ecowitt®

Soil Moisture Monitor Display Console

Model: WH0291_C

Table of Contents

1. Introduction

Thanks for your purchase of the WH0291_C Soil Moisture Monitor with Time Display. To ensure optimal product performance, please read this manual and keep it for future reference.

Note: The WH0291_C display can only pair with 1 WH51/WH51L soil moisture sensor and display its data.

Note: The WH0291 display is not equipped with a Wi-Fi module, so it cannot connect to the router to send data from the WH51/WH51L sensor to the Internet.

2. Getting Start

2.1 Part List

1 x LCD Display

1 x User Manual

Note: The battery is Not Included.

2.2 Overview and Size
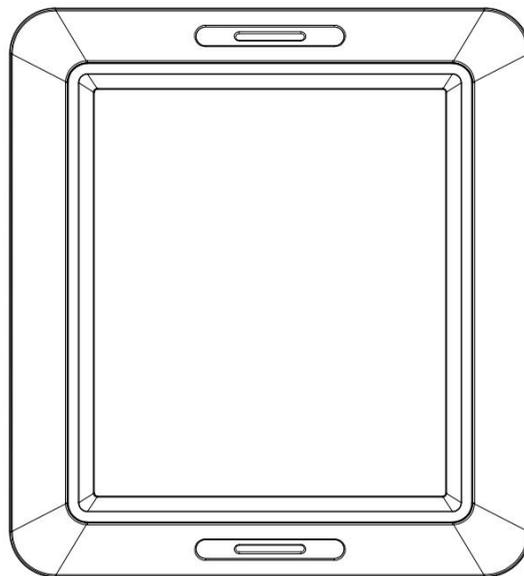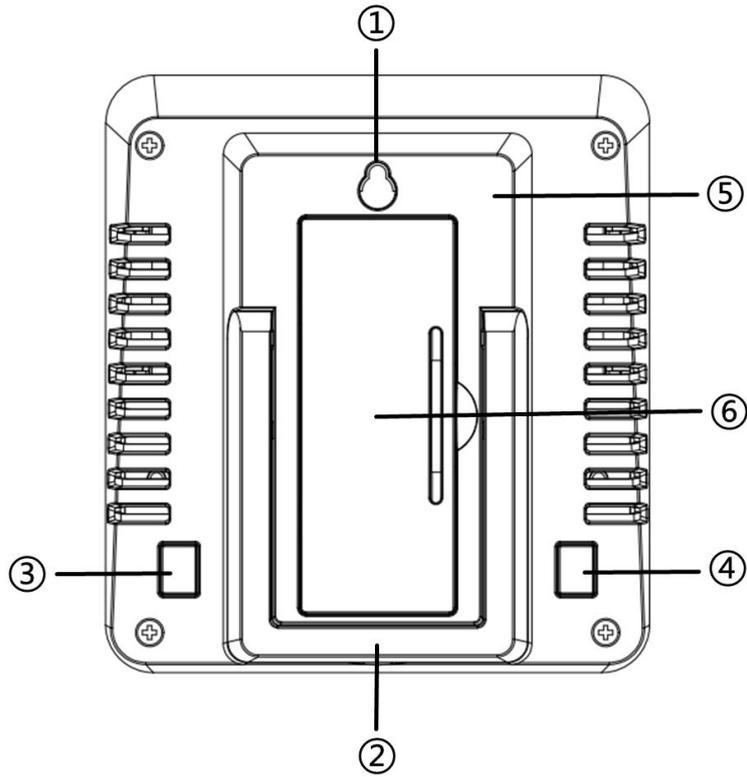
2.2.1 Overview

Figure 1   Front Side

Figure 2   Back Side

①	Integrated Hanging Hole	②	Tabletop Stand
③	ADD+ Button	④	Set Button
⑤	Battery Compartment	⑥	Battery Compartment Cover

