



AirSentric WB55
Wireless Indoor Air Quality Monitor
Setup & Configuration Manual

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1 – Introduction

Before installing the AirSentric WB55 please give this manual a thorough read through. The manual provides all of the important information to help you successfully install the monitor and set up your online monitoring account. Please retain this manual for future reference.

2 – Hardware Configuration

The WB55 IAQ monitor comes equipped with a Zigbee wireless module, which enables multiple monitors to be installed in a single environment/area. Each unit then communicates back to a single internet enabled network point - the Data Hub - which connects to the online monitoring account.

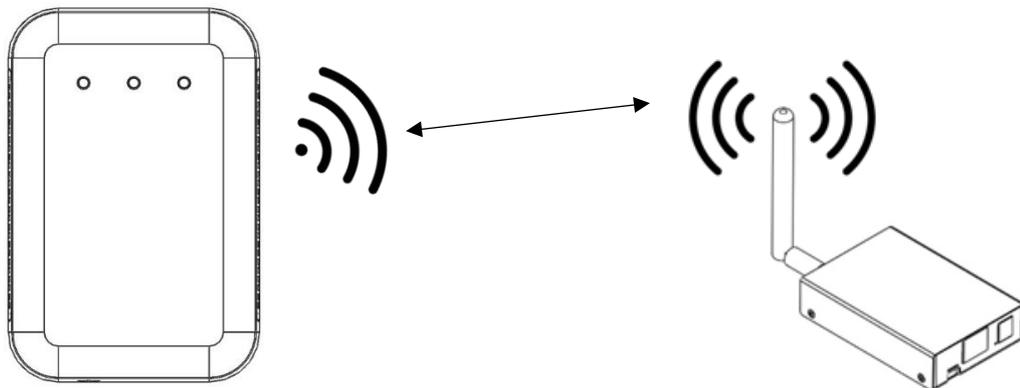


Figure 1 → WB55 wireless setup with Ethernet gateway unit

3 – Hardware Installation

3.1 – Requirements for Installing the WB55 System

In order to install the system, there must be access to the following;

- Access to a power connection
- Access to a wired internet connection for the gateway
- Once power is supplied and the data gateway is connected the unit will need to be added to your online monitoring account.

Note:

- Do not place your WB55 monitor near any heat source such as a radiator or at a window or direct sunlight.
- Place WB55 within range of your wireless network.
- Place in an open space – avoid placing in areas where airflow may be obstructed

3.2 - Coverage Area

As per the Well Building Standard guidelines we recommend installing monitors within a regularly occupied or common space in the building at the following installation density:

Monitor density is minimum one per floor or one every 325 m² [3,500 ft²], whichever is more stringent. Monitors are sited at locations compliant with the following requirements:

1.1-1.7 m [3.6-5.6 ft] above the finished floor at locations where occupants would typically be seated or standing.

Sampling points must be at least 1 m [3.3 ft] away from doors, windows and air supply/exhaust outlets.

Source: Well Building Standard V2 – Q4 2019, A08

3.3 – Mounting System

The WB55 can be wall mounted, using the included mounting plate. anchor points on the baseplate. It is recommended that where possible all 4 mounting holes are used when securing the unit to a wall.

Please note: The unit is designed to be wall mounted vertically - long term use of the unit in the incorrect orientation will result in dust build up within the particle sensor (if a particle sensor is included in your configuration).

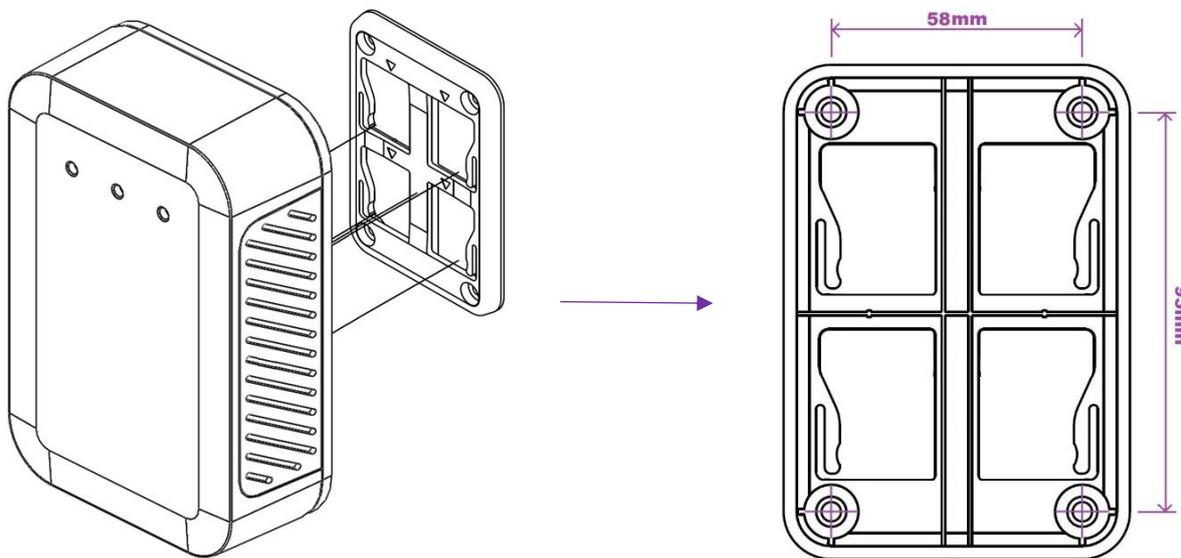


Figure 2 → Wall mounting points for the WB55

4 – Power Supply

The WB55 Sensor includes a 12V power supply adapter. The adapter converter can operate at 100 – 240VAC (47-63Hz) and is compatible with the mains power network of most continents.

