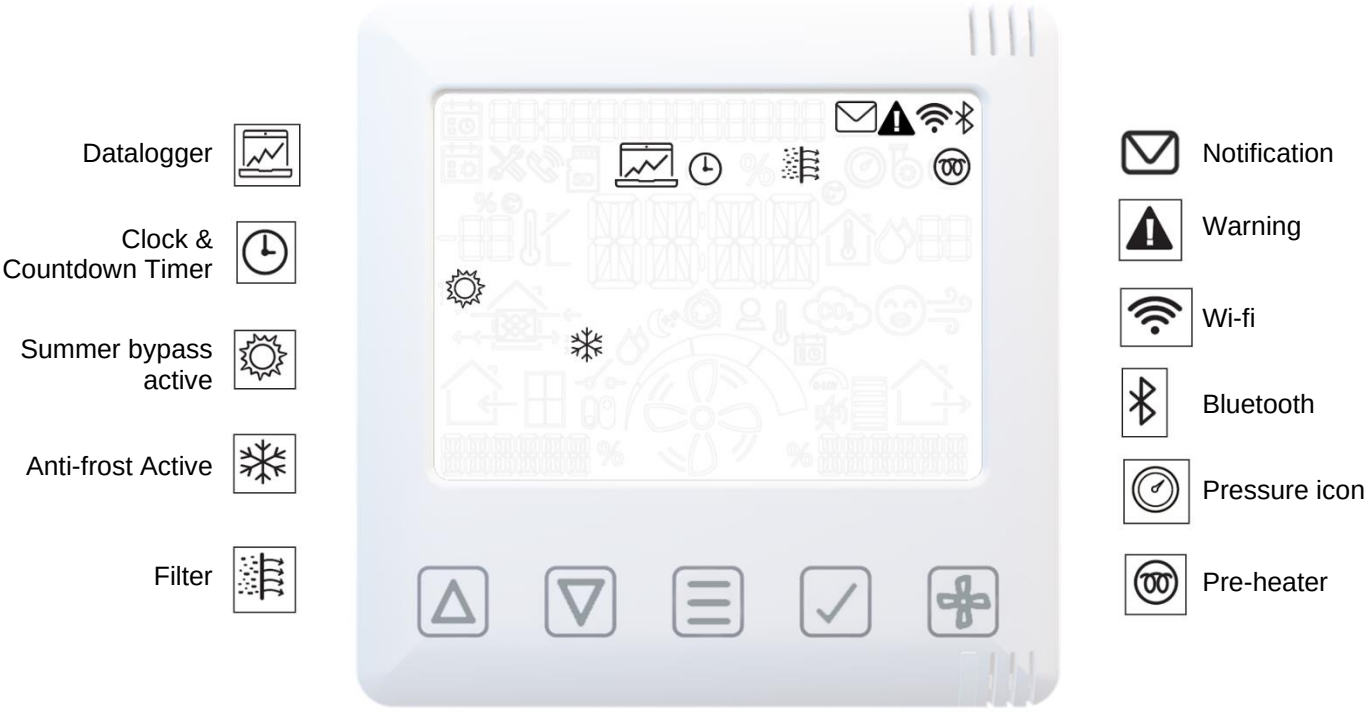
### Display overview – Home screen



## Home User Menu

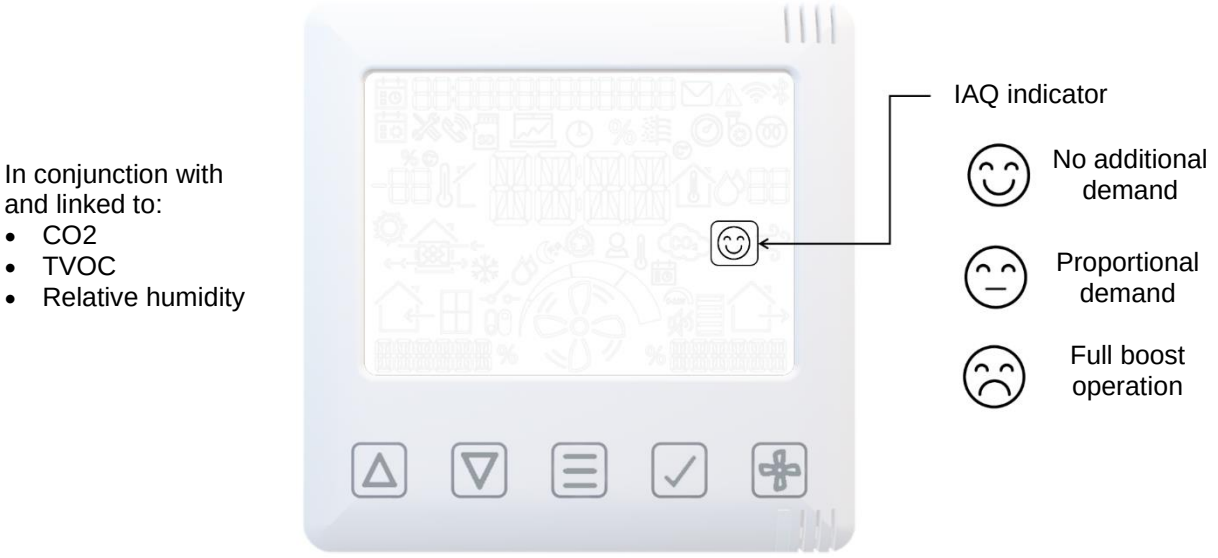



## Display overview – Additional icons

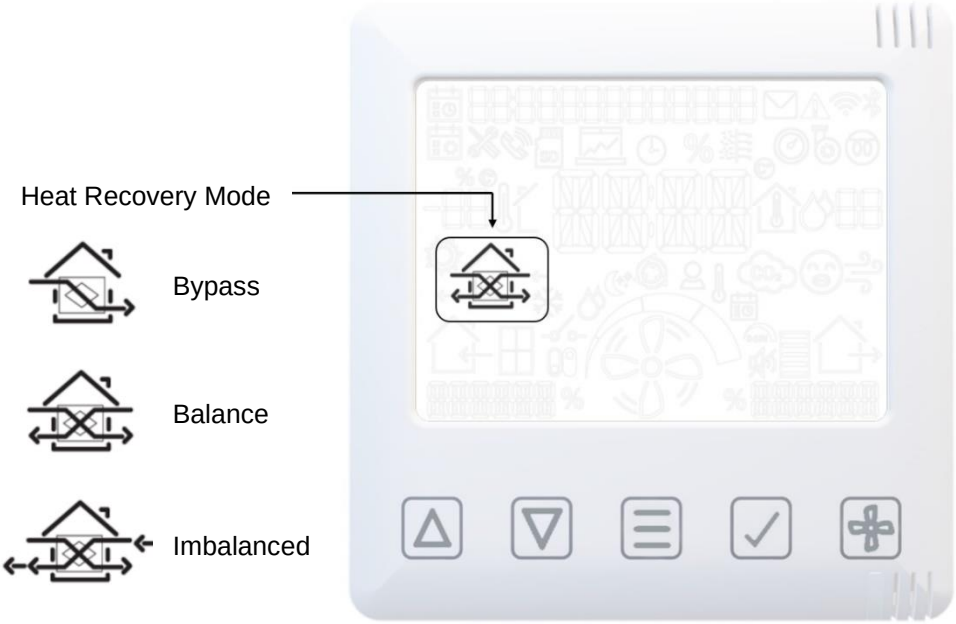


## Display overview – Mode indicators


## Display overview – Indoor air quality monitor

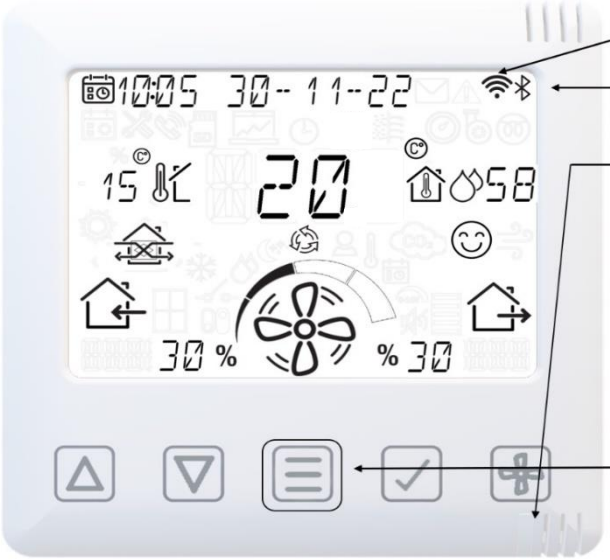


## Display overview – Heat Recovery mode




## Smartphone Device Pairing and App download

To be utilized in conjunction with App Instructions




WiFi icon will appear

Bluetooth icon will appear

Flashing Blue LED = Pairing/Enabled.

Solid Blue LED = User Connected/Authenticated.

Press and hold for 8 seconds, until Blue LED is illuminated.

The App allows the user instant access to commissioning, configuration, direct monitoring and control of the MVHR unit, using a smart phone or tablet with the **Vent-Axia Connect App**, available from the iTunes Store or on Google Play.