Table 1

2.2.2 Size of the Console

77.5

52.3

85.5

61.1
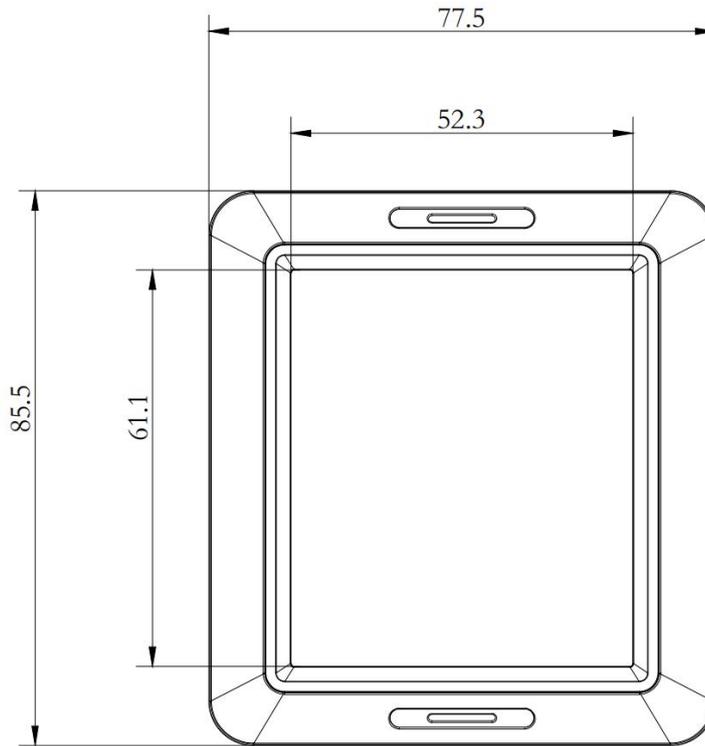
Unit: mm

Figure 3   Size of the Console

2.3 Installation

2.3.1 Install Battery

Remove the battery door on the back of the display console. Insert one AA (alkaline, lithium, or rechargeable) battery in the back of the display console, as shown in Figure 4.
Note: The battery is not included.

Figure 4

Figure 5

2.3.2 Power On

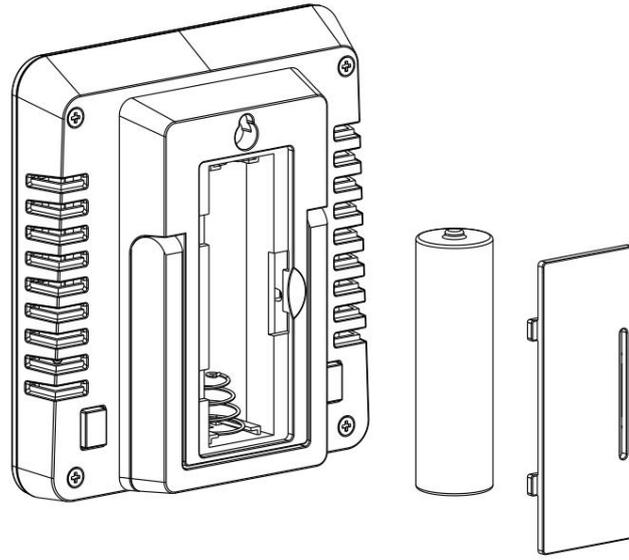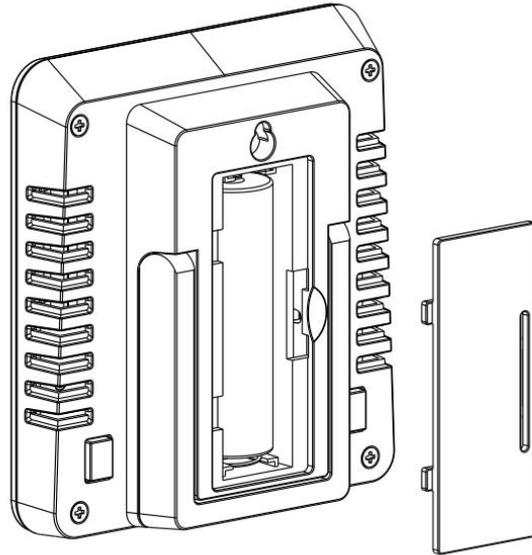All of the LCD segments will light up for a few seconds to verify all segments are operating properly.
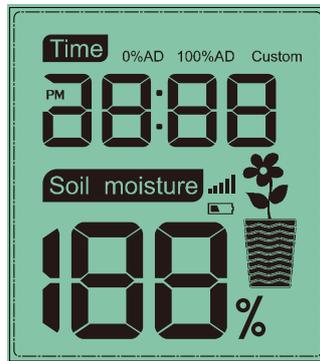
Figure 6

The console will instantly display the default time (12:00). The soil moisture value will update on the display within a few minutes.