5 - Internet Connection

5.1 – Wireless Ethernet Gateway Connection

Your wireless monitor will need to be in range of the gateway – this can vary per building from 20 metres to 100 metres depending on building fabric

- To set up the Gateway please connect the Ethernet cable provided to the DATA HUB and then connect to an Ethernet point or a spare Ethernet port on your router.
- Power on the device after connecting the supplied power supply. The device will power on automatically and establish a connection with the WB55 Sensor.

Please note: It can take up to 5 minutes for the gateway to pair with the monitor. You can check its status by viewing the sensor’s dashboard for data arriving online.

5.2 – Network Configuration

The DATA HUB will also by default automatically configure itself to your network settings using DHCP.

It is possible to configure the sensor to connect to a static IP address. Please see page 12 of this manual to complete this step.

6 – Online Software Setup

6.1 – Online Account Setup

To set up your online account to remotely monitor your IAQ monitor please navigate to <https://hex2.nuwavesensors.com/> on your computer internet browser.

On the webpage you will be prompted to sign in or create an account. As this is your first time to access the account please click 'Create Account' just under the sign in section.

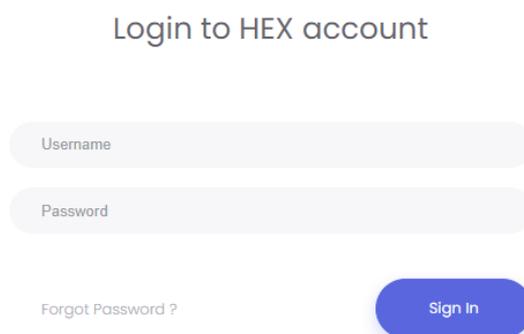


Figure 3 → Login Interface on Webpage

6.2 – Account Registration

Please complete the form in order to complete the sign-up process. If you have any issues, please contact support at: info@nuwavesensors.com quoting the serial number of your monitor and gateway (found on the sticker on the back of both devices).

Create Account

Username

Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.

Email

Password

- Your password can't be too similar to your other personal information.
- Your password must contain at least 8 characters.
- Your password can't be a commonly used password.
- Your password can't be entirely numeric.

Password confirmation

Enter the same password as before, for verification.

Organisation or Business Name

Register

Figure 4 → Account Registration Form

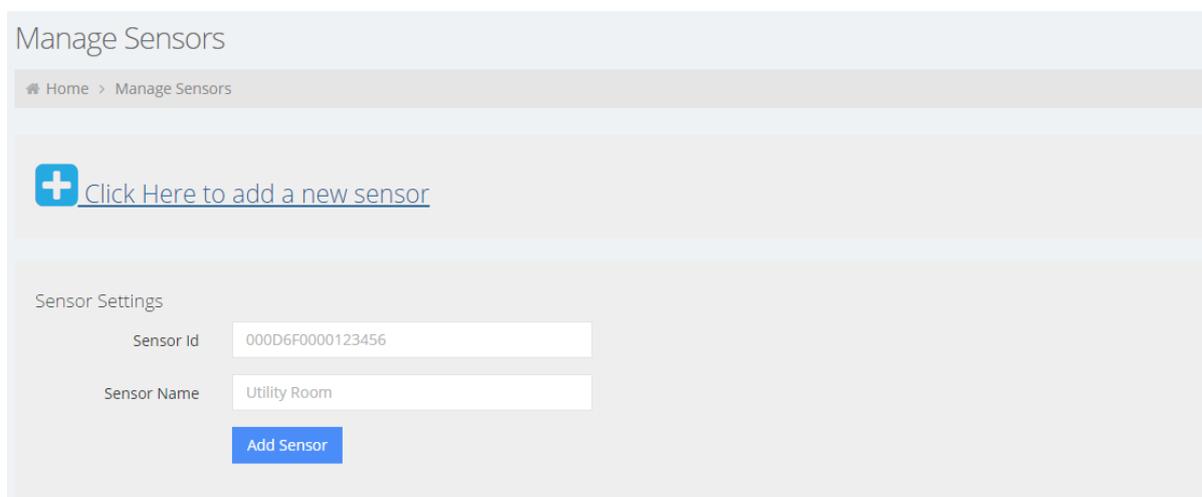
7 – Setting up Your Sensor Using the Online Account

7.1 – Adding a Sensor

After logging in for the first time the first page you will see is the **Home Page** – where you can add a new sensor and view the list of installed sensors.

To add your new sensor, click **'Add Sensor'** and complete the form based on your sensor details;

- **Sensor Id:** Please enter the 16-digit sensor ID – this is the code on the sticker on the back of your sensor.
- **Sensor Name:** Example; Cleanroom 2A
- **Sensor Group:** Completing this field allows you to create groups of sensors based on your preference – example; 1st Floor. You can also leave this blank if you do not wish to create a group.