Download on the App Store

GET IT ON Google Play

## Pairing sensors

To pair the unit with a wired or wireless sensor:

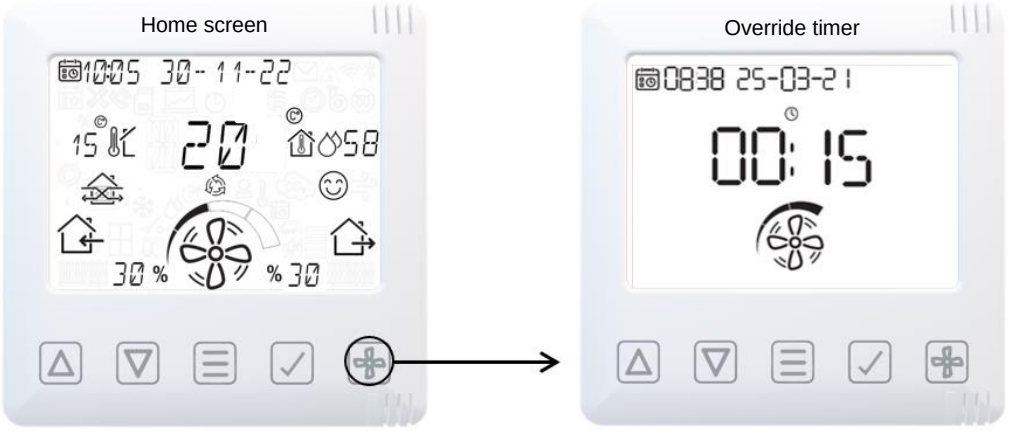
- Press the **MENU** button to turn on the display.
- Press and hold the **MENU** button until the LED illuminates solid White.
- Release the **MENU** button, the LED will flash White to indicate that it is in pairing mode. The unit will remain in pairing mode for 5 minutes, or until the **MENU** button is pressed again.
- Activate the pairing function on the sensor to be paired (see the instructions that came with the sensor).
- When a sensor is paired the total number of paired devices is displayed on the unit (P-XX).

## Removing sensors

To remove paired sensors, the unit must be reset. Caution, this will reset all values back to factory default.

