Ambient Weather TX-3102 7-Channel Soil Moisture and Thermometer User Manual

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1. Introduction

Thank you for your purchase of the Ambient Weather TX-3102 Soil Moisture and Thermometer User Manual. This is an accessory or replacement for your exiting Display Console or Weather Station. This is not a standalone device.

The following user guide provides step by step instructions for installation, operation, and troubleshooting. To download the latest full-sized manual and additional troubleshooting tips, please visit:

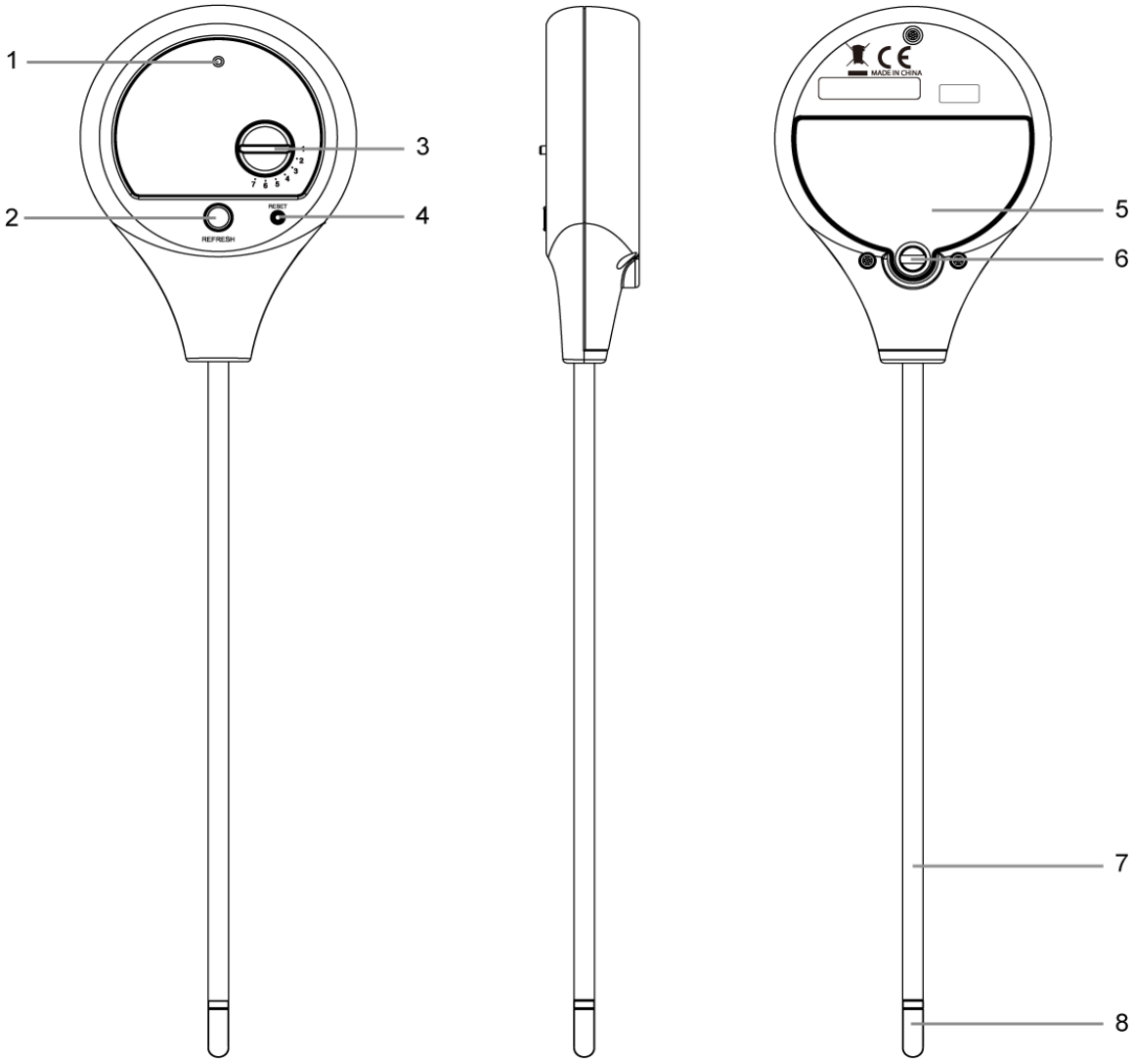
https://ambientweather.com/faqs/question/tags/tag/TX-3102/

