ecowitt®

WiFi Rain Gauge Receiver
User Manual
Model: WN1700

https://s.ecowitt.com/S202X8

Table of Contents

1. Introduction

Figure 1

Thanks for your purchasing the WN1700 High Precision WiFi console with focus on rain data Rain Gauge.

The WN1700 is a WiFi weather data receiver equipped with an LCD display and built-in temperature & humidity sensor and barometric pressure sensor. It is designed to support two primary modes of operation:

● **Rainfall Display Console** – When paired with a rain sensor (e.g., WN20, WH40/WH40H, WS69, WS85 or WS90 models), the WN1700 operates as a dedicated rainfall data display

console.
It can display real-time rainfall data, including traditional tipping bucket and piezoelectric rainfall measurements, along with temperature and humidity readings.

- **Wireless Sensor Gateway** – The WN1700 can also be used as a gateway device to receive data from multiple Ecowitt sensors. Through its built-in Wi-Fi and WebUI, users can view sensor data, configure server upload settings, calibrate sensor values, and manage Sensor IDs conveniently. In combination with the Ecowitt app and WSView Plus app users can access and control all available features.

This device is not meant to be a standalone product and needs to be used with other Ecowitt sensors. Otherwise it will only display time, date and indoor temperature/humidity.

To ensure the best product performance, please read this manual and retain it for future reference.

General Terms Used in the Manual:

Weather Station: Consists of the console and sensors (or sensor array).

Receiver: Refers to the console.

Transmitter: Refers to the sensor or sensor array.

RF: Radio frequency. It refers to the ISM and SRD SubG (Industrial, Scientific and Medical and Short Range Devices frequency bands below 1 GHz) for communicating between the sensors and a console. 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 interferences. Typical ISM/SRD frequencies are 915MHz(America), 868MHz(Europe), 433MHz(worldwide), 920MHz (Japan, Korea).

2. Unpacking
2.1 Part list

QTY	Item
1	WN1700 WiFi Display Console
1	User manual
1	DC to USB Cable (the power adapter has to be user provided)
1	Quick Start

Table 1: Package content

2.2 Views and Sizes
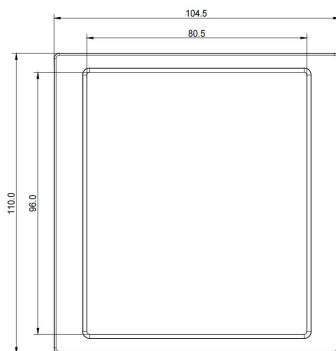
Figure 2 Main view
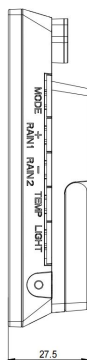
Figure 3 Side view
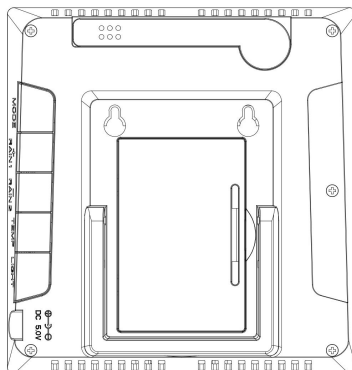
Figure 4 Rear view

3. Set up Guide

3.1 Power up
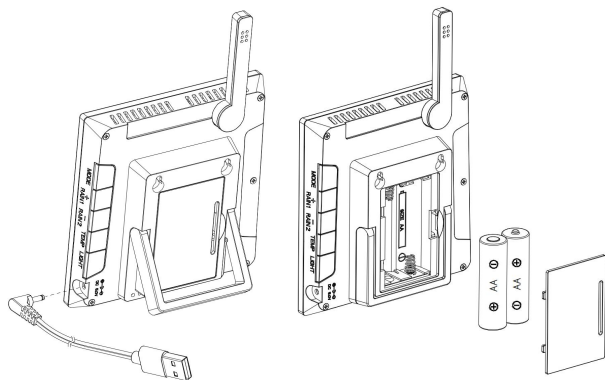
Figure 5 DC power or Battery power

3.1.1 Via DC power

Plug a 5V 1A power adapter into a wall outlet, connect the USB cable and then connect it to the Power socket on the back of the console. The device will power on and automatically enter the pairing mode.

🗒 **Note:**

● When powered by DC input, all features are enabled, including Wi-Fi connectivity, sensor

data reception, and server upload.

3.1.2 Via batteries (not included)

3.1.2.1 Battery usage warning：

- Ensure batteries are installed with correct polarity (+/-).
- Only use new batteries.

Insert 2 fresh AA batteries (not included) into the battery compartment to power the station on.

Note:

- It can run for about 20 days.
- Provide local display functionality only!
  Displays only rainfall and indoor or outdoor T&H data.
- Wi-Fi and other sensor receiving functions disabled.
- Data uploading to the cloud platform function disabled.

Figure 6 Software Version Num. and Freq. Layout
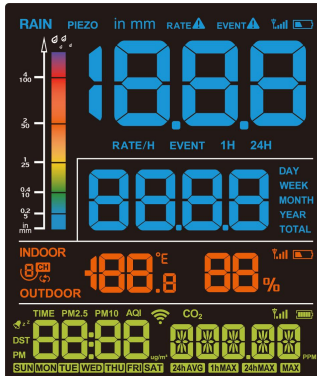
Figure 7 Full Screen Display Layout
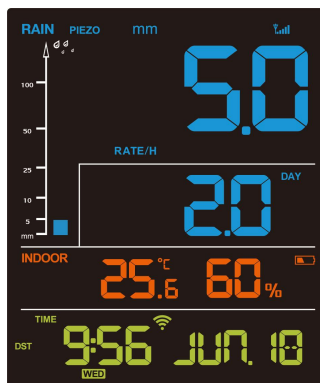
Figure 8 Normal Display Display Layout

To ensure proper communication, mount the console upright on a vertical surface, such as a wall. Do not lay the console flat.