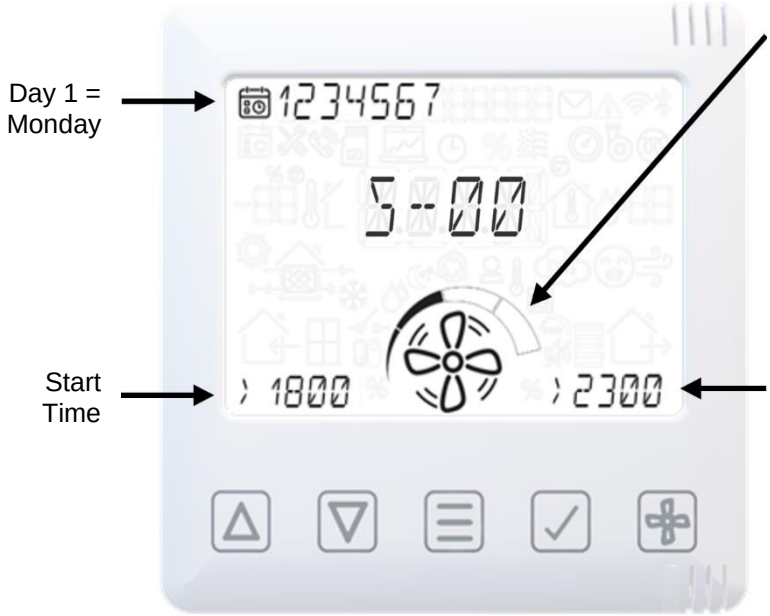
- Press the **MENU** button to turn on the display.
- Press and hold the **MENU** button until the LED illuminates solid Red.
- Release the **MENU** button, the LED will stay Red.
- Pressing the **MENU** button again will confirm the reset command. If a reset is not wanted, leave the unit until the command times out and the LED turns off.

## Speed override



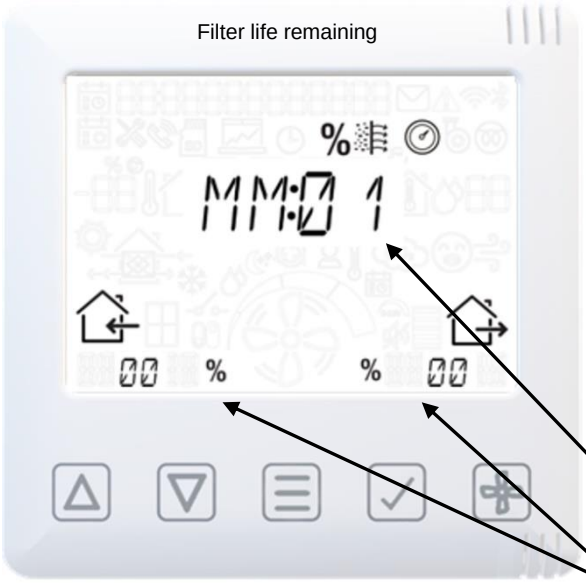

- Increase Timer
- Decrease Timer
- Change Fan Speed – Low, Normal, Boost, Purge
- Confirm Timer

## Schedule




- Press 2 x from Home Screen to enter scheduling.
- Enter edit mode/Confirm Selection.
- Move between existing schedules and adjust schedule times/days in edit mode.
- Change Fan Speed – Low, Normal, Boost, Purge when flashing.

## Filter reset




Press 3 x from Home Screen to enter filter screen.

Enter Reset/Confirm Selection.

Change service duration for filters: 3, 6 or 12 months.

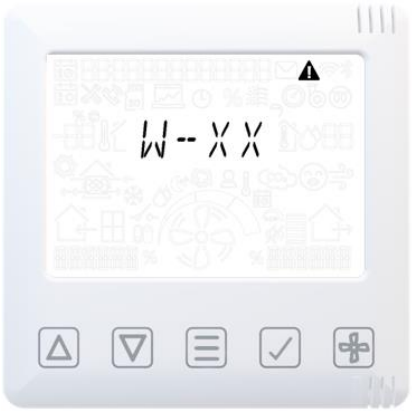
Months remaining, will indicate when filters need replacing/cleaning.

Models with filter pressure sensors fitted, filter life is indicated by % block values.

### Warning Screen

Please see Page 26 for warning codes

**Important: This screen is only visible if a warning or fault is known.**



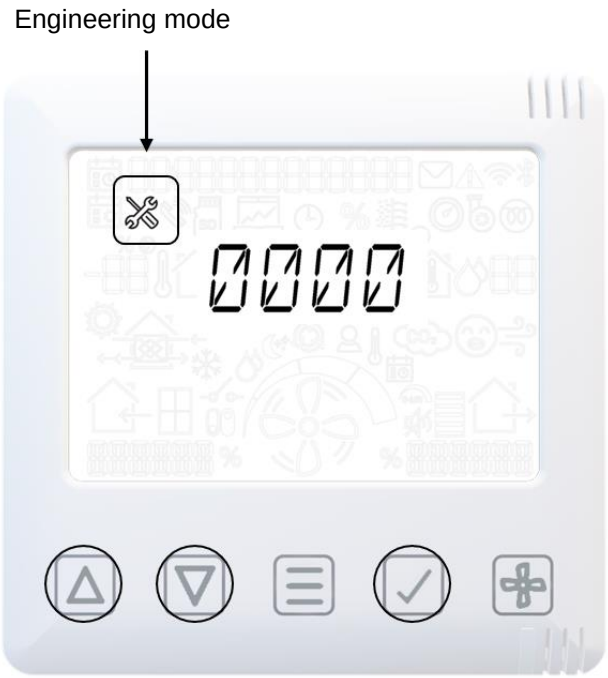

### Service Interval Remaining

Month remaining before service is due.


