

# Black Globe Thermometer

Model: WN38



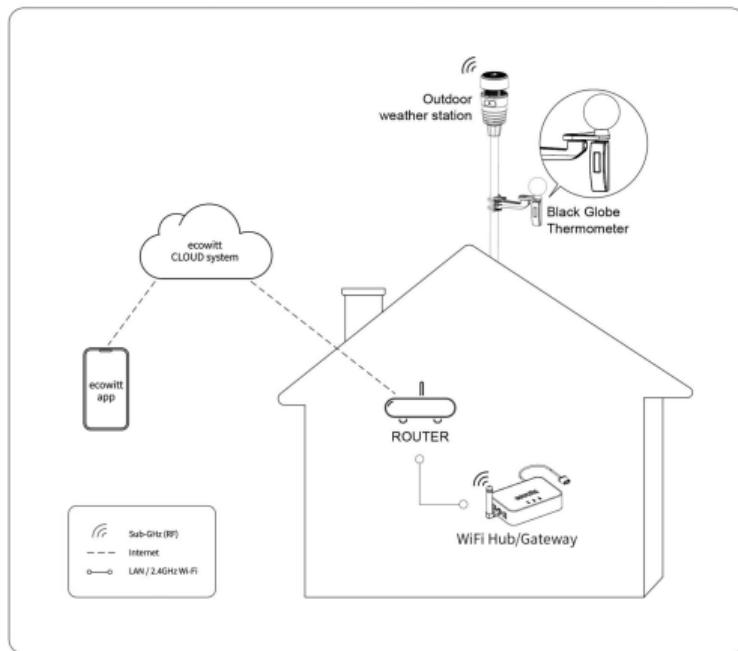
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# 1. Introduction



**Figure 1**

Thanks for purchasing this **WN38** black globe thermometer.

The **WN38 Black Globe Thermometer** measures and displays the **black globe temperature only**, which can be viewed on the **LCD screen** or through the **Ecowitt or WS View Plus app**.

To display **WBGT (Wet Bulb Globe Temperature)** data in the app, the WN38 must be used **together with other Ecowitt outdoor temperature and humidity sensors**. We strongly recommend using them in combination for **complete WBGT monitoring**.

The collected data can be **transmitted** via an **Ecowitt Wi-Fi Gateway** or **displayed on a compatible receiver console** (both sold separately). Once Wi-Fi configuration is completed, data can be viewed in real time through the **Ecowitt app, WS View Plus app, or on the receiver console**.

To ensure the best product performance, we recommend that you read this manual and keep it for future reference.

## **General Terms Used in the Manual:**

### **Gateway:**

Also known as a hub, it is a display-less console

## **Receiver:**

Refers to the console.

## **RF:**

Radio frequency.

It refers to the ISM and SRD Sub-G (Industrial, Scientific and Medical and Short-Range Devices frequency bands below 1 GHz) for communicating between the console and its sensors. This frequency is not the same as the 4G modem (LTE) or Wi-Fi working frequencies (2.4 GHz, 5 GHz). ISM/SRD bands are kept separate from 4G frequencies by national regulations to avoid interference. Typical ISM/SRD frequencies are 915MHz(Americas), 868MHz(Europe), 433MHz(worldwide), 920MHz (Japan, Korea).

## **2. Pairing with a Gateway / Console**

You need to pair this thermometer with the Ecowitt Wi-Fi Gateway or consoles in order to view data on your Ecowitt app and receive email alerts on our weather server. Compatible models are listed in the table below.

Gateways			
			
GW1200	GW2000	GW3000	WS6210

**Table 1**

Display Consoles			
			
WN1700	WN182X	WN1920	WN1980
			
HP25XX	WS38XX	WS39XX	

**Table 2**

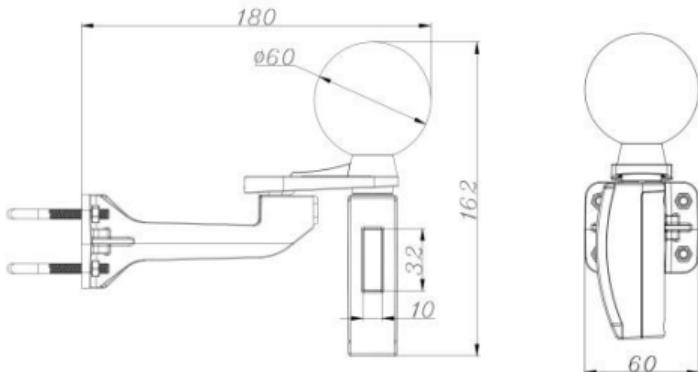
### 3. Instructions for Use

#### 3.1 Parts List

1	Black globe thermometer	Tools and Accessories
1	Mounting bracket	
1	User Manual	
2	U-Bolts for mounting on a pole	
4	Threaded nuts for U-Bolts (M6 size)	
1	SUS304 M3*12 Screw (For horizontal installation)	
1	SUS304 M3*24 Screw (For vertical installation)	
4	PA4.8×32 Screws(For vertical installation)	
1	L-shaped Hex Wrench	
1	8 mm Single-Head Wrench (Carbon Steel)	