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

Note: If you separately purchase the WH0291_C display console, the soil moisture value display 0%; and the soil moisture grade is null.

If you purchase the WH0291 soil moisture monitor kit, including the WH51 soil moisture sensor and the WH0291_C display, the console will display the sensor's measured value.

2.3.3 Display Console Layout

Figure 7   Layout

①	Time Display	②	Soil Moisture Value Display
③	Soil Moisture Grade Display		

Table 2

3. Console Operation

Note: The console has two program modes: **Time setting mode** and **Custom mode**.
If no operation for 20s, display will return to normal mode.

3.1 Time setting mode

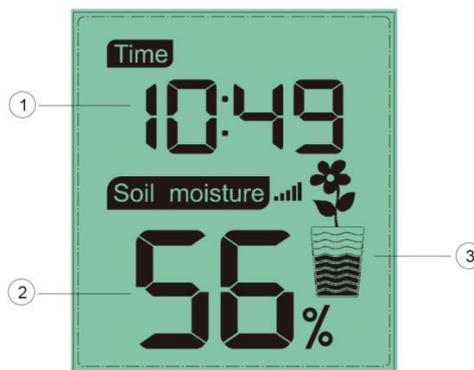Hold the **SET** button for 3 seconds to enter the time setting mode:
a. Press the **ADD+** button, choose between 12/24hr display
b. Press the **SET** button, step into Hour setting, press the **ADD+** button to adjust hour.
c. Press the **SET** button, step into Minute setting, press **ADD+** to adjust minute.

3.2 Custom mode

Custom OFF:
Moisture level is calculated based on default dry and wet definition:
Dry (0%AD) AD: 70
Wet (100% AD) AD: 500

Soil Moisture = (moisture AD − 70) * 100% / (500 − 70)
Example: when sensor moisture AD is 310, calculated moisture is:
(310 − 70)*100% / (430) = 56%.
This is a fixed slope rate linear system.

Custom ON:
When pot soil at dry or wet condition is not giving the moisture sensor output value that is close to its default assumption, it will give inaccurate moisture level results. It is commonly happening with different soil type that gives very different output value at same moisture level condition. We introduced this custom mode to make this slope flexible so that it can match your soil type.
This becomes a variable slope rate linear system.

Adjusting principle:
0%AD is used to adjust for dry condition reading inconsistency.
When the displayed moisture readings are too high at dry soil condition, you could lower the slope rate by increasing the 0%AD value.

100%AD is used to adapt for wet condition reading inconsistency.
When the displayed moisture readings are too low at extremely wet soil condition, you could decrease the 100%AD value to fix it.

Please refer to the below example for better understanding.

For example:

When you use this product at the first time, please turn off the custom mode and test the product at the following two situations:

Situation One:

You watered your potted plant with enough water and the soil should be extremely wet, however the displayed moisture readings is much lower than 95%(e.g.70%).

Solution:

Enable custom mode, and enter 100%AD setting mode.

Hold the ADD+ button, till the 100%AD value reaches 1000 and roll over back to 80 (if your 0%AD is 70 and not changed). Now the 100%AD value will start from 80 while the displayed moisture readings will be calculated to be 100%.

Hold the ADD+ button till the moisture readings start to decrease until it shows 95%.

Record the 100%AD value for future use (when batteries changed).

Situation Two:

Your potted plant hasn't been watered for very long time and soil is extremely dry. When at this dry condition, displayed moisture readings are much higher than 10%(e.g.40%).

Solution:

Enable the custom mode and enter 0%AD setting mode.

Hold the ADD+ button till the moisture readings lowers to 10%(±).

Record the 0%AD value for future use (when batteries changed).

Note: The soil moisture sensor should be inserted totally into the soil for accurate result.