### Notifications if any

Please see Page 26 for warning codes

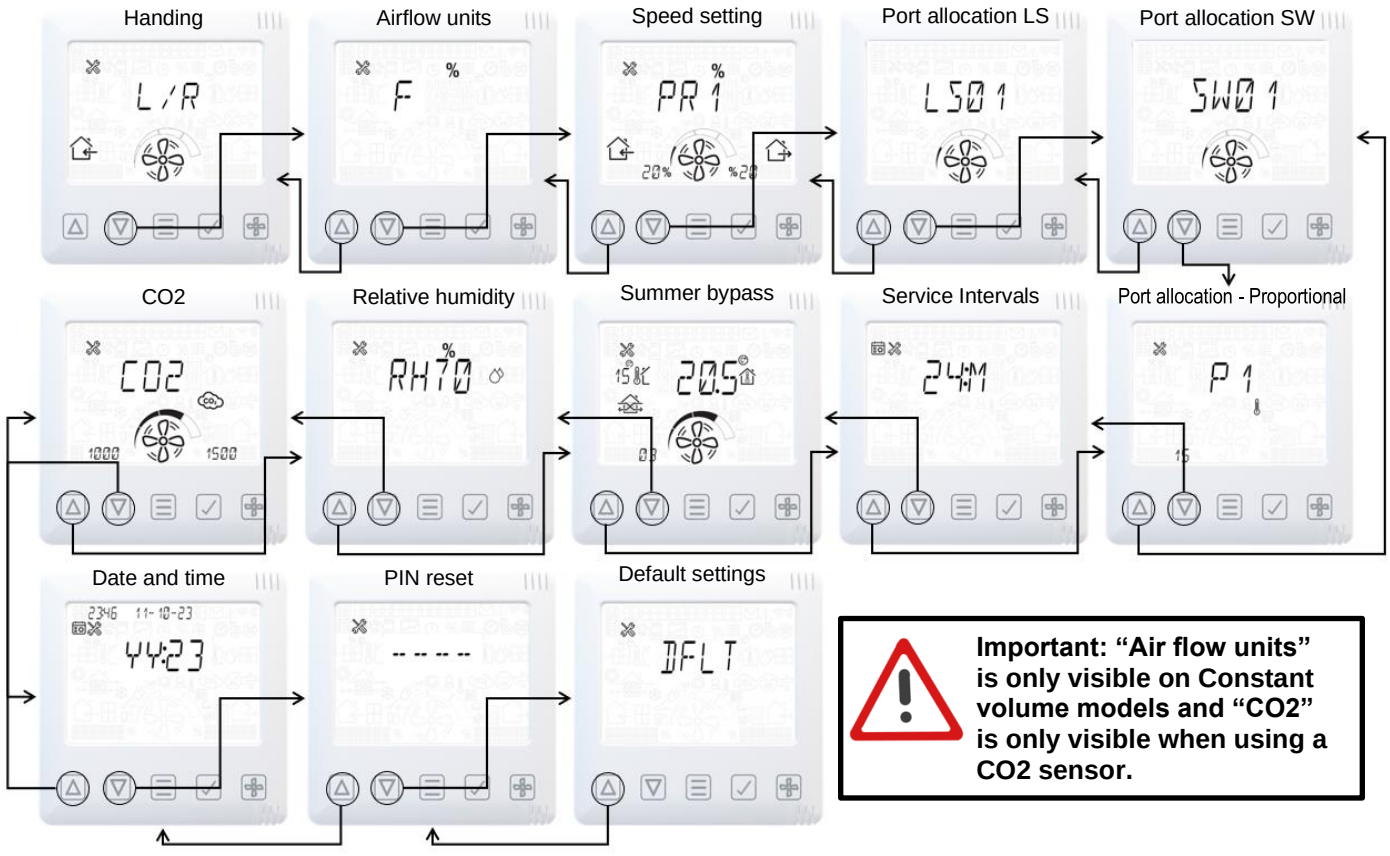
## Engineer menu




Press and hold for 3 seconds to exit or enter the Engineer Menu.

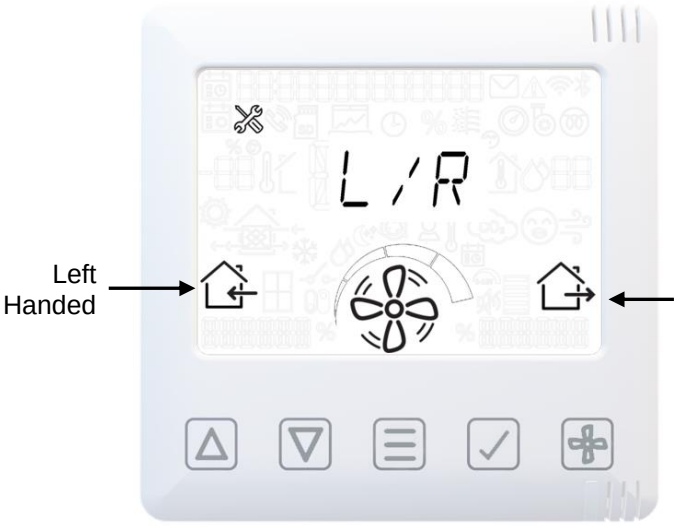
Use up and down to adjust each pin number and press ✓ to confirm each number and enter Engineer settings.

