RESET
INTERNATIONAL STANDARD

INTRODUCTION

The Total Indoor Air Quality Monitor will monitor up to 6 parameters that include Particulate Matter (PM1, PM2.5, PM4 & PM10), Volatile Organic Compounds, Carbon Dioxide, Formaldehyde, Humidity & Temperature and provide either a BACnet® or Modbus signal for connection to a building automation system. The IAQ features a full-colour capacitive touch screen LCD that's user configurable, a configurable alarm relay output and field replaceable sensor modules. All this housed in a new modern, quick mount enclosure.

⚠ WARNING

Read these installation instructions carefully before commissioning the IAQ. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as safety or emergency stop devices or in any other application where failure of the product could result in personal injury. Use electrostatic discharge precautions during installation and do not exceed the device ratings.
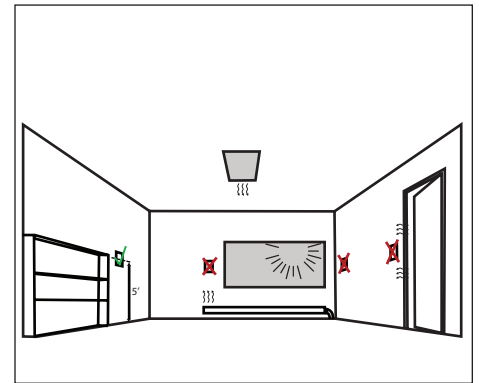
MOUNTING
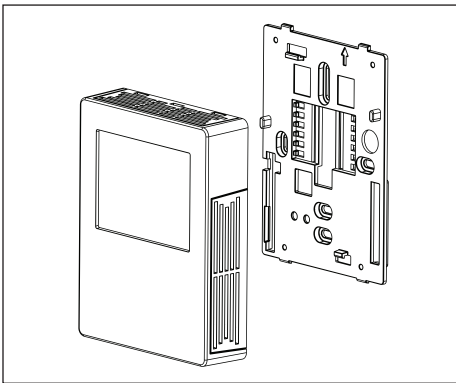
1 Included is the backplate and sensor module/cover. **Do not separate sensor module and cover.**

61mm
2.4"

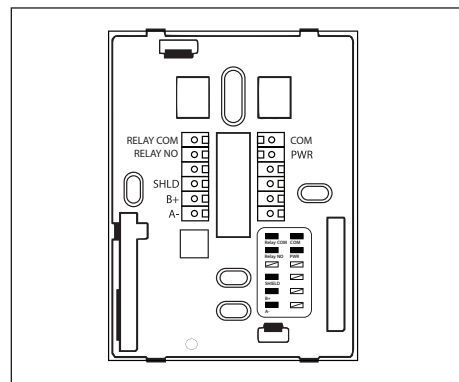78.7mm   61mm
3.1"   2.4"
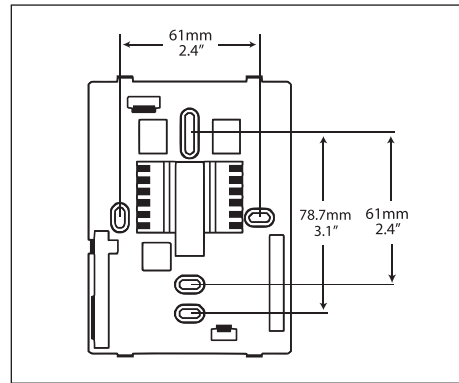
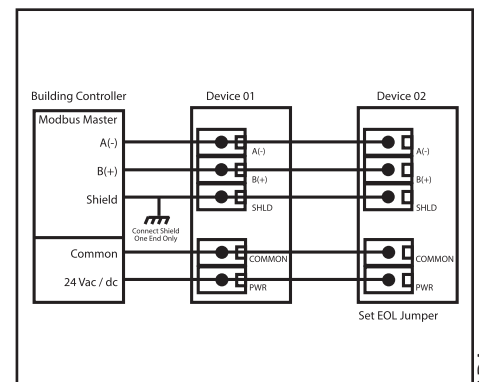**2** The backplate includes mounting holes for several mounting box types.