During power-up the software version number and frequency are displayed for 1 second, then the full screen layout is displayed for 3 seconds before entering normal mode.

3.1.3 Voltage Monitoring

● When using DC power only(no batteries inserted), the device may still display a low battery icon. This is normal and does not affect functionality. You can safely ignore this icon

when DC power is connected.

● If the battery voltage is less than or equal to 2.5V, the low battery icon will appear. When the voltage recovers, it must reach above 2.6V for the icon to disappear.

3.2 Viewing data
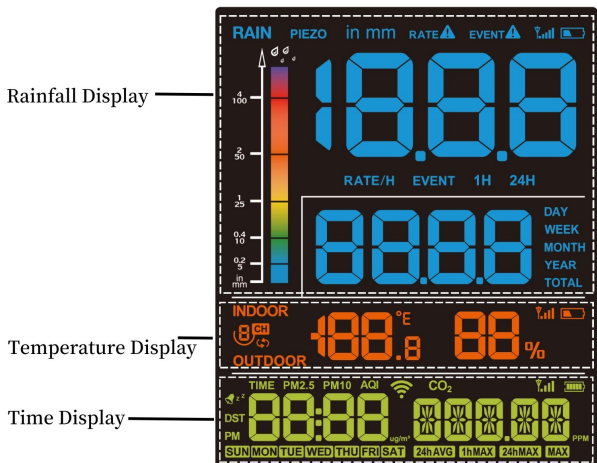
Figure 9 Full Screen Display Layout

3.2.1 Rainfall display
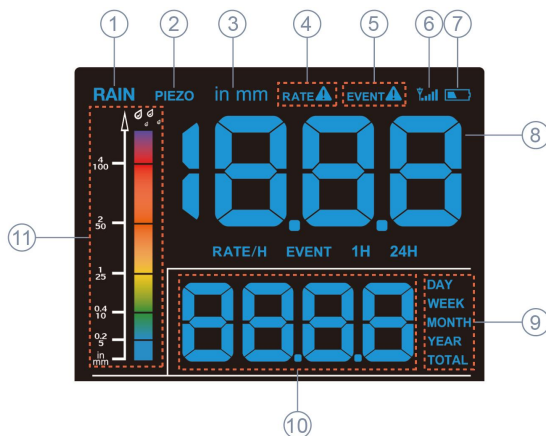
Figure 10

1	Rain display	7	Battery bar
2	PIEZO Icon*	8	Value for the chosen observation (rate, event, 1 h, 24 h)
3	Rainfall Unit		Current Displayed Parameter for the area
4	Rain Rate Alert	9	History data time frame chosen (day, week, month etc.)

5	Rain Event Alert	10	Value for time frame
6	Signal bar	11	Rainfall Bar Graph*

Table 2

3.2.1.1 PIEZO Icon*

If a piezoelectric rain gauge is selected, the PIEZO icon will be displayed on the screen.

If a traditional rain gauge is selected, no PIEZO icon will be shown.

3.2.1.2 Rainfall Bar Graph*

The rainfall bar graph corresponds to the RAIN1 display selection (rain rate or event) and is displayed in 6 levels based on the rainfall amount.
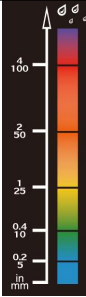
	Level	Metric (mm)	Imperial (in)
	Level 6	> 100 mm	> 4 in
	Level 5	50.1 – 100 mm	2.01 – 4 in
	Level 4	25.1 – 50 mm	1.01 – 2 in
	Level 3	10.1 – 25 mm	0.41 – 1 in
	Level 2	5.1 – 10 mm	0.21 – 0.4 in
	Level 1	0.1 – 5 mm	0.01 – 0.2 in
	Level 0 (nothing shown)	0 mm	0 in

Table 3

3.2.2 Indoor/ Outdoor temperature display

Figure 11

1	Outdoor Temperature	5	Unit (°C / °F)
2	Channel number for WN30/31/36 sensors	6	Corresponding Humidity value
3	Indoor Temperature	7	Signal quality bars
4	Temperature value	8	Battery bars

Table 4

3.2.3 Time & Date display
air quality display (future feature)
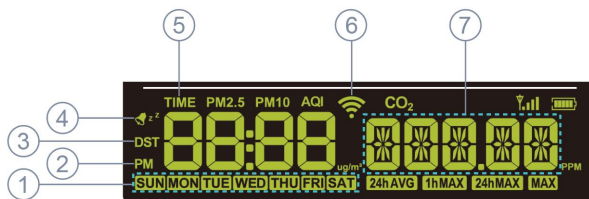
Figure 12

1	Weekday	5	Time mode
2	PM when in 12h mode	6	WiFi Icon
3	DST indicator	7	Date display
4	Alarm indicator		

Table 5

Only time data is supported for display in this area currently.