## Engineer menu Overview




**Important: "Air flow units" is only visible on Constant volume models and "CO2" is only visible when using a CO2 sensor.**

## Engineer menu – Unit handing



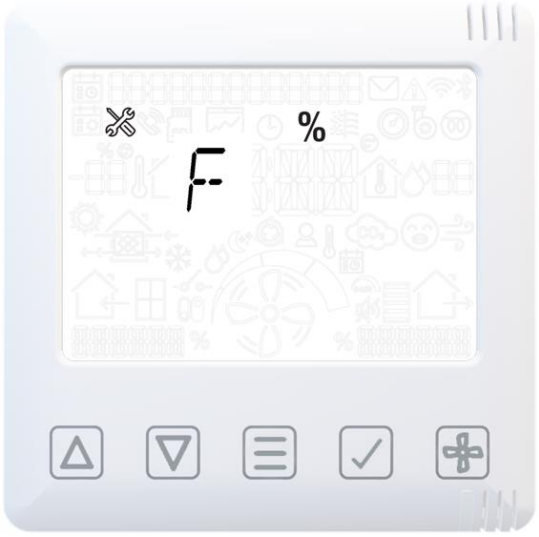

Enter Menu/Confirm Selection

Left Handed = L

Right Handed = R

## Engineer menu – Airflow units

**User can select preferred airflow units.**




Enter Menu/Confirm Selection

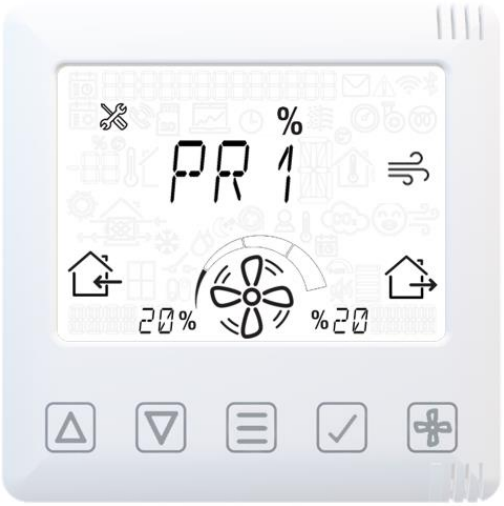
Alternate measures

L/S M3/H C-F

**This is only visible and used on Constant volume models.**

## Engineer menu – Airflow speed setting

**% will be displayed as l/s for Constant volume models.**




Select PR1-4

Enter/Confirm Selection

Adjust flow rate as % pr l/s

**PR1** = Low Speed 20% Default

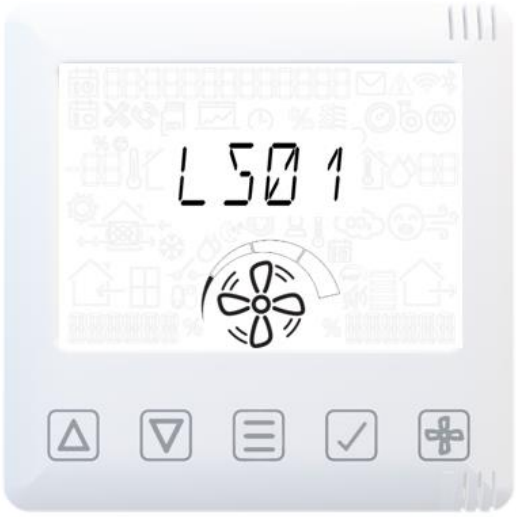
**PR2** = Normal Speed 30% Default

**PR3** = Boost Speed 50% Default

**PR4** = Purge Speed 100% Default

**MVHR unit will run at speed indicated on this screen to aid commissioning.**

## Engineer menu – Port allocation LS




Change Fan Speed – Low, Normal, Boost, Purge

Enter/Confirm Selection

Change Port for Live Switch LS01 or LS02

**Other switch modes are available when configured through the App.**

## Engineer menu – Port allocation SW


Change Fan Speed – Low, Normal, Boost, Purge

Enter/Confirm Selection

Change Port Switch SW01 to SW05

## Engineer menu – Proportional control


Press Once for Zonal Selection

Press twice for Control method Selection

Change Proportional Control P1 or P2

Change Zonal Control 1-15
or
Control Method Temperature, Humidity, 0-10V, CO2

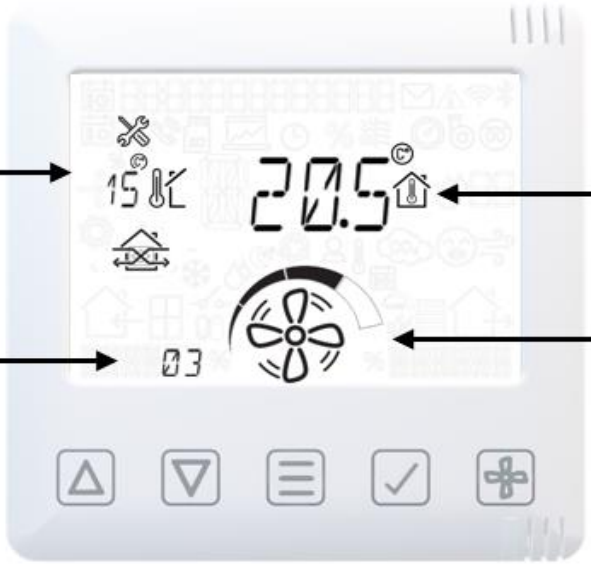
## Engineer menu – Service Intervals


Enter/Confirm Selection

Reset Service Interval

Change service interval
1-60 months.

