

Wireless Indoor Air Quality Monitor with

PM2.5 / PM10 / CO₂ / Temperature/
Humidity 5-In-1 Detection Sensor

Model: WH0295





- *Please scan the QR code to read English manual and keep it for future reference
- *Bitte scannen Sie den QR-Code zudeutsche Anleitung lesen und aufbewahren füZukunftsbezug
- *Si prega di scansionare il codice QR perleggi il manuale italiano e conservalo perReferenza futura

Instruction manuals

<https://www.ecowitt.com/api/quickstart/product?id=248>

Help

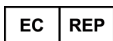
Our product is continuously changing and improving, particularly online services and associated applications. To download the latest manual and additional help, please contact our technical support team:

support@ecowitt.com

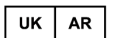
support.eu@ecowitt.net (EU/UK)



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1. Introduction

Thanks for your purchasing of the WH0295 Wireless Indoor Air Quality Monitor which measures PM2.5, PM10, CO2 (NDIR based sensor) , Indoor Temperature and Humidity. To ensure the best product performance, please read this manual and retain it for future reference.

2. Get Started

Note: Power up sequence can be performed in the order shown in this section (insert batteries in the Air Quality Monitor first, then Sensor (transmitter)).

Attention:

- Do not mix old and new batteries
- Do not mix Alkaline, Standard, Lithium or Rechargeable batteries
- Ensure batteries are installed correctly with regard to polarity +/-
- If PM2.5 reading is permanently 0 or with a value extremely low after some period of use, it is very likely that the inlet air path was blocked. You may use a can of compressed air to blow into the inlet of the sensor(open the housing) to see if this can help fixing the problem.

2.1 Parts List

- 1 × 5-in-1 Air Quality Sensor (PM2.5 / PM10 / CO2 / Temperature / Humidity 5-In-1)
(PM2.5/PM10/CO2/Temperature/Humidity)
- 1 × WH0295 Display Console (Receiver)
- 1 × USB Cable
- 1 × User Manual

2.2 Air Quality Sensor Set Up

Remove the battery door on the base of the air quality sensor as shown in Figure 1

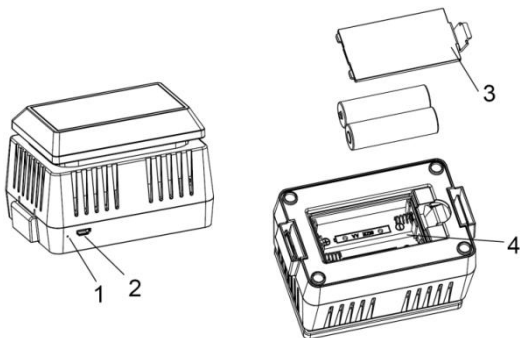


Figure 1

No.	Description	No.	Description
1	Red LED Indicator (RF transmission)	3	Battery Compartment Cover
2	AC Adapter USB Power Port	4	Battery Compartment

1. Insert two AA batteries (not included) and close the battery door.
2. Connect the USB cable between the sensor and an AC adapter (not included).

Note: After inserting the batteries or connecting AC power, the sensor LED indicator will light for 3 seconds – flash once after 20s , and then flash once per 1 minute thereafter. Each time it flashes, the sensor is transmitting data.

Note: The batteries (not included) are mainly for backup purpose.If only using battery power, alkaline batteries can only last for 2-3 days

2.3 Display Console Set Up

1. Move the remote about 2 to 3m away from the display console (if the sensor is too close, it may not be received by the display console).
2. Remove the battery door on the back of the display, as shown in Figure 2. Insert one AA (alkaline, lithium or rechargeable) battery (Not included) in the back of the display console.

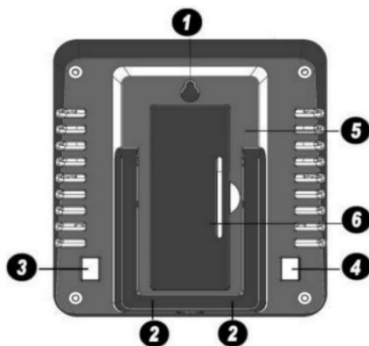
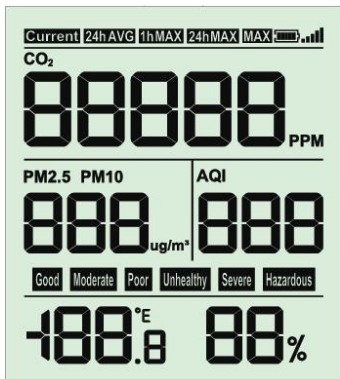



Figure 2

1. Integrated Hanging Hole
2. Tabletop Stand
3. °C/°F Button
4. MAX Button
5. Battery Compartment
6. Battery Compartment Cover

All of the LCD segments will light up for a few seconds to verify all segments are operating properly.