5'

3 The sensor should be mounted 1.5 m (5') from the floor of the area to be controlled. Do not mount the sensor near doors, opening windows, supply air diffusers or other known disturbances. Avoid areas where the detector is exposed to vibrations or rapid temperature changes.
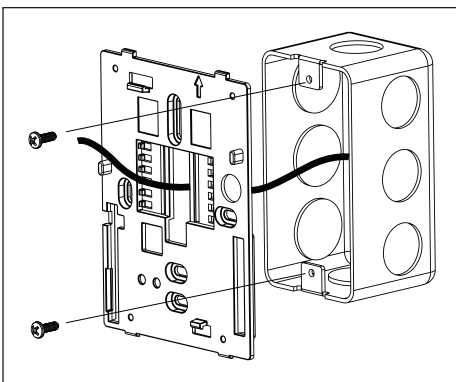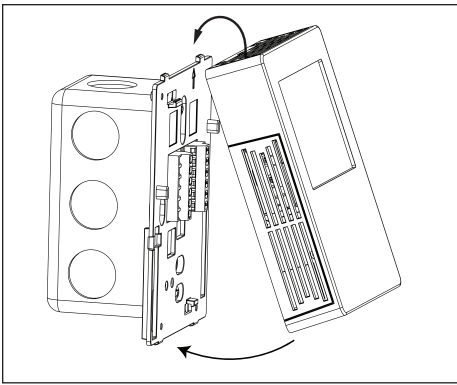

3 Feed control wire through the center hole and mount backplate to an electrical box with 2 screws (not supplied).

RELAY COM
RELAY NO
SHLD
B+
A-
COM
PWR

4 The backplate contains the wiring terminals and terminal designations.

Building Controller
Modbus Master
A(-)
B(+)
Shield
Common
24 Vac / dc

Connect Shield
One End Only

Device 01
A(-)
B(+)
SHLD
COMMON
PWR

Device 02
A(-)
B(+)
SHLD
COMMON
PWR

Set EOL Jumper

Typical Network Wiring

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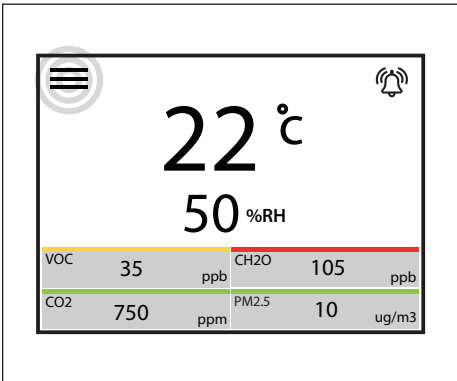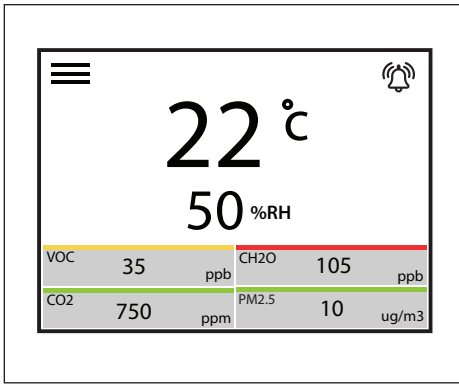**5** **NOTE: The sensor module can be installed with power applied, but it is not recommended.** To Install sensor module/cover by placing the tabs on the top of backplate into slots in the sensor module/cover and snap onto tabs on bottom of backplate


6 If power is present the LCD will illuminate and after about 10 seconds, the sensor readings will be displayed. Allow 24 hours for sensors to stabilize for accurate readings.

LCD BACKLIGHT

The LCD Backlight default is ON. To turn OFF refer to the Network Setup Guide. In the OFF setting, the LCD backlight remains OFF and when the LCD is touched turns on for 2 minutes.

For devices with the Concealed LCD, the LCD Backlight default is OFF.