## Engineer menu – Summer bypass




Press 1 x for Bypass Mode

00 = Disabled (not recommended)
01 = Normal Bypass
02 = Evening Fresh
03 = Night-Time Fresh
See page 38 for details

Press 2 x for Indoor Temperature

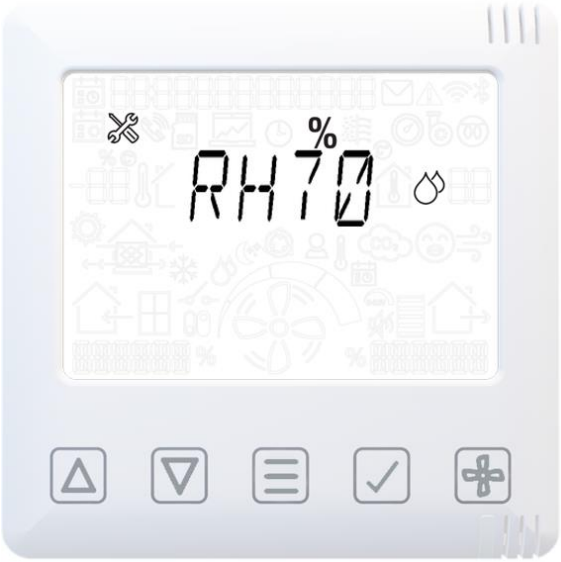
Press 3 x for Outdoor Temperature

Press 4 x for return to main menu

Change Fan Speed - Low, Normal, Boost, Purge

Change field up/down

## Engineer menu – Humidity




Enter/Confirm Selection

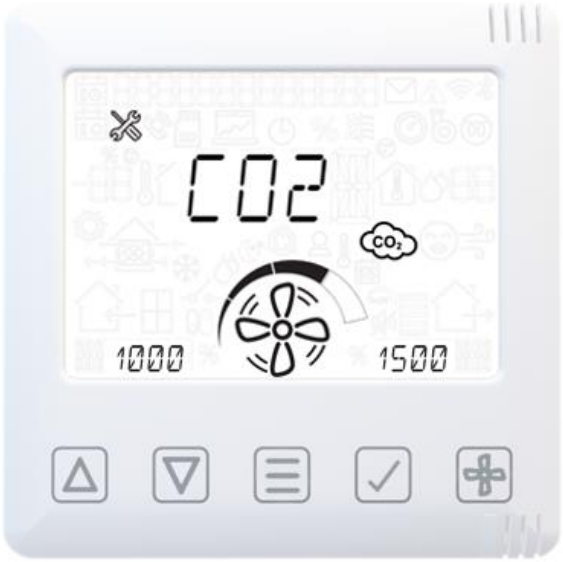
Change Relative Humidity between 50-90%

70% Default

**Rapid rise can be Enabled/Disabled via the App. Along with Ambient response/overrun times.**

## Engineer menu – CO2 threshold

**This is only visible when the CO2 sensor is installed.**




Enter/Confirm Selection

Change Fan Speed - low, normal, boost, purge

Change CO2 PPM Threshold 1000-2000 Default

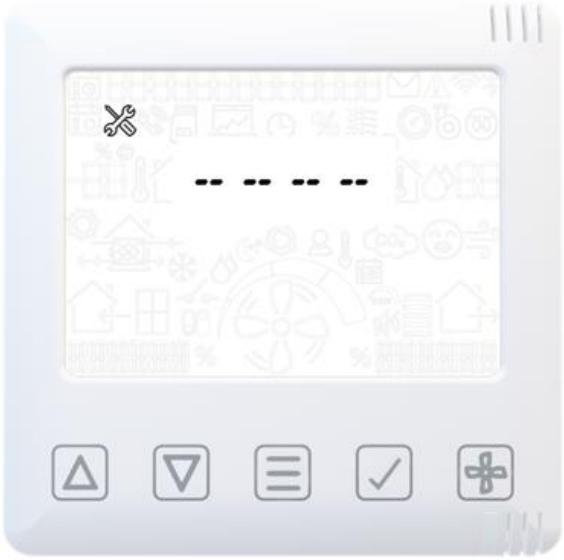
## Engineer menu – Date / Time


Enter/Confirm Selection

Change entry within below field.

YY = Year
MM = Month
DD = Day
HH = Hour
MM = Minutes

## Engineer menu – PIN Change

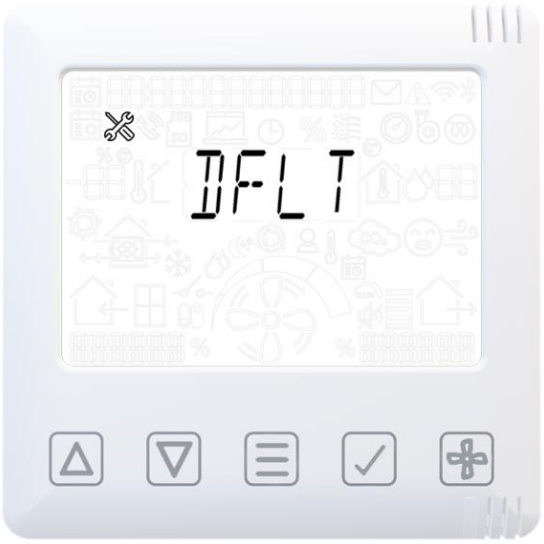



Enter/Confirm Selection

Change Pin Number 1-9

## Engineer menu – Default settings

**Warning: This will reset the user interface to default.**



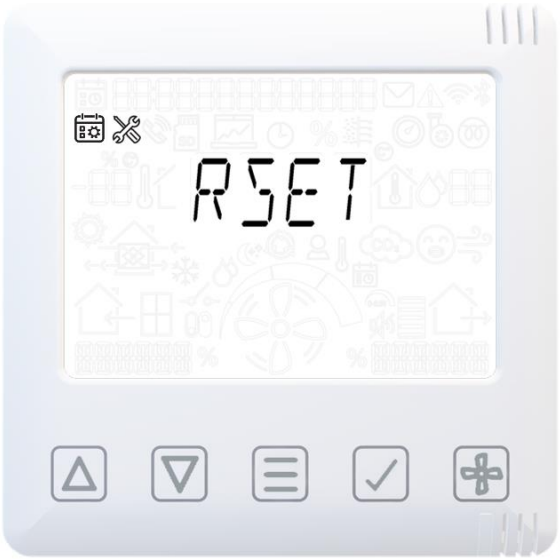

Push and hold the menu button for 15 seconds to reset to default including commission speeds.

