
Ambient Weather FT012TH 8-Channel Wireless Indoor Thermo-Hygrometer sensor User Manual



Table of Contents

1	Introduction	1
2	Getting Started	2
2.1	Parts List	2
2.2	Indoor Thermo-Hygrometer Sensor Set Up	2
2.3	Display Features	4
2.3.1	Comfort Icon	4
2.3.2	Rate of Change Icon	4
3	Indoor Thermo-Hygrometer Sensor Operation	4
3.1	Changing the Sensor Channel Number (optional)	4
3.2	Min/Max Mode	4
3.3	Clearing Min/Max Daily	5
3.4	Temperature Units of Measure	5
4	Backlight Operation	5
5	Adjustment or Calibration	5
5.1	Humidity Calibration	5
5.2	Temperature Calibration	6
6	Indoor Sensor Installation	7
7	Best Practices for Wireless Communication	8
8	Glossary of Terms	8
9	Specifications	8
9.1	Wireless Specifications	8
9.2	Measurement Specifications	9
9.3	Power Consumption	9
10	Troubleshooting Guide	9
11	Liability Disclaimer	10
12	FCC Statement	10
13	Warranty Information	11

1 Introduction

Thank you for your purchase of the Ambient Weather FT012TH 8-Channel Wireless Indoor Thermo-Hygrometer sensor. The following user guide provides step by step instructions for installation, operation and troubleshooting. To download the latest manual and additional troubleshooting tips, please visit the FAQ website:

<http://ambientweather.wikispaces.com/ft012th>

Although the FT012TH makes works well as a standalone product, it also transmits wirelessly to any compatible Ambient Weather receiver, including the WS-07, WS-08 and WS-09, WS-10, WS-11, WS-110, WS-12, WS-14, WS-15, WS-16, WS-21, WS-23, and WS-24 wireless weather station display consoles. Other console models may be added later, and will be listed on the FAQ website.

 **Note:** This sensor is designed for indoor use. Consider the model F007TH for outdoor sensor use.

2 Getting Started

 **Note:** The power up sequence must be performed in the order shown in this section (insert batteries in the remote transmitter(s) first, Display Console second).

2.1 Parts List

QTY	Item
1	Thermometer transmitter (FT012TH) Dimensions (LxHxW): 4.3" x 2.5" x 0.65" LCD Dimensions (LxW): 2.1 x 1.7" LCD Segment Height: 0.8 inches
1	User Manual

2.2 Indoor Thermo-Hygrometer Sensor Set Up

1. Remove the battery door on the back of the sensor, as shown in Figure 1. Insert two AAA (alkaline or lithium, avoid rechargeable) batteries in the back of the indoor sensor.

We do not recommend rechargeable batteries because they start at a lower voltage and do not last as long, resulting in wireless transmission issues.

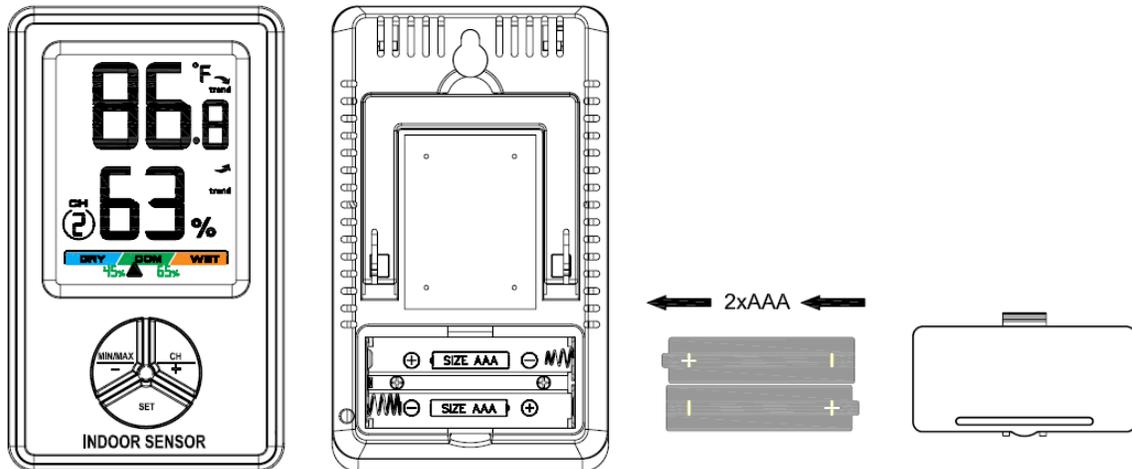


Figure 1

2. Insert two AAA batteries. After inserting the batteries, all of the LCD segments will light up for a few seconds to verify all segments are operating properly, and the transmission icon  will flash once per 60 seconds thereafter. Each time it flashes, the sensor is transmitting data.
3. Verify the correct channel number (CH) and temperature units of measure (°F vs. °C) are on

the display, as shown in Figure 2 (#12).