Operation Steps:

Press the **SET** button after the time setting finished to select "Custom ON" and it will enter the custom setting mode：

a. Press the **ADD+** button, enable/disable the custom function
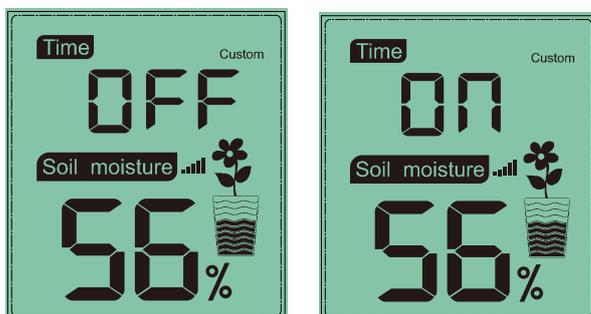
b. If enable the custom function, press the **ADD+** button to adjust the 0%AD value from 70-200. The numbers will change rapidly when hold the **ADD+** button.

c. Press the **SET** button to enter 100%AD setting mode. Press the **ADD+** button to adjust the 100%AD value from 0%AD+10 ~ 1000.
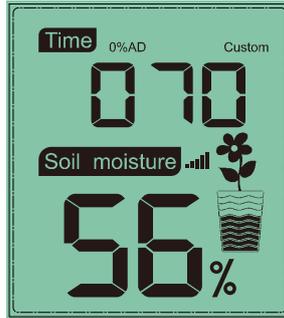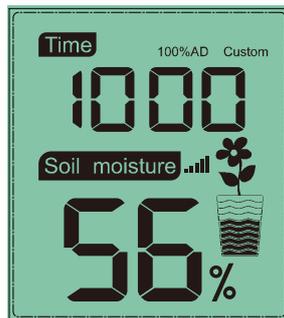

d. Press the **SET** button to return to the normal mode.

There is no "-" button available on this item. If you need to enter a value that is less than the value display, you need to keep press the "+" button until a rollover happens.

Important Note:

When adjusting, you should look at the displayed moisture readings change. Stop immediately when the expected moisture readings is displayed. If you keep pressing the button and the setting value will be increased beyond its sensing sensitive range, resulting in making the system much less sensitive. When this happens, please turn off the custom mode and start over the custom calibration procedure.

4. Function

- 12/24hr digital time display
- Current soil moisture.
- Every 70 second the unit will receive soil moisture sensor.
- Wireless Signal Strength Indicator
- During the synchronization, it will reduce one signal segment if it have not received the signal once from the transmitter. It will increase one signal segment if it has received the signal once.
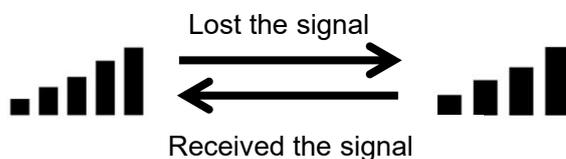
5. Appendix

Moisture grades display on the flower pot icon:
Humidity range: 4%~0%：Display 0 grid moisture
Humidity range: 14%~5%：Display 1 grid moisture
Humidity range: 24%~15%：Display 2 grids moisture
Humidity range: 34%~25%：Display 3 grids moisture
Humidity range: 44%~35%：Display 4 grids moisture
Humidity range: 54%~45%：Display 5 grids moisture
Humidity range: 64%~55%：Display 6 grids moisture
Humidity range: 74%~65%：Display 7 grids moisture
Humidity range: 84%~75%：Display 8 grids moisture
Humidity range: 94%~85%：Display 9 grids moisture
Humidity range: 100%~95%：Display 10 grids moisture

6. Specifications

Moisture Range	0~100%
Resolution	1%
0%AD setting range	70~200 (Initial value:70)
100%AD setting range	0%AD+10~1000 (Initial value:500)
Update Rate	70 seconds
Power Supply	1 x AA Battery (**Not included**)

7. Optional Sensor

Compatible Sensor:			
Sensor Model	Picture	Display the data	Upload the data
WH51		✔	✘
WH51L		✔	✘

Note: One WH0291_C display console can only pair with one WH51/WH51L soil moisture sensor.
Note: If you own one soil moisture sensor, the WH0291_C console can automatically pair

with it.

If you own multiple sensors, the WH0291_C console will pair with the one with the strongest RF signal and keep connecting to it.

8. Warranty & Caution

8.1 Warranty

We disclaim responsibility for any technical error, 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 is only to the original purchaser. The purchaser must contact us for problem determination and service procedures to receive warranty service.

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

8.2 FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device should 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 to 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 a minimum distance between 20cm of the radiator and your body. Use only the supplied antenna.

IC Caution:

English:

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-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 the undesired operation.

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.

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

9. Contact Us

9.1 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.

9.2 Stay in touch

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