LED will illuminate Red.

Press TICK to confirm Default Settings.

## HMI - Hard reset

**Warning: This will hard reset the user interface to default and unpair all sensors.**




Push and hold the menu button for 15 seconds.

LED will illuminate Red.

Press TICK to confirm HMI reset.

OR

Press menu to confirm unit reset.

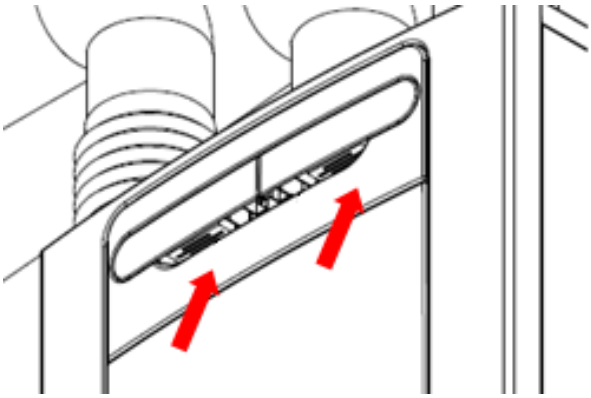
## Filter Maintenance

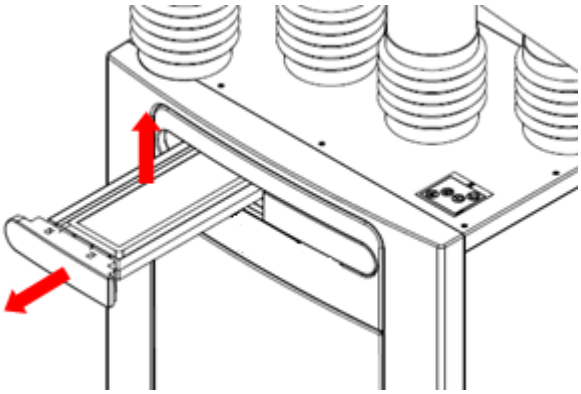
Heat recovery units require regular maintenance. This unit has been designed to facilitate access to enable maintenance to be carried out easily.

When the unit displays a warning symbol and warning code: W-12 filter cleaning/replacement is overdue. When it displays notification N-1 the filter may need cleaning/replacement within the next month.

This is a reminder to ensure that the filters are not so dirty that they are blocking the airflow or allowing dirt to pass through. The rate at which the filters become dirty will vary hugely depending on the environment and the activity within the property. See page 25 for a list of spare filters.

1. Open the filter drawers by pressing the finger plate upwards and sliding the drawer out.
2. Lift each filter out and clean gently by tapping or carefully using a vacuum cleaner if necessary.





3. Replace the filters.
4. Close the filter drawers, ensuring the latches have clicked back into the locked position.
5. After maintenance of the filters, the filter timer can be reset via the controller (see page15).

## Spares

The following spare parts may be ordered from Vent-Axia:

| Part No | Description |
|---|---|
| ?????? | Main PCBA – **Contact Technical Support** |
| 411622 | Control Module (HMI with Display) |
| 411703 | Control Module (HMI with no Display) |
| 472667 | Filters G3, 2 per pack |
| 477360 | Filters G3, 50 per pack |
| 411689 | Filters G4, 2 per pack |
| 472669 | Filters M5, 1 per pack |
| 472671 | Filters F7, 1 per pack |
| 472673 | Motor Scroll Assembly |
| 472675 | Summer Bypass Motor Assembly |
| 411976 | Temperature/Humidity Sensors T1 & T3 (Green & Yellow) |
| 472679 | Temperature Sensor T2 (Red) |
| 472683 | Temperature Sensor T4 (Brown) |
| 411708 | CO2/Temp Humidity Sensor T1 (Green) |
| 411706 | CO2/Temp Humidity Sensor T3 (Yellow) |
| 476354 | Wall Bracket |
| 476356 | Condensate Drain Cap & Screw |
| 478335 | Constant Volume + Clean Filter Pressure Sensors PCBA |

## Diagnosing a Problem

In the event of a problem, always troubleshoot the unit according to:

- **Notification code** displayed on the control unit.
  A notification flag indicates service/maintenance will be due soon.
- **Warning code** displayed on the control unit.
  A warning code is advisory and will not immediately stop the function of the unit.
- **Fault code** displayed on the Control Unit.
  The unit may have stopped functioning due to the fault.
- **Fault LED** if connected.