3.2.4 Backlight Function

1. Backlight Levels:

4 (Max), 3 (High), 2 (Medium), 1 (Low), OFF

2. When powered by batteries only:

● The default backlight level is set to Level 1 and cannot be adjusted.

● Pressing any button will turn on the backlight.

● The backlight will automatically turn off after 15 seconds of no operation.

3. When powered by DC adapter:

● The default backlight level is Level 2.

● Short press the LIGHT button to cycle through the backlight levels:
MAX → High → Medium → Low → OFF

3.3 Button operations and Different Operating Modes

There are five operating modes available: Normal Mode, Setting Mode, Alarm/Alert Setting Mode, Calibration Mode, and MAC Address Display Mode.

The following section describes the button functions in each mode.

3.3.1 Button Operations

Figure 13 Buttons

There is a set of five buttons on the right back side of the display console. **MODE**、**+ / RAIN 1**、**- / RAIN 2**、**TEMP**、**LIGHT**.

The following table briefly explains the function of these buttons.

Button	Description
MODE	Press to switch the Mode between **Normal Mode, Alarm/Alert Setting Mode, Calibration Mode, MAC address display**

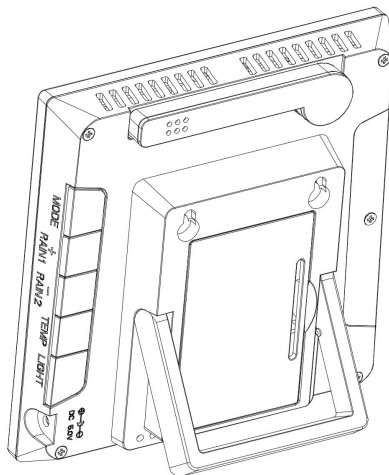|	Mode.
	Hold for 2 seconds to enter the **Setting Mode**.
+ **RAIN 1**	Press to switch the display between RATE, EVENT, 1H, and 24H (in normal mode).
	Press to increase a value (+) in Setting Mode.
	Hold for over 5 seconds to clear the currently displayed Rain Rate, Rain Event, or Rainfall Total data.
- **RAIN 2/**	Press to switch the display between DAY, WEEK, MONTH, YEAR, and TOTAL (in normal mode).
	Press to decrease a value (–) in Setting Mode.
	Hold for over 5 seconds to clear the currently displayed Day, Week, Month, Year, or Total rainfall data.
TEMP	● Short Press the TEMP button to cycle manually through the display: INDOOR → OUTDOOR → CH1 → CH2 → CH3 → CH4 → CH5 → CH6 → CH7 → CH8 → (automatic cycling – change after 3 seconds). ● Hold for 2 seconds while viewing a specific channel to re-register the corresponding sensor. ● When in repeat display mode, holding the TEMP button for 2 seconds, all 8 channels will be registered again.

TEMP & + RAIN 1	Hold for 2s to enter Wi-Fi configuration mode
LIGHT	When powered by DC, each short press on the main screen cycles the backlight through the following levels: MAX → High → Medium → Low → OFF.
	Press to revert to Normal Mode when in other modes.
MODE + LIGHT	Hold for 5s to reset the device to factory defaults and reboot it. All user settings and parameters will be erased.

Table 6 Console buttons

3.3.2 Normal Mode

Description:
In Normal Mode, the device displays real-time data. You can switch between different rainfall displays using the RAIN 1/+ and RAIN 2/- buttons.

Using the RAIN 1/+ button:

● **Function: Cycles through:**

◆ Rain Rate (/H)

◆ Rain Event

◆ Rainfall Total for 1 Hour

◆ Rainfall Total for 24 Hours

● **Note:** Holding the RAIN1 / + button for over 5

seconds clears the currently displayed rainfall data.

Using the RAIN2 / - **button:**

- **Function: Cycles through:**
    - ◆ Rainfall for the Day
    - ◆ Rainfall for the Week
    - ◆ Rainfall for the Month
    - ◆ Rainfall for the Year
    - ◆ Total Rainfall
- **Note:** Holding the RAIN 2/- button for over 5 seconds clears the currently displayed rainfall data.

3.3.3 Setting Mode

Note: most of the below settings shown, the calibrations and more can also be set/changed in the WebUI of the console. Network settings are WebUI only.

Entering Setting Mode:

While in Normal Mode, hold the MODE button for 2 seconds. The first setting parameter will begin flashing. You can press MODE again to skip any step.

Available Settings:

- Beep On/Off
- 12/24 - Hour Format
- Manual Time Setting (Hours/Minutes)
- Date Setting (Year/Month/Day)
- Temperature Unit (°C/°F)
- Rainfall Unit (in/mm)
- Rain Sensor Priority Selection (Traditional / Piezoelectric)

Operation Tips:

- Use the RAIN 1/+ or RAIN 2/- buttons to change or scroll through values.
- Holding these buttons for 2 seconds accelerates the change.
- The device will revert to Normal Mode if idle for 30 seconds or by pressing the LIGHT button.

3.3.4 Alarm/Alert Setting Mode

The factory default rain rate alarm is set to 1.0 mm/h, and the rain event alarm is set to 1.0 mm, both disabled by default. Users can modify the alarm values and enable/disable the alarms here.

Entering Alarm/Alert Setting Mode:

How to Enter Alarm/Alert Setting Mode

In Normal Mode, short press the MODE button once and "ALM" will appear on the screen. Then, hold the MODE button for more than 2 seconds to enter Alarm/Alert Setting Mode.