NETWORK CONFIGURATION

1 To configure, select the menu icon in the top left of display.
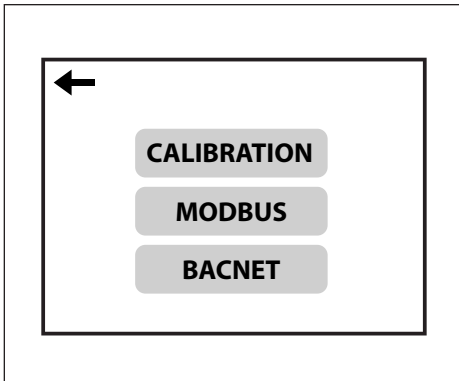
2 Select network system type. BACnet® or Modbus
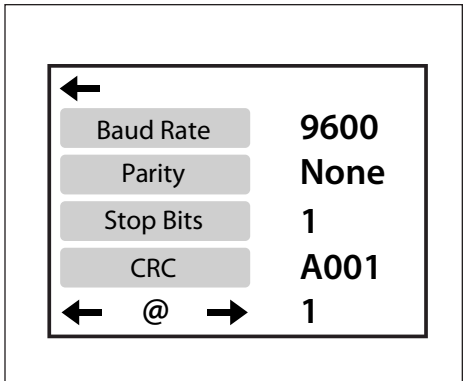
3 **MODBUS**
For a Modbus network, required parameters are Baud Rate, Parity Value, Stop Bits, CRC Value & Address
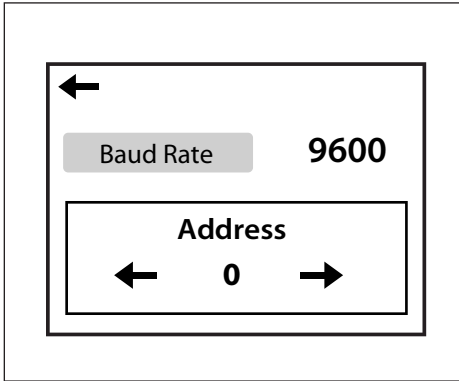
MODBUS
Baud Rate range: 9600, 19200, 38400, 57600, 76800 or 115200. The default network baud rate is 9600.
Parity Value: None, Odd or Even. The default Modbus parity bit is None
Stop Bits: 1 or 2. The default Modbus stop bits is 1.
CRC Value: A001 (CRC-16 reverse), 1021 (CITT), 8005 (CRC-16) or 8408 (CITT reverse). The default CRC is A001.
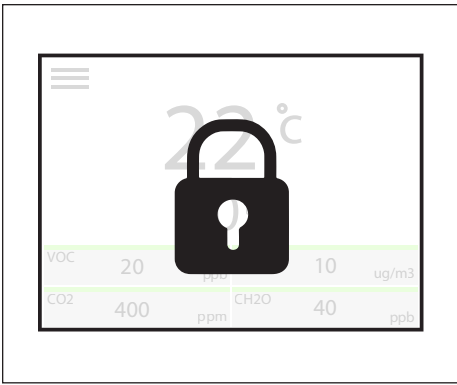**Address:** 1-255. The default addess is 1.

4 **BACNET®**
For a BACnet® network, required parameters are Baud Rate & Address

BACnet®
Baud Rate range: 9600, 19200, 38400, 57600, 76800 or 115200. The default network baud rate is 9600.
Address: 0-127. The default addess is 0.

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5 After initial setup, the touchscreen can be locked during network set up via the network to avoid any unauthorized access. See Network Setup Guide.
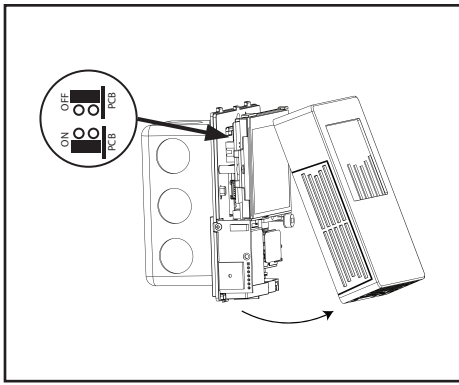
6 This device includes a EOL network termination jumper and will connect the (121 Ω) resistor correctly on the PCB. The default is OFF. Simply move the jumper to the ON position. Remove cover to set the EOL Jumper.

NETWORK SETUP GUIDE

The network setup guides describe the implementation of the BACnet® or Modbus protocol. They are intended to assist control system programmers who may need to add support to their systems to communicate with the device.