### Service/Fault Codes

For assistance contact the service provider and quote the fault code number and the product serial number which can be found behind the front cover.
Note that the fault code is not displayed until the fault has been present for 3 minutes.

| Fault Codes | |
|---|---|
| **ID** | **Cause** |
| F-1 | Intake Thermistor |
| F-2 | Extract Thermistor |
| F-3 | Supply Fan |
| F-4 | Extract Fan |
| … | |
| F-32 | HMI Comms Lost |

| Warning Codes | |
|---|---|
| **ID** | **Cause** |
| W-1 | Supply Temperature |
| W-2 | Exhaust Temperature |
| W-3 | Preheater Temperature |
| W-4 | Intake RH |
| W-5 | Extract RH |
| W-6 | Supply Flow |
| W-7 | Extract Flow |
| W-8 | Filter Sensor 1 |
| W-9 | Filter Sensor 2 |
| W-10 | System Over-pressure |
| W-11 | Preheater Tripped |
| W-12 | Filter Clean Overdue |
| W-13 | Service Overdue |
| W-14 | Controller Device Lost |
| W-15 | BMS Offline |

| Notification Codes | |
|---|---|
| **ID** | **Cause** |
| N-1 | Intake Thermistor |
| N-2 | Extract Thermistor |

There may be new fault codes not listed here, please ensure that you always review the latest F&W available on our website under the product page and downloads.

## Power on Self-Test

The LED blinks RED for 'X' times, based on the error bit flag that is set.
e.g. "Storage" 3x flash – Pause – 3x flash…….

**MVHR (HMI)**

| Self-Test Failures | |
|---|---|
| **Flash** | **HMI** |
| 1 | RNG - Random Number Generator (RNG) peripheral has failed as part of self-test routine |
| 2 | Flash - DS-45DB081E flash chip initialisation failed |
| 3 | Storage – Error with Read/Write access to flash |
| 4 | HMI – Initialisation for UC1677LCD (LCD driver) failed |
| 5 | CapSense – Error with initialisation of CAP1298 |
| 6 | SHT3x – Sensor Initialisation failed |
| 7 | ESP32 – No response the Sync event as part of self-test |
| 8 | RF868 – Core 2 not initialized, or Auto Tune has failed (Auto tune yet to be added) |
| 9 | AppInit- Error with respect to Initialisation of Application modules |

**MVHR (Mainboard)**

| Self-Test Failures | |
|---|---|
| **Flash** | **Mainboard** |
| 1 | RNG - Random Number Generator (RNG) peripheral has failed as part of self-test routine |
| 2 | RTC – RTC initialisation failed |
| 3 | *Eeprom(reserved) – not used for now* |
| 4 | Flash – DS-45DB081E flash chip initialisation failed |
| 5 | Storage – Error with Read/Write access to flash |
| 6 | External RAM – FM24V01A RAM Chip Initialisation failed |
| 7 | Ventilation Engine – Ventilation Engine not initialised |
| 8 | AppInit- Error with respect to Initialisation of Application modules |
| 9 | Modbus – Modbus intialisation failure |

## Accessories

- **Wall-Mounting HMI Kit – 411628**

  The Wall-Mounting Kit has been designed to allow the HMI controller module to be removed from the MVHR unit & mounted remotely to a single gang flush mount back-box of 25mm depth (min.). the kit is supplied with a 15m lead and control panel blanking cover.

- **Remote LED indicator and Lead - 448356**

  Remote LED to indicate that there is a message in the control display

## Flow Rate settings

The Unit has four (4) user defined speeds, which are adjustable in the advance setting menu or via the App. The speed mode names are customisable via the App.

Default speed modes names: -

- Low
- Normal (Unit default operating mode)
- Boost
- Purge

## Frost Protection

Frost Protection is required to prevent condensate freezing in the heat exchanger at low temperatures. The process is fully automatic. The method used for frost protection will depend on the model and building it is installed in.

For buildings with a leak rate of 3m3/hr or less (at 50Pa), a balanced frost protection mode must be used. A balanced mode must also be used when a combustion device without a dedicated air supply is present.

**Airflow (Imbalanced)**

Airflow mode reduces the Intake flow and increases the Extract flow in varying proportions dependent on the incoming air temperature. The unit will continue to recover heat as low as "-20°C". At this point, the unit switches to 'Extract Only' mode.

**Bypass (Balanced)**

Bypass mode opens the Summer Bypass and stops recovering heat until the external temperature increases sufficiently.

**Airflow & Preheater (Imbalanced)**

If a preheater is fitted, the preheater will turn on to warm the incoming air to above freezing. If the air temperature is so low that the heater cannot warm the air sufficiently, the supply flow rate will be reduced to compensate.

**Airflow & Preheater (Balanced)**

If a preheater is fitted, the preheater will turn on to warm the incoming air to above freezing. If the air temperature is so low that the heater cannot warm the air sufficiently, both the supply and extract flow rate will be reduced to compensate.

## Disposal

This product should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority for recycling advice.

### The Vent-Axia Guarantee

Applicable only to products installed and used in the United Kingdom. For details of guarantee outside the United Kingdom contact your local supplier.

Vent-Axia guarantees its products for two years from date of purchase against faulty material or workmanship. In the event of any part being found to be defective, the product will be repaired, or at the Company's option replaced, without charge, provided that the product: -

- Has been installed and used in accordance with the instructions given with each unit.
- Has not been connected to an unsuitable electricity supply. (The correct electricity supply voltage is shown on the product rating label attached to the unit).
- Has not been subjected to misuse, neglect or damage.
- Has not been modified or repaired by any person not authorised by the company.

**IF CLAIMING UNDER TERMS OF GUARANTEE**

Please return the complete product, carriage paid to your original supplier or nearest Vent-Axia Centre, by post or personal visit. Please ensure that it is adequately packed and accompanied by a letter clearly marked "Guarantee Claim" stating the nature of the fault and providing evidence of date and source of purchase.

The guarantee is offered to you as an extra benefit and does not affect your legal rights.

Vent-Axia

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**UK NATIONAL CALL CENTRE: -**

| | | |
|---|---|---|
| **Sales Enquiries**: | Tel: 0344 8560590 | Email: sales@vent-axia.com |
| **Technical Support**: | Tel: 0344 8560594 | Email: vatechsupport@vent-axia.com |

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