

M4098 CTXL Addendum

CTXL-TRH Wireless Temperature/ Humidity Chart Recorder

CTXL-PT Series Wireless Temperature/Humidity Transmitter

CTXL-PR Series Wireless Temperature/Humidity Receiver

WIRELESS
TRANSMITTER



WIRELESS
RECEIVER



1 - Introduction

This is our standard CTXL-TRH recorder, except that the temperature/humidity probe is wireless. The wireless probe consists of a temperature/humidity wireless transmitter and a wireless receiver.

The wireless transmitter has a built-in temperature/humidity sensor that measures the air quality (Temperature & Humidity). It then transmits the data to a wireless receiver thru an RF link. The transmitter is operated from one AA size lithium battery and/or a DC adapter input. The transmitter also has two LED indicators. One Green LED is for transmission indication. One Red LED is for low battery indication as well as other wireless communication errors.

The wireless receiver plugs directly to the circular chart recorder where a temperature/humidity probe is normally plugged into. The wireless receiver acts as a probe, so the wireless RF link is totally transparent to the circular chart recorder. The recorder thinks that it is directly connected to the probe. This design allows us to offer the wireless probe as an option to all existing recorders in the field. There is no internal upgrade required to make a standard circular chart recorder wireless.

Figure 1 shows Temperature/ Humidity wireless transmitter, General Dimensions, Labels and descriptions.

Figure 2 shows the Battery location in the wireless transmitter. You need to open the case to get access to the battery.

Figure 3 shows Temperature/ Humidity wireless receiver, General Dimensions, Labels and descriptions.

Figure 4 shows the General Dimensions of the mounting bracket plate.

Figure 5 shows the wireless transmitter mounting bracket assembly.

Figure 6 shows the transmitter mounting bracket assembly for tripod mount.

Figure 7 shows the transmitter mounting bracket with DIN rail mount.

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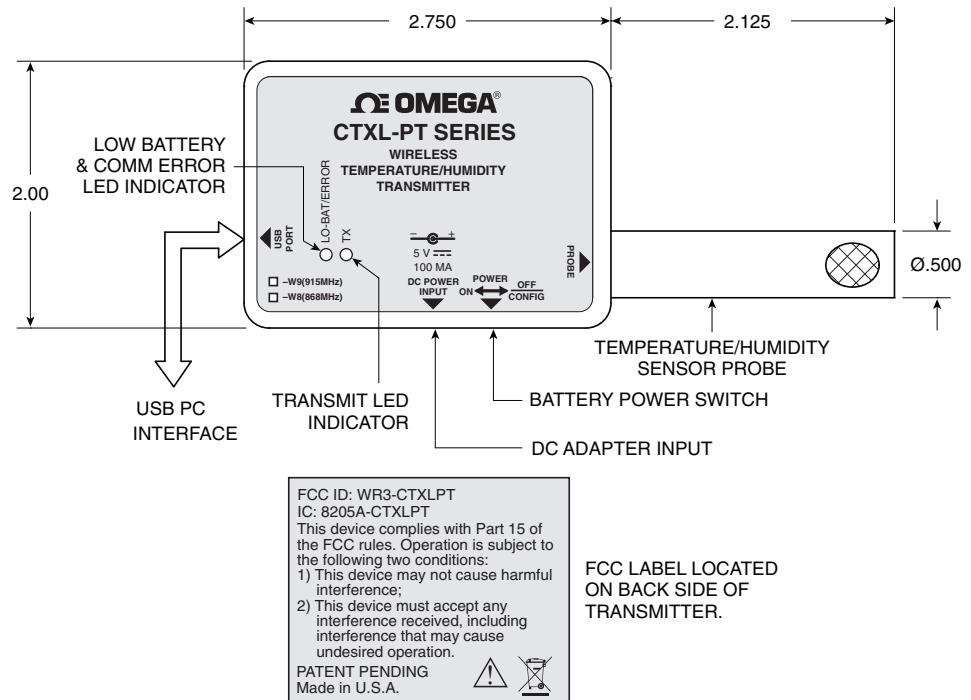


