

DP250 5-In-1 CO2/PM2.5/PM10/Temperature/Hum idity Indoor Air Quality Sensor

Manual (EN)

The logo for froggit.de, featuring the word "froggit" in a bold, lowercase sans-serif font, followed by ".de" in a smaller, lowercase sans-serif font. The entire logo is centered within a light gray rectangular background.

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1. Introduction

Thanks for your purchasing of this integrated multifunction indoor air quality monitoring sensor. It measures PM2.5 / PM10 / CO2 / Temperature / Humidity. To ensure the best product performance, please read this manual and retain it for future reference.

2. Unpacking

Open your box and inspect that the contents are intact (nothing broken) and complete (nothing missing). Inside you should find the following:

QTY	Item Description
1	Particle Detection Sensor (PM2.5 / PM10 / /CO2 / Temperature / Humidity 5-In-1)
1	USB Cable
1	User Manual

Table: Package content

If any component is missing from the package, or broken, please contact our Customer Service department to resolve the issue.

3. Features

Particle Detection Sensor

- Measures indoor PM2.5, PM10, CO₂ concentration, Temperature and Humidity every 60 seconds when powered with USB or detecting every 10 minutes when powered with batteries only.
- USB connection for indoor use only
- CO2 value calibration function available on the device
- PM2.5 value Calibration function available when paired with DP1500/HP1000SE PRO / HP1000SE PRO Ultrasonic
- Long wireless range, up to 100 meters in open areas

When paired with a DP1500 Wi-Fi Gateway:

- Monitor live sensor data on the Live Data page of the WS View app (requires the gateway and your phone using the same Wi-Fi network)
- Displays current PM2.5 / PM10 concentration/AQI and 24H AQI and air quality level index on the Live Data page of the WS View app
- Displays current CO₂ concentration and 24H average CO₂ concentration on the Live Data page of the WS View app
- Displays temperature and humidity data where the sensor located
- Calibration function available for PM2.5 value

When paired with a Weather Station Console (HP1000SE PRO / HP1000SE PRO Ultrasonic):

- The PM2.5, PM10 and CO₂ data automatically

scrolls displaying on the screen every 5 seconds

- Calibration function available for PM2.5 value

When uploaded to Ecowitt.net Weather Server:

- View current sensor data & history records & graph on the website
- Set and receive email alerts from the server
- Remote monitoring with smart phone, laptop, or computer by visiting the website

4. Sensor Set Up

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

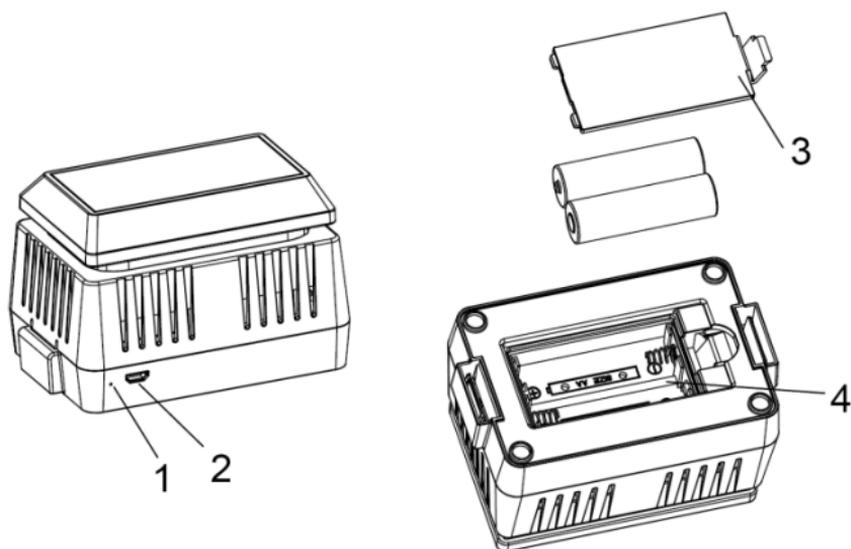


Figure 1

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

2. Insert two AA batteries and close the battery door.

Note: The batteries (not included) are mainly for backup purpose.

3. 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 (10 minutes if only powered by batteries). Each time it flashes, the sensor is transmitting data.

5. Sensor Installation

Before install the sensor into its permanent location, you may go to Section 6 to configure with the gateway first. Once the sensor has been confirmed working correctly, then you can go back here.

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.

6. Wi-Fi Configure with DP1500

This Particle Detection Sensor doesn't have a display function and you need to use our WS View App to view the data on your mobile application after pairing this device with our DP1500 Wi-Fi Gateway or HP1000SE PRO / HP1000SE PRO Ultrasonic console (all sold separately).

6.1 Pair with DP1500

If DP1500 has been in operation, and you have never had any DP250 sensor setup before, just power up the sensor and DP1500 will pick sensor data automatically.

If a DP250 sensor has been hooked on DP1500 before, and you have a new sensor to replace the old one, just power off the old sensor and power on the new sensor, open the APP: WS View, tap the device and go to sensor ID page, locate the DP250 sensor, select "Register", then the gateway will erase the previous registered sensor and have the new sensor paired.

6.2 Wi-Fi Connection for the DP1500

For this part, please refer to the manual of the DP1500 Wi-Fi gateway.

Any question, please contact the customer service.

7. View Online Data on WS View

When the Wi-Fi configuration is done, you can view the live data of your sensor on the WS View application.