Full Display

3. Replace the battery door, and fold out the desk stand and place the console in the upright position.
4. The console will instantly display indoor temperature and humidity. The PM 2.5 value will update on the display within a few minutes. While in the search mode, the reception search icon  flash.

If the remote does not update, please contact our Customer Service for support.

2.3.1 Display Console Layout

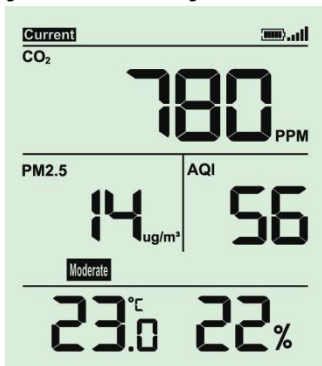


Figure 3

1. Data Indicator and Sensor status
2. CO₂
3. PM2.5/PM10
4. AQI index
5. Indoor Temperature and Humidity

3. Wireless Sensor Installation

Place the sensor on a horizontally surface. Note that the vents must be clear of any obstructions, and we recommend placement away from other electronic devices to prevent interference. Do not

place on a metal table to prevent RF signal loss.

Note: This sensor is designed for indoor use only. Wireless communication is susceptible to interference, distance, walls and metal barriers. We recommend the following best practices for trouble free wireless communication.

1. Electro-Magnetic Interference (EMI). Keep the console several feet away from computer monitors and TVs.

2. Radio Frequency Interference (RFI). If you have other devices using the same RF frequency and communication is intermittent, try turning off these other devices for troubleshooting purposes. You may need to relocate the transmitters or receivers to avoid intermittent communication.

3. Line of Sight Rating. This device is rated at 300feet line of sight (no interference, barriers or walls) but typically you will get 100feet maximum under most real-world installations, which include passing through barriers or walls.

4. Metal Barriers. Radio frequency will not pass through metal barriers such as aluminum siding. If you have metal siding, align the remote and console through a window to get a clear line of sight.

4. Console Operation

Note: The console has two buttons for easy operation: **【°C/°F】** button (on the left), and **【MAX】** button (on the right).

4.1 °C/°F

Short press **【 ° C/ ° F 】** button: switch between display of temperature unit: ° C/° F

Press and hold the **【 ° C/ ° F 】** button for 2 seconds: switch between display of the PM2.5 and PM10 data display.

4.2 MAX

Short press the **【 MAX 】** button: switch between display of current, 24h average, 1h MAX , 24h MAX and MAX(since last reset).


Press and hold the **【 MAX 】** button for 2s to clear current data and refilled with next measured value.

4.3 MAX + °C/°F

If both button pressed at the same time briefly, it will tell the display to turn on the receiver and search for

sensor for maximum 12minutes until the sensor signal is received.

If both button pressed and hold for 2s or longer, it will tell the display to erase the previously learned sensor ID and search for new sensor ID. This can be used when you have a new sensor to be paired with the display, or for the first time use, to erase any previously learned sensor and start as new. Please do this when you have no reception for sensor data upon first power setup.

While in the search mode, the reception search icon  flash.

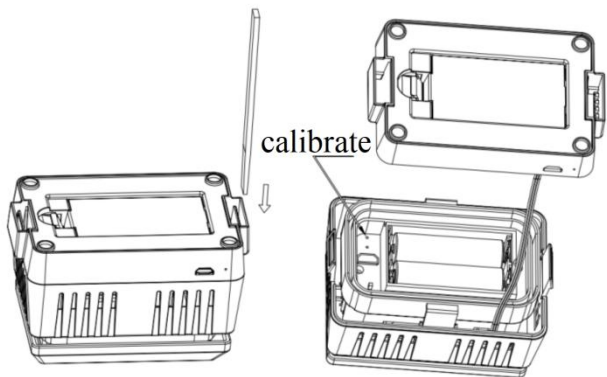
You can also re-sync the two units by removing all the batteries and then wait for several minutes. Then install the batteries again to register faster.

5. Sensor Calibration

CO2: There is an easy way to find the CO2 sensor is drifted or not: put the sensor in outdoor open air locations, away from any combustion exhausts, wait for 30 minutes, you should see the CO2 reading is 420ppm +/-10. If it is far from this reading, you can

wait for some more time, and test it during night to confirm. Once it is confirmed, you can open the back housing, and use a clipper pin to press the Calibrate button as below figure shows, leave it for 4minutes at least, because the calibration must be completed in a ventilated environment with Co2 fluctuations $<\pm 15\text{ppm}$ for 4 minutes, and the calibration will always be in the state if the conditions are not met. If the led flash, it indicates that calibration is not finished.

Note: When the CO2 sensor in calibration state, please do not stand near the sensor, otherwise it will affect the calibration result.



PM2.5: It is impossible to calibrate on the sensor side, and you can calibrate through WS View Plus App when paired with Wi-Fi Gateway or on the console when paired with HP2551/HP3500/HP3501, which saves the offset value on the gateway side before sending data to www.ecowitt.net server. However if PM2.5 data is persistently low, it can be that there is a spider net going inside the sensor. So please clean the sensor from time to time to see if there is any sign of spider penetration.