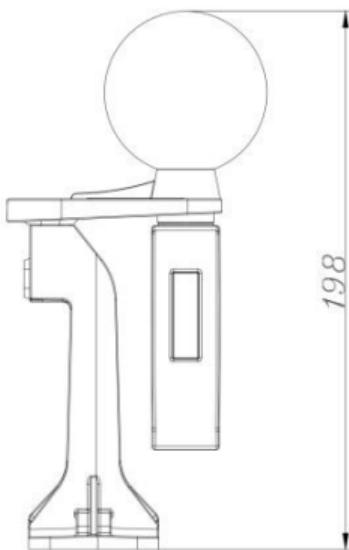
## 3.2 Views and Sizes

### 3.2.1 Horizontal installation



**Figure 2**

### 3.2.2 Vertical installation



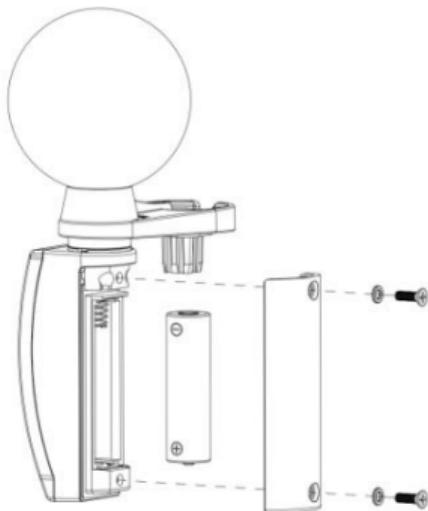
**Figure 3**

## 4. Setup Guide

The default unit is in °C. If you need to change the unit to °F, please do so at this step.

## 4.1 Unscrew the screws

1. Unscrew the screws on the LCD unit and remove the cover. Make sure not to lose the screw sealing gaskets.



**Figure 4**

## 4.2 Unit setting

### Unit Switch

Before inserting the batteries, set the unit first.

- "1" represents the unit in °C.
- "ON" represents the unit in °F.



**Figure 5 The unit switch**

### 4.3 Find the sensor ID

The Sensor ID is labeled inside the battery compartment, as illustrated below. Please note the ID number for future reference when comparing it to the Sensor ID displayed on the APP or console display.



**Figure 6**

## **4.4 Power up**

Insert 1 AA battery.

## **4.5 Close the battery door.**

Close the cover and securely tighten the screws to prevent water leakage. Ensure that the screw gaskets are not lost. If the gaskets are missing, the battery cover may not tighten properly, leading to waterproofing issues.

## **4.6 Initial displays after power up**

Firstly, the display will show version number 34. Secondly, the whole display will show for 3 seconds. After that, the display measures and displays temperature data.

	Version umber
	Full Display
	Normal Display

**Table 3**

## 5. View Online Data on Ecowitt APP

Once the Wi-Fi configuration is complete, the **WN38 thermometer** data can be viewed on the Ecowitt app.

To display **WBGT (Wet Bulb Globe Temperature)** data in the app, the WN38 must be used **together with** an Ecowitt outdoor temperature and humidity sensor from either an outdoor array or a WN32 sensor. We strongly recommend using the WN38 in combination with an outdoor T&H sensor for complete **WBGT monitoring**.

- You can modify the text/caption of the tile by tapping on “...” 
- Tap “  ” to get graph of history data.



Figure 7: BGT tile without an outdoor T&H sensor



**Figure 8: BGT tile with an outdoor T&H sensor**

The app will provide the corresponding **heat risk level** based on the **current WBGT** data: **Minimal, Low, Moderate, High, Extreme**.