Available Settings:

Press the MODE button to cycle through the available settings:

Alarm Hour Setting

Alarm Minute Setting

Rain Rate Alert Threshold Setting

Rain Event Alert Threshold Setting.

While setting the Alarm Hour or Alarm Minute, press the **TEMP** button to toggle the alarm ON or OFF.

Use the **RAIN 1/+** or **RAIN 2/-** buttons to change or scroll through values.

If an alarm is triggered, the buzzer will sound continuously for 2 minutes unless any button is pressed. During this period, the corresponding alarm icon will flash, and the alarm sound will become progressively faster.

Pressing any button while the alarm is sounding will stop the buzzer, but the icon will continue to flash until the alarm condition clears.

3.3.5 Calibration Mode

Entering Calibration Mode:
In Normal Mode, short press the MODE button twice and "CAL" will appear on the screen. Then, hold the MODE button for more than 2 seconds to enter Calibration Mode.

Press the MODE button to cycle through the available calibration items:

3.3.5.1 Rain Gain Calibration
This section applies to rain data from the WN20, WH40/WH40H, and WS65/WS69 rain gauges.

The rain collector is factory-calibrated according to the funnel diameter. Each model has a different tipping resolution:

- ◼ **WH40/WH40H:**
  One bucket tip equals 0.1 mm (0.004 inch) of rainfall.

- ◼ **WS65/WS69:**
  One bucket tip equals 0.254 mm (0.01 inch) of rainfall.

- ◼ **WN20:**
  One bucket tip equals 0.3 mm of rainfall.

To verify the accuracy, you can compare the accumulated rainfall with a manual sight glass rain gauge with an aperture of at least 4 inches (0.1 m).

For reference, 1 mm of rainfall equals 1 litre of water spread over 1 m² . A cubic container with a 1 m² base and 1,000 mm height will hold 1,000 litres when filled, which illustrates this measurement for the WH40 rain gauge.

Make sure you periodically clean the rain gauge funnel.

Note: The purpose of calibration is to fine tune or correct for any sensor error associated with the device's margin of error. Errors can occur due to electronic variation (example, the temperature sensor is a resistive thermal device or RTD, the humidity sensor is a capacitance device), mechanical variation, or degradation (wearing of moving parts, contamination of sensors).

Calibration is only useful if you have a known calibrated reference you can compare it against, and is optional. This section discusses practices, procedures and sources for sensor calibration to reduce manufacturing and degradation errors. Do not compare your readings obtained from sources such as the internet, radio, television or newspapers. The purpose of your weather station is to measure

conditions of your surroundings, your micro-climate,which can vary significantly from location to location.

3.3.5.2 Piezo Rain Gain Calibration

Including the calibration of Piezo Daily Rain, Weekly Rain, Monthly Rain, Yearly Rain, and Total Rain, as well as the calibration of Piezo Rain Gain 1 through 5.

Piezo Rain Gain 1 through 5 Calibration Instructions

This calibration function is designed to fine-tune the connected piezoelectric rain sensor by applying

different gain coefficients based on varying rainfall intensities (Rain Rate), thereby improving the accuracy of rainfall measurement.

Tiered Gain Calibration Logic (Calibration range: 0.10 to 5.00):

Piezo Rain1 Gain

Applied when rainfall intensity is less than 4 mm/h

Piezo Rain2 Gain

Applied when rainfall intensity is less than 10 mm/h

Piezo Rain3 Gain

Applied when rainfall intensity is less than 30 mm/h

Piezo Rain4 Gain

Applied when rainfall intensity is less than 60 mm/h

Piezo Rain5 Gain

Applied when rainfall intensity is greater than 60 mm/h

Operation:

● Use the RAIN 1/+ and RAIN 2/- buttons to adjust the coefficient.

● Holding these buttons for 2 seconds changes the value more rapidly.

3.3.6 MAC address display Mode

Entering MAC address display Mode:
Press the **MODE** button 3 times will enter the MAC address display Mode. MAC address will appear on the screen.

Figure 14 MAC address：58 CF 79 DC 3C E8

4 Pair with sensors

4.1 Connect with the rain gauge(does not require Wi-Fi)

(Will illustrated with a WN20 rain gauge and WH40H rain gauge)

Note:

- This connection does not require Wi-Fi. You can view rain data without being connected to a local network.

- Make sure that the RF frequency of sensor and console matches (the frequency is different for various countries because of regulations).

- Place the WN20 and the WN1700 console closely together in one location (about 1 m/3 ft distance) to easily test functionality. After testing, install the rain sensor in its desired location.

- However, that movement during and after assembly can cause the rain sensor (tipping bucket/spoon) to tilt and falsely detect rain. The rain total can be reset to 0 via the console or you can remove the batteries from the WN20 while moving it.

1. Power up rain gauge

- **Power up the WN20 rain gauge.**
  Insert **2 AAA batteries** (not included).

- **Power up the WH40H rain gauge**.
  Install the filter and rain collector top. Remove the battery door on the back of the sensor by sliding it toward the arrow. Insert **1 AA battery** (not included).