Device List		Live Data	More
GW1000B-WIFI38B4			
Indoor Temperature		Indoor Humidity	
30.1 °C		71 %	
Absolute Pressure		Relative Pressure	
992.3 hPa		992.3 hPa	
CO2 DC			
Temperature		Humidity	
32.5 °C		63 %	
PM2.5	Real-time AQI	24H AQI	
1.6 ug/m ³	7 Good	21 Good	
PM10	Real-time AQI	24H AQI	
2.3 ug/m ³	2 Good	6 Good	
CO2		24H CO2	
463 ppm		507 ppm	
GW1000B_V1.6.3			

Note:

The DP250 sensor data can be only viewed on the Live Data interface since it doesn't support uploads to weather underground.

If you choose to upload the data to the Ecowitt.net weather server: <https://www.ecowitt.net>, you can view the live data/history graph and download the records on the website. You can add a shortcut of the website on the home screen of your phone for quick access.

8. Appendix

Air Quality Index (AQI) for the PM2.5 Concentration (24hr)

AQI	Air Pollution Level	PM2.5 Concentration ug/m³
0 - 50	Good	0.0-12.0
51 -100	Moderate	12.1-35.4
101-150	Poor	35.5-55.4
151-200	Unhealthy	55.5-150.4
201-300	Severe	150.5-250.4
300+	Hazardous	250.5+

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

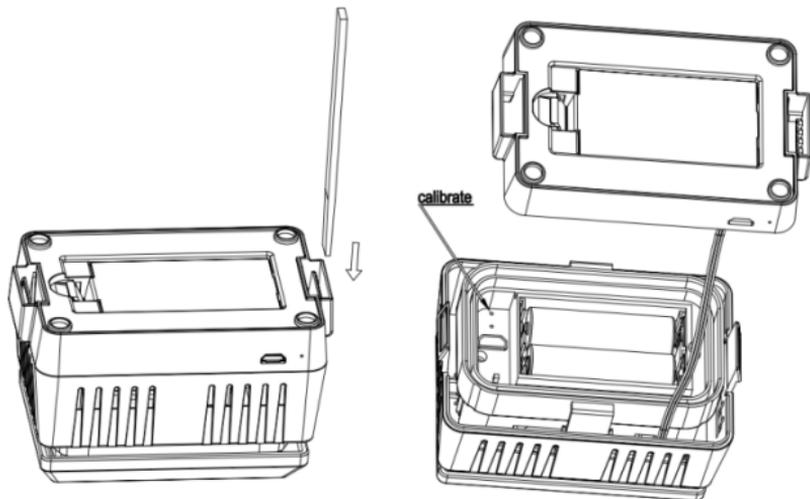
- 1,000-2,000 ppm: level associated with complaints of drowsiness and poor air
- 2,000-5,000 ppm: level associated with headaches, sleepiness, and stagnant, stale, stuffy air; poor concentration, loss of attention, increased heart rate and slight nausea may also be present.
- >5,000 ppm: This indicates 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>

9. 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 30s, and the reading will be shifted back to 420ppm.



PM2.5: It is not possible to calibrate on the sensor side, and you can calibrate through WS View App when paired with DP1500 or on the console when paired with HP1000SE PRO / HP1000SE PRO Ultrasonic, 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.

10. Specification

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	0%~99%	± 5%	1%

Transmission distance in open field: 100m

Frequency: 868Mhz

Sensor reporting interval: 1 minute (10 minutes when only powered by batteries)

Power consumption

- Particle Detection Sensor: AC power (5V 1A) - Not included
2 x AA 1.5V Batteries for back up - Not included

Note:

If you have a DP200 PM2.5 sensor, the reading of PM2.5 may be different due to different sensor type used.

General safety instructions

Danger of asphyxiation:

Keep all packaging materials (plastic bags, rubber bands, etc.) away from children. There is a danger of suffocation!

Danger of burns:

Caution! Leaking / leaking battery acid can lead to burns! Avoid contact of battery acid with eyes, mucous membranes and skin. In case of contact, rinse the affected areas immediately with clear water and consult a doctor.

Risk of electric shock:

Children must not be unattended with the device, because the device contains electronic parts which are operated by means of a power source. The device may only be used as described in the instructions. If not, there is a risk of electric shock.

Danger of fire & explosion:

Use only recommended batteries. Never short-circuit the unit or batteries. Never throw the device or batteries into a fire! Overheating and improper handling may result in short circuits which can cause fires and explosions.

Important:

If there is a defect, contact your dealer immediately. Never disassemble the device! The dealer will contact the

service department. Never expose the device to water! Protect the device from vibrations. Only use recommended batteries. Never mix batteries - Always replace empty batteries with a complete set of full power batteries. If the unit is not powered for a longer period of time or is not in use, remove the batteries from the unit. The manufacturer accepts no liability for incorrectly inserted batteries!



Notes on the return of batteries according to §12
BatterieVO: Batteries do not belong in the household waste. Please dispose of all batteries as required by law, disposal in domestic waste is expressly prohibited. Batteries and rechargeable batteries can be dispensed free of charge at municipal collection points or in the shops on the spot.

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WEEE Reg. Nr. 66110125

declaration of conformity

Hereby we declare, HS-Group GmbH & Co.KG,
Escherstr. 31, 50733 D-Cologne, that this product is in
compliance with the essential requirements and other
relevant provisions of Directive 2014/53/EU.

The declaration of conformity for this product can be
found at: www.froggit.de or on request.