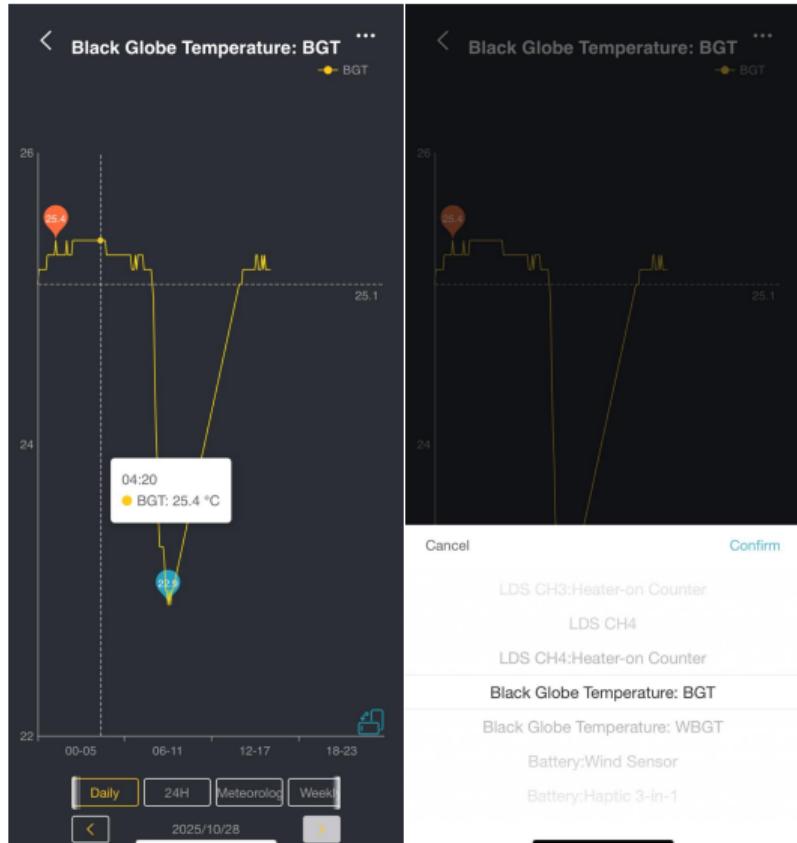


Figure 9 History data

## 6. Mounting

The accessory bracket supports two installation methods: horizontal or vertical installation. You can choose the installation method and proper screw according to your needs.

### 6.1 The WBGT index formula

The WBGT index used in this product is calculated as follows:

#### WBGT (in the presence of solar radiation)

$$= 0.7 \times \text{wet-bulb temperature} + 0.2 \times \text{globe temperature} + 0.1 \times \text{dry-bulb temperature}$$

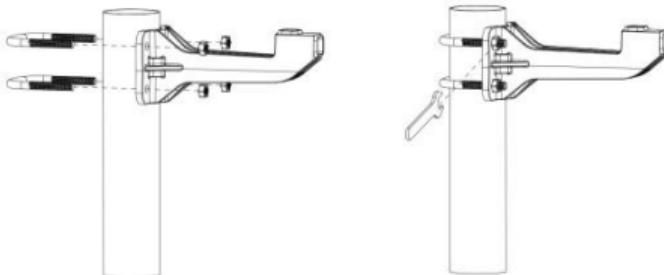
### 6.2 Siting

- The black globe thermometer should be mounted in a **shadow-free location representative of the environmental conditions**, at a height of **approximately 1.2 - 1.5 m (4 - 5 ft)**.
- Place it on **grass or bare soil**, avoiding concrete or highly reflective surfaces.
- The site should be flat and well-ventilated, and all related sensors should remain on the **same horizontal plane**, clear of obstructions and heat sources.

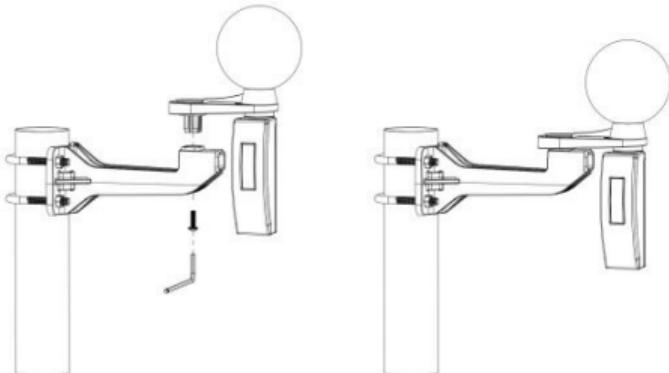
## 6.3 Horizontal installation

For vertical mounting poles, you can choose this installation method.

- **Step 1:** Fix the mounting bracket to the pole with the U-bolts. Use the single-head wrench to tighten the bolts securely.



- **Step 2:** Attach the WN38 thermometer onto the bracket. Tighten it with the shorter screw using the L-shaped hex wrench.