Manage Sensors

Home > Manage Sensors

[Click Here to add a new sensor](#)

Sensor Settings

Sensor Id

Sensor Name

Figure 5 → 'Add Sensor' Interface Page

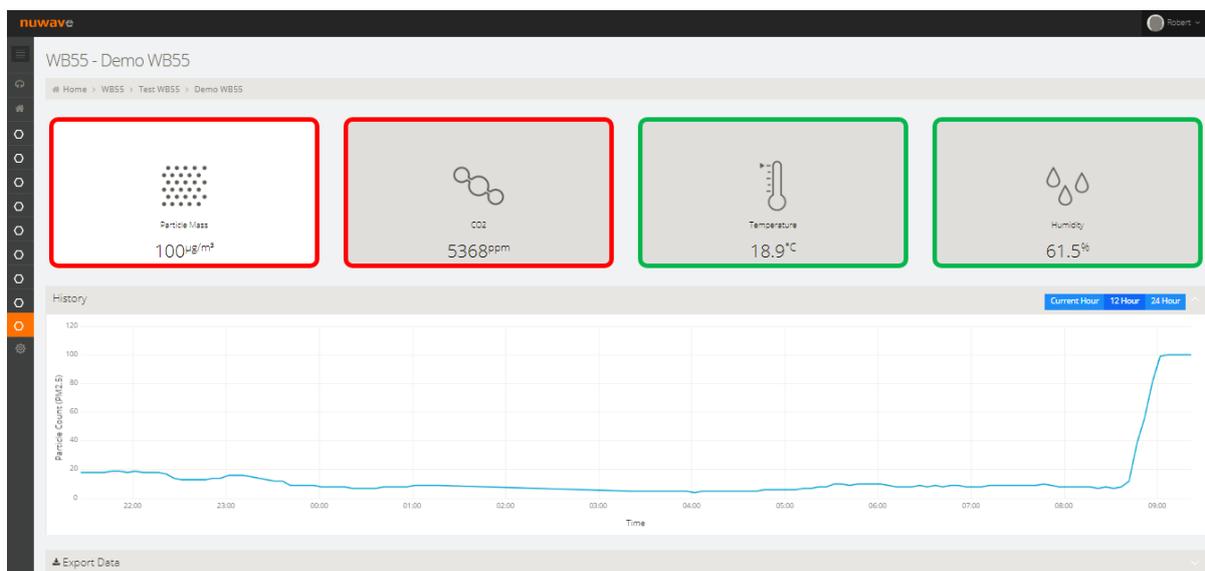
Once you have completed the above form click 'Add Sensor' button at the end of the form and your sensor will be added. To add another sensor at any time please repeat the steps above.

8.0 - Viewing and Managing Sensor Data

After setting up the sensor and gateway correctly as well as adding your sensor after logging in you should now start to see data arriving on the sensor monitoring page. If you do not see data arriving after a period of 15 minutes please refer to the gateway configurations setting in the troubleshooting section of this manual (page 17).

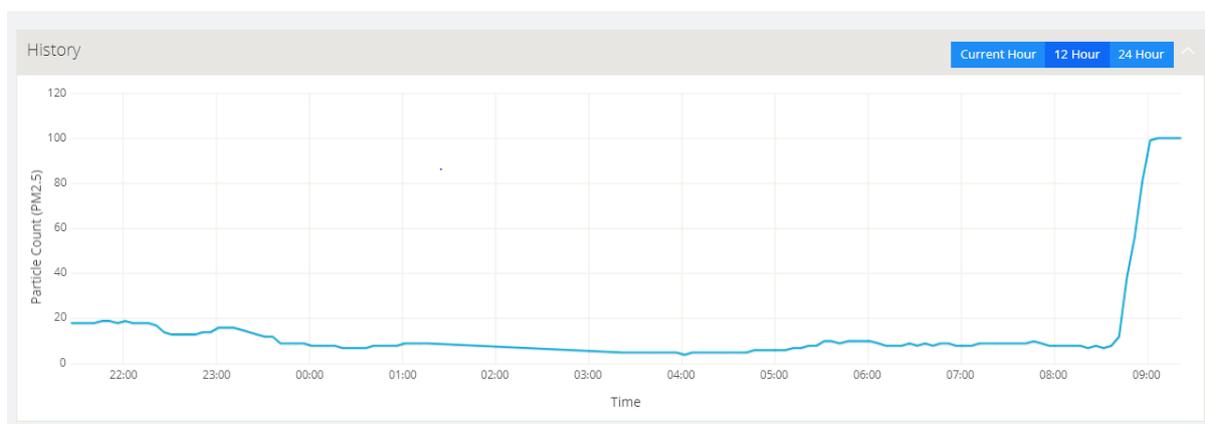
8.1 Sensor Status:

Here you can view the current VOC reading as well as the current temperature and humidity reading from your sensor.