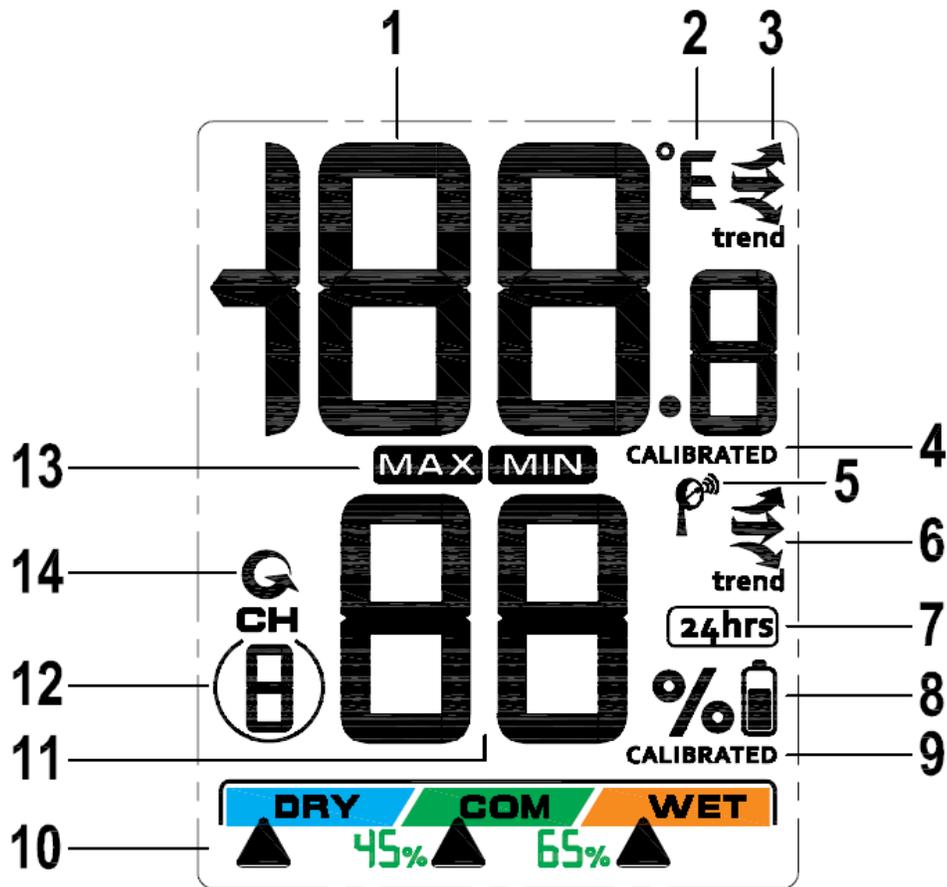


Figure 2

- | | |
|---|--|
| 1. Temperature | 8. Low power indicator |
| 2. Temperature units (°F or °C) | 9. Humidity Calibrated Icon (when the calibration is displayed) |
| 3. Temperature, Rate of Change indicator | 10. Humidity Comfort Colorful Icon |
| 4. Temperature Calibrated Icon (when the calibration is displayed) | 11. Relative Humidity (%) |
| 5. Transmission Icon (flashes when updating) | 12. Channel 1,2,3,4,5,6,7,8 indicator |
| 6. Humidity, Rate of Change indicator | 13. Min/Max Record mode |
| 7. Min/Max Clears daily mode | 14. Scroll Icon indicator setting Channel mode |

4. Close the battery door. Place on a table using the desk stand or hang on the wall using the suspension eye.

2.3 Display Features

2.3.1 Comfort Icon

The comfort icon is based on humidity ranges specified in Figure 3.