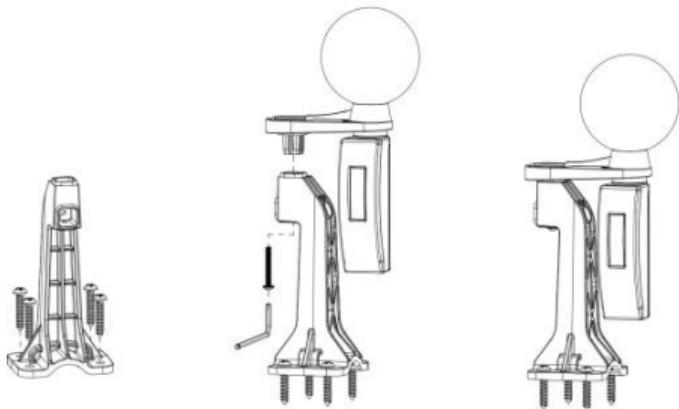


**Figure 10**

## 6.4 Vertical installation

For **horizontal mounting** poles, you can choose this installation method.

- Step 1: Fix the mounting bracket to the pole using the 4 screws.
- Step 2: Attach the WN38 thermometer onto the bracket. Tighten it with the longer screw using the L-shaped hex wrench.



**Figure 11**

## 7. Calibration

If you have a **reliable source** to calibrate the black globe thermometer, you may calibrate the offset on the Ecowitt App, or the console.

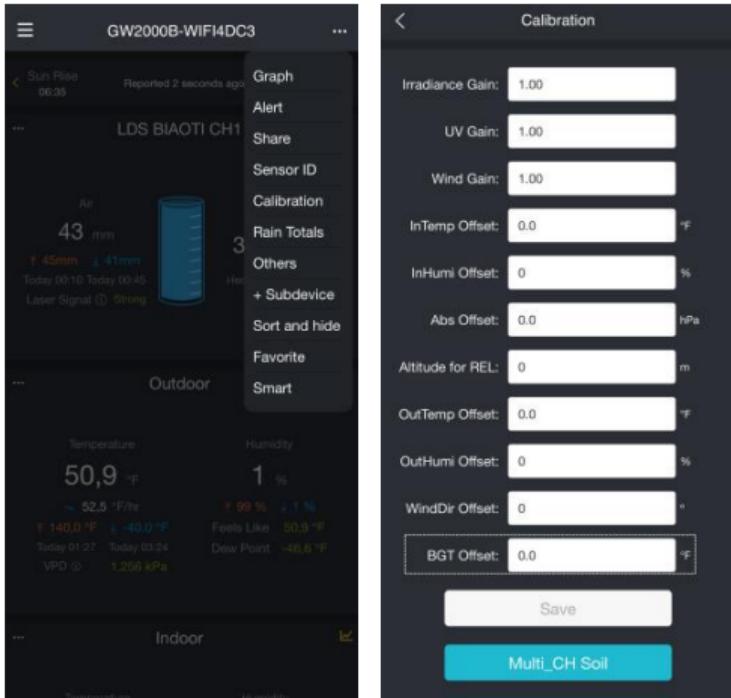


Figure 12

Open ecowitt APP → "..." → "Calibration" → "BGT Offset" → "Save".

## 8. Set Email Alerts

Once your device is added successfully on the Ecowitt Weather server, you may set alerts for the **WN38 thermometer** on the website to get email notifications.

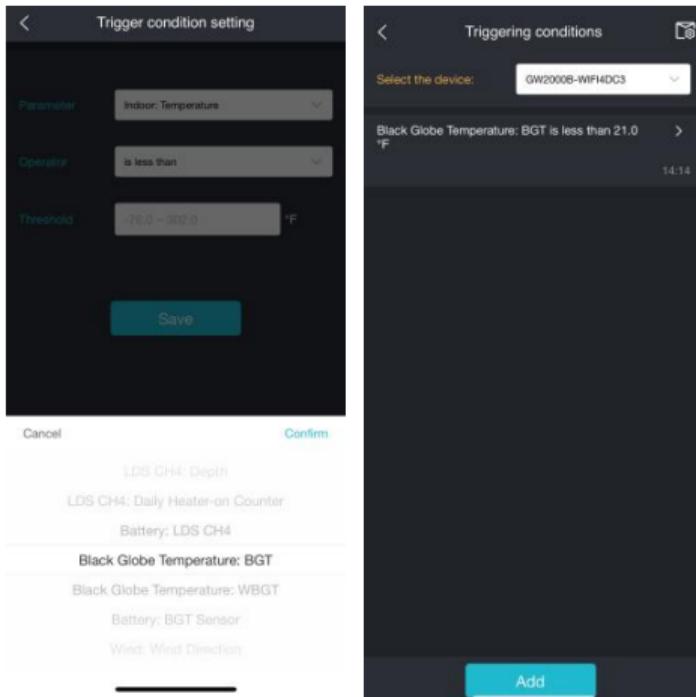


Figure 13

# 9. Features

## 1. Core Measurement Function

- **Accurate Black Globe Temperature Measurement:**  
Equipped with a standard-diameter black silicone sphere and a centrally positioned high-precision thermometer to ensure reliable black globe temperature readings.