2. When in learning mode (default), the WN1700 console will begin searching for the rain gauge sensor data automatically. This may take up to 3 minutes, after which the data will be displayed on the console.
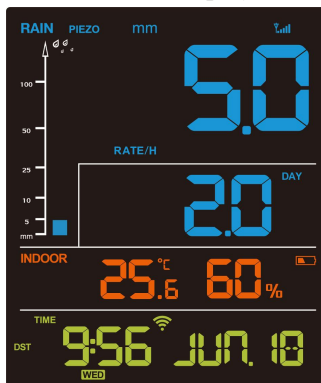
Figure 15 Normal Display Display Layout

3. If the rainfall data does not appear, hold the RAIN1 / + and RAIN2 / - buttons for 5 seconds. The device will register the transmitter signal for 3 minutes.

4.2 Download the Ecowitt App

Visit the App Store or Google Play Store or scan the QR code below to download the free Ecowitt App onto your mobile device.

Open the Ecowitt App, follow the on-screen setup instructions to create an account, add a new device, and follow **Section 3.4 or 3.5** below to connect your station to your Wi-Fi network.

Figure 16 Download Ecowitt App
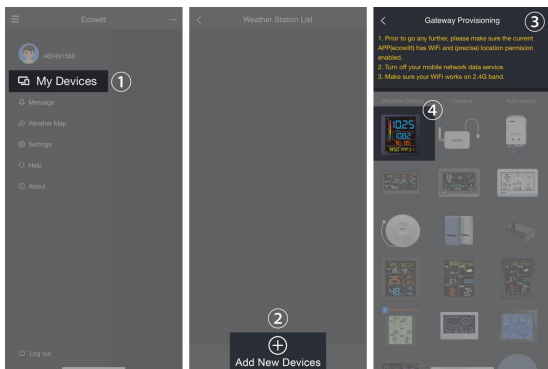
📝 Note

For **Section 4.3** and **4.4** below (2 ways to complete Wi-Fi configuration), you'll need your Wi-Fi network name (SSID) and password.

4.3 Connect the Station to Wi-Fi via Ecowitt App

(1) Open Ecowitt App →"My Devices"→"Add New Devices"→click WN1700 icon→choose WiFi Provisioning

Figure 17

(2) Hold WN1700's **TEMP** & **+ / RAIN 1** buttons for more than 2s in normal mode will turn on its hotspot, Wi-Fi icon will flash fast on the screen. Use mobile phone to connect to the hotspot "WN1700x-WIFIxxxx"emitted by the receiver. Then tick "Operation Completed"→"Next".

Note:

1. The Wi-Fi function does not turn on when the device is running solely on battery power.

2. WN1700x-WIFIxxxx, the first x represents the frequency, A=868MHz, B=915MHz, C=433MHz, xxxx represents the last 4 digits of the product MAC address.

(3)Allow location access, recommend selecting "While Using the App". Then return to the Ecowitt App.

(4) Fill in the Wi-Fi SSID and password, then click "Submit".

(5) Now the gateway setup is successful. Switch the network of phone to the same Wi-Fi WN1700 is connected to. The receiver has been successfully added to the App, then the data can be viewed online.

📝 **Note:**

If you are unable to connect the WN1700 to Wi-Fi using the Ecowitt App, we recommend using the setup via Embedded Web Page 192.168.4.1 on the next page.

4.4 Web Page 192.168.4.1
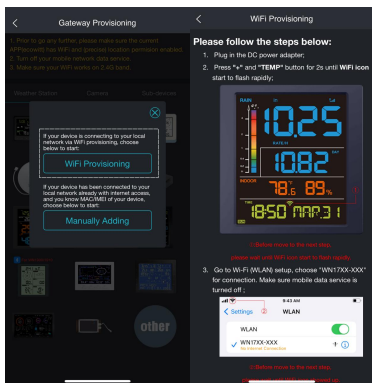
(1)Hold WN1700's TEMP & + / RAIN 1 buttons for more than 2s in normal mode will turn on its hotspot, Wi-Fi icon will flash fast on the screen. Use a mobile phone to connect to the hotspot "WN1700x-WIFIxxxx"emitted by the receiver.

Ignore a message from your phone that the network has no internet connection. It's true but not needed here.

(2)Use a mobile browser to search the URL 192.168.4.1. No password is set by default. Click login.

(3) Click Local Network. Input your router credentials and tap on the "apply" button to make the setting effective.

(4)Record the MAC address.

(5) Switch the phone's WLAN network to the same Wi-Fi the WN1700 is connected to (usually your local network).

Open Ecowitt App →"My Devices"→"Add New Devices"→click WN1700 icon→choose Manually Adding.

(6) Edit the Device Name and paste the MAC address copied in step (4) into the box. Then click "Save," and the device will be   bound to (=registered on) your account.

4.5 Device Location, Time Zone, DST, and Data Public

After completing the Wi-Fi configuration, follow these steps for Device location, Time zone, DST

(Daylight Saving Time), and Data public settings.

1. Click on "My Devices".

2. Click on the "..." icon.

3. Set the Device's location and Time zone on this interface. Tick "Auto DST" and "Is Public" when necessary.

4. Click "Save," then reboot (power-cycle) the WN1700 device; the WN1700 will automatically synchronize time and DST.
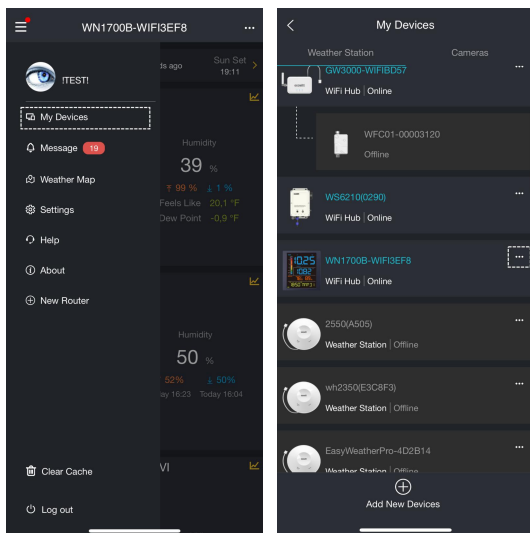
Figure 18 Related settings via Ecowitt App

📝 **Note:** After completing the above Wi-Fi configuration and related settings, the WN1700 screen will display a stable Wi-Fi signal, auto time zone, and DST (when in effect).