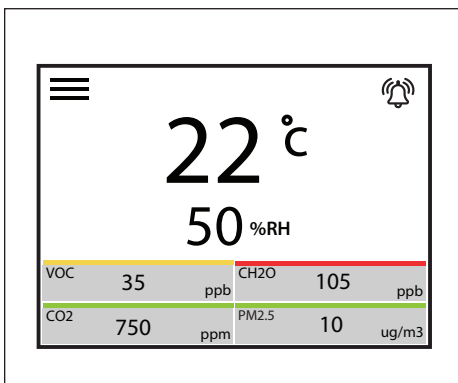BACnet® and Modbus setup guide download is available online.
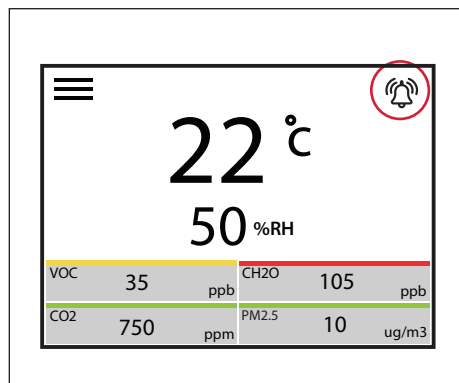

BACnet® PROTOCOL
https://downloads.greystoneenergy.com/SG/SG-IAQXXXBAC-001.pdf

Modbus PROTOCOL
https://downloads.greystoneenergy.com/SG/SG-IAQXXXMOD-001.pdf

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DISPLAY

1 The touchscreen display has several features that are configurable during set up. The factory default is all features on. To change features see Network Setup Guide.

2 Alarm Icon - The alarm icon is tied to the alarm relay. If the alarm relay is not in alarm mode the icon is not shown. If alarm relay is activated the icon is shown. See alarm relay settings to set alarm functions.
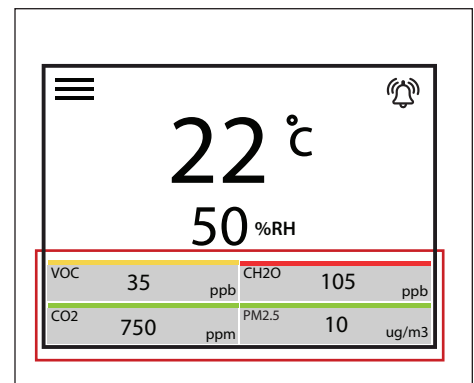

3 Sensor Display - Display of the VOC, PM, CO2 and CH2O are optional. The factory default is all on. Each parameter can be turned off individually during network set up. To change parameter display see Network Setup Guide.
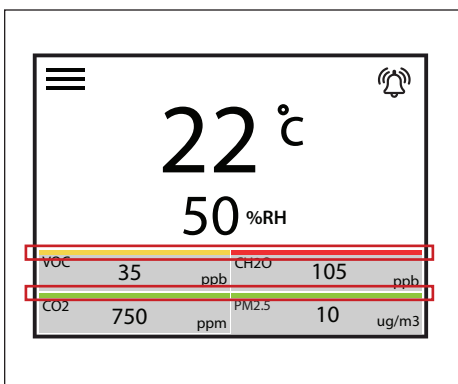
4 Status Bars - The colored status bars for each parameter are displayed as Green, Yellow or Red and change based on preset contamination levels. The factory default is all on. To turn all off see Network Setup Guide. Note: if the parameter displays are turned off in step 3, status bars are also off.