## 2. Wireless Communication and Power Supply

- **Ultra-Low Power Wireless Transmission:**  
Utilizes optimized FKS RF protocol for stable and efficient data transmission.
- **Multi-Frequency Support:**  
Available in fixed 433 MHz, 868 MHz, and 915 MHz versions to comply with regional frequency regulations worldwide.
- **Long Communication Range:**  
Provides a stable wireless range of at least 100 meters under line-of-sight conditions, suitable for most outdoor installations.
- **Long Battery Life:**  
Powered by one AA battery. With ultra-low power design, the expected battery life is up to **12 months** (depending on reporting interval).

### 3. Durability and Installation

- **Waterproof Design:**  
Rated IP66 for full protection against dust and water, suitable for continuous 24/7 outdoor operation.
- **Professional Mounting Bracket:**  
Comes with an adjustable mounting bracket for secure installation on standard-diameter poles, ensuring proper measurement height and minimizing heat source interference.

## 10. Specification

Model	WN38
Name	Black Globe Thermometer
Dimensions	180×162×60(mm)
Material of Plastic Casing	PBT、ABS
Screen Size	32×9.8(mm)
Material of Screen	TN-LCD
Black globe diameter	φ60 mm
Black globe material	Brass with a matte black coating on the surface

Weight	247(g)
Reading Update Interval	About 1 minute
RF Connection Frequency	920/915/868/433MHz (depending on local regulations)
RF Wireless Range	Over 100 meters (in open areas)
Operating Temperature Range of LCD Screen	-10°C to 50°C(14°F to 122°F)
Operating Temperature Range of the Plastic Casing	-40°C to 60°C(-40°F to 140°F)
Waterproof Rating	IP66
Power Supply	1 AA Battery (not included)
Battery Life	1 Year
Temperature Metering Range	-40°C to 125°C (-40°F to 257°F)
Temperature Metering Accuracy	±1°C (±1.8°F)
Temperature Metering Resolution	0.1°C (0.2°F)

**Table 4**

## 11. Warranty

We disclaim any responsibility for any technical error or printing error or the consequences thereof.

All trademarks and patents are recognized.

We provide a 2-year limited warranty on this product against manufacturing defects or 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 limited 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, or claims based on misrepresentation by the seller, or performance variations resulting from installation-related circumstances.

## 12. FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference (1) this device may not cause harmful interference, and (2) this device must accept any interference received,

including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

IC Caution:

English:

This device contains licence-exempt transmitter(s) /receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

## 13. Battery Care and Maintenance

When batteries of different brand or type are used together, or new and old batteries are used together, some batteries may be over-discharged due to a difference of voltage or capacity. This can result in venting, leakage, and rupture and may cause personal injury.

- Do not mix Alkaline, Lithium, standard, or rechargeable batteries.
- Always purchase the correct size and grade of battery most suitable for the intended use.
- Always replace the whole set of batteries at one time, taking care not to mix old and new ones, or batteries of different types.
- Clean the battery contacts and also those of the device prior to battery installation.
- Ensure the batteries are installed correctly with regard to polarity (+ and -).
- Remove batteries from product during periods of non-use. Battery leakage can cause corrosion and damage to this product.
- Remove used batteries promptly.
- For recycling and disposal of batteries, and to protect the environment, please check the internet or your local phone directory for local recycling centers and/or follow local government regulations

# 14. Contact Us

## 14.1 After-sales Service

### Order Issues:

If you encounter any missing or incorrect shipments of Ecowitt products purchased, please reach out to the respective platform's customer service from the store where you bought the product for assistance.

### Usage Inquiries:

Our product is continuously changing and improving, particularly online services and associated applications. To download the latest manual, and additional help, and for any issues related to product usage feel free to contact our customer support team at [support@ecowitt.com](mailto:support@ecowitt.com). We are committed to providing assistance and resolving any concerns you may have.

## 14.2 Stay in Touch

Ask questions, watch setup videos, and provide feedback on our social media outlets. Follow Ecowitz on Discord, YouTube, Facebook and Twitter.



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