4.6 Adding Sensors

To pair the optional sensors (refer to **Section 7** for more optional sensors) with the WN1700, please do as

follows:

1. Power the sensor on and place it next to the console.

2. Wait 1~2 minutes, check whether the console will automatically pick up the sensor data and display it on the screen or App.

3.   If data is not received from a registered sensor, the number of bars behind the RF icon will decrease the by one; if data is received, the number of bars behind the RF icon will increase by one.

4. If data is not received, try the following: after **ensuring the phone and WN1700 are connected to the same Wi-Fi network**, open the Ecowitt App → Sensor ID→enter the Sensor Management page.

5. On the Sensor Management page, find the sensor you want to pair, select the ID number box, and register it with its SensorID. The SensorID is usually printed on a sticker on the sensor.

6. Once successful, you may return to the main interface to check the data.

If you know precisely the sensor ID and want the WN1700 to pair that sensor only, you may enter the sensor ID and save the change to make it effective.

If you have more than one sensor of the same type (e.g. a WN20, a WH40 and a WS69, the console will

automatically register the sensor which is highest in the so-called sensor hierarchy (WS85 > WS90 > WH40 > WS69 > WN20). If you want a specific sensor to be connected, you have to actively enter its SensorID as described before. The sensor hierarchy applies to wind, rain, outdoor/indoor temperature and solar data.
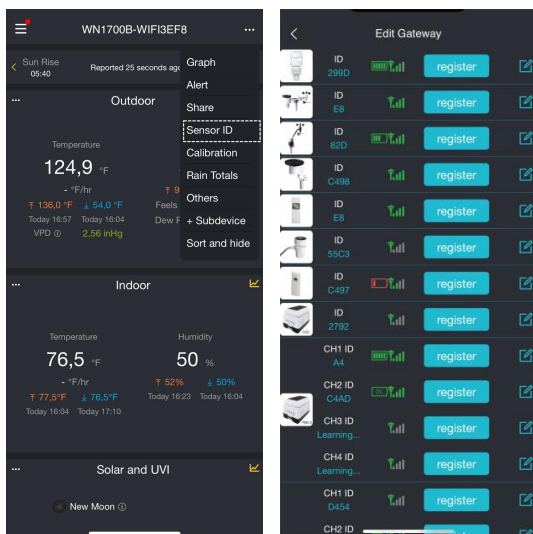

Figure 19 Sensor ID page

4.7 Historical Data Export and Clear

4.7.1 Export History Data

WN1700　doesn't support storing data on a memory card. When the Wi-Fi configuration is completed, you can log in to Ecowitt.net to export the data in CSV file format.

Note:

Data with a query period of days/24 hours is retained for three months (data resolution 5 minutes).

Data with a weekly query period is retained for one year (data resolution 30 minutes).

Data with a monthly query period is retained for two years (data resolution 3 hours).

Data with a yearly query period is retained for four years (data resolution 6 hours).

4.7.2 Clear History Data on ecowitt.net

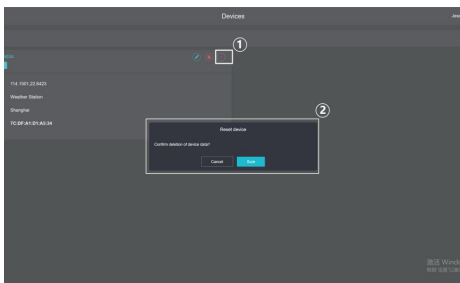Under "menu" → "devices" → "..." →"Sure"

Figure 20 Clear History Data

4.8 Firmware Upgrade

Method 1: Via Ecowitt App

(the Ecowitt app must be connected to the same local network as the console)

Open Ecowitt App → My Devices →"…" (Open the Edit Gateway page) → tap the firmware version number to upgrade if a new version is available. When the upgrade is complete, the WN1700 will reboot into the latest version.

Method 2: Via web page 192.168.4.1

for this the internal hotspot WN1700x-WIFIxxxx must be activated

Method 3: via the inbuild webpage (WebUI):

(the computer must be connected to the same local network as the console)
http://IP-address-of -your console
→ Device settings

Method 4: via the WS View Plus app in the same local network by choosing your console in the WS View Plus device list. When an upgrade is available, a pop-up window will appear.