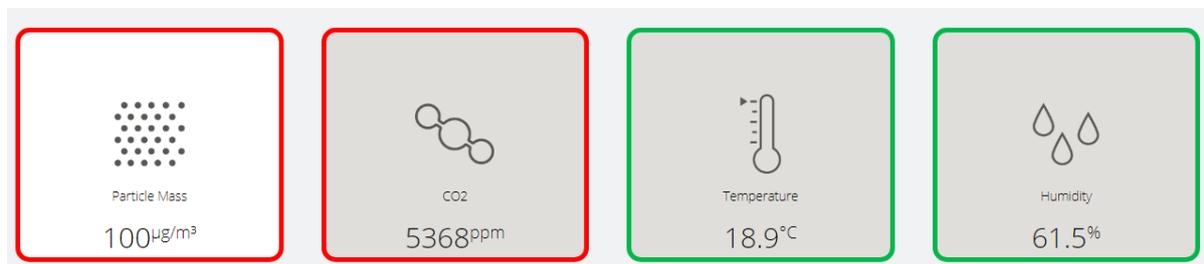
8.2 Graphing Options:

Data arriving on the website will be visible on the sensor graph. You can change between graph views of 1 hour, 12 hour or 24 hours.



8.3 Sensor Indexes

Each sensor widget has a colour coded band that changes in response to sensor measurements and indicates if this is considered to be good or bad air quality on an air quality index.



PM2.5:

The PM2.5 index changes colour in accordance with Now-Cast system used by the World Air Quality Index Project. You can find more information here: <http://aqicn.org/here/>

The index values are as follows:

AQI Category	Index Values	$\mu\text{g}/\text{m}^3$
Good	0-50	0.0 – 12.0
Moderate	51-100	12.1 – 35.4
Unhealthy for Sensitive Groups	101-150	35.5 – 55.4
Unhealthy	151 +	55.5 +

CO2:

The following index is used to determine the widget colour for the CO2 sensor based on what is considered fair and poor levels of CO2.

<p>OK</p> <p></p> <p>0-999 ppm</p>	<p>Good Ventilation</p> <p>Typical of normal CO2 levels in occupied spaces</p>
<p>Fair</p> <p></p> <p>1000-1999 ppm</p>	<p>Inadequate Ventilation</p> <p>Can cause feelings of drowsiness and or headaches</p>
<p>Poor</p> <p></p> <p>2000-5000 ppm</p>	<p>Poor Ventilation</p> <p>Stale, stagnant air which can cause drowsiness, nausea and poor concentration</p>

Temperature & Humidity:

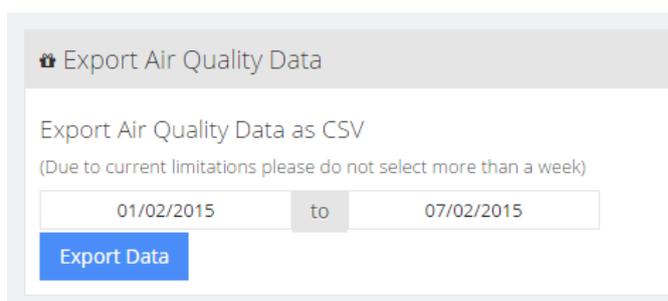
The following index is used to determine the optimal values for temperature and humidity based on building occupant comfort levels and what is considered to be healthy for the respiratory system.

	OK	Fair	Poor
Humidity	35 - 65%	25% - 35% / 65% - 80%	<25% / >80%
Temperature	18 °C - 24 °C	15 °C - 18 °C / 24 °C - 28 °C	<15 °C / >28 °C

8.4 Export CSV data:

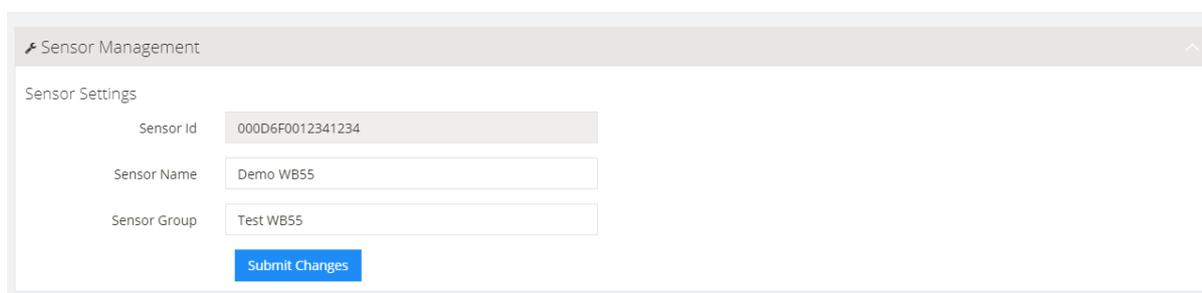
For a longer-term view of the data or for detailed analysis you can download a CSV file of your data at any time.

Due to download file size limitations this is limited at 1 weeks' worth of data per download. The link to download your data will be e-mailed to the e-mail address registered with the account.



8.5 Sensor Management Settings

At the bottom of each sensor you will find the sensor management settings. From here you can manage settings such as re-naming the sensor.