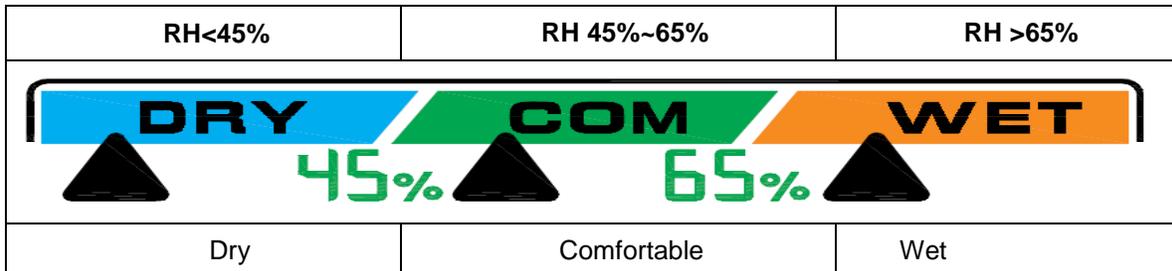


Figure 3

2.3.2 Rate of Change Icon

The rate of change icon  detects rapid changes in temperature and humidity. If the arrow points upward, the temperature is increasing at a rate of +2°F per 30 minutes (or greater), or humidity is increasing at a rate of +5% per 30 minutes (or greater). If the arrow points downward, the temperature is decreasing at a rate of -2°F per 30 minutes (or less), or humidity is decreasing at a rate of -5% per 30 minutes (or less).

3 Indoor Thermo-Hygrometer Sensor Operation

 **Note:** The indoor sensor has three buttons for easy operation: **MIN/MAX/-** button, **SET** button, and **CH/+** button.

3.1 Changing the Sensor Channel Number (optional)

If you are using the transmitter to send data to a wireless receiver, and own more than one sensor, they must transmit on separate channels.

To set a different channel, you must enter the channel scroll mode.

Press and hold the **CH/+** button 3 seconds to enter the scroll mode . In scroll mode, press the **CH/+** button to set channels 1 through 8. Press and hold the **CH/+** button 3 seconds to exit the setting, and the scroll icon  disappears.

 **Note:** **BEFORE** inserting the receiver batteries, set each indoor sensor channel number **FIRST** (the default is Channel 2, the outdoor sensor is usually defined as Channel 1).

3.2 Min/Max Mode

The Min/Max mode displays the minimum and maximum temperature and humidity (since reset of the unit) for the indoor sensor.

1. **Display Maximum.** Press the **MIN/MAX** button once to display the maximum. The **MAX** icon will be displayed.
2. **Clear Maximum.** To reset the maximum values to the current values, *press and hold* the **MIN/MAX** button for 3 seconds.

3. **Display Minimum.** Press the **MIN/MAX** button again to display the minimum. The **MIN** icon will be displayed.
4. **Clear Minimum.** To reset the minimum values to the current values, *press and hold* the **MIN/MAX** button for 3 seconds.

To return to normal mode, press the **MIN/MAX** button again.

3.3 Clearing Min/Max Daily

The minimum and maximum can be set to clear daily (every 24 hours automatically) or manually. Press and hold the **SET** button for 3 seconds to switch between **24hrs** and Clears Manually.

When you manually clear the minimum and maximum, the Clears Daily function will clear every 24 hours from the time you clear it.

For example, if you clear the min and max at 4:00pm, it will continue to clear every day at 4:00pm.

3.4 Temperature Units of Measure

The default temperature units of measure are degrees Fahrenheit. To toggle between degrees Celsius and degrees Fahrenheit, press and hold the **MIN/MAX** button for 3 seconds in normal mode.

4 Backlight Operation

To temporarily turn on the back light for five seconds, press the **any** button on the indoor sensor.

5 Adjustment or Calibration

 **Note:** The measured humidity range is between 10 and 99%. Humidity cannot be accurately measured outside of this range without an expensive hygrometer. Thus, the humidity cannot be calibrated below 10% or above 99%.

The purpose of calibration is to fine tune or correct for any sensor error associated with the devices margin of error. The measurement can be adjusted from the console to calibrate to a known source.

Calibration is only useful if you have a known calibrated source 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. They are in a different location and typically update once per hour.