2. Getting Started

2.1 Parts List

QTY	Item
1	Soil Moisture and Thermometer Dimensions (L x W x H): 65 x 257.5 x 23.5 mm (2.56 x 10.14 x 0.93”)
1	User Manual

2.2 Product Overview



1	LED indicator. Blinks once during transmission.	5	Battery compartment. Accommodates 2 x CR2032 button cells.
2	**REFRESH** button. Automatically	6	Battery door screw

	forces transmission.		
3	**CHANNEL** switch Assign each sensor to a different channel 1, 2, 3, 4, 5, 6 or 7. Press **RESET** after selecting the channel.	7	Sensor metal probes
4	**RESET** button.	8	Moisture sensor

Figure 1

2.3 Getting Started

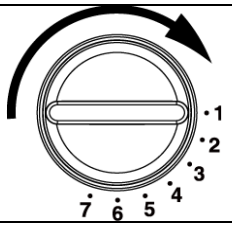
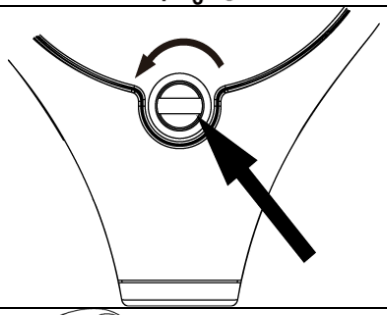
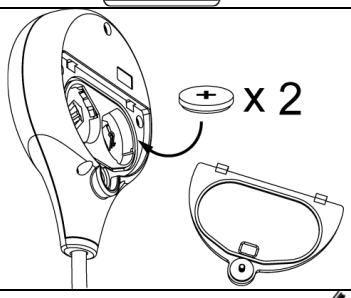
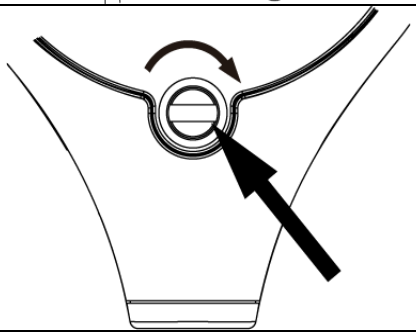
Select the sensor channel by using **CHANNEL** rotatory selection switch. For example: Channel 1 is selected.	
Turn the battery door screw counterclockwise to open the battery door.	
Insert 2 x CR2032 button cells into the battery compartment. Make sure the polarity is correct. Check the information marked on the battery compartment.	
Cover the battery door and turn the door screw clockwise to close the battery door. **Note**: Make sure the watertight O-ring is properly aligned in place to ensure water resistivity.	

Figure 2

2.4 Temperature Reading

The temperature probe measures the temperature at the probe tip.

2.4.1 Soil temperature calibration when used with the WS-8482

To calibrate the temperature:

1. In the normal time mode, Press the **TUNE** key on the back of the console to enter the calibration mode.
2. Press **CHANNEL / +** or **MEM / -** key to select the channel.