Note: If the battery level is lower than 4 bars, calibration is prohibited. When the led light on the sensor is steady for 3 seconds, it indicates that calibration is prohibited.

Usually it is not needed to make this calibration as the sensor has been calibrated in the factory before shipping. During time of use, the sensor can be drifted due to component aging reason, and we only recommend making this calibration when you know for certain that the sensor is not showing a correct value in free open air.

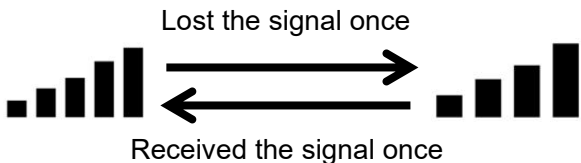
6. Best Practices for Wireless

Communication

Note: To insure proper communication, place the remote sensor on a flat surface. Do not lean or upside down it to avoid any damage.

Keep the console several feet away from computer monitors and TVs.

The wireless signal strength displays reception quality. If no signal is lost, the signal strength indicator will display 5 bars. If the signal is lost once, four bars will be displayed.



7. Appendix

Air Quality Index (AQI) for the PM_{2.5} Concentration (24hr)

AQI	Air Pollution Level	PM2.5 Concentration ug/m3	Health Implications	Cautionary Statement (for PM2.5)
0 - 50	Good	0.0-12.0	Air quality is considered satisfactory, and air pollution poses little or no risk	None
51 - 100	Moderate	12.1-35.4	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
101-150	Poor	35.5-55.4	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
151-200	Unhealthy	55.5-150.4	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion
201-300	Severe	150.5-250.4	Health warnings of emergency conditions. The entire population is more likely to be affected.	Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
300+	Hazardous	250.5+	Health alert: everyone may experience more serious health effects	Everyone should avoid all outdoor exertion

Air Quality Index (AQI) for the PM10 Concentration (24hr)

AQI	Air Pollution Level	PM2.5 Concentration ug/m3
0 - 50	Good	0-54
51 -100	Moderate	55-154
101-150	Poor	155-254
151-200	Unhealthy	255-354
201-300	Severe	355-424
300+	Hazardous	425+

Carbon Dioxide Levels and potential health problems are indicated below:

- 250-350 ppm: background (normal) outdoor air level
- 350-1,000 ppm: typical level found in occupied spaces with good air exchange
- 1,000-2,000 ppm: level associated with complaints of drowsiness and poor air
- 2,000-5,000 ppm: level associated with

headaches, sleepiness, and stagnant, stale, stuffy air; poor concentration, loss of attention, increased heart rate and slight nausea may also be present.

- >5,000 ppm: This indicates unusual air conditions where high levels of other gases also could be present. Toxicity or oxygen deprivation could occur. This is the permissible exposure limit for daily workplace exposures.
- >40,000 ppm: This level is immediately harmful due to oxygen deprivation.

Reference link:

<https://ohsonline.com/Articles/2016/04/01/Carbon-Dioxide-Detection-and-Indoor-Air-Quality-Control.aspx?Page=2>

8. Specifications

8.1 Wireless Specifications

- Line of sight wireless transmission (in open air):
300feet (100meters)

- Frequency: 433/915/868 MHz (optional)
- Update Rate: 1 minutes

8.2 Measurement Specifications (Sensor)

The following table provides specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution
PM 2.5	0~999ug/m ³	>100ug/m ³ , ±15% <100ug/m ³ , ±15ug/m ³	1ug/m ³
PM 10	0~999ug/m ³	>100ug/m ³ , ±25% <100ug/m ³ , ±25ug/m ³	1ug/m ³
CO ₂	0- 40000ppm	400-10000ppm ±(30ppm +3%)	1ppm
Temperature	-40°C – 60°C (-40°F - 140°F)	± 1°C, or ± 2°F	0.1°C, or 0.1°F
Humidity	1%~99%	± 5%	1%

8.3 Power Consumption

- Display Console : 1 x AA Alkaline or Lithium batteries (not included)
- 5-in-1 Air Quality sensor : 2 x AA Alkaline or Lithium batteries (not included)
- USB mini-B type cable to be connected from a USB power port with 1.0A current supply is needed. The peak current during air sensing is about 0.3A and happens at once per minute frequent.

9. Warranty Information

We disclaim any responsibility for any technical error or printing error, or their consequences. All trademarks and patents are recognized.

We provide a 1-year limited warranty on this product against manufacturing defects in materials and workmanship.

This limited warranty begins on the original date of purchase, is valid only on products purchased and only to the original purchaser of this product. To

receive warranty service, the purchaser must contact us for problem determination and service procedures.

This warranty covers only actual defects within the product itself, and does not cover the cost of installation or removal from a fixed installation, normal set-up or adjustments, claims based on misrepresentation by the seller or performance variations resulting from installation-related circumstances.