4.9 Calibration

If you have data from a trusted near-by (!!) weather station, you can use its data as an indication. Be aware you're your microclimate data can differ from public weather station data without being wrong.
1. Make sure your mobile device is connected to the Wi-Fi network WN1700 is connected to.
2. Click "…" on the top right corner and choose "Calibration".
3. For a particular parameter (Take Outdoor temperature as an example in **Figure 21**). Calculate the offset of data from an accurate reference sensor.
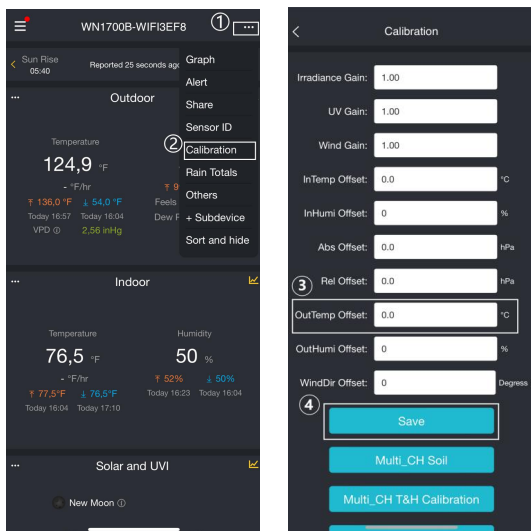4. Fill in the offset from step 3 , and click Save.

Figure 21 Calibration

4.10 Sensor Signal Quality Indicator

During the synchronization, it will reduce one signal segment (bar) if it has not received the signal once from the transmitter. It will increase it by one signal segment if it has received the signal once (the maximum number of bars is 5).

Lost the signal once

Received the signal once
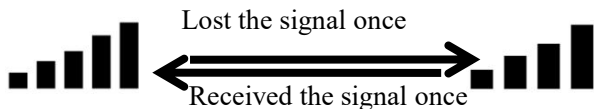
4.11 Upload Data to Server

After the Wi-Fi configuration is successful, data can be uploaded to the following weather station servers:

A. ecowitt.net (Default upload to this server)

B. wunderground.com

C. weathercloud.net

D. wow.metoffice.gov.uk

E. A user-chosen (Customized or DIY) server

Upload servers' management:

(1) Ensure the mobile phone and WN1700 receiver use the same Wi-Fi.

(2) Ecowitt App → "..." at the top right corner → "Others" → "DIY Upload Servers"

4.12 Best Practice for Wireless (RF) Communication

Wireless (RF) communication is susceptible to

interference, distance, walls and metal barriers. We recommend the following best practices for trouble-free wireless communication between both sensor and the console:

Indoor/outdoor sensor placement: The sensor will have the longest reach for its signal when mounted or hung vertically. Avoid laying it down on a flat surface.

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

Radio Frequency Interference (RFI). If you have other devices operating on the same frequency band as your indoor and/or outdoor sensors and experience intermittent communication between sensor and console, try turning off these other devices for troubleshooting purposes. You may need to relocate the transmitters or receivers to avoid the interference and establish reliable communication. The frequencies used by the sensors are one of (depending on your location): 433, 868, or 915 MHz (915 MHz for United States).

Line of Sight Rating. This device is rated at 300 feet line of sight (under ideal circumstances; no interference, barriers or walls), but in most real-world scenarios, including a wall or two, you will be able to go about 100 feet.

Metal Barriers. Radio frequency will not pass through metal barriers such as aluminum siding or metal wall framing. If you have such metal barriers and experience communication problems, you must change the placement of sensor package and or console.

The following table shows different transmission media and expected signal strength reductions. Each "wall" or obstruction decreases the transmission range by the factor shown below.

Medium	RF Signal Strength Reduction
Glass (untreated)	5-15%
Plastics	10-15%
Wood	10-40%
Brick	10-40%
Concrete	40-80%
Metal	90-100%

Table 7 RF Signal Strength reduction

5. Rainfall settings
5.1 Rain Sensor Priority

Ecowitt supports two types of rain gauge sensors: traditional tipping-bucket sensors (WH40, WH40H, WH65, WN67, WS69, WN20) and piezoelectric sensors (WS85, WS90).

When multiple sensors are connected, each type follows a specific display priority:

for traditional tipping-bucket sensors, the priority is WH40 = WH40H > WH65 = WN67 = WS69 > WN20; for piezoelectric sensors, the priority is WS85 > WS90.

5.1.1 How to set rain sensor priority

While in Normal Mode, hold the MODE button for 2 seconds. Press MODE Till Rain Sensor Priority Selection (Traditional / Piezoelectric) appears. Use the RAIN 1/+ or RAIN 2/- buttons to change the value.

5.2 Clear the rainfall value

In Normal Mode,

- Hold the **RAIN1/+** button for more than 5 seconds to clear the current rainfall value displayed for RAIN1.

- Hold the **RAIN2 / −** button for more than 5

seconds to clear the current rainfall value displayed for RAIN2.

5.3 Rain Gauge Sensor Registration

Hold both RAIN1/＋ and RAIN2/－ buttons simultaneously for more than 5 seconds to re-register all connected rain gauge sensors.

6. Optional Sensors
6.1 Sensors

When powered by DC or battery, the device supports these sensors as below.

The following sensors can be purchased separately. For more information, please visit our website: http://www.ecowitt.com. Select the model of the units with the same RF frequency as your gateway or display (the frequency is different for various countries because of regulations).

Note: Max QTY of the following table means the maximum number of sensors of each type which can be connected to the WN1700.

The WN1700 supports all existing Ecowitt sensors including the IoT (internet of things) devices.