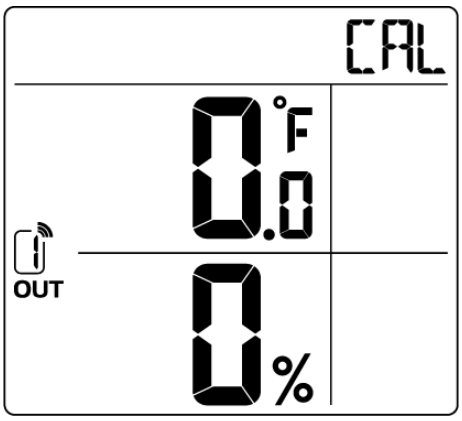


Figure 3

3. Press the **MODE / ALARM** key to switch between temperature and humidity. The parameter will flash when selected.

4. In the temperature calibration mode, press the **CHANNEL /+** or **MEM/-** key to increase or decrease the calibrated temperature offset in 0.1º increments. Press and hold the **CHANNEL /+** or **MEM/-** key to change rapidly, where:

   Calibrated Temperature = Measured Temperature + Temperature Offset

5. Press the **TUNE** key again to exit the calibration mode.

   Note: WS-8480/WS-8480A can calibrate soil temperature via the web GUI please see user manual.

2.5 Moisture Reading

The Soil moisture can be characterized by five different levels: Very Dry, Dry , Moist, Wet and Very Wet.

To determine the soil moisture, the sensor measures 16 points, and correlates them into percent moisture value:

Points	Percentage	Level
1	0%	Very Dry
2	7%	
3	13%	
4	20%	
5	27%	
6	33%	Dry
7	40%	
8	47%	
9	53%	
10	60%	Moist
11	67%	
12	73%	
13	80%	Wet
14	87%	
15	93%	Very Wet
16	99%	

Figure 4

Note:
The measurement accuracy of the sensor can be affected by the soil condition. For example, loose soil may measure a lower moisture level than dense soil.

3. Synchronizing with your Display Console

Refer to the User Manual for your display console to locate specific buttons. After installing the batteries in the wireless thermometer, place the sensor about 10 feet from the display console, and press the **SENSOR** button on the console to manually receive the sensor signal.

The signal icon will flash until the reception is successful. If no signal is received within 5 minutes, the icon will disappear.

NOTES:

If the signal for Channel 1-7 is lost and does not recover for 15 minutes, the temperature may display “Er” for the corresponding channel, depending on the model of your console.

If the signal does not recover for 48 hours, the “Er” display will display all of the time (depending on the model of your console). Replace the sensor batteries and press the **SENSOR** button on the console to pair again.

4. Sensor Placement

1. Place the sensor within 100 feet of the display console.
2. Insert the probe at least 4” into the soil.
3. Avoid transmitting through solid earth or ground (Figure 5)
4. Place the console at least three feet away from computers, TVs and wireless phones.
5. Avoid transmitting through solid metal barriers.

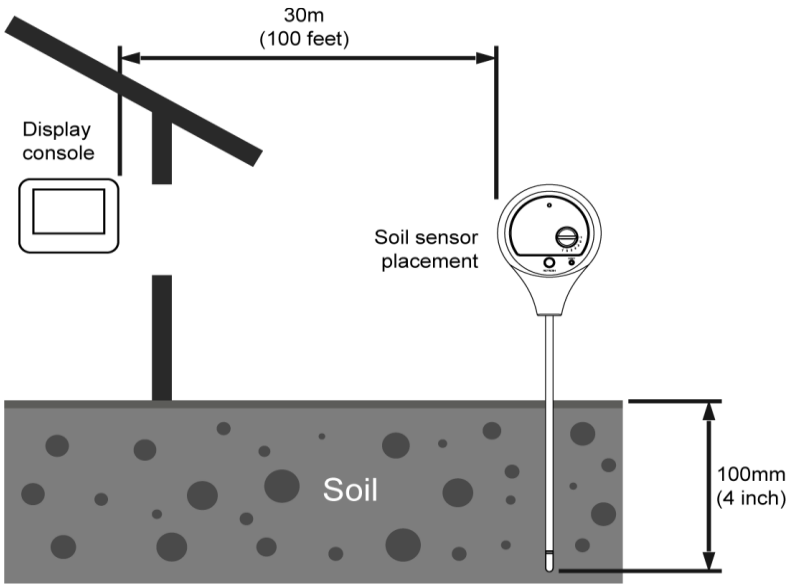


Figure 5

4.1 Best Practices for Wireless Communication

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 915 MHz devices 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 300 feet line of sight (no interference, barriers, or walls) but typically you will get 100 feet 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.