The purpose of your weather station is to measure conditions of your surroundings, which vary significantly from location to location.

5.1 Humidity Calibration

To enter the humidity calibration mode, press and hold the **SET and MIN/MAX** buttons at the same time for 3 seconds, and the humidity value will begin flashing. Press the **CH/+** button to increase the humidity and the **MIN/MAX/-** button to decrease the humidity reading in 1% increments. To rapidly increase (or decrease) the humidity reading, press and hold the **CH/+** or **MIN/MAX/-** button.

To return the humidity to the actual or uncalibrated measurement, press the **SET** button. **CALIBRATED** will be displayed when the humidity calibrated measurement.

Once the displayed humidity equals the calibrated source, press and hold the **SET** button for three seconds, or wait 15 seconds for timeout, and the humidity value will stop flashing.

 **Discussion:** Due to manufacturing tolerances, the humidity is accurate to $\pm 5\%$. In addition, capacitive hygrometers are susceptible to drift due to contamination. To improve this accuracy, the indoor and outdoor humidity can be calibrated using an accurate source, such as a sling psychrometer or one step humidpak calibration kits available at AmbientWeather.com.

5.2 Temperature Calibration

To enter the temperature calibration mode, press and hold the **SET and CH/+** buttons for 3 seconds and the temperature value will begin flashing. Press the **CH/+** button to increase the temperature and the **MIN/MAX/-** button to decrease the temperature reading in 0.1° increments. To rapidly increase (or decrease) the temperature reading, press and hold the **CH/+** or **MIN/MAX/-** button.

To return the temperature to the actual or uncalibrated measurement, press the **SET** button. **CALIBRATED** will be displayed when the temperature calibrated measurement.

Once the displayed temperature equals the calibrated source, press and hold the **SET** button for three seconds, or wait 15 seconds for timeout, and the temperature value will stop flashing.

 **Discussion:** Temperature errors can occur when a sensor is placed too close to a heat source (such as a building structure, the ground or trees).

To calibrate temperature, we recommend a mercury or red spirit (fluid) thermometer. Bi-metal (dial) and other digital thermometers are not a good source and have their own margin of error.

Place the sensor in a shaded, controlled environment next to the fluid thermometer, and allow the sensor to stabilize for 48 hours. Compare this temperature to the fluid thermometer and adjust the console to match the fluid thermometer.

6 Indoor Sensor Installation

Indoor use only. It is recommended you mount the Indoor sensor in a shaded area. Avoid indirect sunlight and radiant heat sources that will result in inaccurate temperature readings. Use a screw or nail (not included) to affix the indoor sensor to the wall, as shown in Figure 4.

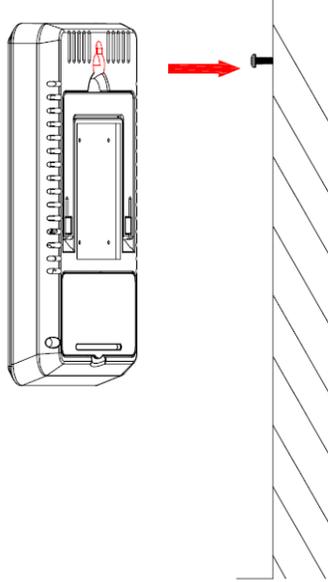


Figure 4

To place on a table or horizontal surface, fold out the desk stand, as shown in Figure 5.