STATUS BAR LEGEND

|	
VOC:	<29 ppb - Green
	29 to 85 ppb - Yellow
	>85 ppb - Red
CO2:	<1000 ppm = Green
	1000 to 1500 ppm = Yellow
	>1500 = Red
PM:	<12 ug/m3 = Green
	12 to 55 ug/m3 = Yellow
	>55 ug/m3 = Red
CH2O:	<40 ppb = Green
	40 to 100 ppb = Yellow
	>100 ppb = Red
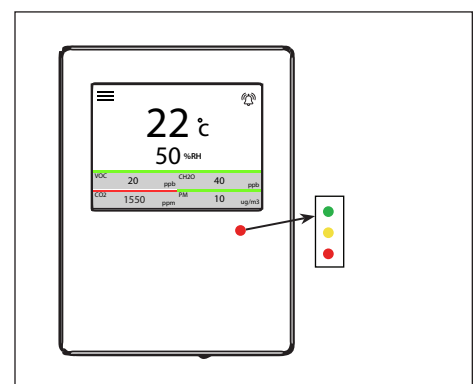
5 LED - A tri-color, Green, Yellow or Red status LED illuminates based on the same preset contamination levels as STEP 4. If any one of the measured parameters changes status, the LED color will change. The factory default is on. To turn off see Network Setup Guide.
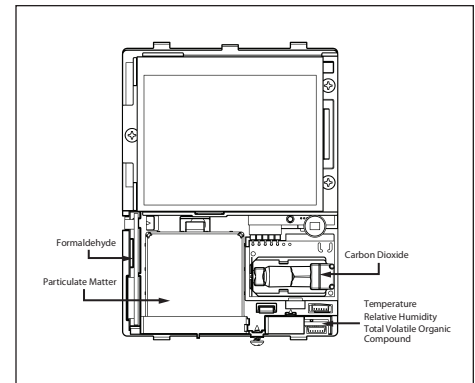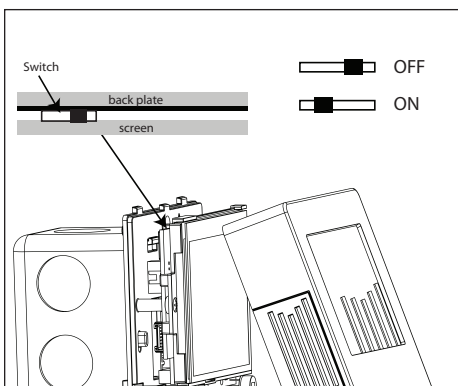
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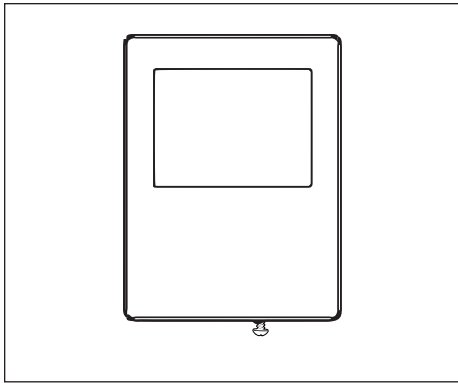
SERVICING

1 For sensor servicing or to remove from wall, loosen the security screw. Complete removal is not required.
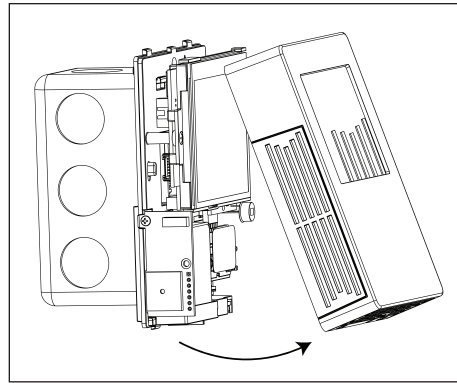
2 Remove cover by pulling outward on bottom and lift off backplate tabs

3 There 3 or 4 replaceable sensor modules depending on device purchased. The VOC, RH & Temperature sensor are combined on one module. For sensor module replacement, please refer to the sensor replacement instructions.

Formaldehyde

Carbon Dioxide

Particulate Matter

Temperature
Relative Humidity
Total Volatile Organic
Compound

4 The device must be powered off to perform a sensor replacement or removal from the wall. An on/ off switch located on the top left of the device is provided.