The following is a table of reception loss vs. the transmission medium. 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%

5. Accessories

Description	Part Number	Image
Ambient Weather WS-8482 Console	WS-8482-CONSOLE	
Ambient Weather WS-7078 Console	WS-7078-CONSOLE	

Description	Part Number	Image
Ambient Weather WS-7079 Console	WS-7079-CONSOLE	
Ambient Weather WS-8478 Console	WS-8478-CONSOLE	

6. Specifications

6.1 Measurement Specifications

The following table provides specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution
Temperature	-4 to 140 °F	32 to 104°F: ± 1.8°F (0 to 40°C: ± 1°C) < 32 °F: ± 3.6°F (<0°C: ± 2°C) > 104 °F: ± 3.6°F (> 40°C: ± 2°C)	0.1 °F/°C
Moisture	1-16 (0 to 99%)	+/- 1 point at 4 inches (10cm) below the ground and at an air temperature of 25°C (77°F). Soil moisture is impacted by the type, content and density of the soil.	1 point (about 7%)

6.2 Power Consumption

Wireless Sensor: 2 x CR2032 button cells

7. Troubleshooting Guide

If your question is not answered here, you can contact us as follows:

1. Email Support: support@ambientweather.com
2. Technical Support: 480-346-3380 (M-F 8am to 3pm Arizona Time). Note that Arizona does not observe Daylight Savings Time.
3. Please visit AmbientWeather.com/support for assistance.
4.

Problem	Solution
Wireless remote (soil sensor) not reporting in to console. There are dashes (--.-) on the display console.	The maximum line of sight communication range is 100’ line of sight and 70’ under most conditions. Move the console closer to the sensor. If the sensor is too close (less than 5’), move the sensor assembly away from the display console.

Problem	Solution
	Make sure the wireless sensor LED is flashing. Press the **REFRESH** button. Install a fresh set of batteries in the remote sensor. Make sure the remote sensors are not transmitting through solid metal (acts as an RF shield), or earth barrier (down a hill). Move the display console around electrical noise generating devices, such as computers, TVs and other wireless transmitters or receivers.

8. Liability Disclaimer

Please help in the preservation of the environment and return used batteries to an authorized depot.
The electrical and electronic wastes contain hazardous substances. Disposal of electronic waste in wild country and/or in unauthorized grounds strongly damages the environment.

Reading the “User manual” is highly recommended. The manufacturer and supplier cannot accept any responsibility for any incorrect readings and any consequences that occur should an inaccurate reading take place.

This product is designed for use in the home only as indication of weather conditions. This product is not to be used for medical purposes or for public information.

The specifications of this product may change without prior notice.

This product is not a toy. Keep out of the reach of children.

Ambient, LLC WILL NOT ASSUME LIABILITY FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR OTHER SIMILAR DAMAGES ASSOCIATED WITH THE OPERATION OR MALFUNCTION OF THIS PRODUCT.

9. FCC Statement

Statement according to FCC part 15.19:
This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

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

Statement according to FCC part 15.21:
Modifications not expressly approved by this company could void the user's authority to operate the equipment.
Statement according to FCC part 15.105:
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.

The Responsible party:
Company Name: Ambient, LLC
Address : 6845 W. Frye Road Chandler, AZ 85226
Phone : 1-(480)346-3380

10. Warranty Information

Ambient, LLC provides a 1-year limited warranty on this product against manufacturing 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 Ambient, LLC for problem determination and service procedures.

Warranty service can only be performed by an Ambient, LLC. The original dated bill of sale must be presented upon request as proof of purchase to Ambient, LLC.