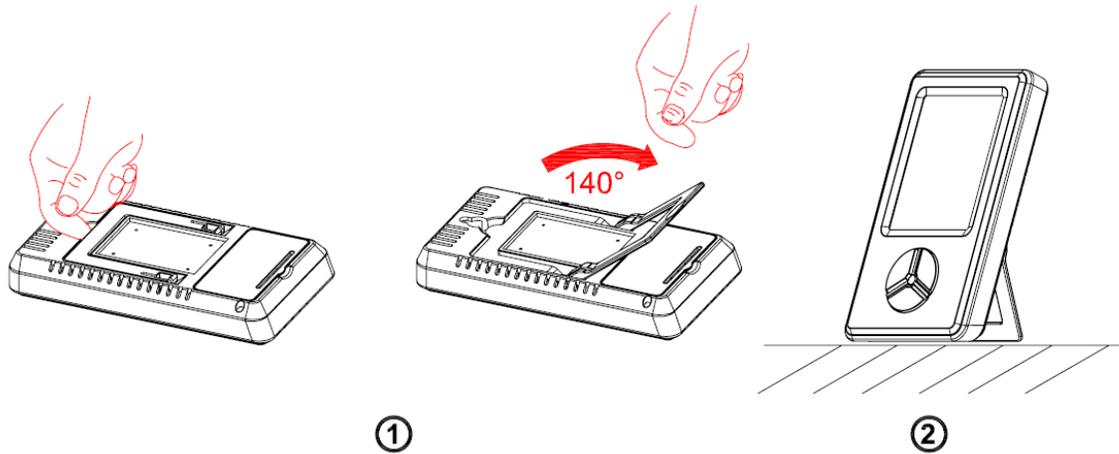


Figure 5

Place the console at least three feet away from computers, TVs and wireless phones. Avoid transmitting through solid metal barriers, as shown in Figure 6.

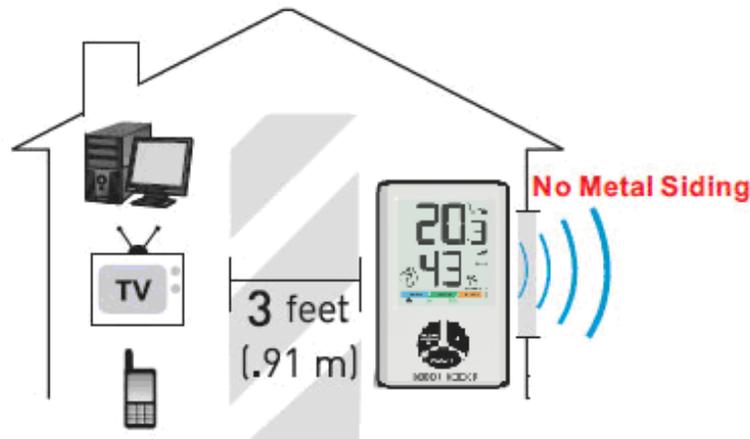


Figure 6

7 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 433 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.

8 Glossary of Terms

Term	Definition
Accuracy	Accuracy is defined as the ability of a measurement to match the actual value of the quantity being measured.
Hygrometer	A hygrometer is a device that measures relative humidity. Relative humidity is a term used to describe the amount or percentage of water vapor that exists in air.
Range	Range is defined as the amount or extent a value can be measured.

9 Specifications

9.1 Wireless Specifications

- Line of sight wireless transmission (in open air): 150 feet, 100 feet under most conditions.
- Frequency: 433 MHz
- Update Rate: 60 seconds

9.2 Measurement Specifications

The following table provides specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution
Channel 1-8 Temperature	0 to 140 °F	± 1 °F	0.1 °F
Channel 1-8 Humidity	10 to 99 %	± 5% (only guaranteed between 20 to 90%)	1 %

9.3 Power Consumption

- 2 x AAA 1.5V Alkaline or Lithium batteries (not included)
- Battery life: Minimum 12 months for indoor sensor. Using the backlight often may reduce the battery life.

10 Troubleshooting Guide

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

1. Email Support: support@ambientweather.com
2. Live Chat Support: www.ambientweather.com/chat.html (M-F 8am to 3pm Arizona Time)
3. Technical Support: 480-346-3380 (M-F 8am to 4pm Arizona Time)

Problem	Solution
<p>Wireless remote not reporting in to console.</p> <p>There are dashes (---) on the display console.</p>	<p>The maximum line of sight communication range is 150' and 100' under most conditions. Move the sensor closer to the display console.</p> <p>If the sensor assembly is too close (less than 5'), move the sensor assembly away from the display console.</p> <p>Make sure the remote sensor LCD display is working and the transmitter light is flashing once per 60 seconds..</p> <p>Make sure the remote sensors are not transmitting through solid metal (acts as an RF shield), or earth barrier (down a hill).</p> <p>Move the display console around electrical noise generating devices, such as computers, TVs and other wireless transmitters or receivers.</p>

Problem	Solution
LCD display fading or unreadable.	Replace batteries in the thermometer. Extreme heat or cold will cause the display to fade but does not affect the wireless functionality. Bring into house to restore display.

11 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.

No part of this manual may be reproduced without written authorization of the manufacturer.

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

12 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.

13 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 a 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.