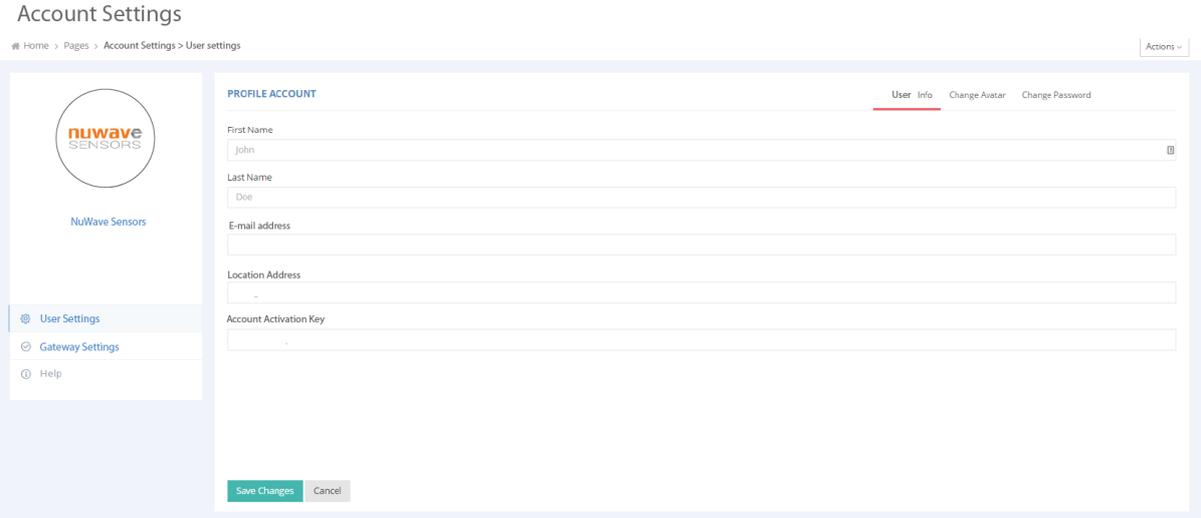
Note: To save and changes make sure and click 'Submit Change' at the bottom of the form.

9 - User Profile Settings

On the settings page you can edit and manage your user account details including;

- Change Password
- Change e-mail address associated with the account
- Address Location

Once any changes have been made click the 'Save Changes' button.



The screenshot displays the 'Account Settings' page. On the left is a sidebar with the NuWave Sensors logo and navigation links for 'User Settings', 'Gateway Settings', and 'Help'. The main content area is titled 'PROFILE ACCOUNT' and features a sub-navigation bar with 'User Info', 'Change Avatar', and 'Change Password'. Below this are input fields for 'First Name' (containing 'John'), 'Last Name' (containing 'Doe'), 'E-mail address', 'Location Address', and 'Account Activation Key'. At the bottom of the form are 'Save Changes' and 'Cancel' buttons. The breadcrumb trail at the top reads 'Home > Pages > Account Settings > User settings'.

Figure 6 → Account Settings Page

10 - API

NuWave Sensors offers a RESTful API to monitor devices connected to our HEX monitoring software.

Resources regarding the API for your installed monitors is available at the following link address:

<https://hex2.nuwavesensors.com/api/docs/>

11 – Gateway Network Configuration

The DATA HUB gateway is configured to use DHCP by default. This automatically detects network settings on most standard networks and the sensor will be able to send data online without changing any settings.

If you need to configure a port on your network for the gateway the port and server address details are as follows:

Remote Port Number: 58122

Remote Server Address: gateway2.nuwavesensordata.com

You can also edit the network settings and assign a static IP using the gateway web interface of the gateway which is accessible using an internet browser. To access the gateway you must know the IP address which can be found using the MAC address of the gateway (located on the bottom of gateway).

When prompted, enter the following username and password;

Username: admin

Password: admin

If you have any issues, please contact info@nuwavesensors.com

Current Status	<p>Module Name: Gateway</p> <p>Firmware Revision: 3010</p> <p>Current IP Address: 192.168.1.108</p> <p>MAC Address: d8-b0-4c-c0-0e-7f</p> <p>Run Time: 9day: 1hour: 17min</p> <p>TX Count(ETH) : 58985642/ bytes</p> <p>RX Count(ETH) : 0/ bytes</p>	help
Local IP Config		<ul style="list-style-type: none"> • Run time: run time means the minutes since latest reboot • TX/RX Count: TX/RX count give us a calculation of the total byte we have been received or send.
TTL1		
Web to Serial		
Misc Config		
Reboot		

Figure 7 → Gateway Homepage

Current Status	<p>IP type: <input type="text" value="DHCP/AutoIP"/></p> <p>Static IP: <input type="text" value="192"/> · <input type="text" value="168"/> · <input type="text" value="0"/> · <input type="text" value="7"/></p> <p>Submask: <input type="text" value="255"/> · <input type="text" value="255"/> · <input type="text" value="255"/> · <input type="text" value="0"/></p> <p>Gateway: <input type="text" value="193"/> · <input type="text" value="168"/> · <input type="text" value="0"/> · <input type="text" value="100"/></p> <p><input type="button" value="Save"/> <input type="button" value="Cancel"/></p>	help
Local IP Config		<ul style="list-style-type: none"> IP type: StaticIP or DHCP StaticIP Module's static ip Submask usually 255.255.255.0 Gateway Usually router's ip address
TTL1		
Web to Serial		
Misc Config		
Reboot		