Switch

back plate

screen

OFF

ON
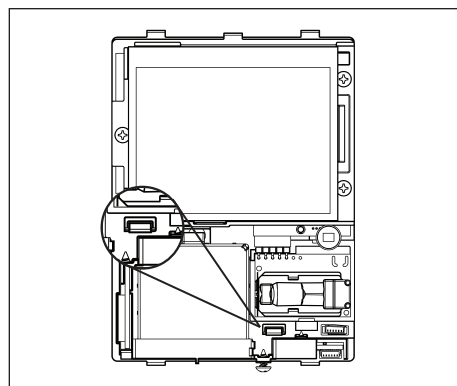
5 To remove device from wall, use a standard screwdriver to gently pry up the locking tab.
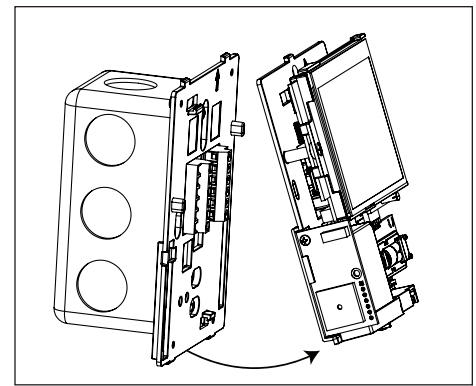
6 While prying gently on locking tab, pull out the bottom of the sensor carriage. The backplate will remain mounted to the wall.
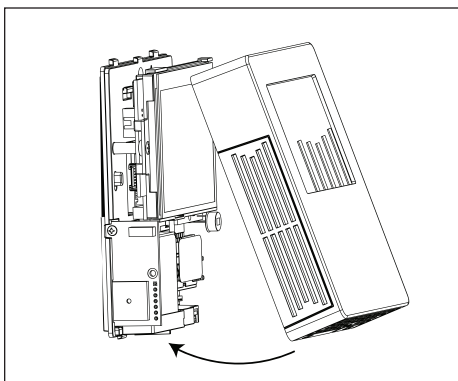
7 To re-install, turn Power Switch to On and attach cover to sensor carriage and tighten security screw before re-installing on the backplate.
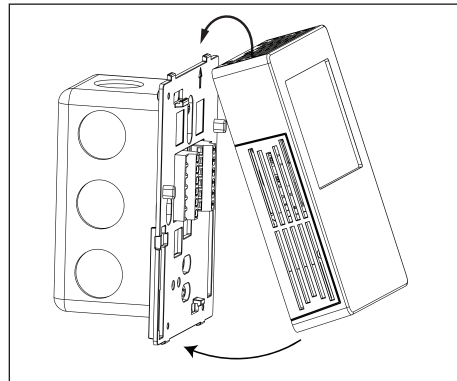
8 Install sensor module/cover by placing the tabs on the top of backplate into slots in the sensor module/cover and snap onto tabs on bottom of backplate

CALIBRATION (CO2 ONLY)

Field calibration can be completed on the CO_2 sensor by 2 methods. 1) Using a field calibration kit, CO_2 gas and sensor hood (Part# IAQA-CO2HOOD) or 2) By a using a handheld CO_2 meter or secondary device as a reference. To perform using a field calibration kit, please refer field calibration instructions. To perform using a handheld CO_2 meter or secondary device as a reference follow the steps below. To start, perform STEP 1 & 2 from the SERVICING Section.

1 If touchscreen is enabled, skip to STEP 3. If touchscreen was disabled during initial set up it will need to be re-enabled via the Network settings, or turning power off and back on will enable the touchscreen for 2 minutes. Entering calibration screen will extend this time indefinitely.
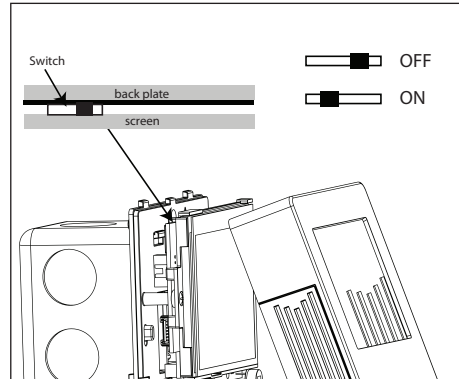
2 An on/ off switch located on the top left of the device is provided. Turn off and back on.
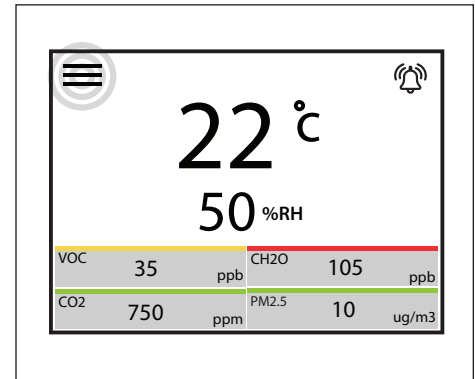
3 Select the menu icon in the top left of display
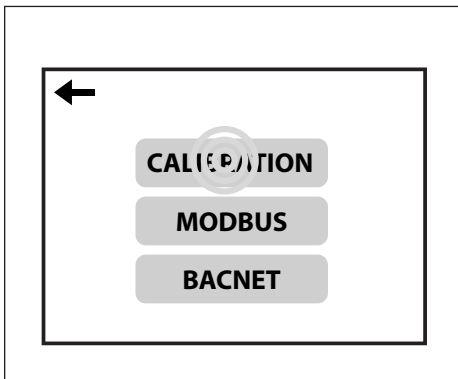
4 Select calibration from the menu items

5 Set calibration CO_2 level based on reading from handheld CO_2 meter or secondary reference device.
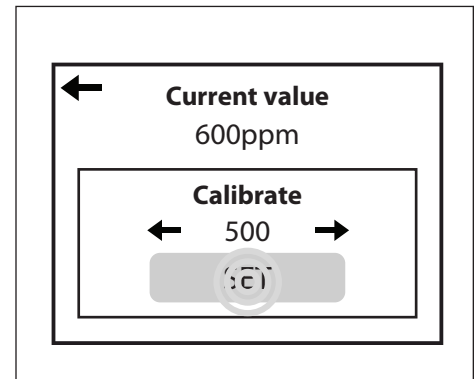
6 Select SET to calibrate the sensor.