Your Ambient, LLC warranty covers all defects in material and workmanship with the following specified exceptions: (1) damage caused by accident, unreasonable use or neglect (lack of reasonable and necessary maintenance); (2) damage resulting from failure to follow instructions contained in your owner's manual; (3) damage resulting from the performance of repairs or alterations by someone other than an authorized Ambient, LLC authorized service center; (4) units used for other than home use (5) applications and uses that this product was not intended (6) the products inability to receive a signal due to any source of interference or metal obstructions and (7) extreme acts of nature, such as lightning strikes or floods.

This 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, claims based on misrepresentation by the seller or performance variations resulting from installation-related circumstances.

11. California Prop 65

WARNING: Use of the Ambient Weather Products can expose you to chemicals, including lead and lead compounds, which are known to the State of California to cause

cancer and bisphenol A (BPA), and phthalates DINP and/or DEHP, which are known to the State of California to cause birth defects or other reproductive harm.

Can I Trust that Ambient Weather Products are Safe Despite this Warning?

In 1986, California voters approved the Safe Drinking Water and Toxic Enforcement Act known as Proposition 65 or Prop 65. The purpose of Proposition 65 is to ensure that people are informed about exposure to chemicals known by the State of California to cause cancer, birth defects and/or other reproductive harm. A company with ten or more employees that operates within the State of California (or sells products in California) must comply with the requirements of Proposition 65. To comply, businesses are: (1) prohibited from knowingly discharging listed chemicals into sources of drinking water; and (2) required to provide a "clear and reasonable" warning before knowingly and intentionally exposing anyone to a listed chemical. Proposition 65 mandates that the Governor of California maintain and publish a list of chemicals that are known to cause cancer, birth defects and/or other reproductive harm. The Prop 65 list, which must be updated annually, includes over 1,000 chemicals, including many that are commonly used in the electronics industry.

Although our manufacturing process is "lead-free" and RoHS compliant, it remains possible that trace amounts of lead could be found in components or subassemblies of Ambient Weather Products. Bisphenol A (BPSA) could conceivably be present in minute amounts in our plastic housings, lenses, labels or adhesives, and DEHP & DINP (phthalates) could possibly be found in PVC wire coatings of our cables, housings, and power cords. Unlike RoHS, Prop 65 does not establish a specific threshold for reporting on the substances of concern and instead sets forth a much less definitive standard requiring that the business demonstrate with certainty that there is "no significant risk" resulting from exposure. With respect to carcinogens, the "no significant risk" level is defined as the level which is calculated to result in not more than one excess case of cancer in 100,000 individuals exposed over a 70-year lifetime. In other words, if you are exposed to the chemical in question at this level every day for 70 years, theoretically, it will increase your chances of getting cancer by no more than 1 case in 100,000 individuals so exposed. With respect to reproductive toxicants, the "no significant risk" level is defined as the level of exposure which, even if multiplied by 1,000, will not produce birth defects or other reproductive harm. In other words, the level of exposure is below the "no observable effect level," divided by 1,000. (The "no observable effect level" is the highest dose level which has not been associated with observable reproductive harm in humans or test animals.) Proposition 65 does not clarify whether exposure is to be measured only in normal operation, or in the event of misuse such as intentionally damaging, incinerating or consuming an Ambient Weather Product or component and Ambient Weather has not attempted to evaluate the level of exposure.

A Proposition 65 warning means one of two things: (1) the business has evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) the business has chosen to provide a warning simply based on its knowledge about the presence of a listed chemical without attempting to evaluate the exposure. The California

government has itself clarified that "The fact that a product bears a Proposition 65 warning does not mean by itself that the product is unsafe." The government has also explained, "You could think of Proposition 65 more as a 'right to know' law than a pure product safety law."

While using Ambient Weather Products as intended, we believe any potential exposure would be negligible or well within the "no significant risk" range. However, to ensure compliance with California law and our customers' right to know, we have elected to place the Proposition 65 warning signs on Ambient Weather Products.

For further information about California's Proposition 65, please visit https://oehha.ca.gov/prop65/background/p65plain.html