Figure 8 → Gateway IP Configuration Page

Current Status	<p>Baud Rate: <input type="text" value="19200"/> bps</p> <p>Data Size: <input type="text" value="8"/> bit</p> <p>Parity: <input type="text" value="None"/></p> <p>Stop Bits: <input type="text" value="1"/> bit</p> <p>Flow Control and RS485: <input type="text" value="None"/></p> <p>Local Port Number: <input type="text" value="23"/></p> <p>Remote Port Number: <input type="text" value="58122"/></p> <p>Work Mode: <input type="text" value="TCP Client"/> <input type="text" value="None"/></p> <p>Remote Server Addr: <input type="text" value="gateway2.nuwavesensordata.com"/></p> <p>Timeout: <input type="text" value="0"/> seconds (< 256, 0 for no timeout)</p> <p>UART packet Time: <input type="text" value="0"/> ms (< 256)</p> <p>UART packet length: <input type="text" value="0"/> chars (<= 1460, 0 for no use)</p> <p>Sync Baudrate(RF2217 similar): <input type="checkbox"/></p> <p><input type="button" value="Save"/> <input type="button" value="Cancel"/></p>	help
Local IP Config		<ul style="list-style-type: none"> baud: 300~102400bps(and 485 can only up to 115200bps) flowcontrol and RS485 default RS485 local port 1~65535. when TCP Client, set this to 0 means use random local port remote port 1~65535 packet time 1~255ms,default 10ms;when baud <=4800bps, pls set packet time to 50 ms
TTL1		
Web to Serial		
Misc Config		
Reboot		

Figure 9 → Gateway TTL Configuration Page

Current Status	<p>Module Name: <input type="text" value="Gateway"/></p> <p>UPnP port number: <input type="text" value="6432"/></p> <p>weberver port number: <input type="text" value="80"/></p> <p>Module Id(use for indentify modue): <input type="text" value="1"/> (1~65535)</p> <p>Module Id type: <input type="text" value="0"/> (0/1/2/3)</p> <p>MAC Address: <input type="text" value="d8-b0-4c-c0-0e-7f"/></p> <p>User name: <input type="text" value="admin"/></p> <p>Pass word: <input type="text" value="admin"/></p> <p><input type="button" value="Save"/> <input type="button" value="Cancel"/></p>	help
Local IP Config		<ul style="list-style-type: none"> module name max length is 15 char Web port default 80 ID and ID type we could use it for D2D Mac address user could modify this MAC address
TTL1		
Web to Serial		
Misc Config		
Reboot		

Figure 10 → Gateway Misc Configuration Page

12 – Calibration

Our sensors come factory calibrated and in most cases your sensors can be used for up to 3 years without calibration.

Calibration may be required in the following circumstances:

- You may require calibration for compliance purposes such as compliance with the Well Building Standard. In this case we recommend an annual calibration service
- If the devices are used in very polluted environments where a lot of dust is present this can have an impact on the particle sensor accuracy
- Exposure to high levels of chemicals can have an impact on the VOC or Formaldehyde sensor
- The temperature and humidity sensor will have a small amount of calibration drift annually which can be adjusted for with a calibration

Please contact us directly in order to arrange a calibration service at support@nuwavesensors.com

13-Important Precautions

Caution! This device is recommended for use indoors and in a dry location only.

- Avoid using WB55 in very dusty environments as dust build up may obstruct the air flow within the device.
- Take care when using WB55 to route the power cable in a way that reduces the risk of injury to others, such as by tripping or choking.
- Do not cover or obstruct vents around the WB55 sensor.
- Only use the power adapter supplied with WB55.
- Do not insert anything through the vents.
- Do not inject gas, dust or chemicals directly into the WB55 sensor.
- Do not use this device near water.
- Do not drop or subject the device to undue shock.
- Do not place in insect-infested areas. Insects can block vent openings to the sensors.

WB55 is designed to be maintenance free, but you should keep it clean and avoid dust build up - especially around the air vents of the sensor which can reduce performance.

To clean WB55:

1. Turn off mains power and remove the power adapter plug from WB55.
2. Wipe the outside with a clean, slightly damp cloth. Don't use soap or solvents!
3. Very gently vacuum around the vents of the WB55 sensor to remove dust obstructing the vent openings.

Note:

- Never use detergents or solvents on your WB55 sensor or spray air fresheners, hair spray or other aerosols near it.
- Do not place WB55 in water or let water get inside the WB55 sensor.
- Do not paint your WB55 sensor.

14 - Recycling and disposal

The WEEE symbol on this product means that WB55 should be disposed of separate from ordinary household waste at the end of its life in accordance with local regulations. Please take WB55 to a collection point designated by your local authority to be recycled to help conserve natural resources.

15 – Product Warranty:

Limited Product Warranty

THIS LIMITED WARRANTY CONTAINS IMPORTANT INFORMATION ABOUT YOUR RIGHTS AND OBLIGATIONS, AS WELL AS LIMITATIONS AND EXCLUSIONS THAT MAY APPLY TO YOU AS PART OF THE TERMS AND CONDITIONS OF SALE IN EFFECT AT THE TIME THAT YOU PURCHASE A NUWAVE SENSOR TECHNOLOGY LIMITED PRODUCT.

What this warranty covers?

NuWave Sensor Technology Limited (“NuWave”) warrants to the original purchaser of this WB55 sensor (the “Product”) shall be free of defects in design, assembly material, or workmanship under normal use for a period of one (1) year from the date of purchase (the “Warranty Period”).