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Current value
500ppm

Calibrate
← 500 →

SET
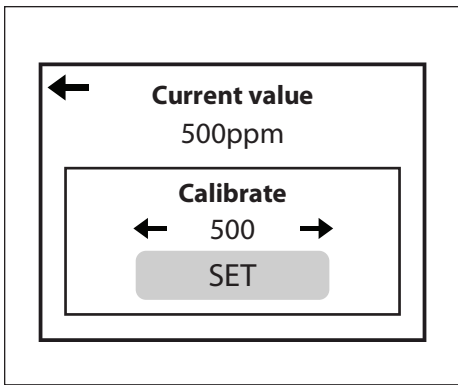
7 When calibration is complete the CURRENT VALUE and SET VALUE will match. Select back arrow in top left of screen to exit to main screen
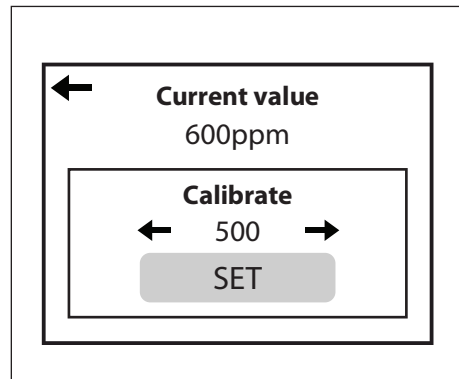

22 °C

50 %RH

| VOC | 35 ppb | CH2O | 105 ppb |
| CO2 | 750 ppm | PM2.5 | 10 ug/m3 |
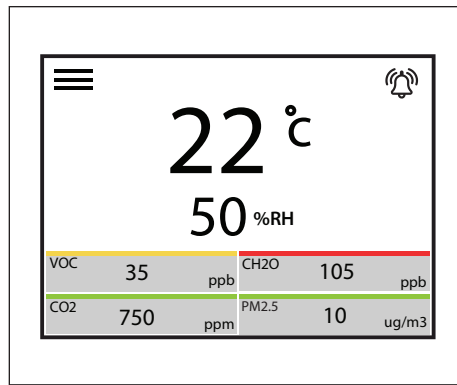
8 If touchscreen lock was set initially and disabled by turning the device off/on, after 2 minutes it will re-enable automatically. If disabled via the Network settings, it will need to be re-enabled via the Network settings.

DIMENSIONS

94.5mm
3.72"

29.1mm
1.14"

124.5mm
4.9"

61mm
2.4"

78.7mm
3.1"
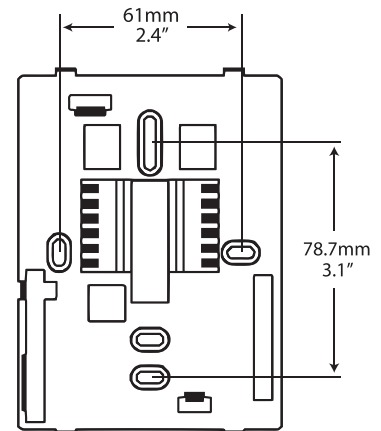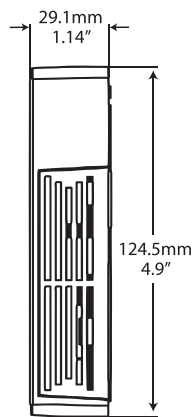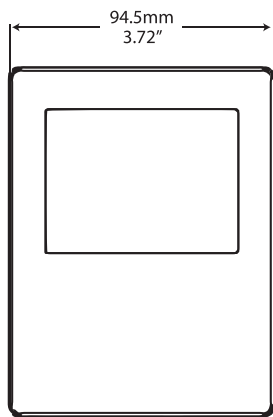
SPECIFICATIONS

