



WiFi Rain Gauge Receiver
User Manual
Model: WN1700



<https://s.ecowitt.com/S202X8>

User Manual

1. Introduction	2
2. Unpacking	5
2.1 Part list	5
2.2 Views and Sizes	5
3. Set up Guide	7
3.1 Power up	7
3.1.1 Via DC power	7
3.1.2 Via batteries (not included)	8
3.1.3 Voltage Monitoring	10
3.2 Viewing data	11
3.2.1 Rainfall display	12
3.2.2 Indoor/ Outdoor temperature display	14
3.2.3 Time & Date display air quality display (future feature)	15
3.2.4 Backlight Function	15
3.3 Button operations and Different Operating Modes	16
3.3.1 Button Operations	17
3.3.2 Normal Mode	19
3.3.3 Setting Mode	20
3.3.4 Alarm/Alert Setting Mode	21
3.3.5 Calibration Mode	23

3.3.6 MAC address display Mode.....	27
4 Pair with sensors	28
4.1 Connect with the rain gauge(does not require Wi-Fi).....	28
4.2 Download the Ecowitt App.....	30
4.3 Connect the Station to Wi-Fi via Ecowitt App.....	32
4.4 Web Page 192.168.4.1.....	34
4.5 Device Location, Time Zone, DST, and Data Public	35
4.6 Adding Sensors	37
4.7 Historical Data Export and Clear.....	41
4.7.1 Export History Data	41
4.7.2 Clear History Data on ecowitt.net.....	41
4.8 Firmware Upgrade	42
4.9 Calibration.....	43
4.10 Sensor Signal Quality Indicator.....	44
4.11 Upload Data to Server.....	45
4.12 Best Practice for Wireless (RF) Communication.....	45
5. Rainfall settings.....	47
5.1 Rain Sensor Priority.....	47
5.1.1 How to set rain sensor priority.....	48
5.2 Clear the rainfall value.....	48

5.3 Rain Gauge Sensor Registration	48
6. Optional Sensors	48
6.1 Sensors	48
6.1.1 Sensor Data which can be displayed on the console screen	50
6.1.2 Sensor Data which can only be uploaded to the Ecowitt Weather Cloud	52
6.2 IoT Devices	54
7. Features.....	55
8. Troubleshooting Guide	56
9. Specifications	58
10. Warranty Information	59
11. FCC	60
12. Contact Us	64
12.1 After-sales Service	64
12.2 Stay in Touch	65

1. Introduction

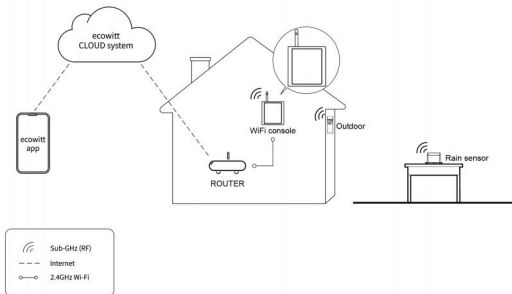


Figure 1

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

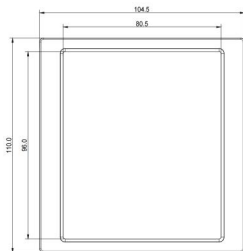


Figure 2 Main view

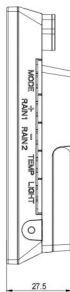


Figure 3 Side view

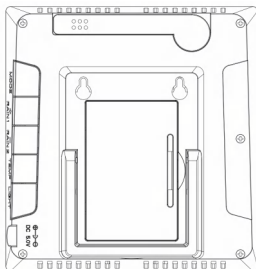


Figure 4 Rear view

3. Set up Guide

3.1 Power up

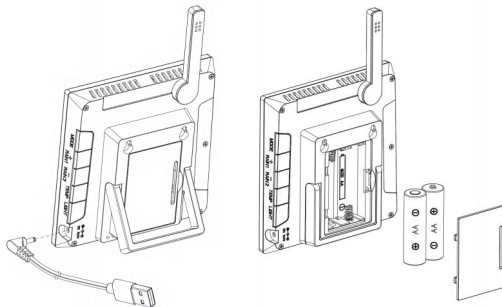


Figure 5 DC power or Battery power

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

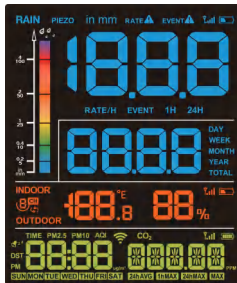


Figure 7 Full Screen Display Layout

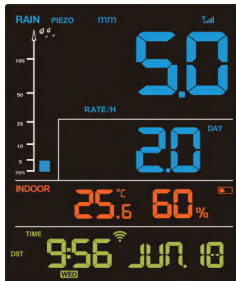


Figure 8 Normal Display Display Layout

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

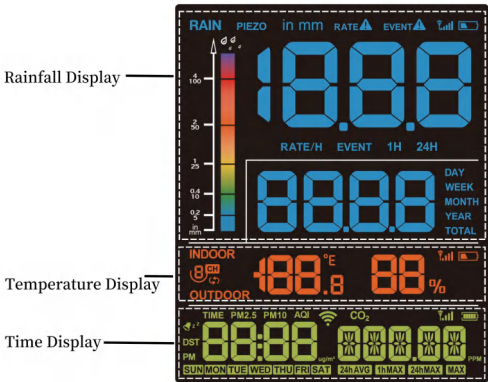


Figure 9 Full Screen Display Layout

3.2.1 Rainfall display

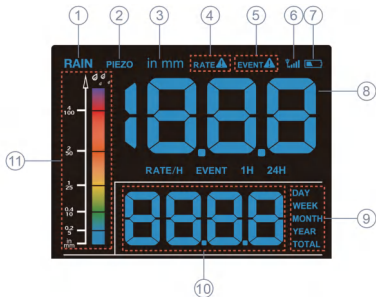


Figure 10

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)

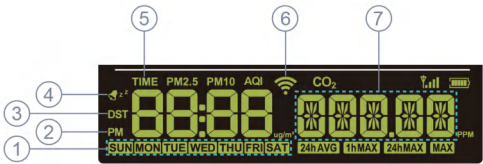


Figure 12

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

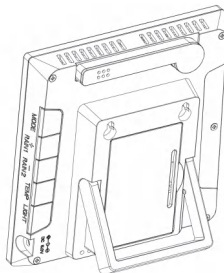


Figure 13 Buttons

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 Daily Rain	0.0	mm
Piezo Weekly Rain	0.0	mm
Piezo Monthly Rain	0.0	mm
Piezo Yearly Rain	0.0	mm
Piezo Totaly Rain	0.0	mm
Piezo Rain1 Gain	1.00	When rain rate less than 4 mm/h, Range: 0.10 - 5.00
Piezo Rain2 Gain	1.00	When rain rate less than 10 mm/h, Range: 0.10 - 5.00
Piezo Rain3 Gain	1.00	When rain rate less than 30 mm/h, Range: 0.10 - 5.00
Piezo Rain4 Gain	1.00	When rain rate less than 60 mm/h, Range: 0.10 - 5.00
Piezo Rain5 Gain	1.00	When rain rate more than 60 mm/h, Range: 0.10 - 5.00

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