NuWave does not warrant that the operation of the Product will be uninterrupted or error-free. NuWave is not responsible for damage arising from failure to follow instructions relating to the Product’s use. This Limited Warranty does not cover software embedded in the Product and the services provided by NuWave to owners of the Product. Refer to the licence agreement accompanying the software for details of your rights with respect to their use.

Remedies

NuWave will repair or replace, at its option, any defective product free of charge (except for shipping charges for the product). Any replacement hardware product will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer. In the event that NuWave is unable to repair or replace the product (for example, because it has been discontinued), NuWave will offer either a refund or a credit towards the purchase of another product from NuWave in an amount equal to the purchase price of the product as evidenced on the original purchase invoice or receipt.

What is not covered by this warranty?

The warranty is null and void if the Product is not provided to NuWave for inspection upon NuWave’s request, or if NuWave determines that the Product has been improperly installed, altered in any way, or tampered with. The NuWave Product Warranty does not protect against floods, lightning, earthquakes, war, vandalism, theft, normal-use wear and tear, erosion, depletion, obsolescence, abuse, damage due to low voltage disturbances such as brownouts, non-authorized program or system equipment modification, alternation or other external causes.

How to Obtain Warranty Service

Please review the online help resources at nuwavesensors.com/support prior to seeking warranty service. To get service for your WB55 sensor you must take the following steps;

1. Contact NuWave Sensors customer support. Customer Support contact information can be found by visiting www.nuwavesensors.com/support
2. Provide the following to the customer support agent;
 - a. The serial number found on the back of your WB55 sensor
 - b. Where you purchased the product
 - c. When you purchased the product
 - d. Proof of payment
3. Your customer service representative will then instruct you on how to forward your receipt and your WB55 as well as how to proceed with your claim.

It is likely that any stored data relating to the product will be lost or reformatted during service and NuWave will not be responsible for any such damage or loss.

NuWave reserve the right to review the damaged NuWave product. All costs of shipping the Product to NuWave for inspection shall be borne by the purchaser. Damaged equipment must remain available for inspection until the claim is finalised. Whenever claims are settled NuWave reserves the right to be subrogated under any existing insurance policies the purchaser may have.

Implied Warranties

EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ALL IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) SHALL BE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some jurisdictions do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you.

Limitation of Damages

IN NO EVENT SHALL NUWAVE BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR MULTIPLE DAMAGES SUCH AS, BUT NOT LIMITED TO, LOST BUSINESS OR PROFITS ARISING OUT OF THE SALE OR USE OF ANY NUWAVE PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Statutory Rights

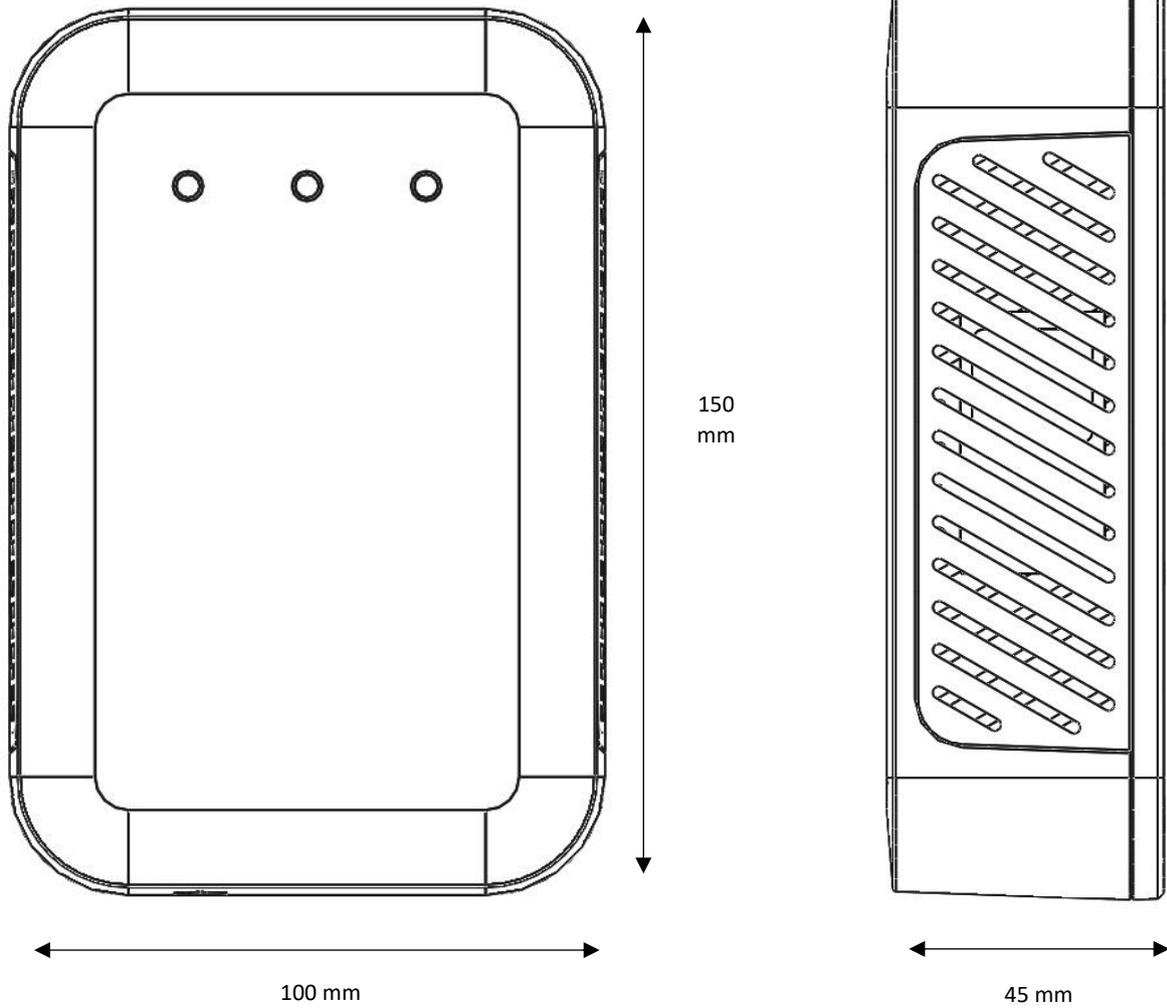
This warranty gives you specific legal rights, and you may have other rights, depending on your jurisdiction. These rights are not affected by the warranties in this Limited Warranty.