Figure 1. Temperature/Humidity Wireless Transmitter, General Dimensions, Labels and Descriptions

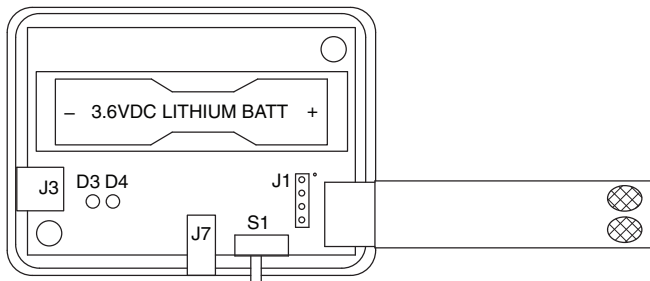


Figure 2. Battery Location in the Wireless Transmitter

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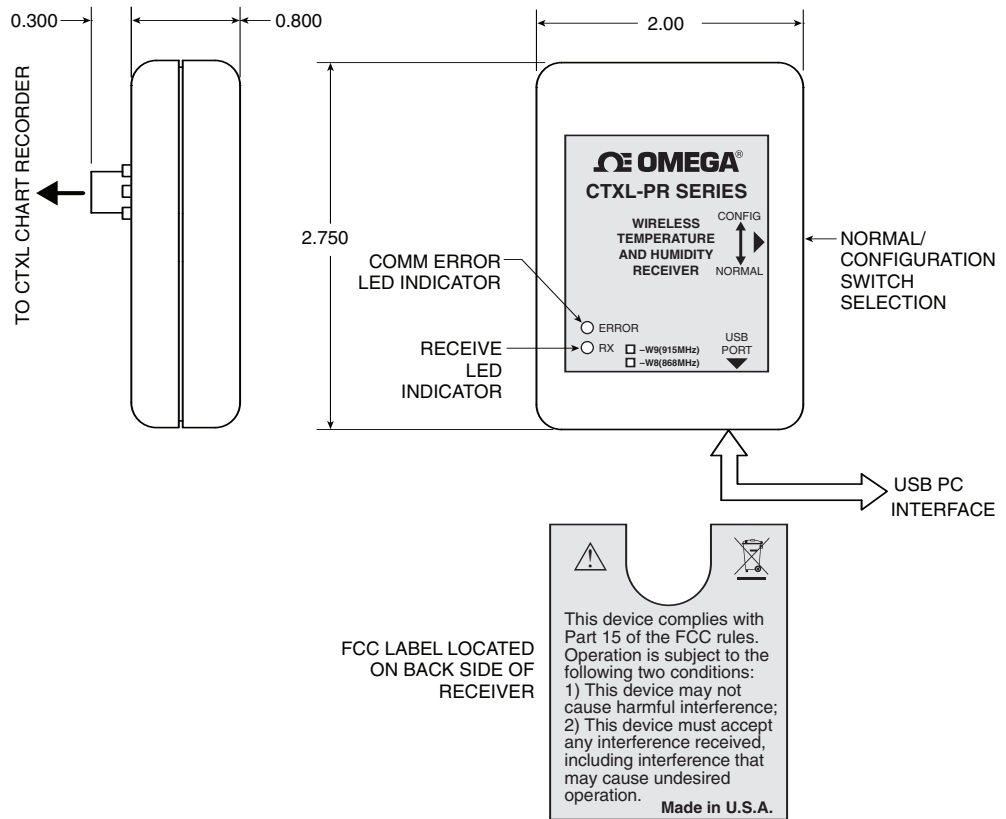


Figure 3. Temperature/Humidity Wireless Receiver, General Dimensions, , Labels and Descriptions