PARTICULATE MATTER SENSOR

Type
Laser Scatter Method (Field Replaceable)
Particulate Size
PM1.0, PM2.5, PM4.0 and PM10
Mass Concentration Range
0 - 1000 ug/m³ or 0 - 3000 #/cm³ (Selectable)
Mass Concentration Resolution
1 (ug/m³, 1#/cm³)
Accuracy PM1.0 and PM2.5
±10 ug/m³ (0 – 100 ug/m³), ±10%M.V. (100 – 1000 ug/m³)
Accuracy PM4 and PM10
±25 ug/m³ (0 – 100 ug/m³), ±25%M.V. (100 – 1000 ug/m³)
Sensor Life Expectancy >10 years

CARBON DIOXIDE SENSOR

Type
Dual channel non-dispersive infrared (Field Replaceable)
Accuracy
± (30ppm + 3% of measured value)
Measurement Range
0 - 10000 ppm
Auto-Cal
Selectable On (ASC) or Off (FRC)
Altitude Adjustment
0 - 3000 meters
Calibration
Field calibration capable with calibration kit
Sensor Life Expectancy >15 years

VOLATILE ORGANIC COMPOUNDS SENSOR

Type
MOX metal oxide semiconductor (Field Replaceable)
Range
VOC Index (0 - 500) or TVOC (1300 ppb or 6000 ug/m³)
Resolution
1 (VOCI, PPB, ug/m³)

RELATIVE HUMIDITY SENSOR

Type Thermoset Polymer-based Capacitance Sensor Chip (Field Replaceable)
Range 0-100% RH
Accuracy ±1.5% RH
Calibration +/-10% Offset
Resolution 0.1% RH

TEMPERATURE SENSOR

Type Bipolar Transistor Sensor Chip
Range 0 - 60°C, 32 - 140°F
Resolution 0.1°C/°F
Accuracy ± 0.2°C, ± 0.4°F (Typical)
Calibration
-5 to 5°C Offset, Resolution = 0.1°C ;
-10 to 10°F Offset, Resolution = 0.1°F

FORMALDEHYDE SENSOR

Type
Electrochemical (Field Replaceable)
Range 0 - 1000 ppb or 0 - 1230 ug/m³
Accuracy ±10% FS@25°C
Resolution 1 (ppb, ug/m³)
Sensor Life Expectancy > 6 years

NETWORK INTERFACE

Hardware
MS/TP, 2-Wire, RS-485
Software
BACnet® or Modbus
Baud Rate
9600, 19200, 38400, 57600, 76800, or 115200
Address Range
BACnet®: 0 - 127, Modbus: 1 - 255

RELAY

Contact Rating
Form A, 2A max 24Vac/dc
Setpoint/Hysterisis/Delay
Selectable based on selected sensor
Relay Setpoints (Selectable)
PM Mass Concentration: 50 - 900 ug/ m³;
VOC: 100 - 500 VOC Index;
CH_2O: 50 - 900 ppb;
CO_2: 500 - 9000 ppm
Humidity: 20 - 90%;
Temperature: 5 - 40°C / 40 - 100°F
Relay Configuration
Via BACnet®/Modbus
Switching Power
60W, 62.5VA

VISUAL INDICATION

Display
3.5" full colour graphic LCD
User Interface
Capacitive Touchscreen
Display Options
Viewable or Concealed
Display Parameters
Temperature and Humidity - Standard
CO_2, VOC, PM & CH_2O - Selectable On/Off
Status Bars
Green/Yellow/Red - Selectable On/Off
Status LED
Green/Yellow/Red - Selectable On/Off

GENERAL

Power Supply
12 - 28 Vac/Vdc, 50/60 Hz
Consumption
Maximum 150mA @ 12Vdc, 1.8W
Protection Class
III
Wiring Termination
Backplate mounted terminal block (14 to 22 AWG)
Operating Conditions
0 to 60°C (32 to 140°F), 0 to 95 %RH non-condensing
Sensor Coverage
100 m2 (1000 ft2) typical
Certifications
CE, UKCA, RESET® AIR Accredited CE

ENCLOSURE

Material
White PC/ABS, UL94-V0, UV Protected, IP30
Connection
Wall plate with screw terminal blocks
Dimensions
124.5 mm H x 94.5 mm W x 29 mm D (4.9" x 3.72" x 1.14")

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