16 – Appendix

16.1 – Troubleshooting

Problem	Possible Issue	Solution
No data arriving online after 5 minutes	Outside of wireless range	<p>The wireless range of the sensor can vary greatly depending on the building fabric and can vary by as much as 20m to 100m. To test this please plug the WB55 SENSOR in close range to the DATA HUB. Data should arrive online after about 5 minutes. In this case the Data Hub will need to be re-positioned closer to the sensor location.</p>
	Ethernet Cable not firmly connected	<p>Power off both the DATA HUB and WB55 SENSOR by plugging out the power supplies. Please ensure that the Ethernet cable is firmly connected to both the DATA HUB gateway and the port on your broadband router. Apply power to both devices and check to see if data arrives after 5 minutes.</p>

16.2 – WB55 Dimensions



16.3 – WB55 Specifications

The below specification is for SKU: AR10-B-114-A

Depending on your device / SKU individual sensors may not be included in your configuration.

Particulate Matter	Particle Sizes	PM1.0, PM2.5, PM4.0, PM10 (0.3 - 10µm)
	Mass concentration range	0 – 1000 µg / m ³
	PM Sensor Accuracy - PM1/2.5	+/- 10%
	PM Sensor Accuracy - PM4/10	+/- 25%
Carbon Dioxide (CO2)	CO2 Sensor Range	0 to 5000 ppm / 0.04 to 2% Volume CO2
	CO2 Sensor Accuracy	+/-40ppm +/-3% of reading
TVOC Sensor	TVOC Sensor Range	125-600 ppb and µg/m ³ output
	TVOC Sensor Accuracy	+/- 5 ppb
Formaldehyde Sensor	CH2O Sensor Range	0 to 5 ppm
	CH2O Accuracy	10 ppb
Temperature	Temperature Range	0 to 50°C
	Temperature Accuracy	(at -10 to 85 °C) ±1 °C (max)
	Temp Sensor Stability	< 0.01 °C/Y
Humidity	RH Range	5 to 95% RH continuous
	RH Accuracy	(at 0–90% RH) ± 5% RH (max)
	RH Sensor Stability	< 0.25 %RH/yr

Size and Weight	Size	Size (LxWxD) - 4in (100mm) x 6in (150mm) x 1.8in (45mm)
	Weight	202g (enclosure weight without power adapter)
Connectivity	Zigbee	Zigbee using GY36 Gateway (30m / 100ft range)
Power	Power Supply	100-240V International Adapter, DC 12V +/- 10%, 420mA
	Power Consumption	250mA @ 12V
	Operating Temperature	0°C to 50°C (32 F to 122 F)

Accessories	Wall Mount Bracket is supplied
Calibration	Calibration service available (typically required every 3 years, annual service option available)
Software	Cloud Dashboard with no subscription fee for standard account
	API available

Additional Sensor Specifications:

CH₂O Sensor Specifications:

Range	0 – 5 ppm
Accuracy	10 ppb
Resolution	0.01 ppm
Warm up time	3 minutes
Sensor Lifetime	2 years

CH₂O Sensor - Interfering Gases:

Gas	Concentration	Concentration output
NH ₃	50ppm	0ppm
C ₆ H ₆	100ppm	0.1ppm
Cl ₂	10ppm	0.1ppm
CH ₃ CL	5ppm	0.1ppm
C ₃ H ₆ O	100ppm	0.2ppm
C ₂ H ₄ O	10ppm	0.5ppm
SO ₂	20ppm	0.8ppm
H ₂ S	100ppm	3.7ppm
H ₂	500ppm	5.5ppm
C ₂ H ₅ OH	131ppm	5ppm
CH ₃ OH	42ppm	5ppm
CH ₂ O	5ppm	5ppm

TVOC Sensor Specifications

VOCs detected:

Alcohols, Aldehydes, Ketones, Organic Acids, Amines, Aliphatic and Aromatic Hydrocarbons

Cross Sensitivity:

Humidity and Hydrogen

Technical Support

www.nuwavesensors.com/support