The data of all connected sensors can be viewed

- At the ecowitt.net dashboard in the Ecowitt Weather Cloud in a one-minute resolution
- In the Ecowitt app in a one-minute resolution
- In the inbuilt browser interface (WebUI) in real-time
- In the WS View Plus app in realtime

6.1.1 Sensor Data which can be displayed on the console screen

Sensor Model	Max QTY	Picture	Functions
WN20	1		Rainfall
WS85	1		Rainfall wind data upload only but no display
WS90	1		Outdoor temperature & humidity, rainfall **wind, light, UV upload only but no display**
WS80	1		Outdoor temperature & humidity, wind speed/ direction **wind, light, UV upload only but not display**

WS69	1		Outdoor temperature & humidity, rainfall **wind, light, UV upload only but no display**
WS68	1		**wind speed/ direction, light, UV upload only but no display**
WH40/WH40H	1		Rainfall
WN32P	1		Indoor temperature, humidity and pressure
WN32	1		Outdoor temperature humidity
WN31	8		Temperature and humidity
WN30			Temperature

Sensor Model		Picture	Pool temperature
WN36			Pool temperature

Table 8

6.1.2 Sensor Data which can only be uploaded to the Ecowitt Weather Cloud

Sensor Model	Max QTY	Picture	Functions
WH51L	16		Soil moisture
WH51			Soil moisture
WN34L/S/D	8		Temperature
WN35	8		Leaf wetness

WH57	1		Lightning detection
WH41/WH43	4		PM2.5
WH45/WH46*	1		WH45: CO_2, PM2.5, PM10, temperature and humidity WH46: CO_2, PM1.0, PM2.5, PM4.0, PM10, temperature and humidity
WH55	4		Water leak detection
LDS01	4		Laser distance sensor

*) The WH45, WH46, WH46D data might be displayed on the console screen in the future via a

firmware upgrade.

6.2 IoT Devices

The WN1700 console is a fully functional IoT hub.

Sensor Model	Max QTY	Picture	Functions
WFC01			Smart water timer
AC1100	16*		Smart plug
WFC02			Smart water timer

Table 9

*) any combination of IoT devices must not be more than 16 devices together.

7. Features

- **Built-in Sensors:**
  Equipped with internal temperature & humidity sensor and barometric pressure sensor.

- **Multi-Data LCD Display:**
  Supports display of traditional/piezoelectric rain gauge data, indoor/outdoor temperature & humidity, and up to 8 channels of outdoor temperature & humidity sensors.

- **Gateway and IoT Functionality:**
  Can serve as a gateway to receive data from various sensors and as a hub for IoT devices. Sensor data can be viewed.

- **Web-Based Configuration:**
  Supports Wi-Fi setup and advanced configuration via web interface, including server settings, sensor calibration, and Sensor ID management.

- **Wi-Fi Connectivity:**
  Enables real-time data upload to weather platforms via Wi-Fi.

- **Auto Timezone & NTP Support:**
  Automatically syncs timezone and network time via the internet.

- **Customizable Units:**
  Supports unit conversion and display settings.

- **Backlight Control:**
  When powered via DC input, LCD backlight brightness is adjustable.

8. Troubleshooting Guide

Problem	Solution
No rainfall data displayed	Check and remove any debris from the funnel inlet hole. Open the funnel and remove any insects or obstructions from the tipping mechanism.
Temperature reads too high in the day time.	Indoor temperature: make sure the console is placed in a shaded area outdoor temperature: make sure the console is placed in a shaded area or on a north facing wall.
Display console contrast is weak	Replace console batteries with a fresh set of batteries.
How to perform a Rain Gauge Accuracy Cross Check Before Calibrating, (Use WH40/WH40H	**Collect Water:** Use a narrow-neck bottle placed under the rain gauge's water outlet to collect water during a rain event. Measure the weight (e.g., 353 g). Calculate Rainfall Depth:

Problem	Solution
as illustration)	Since 353 g ≈ 353 ml, divide by the rain collector area (250 cm²):
	Calculation: 353 ml / 250 cm² = 1.412 cm, or approximately 14.1 mm.
	Compare Readings:
	Compare this calculated rainfall depth with the reading on your console or a calibrated manual gauge.
	Adjust for Discrepancies:
	Note that due to residual water in the tip bucket and on the collector, the measured rainfall is usually slightly less (within 5%) than the actual amount.
	If the deviation exceeds 5%, adjust the calibration settings accordingly or contact customer service for replacement.

9. Specifications

Model	WN1700
Name	High Precision WiFi Rain Gauge
Transmission distance in open field	100m(328 ft)
Frequency	915/868/433MHz depending on location (North American:915MHz; Europe:868MHz; Other areas:433MHz)
Indoor temperature and humidity data measuring interval	60s
Indoor temperature measuring range	-9.9˚C－60˚C (14°F－140°F)
Outdoor temperature displaying range	-40˚C－60˚C (-40℉－140℉)
Indoor temperature accuracy	± 1°F / ±0.56°C
Indoor humidity measuring range	1%－99%
Indoor relative humidity	±6% for 30－80% RH

accuracy (at 25°C):	± 5% for 1 – 29% & 80 – 99% RH
Power supply	2 AA batteries (not included) / 5V DC
Battery life	20 days

Table 10

10. Warranty Information

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

All trademarks and patents are recognized.

We provide a 2 years 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.

Manufacture: Shenzhen Fine Offset Electronics Co., Ltd. Address: 4/F, Block C, JiuJiu Industrial City, Shajing Town, Baoan District, Shenzhen City, China

11. 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.

French:

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d' Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

12. Contact Us
12.1 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.We are committed to providing assistance and resolving any concerns you may have.

12.2 Stay in Touch

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