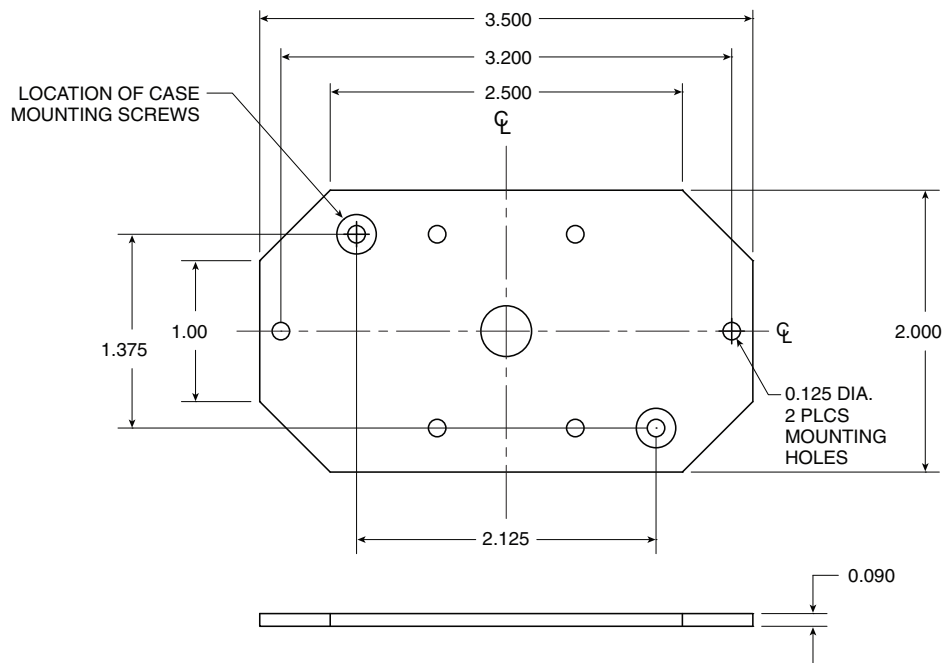


Figure 4. Mounting Bracket Plate General Dimensions

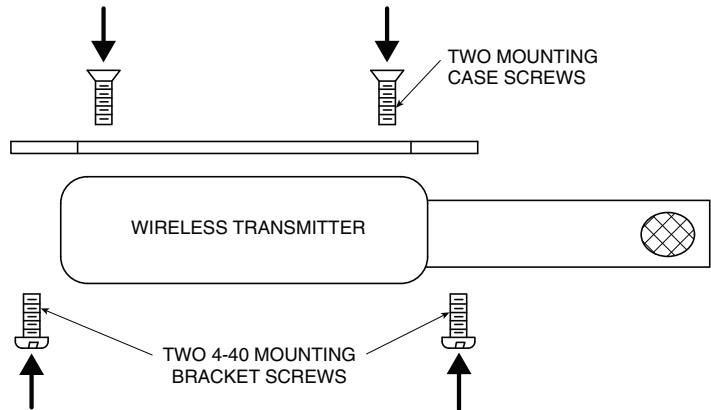


Figure 5. Wireless Transmitter Mounting Bracket Assembly

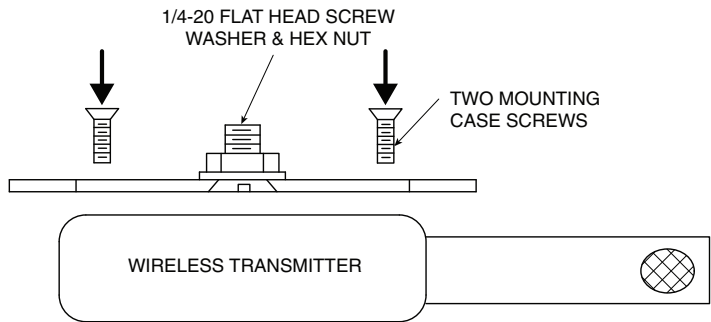


Figure 6. Transmitter Mounting Bracket Assembly For Tripod Mount

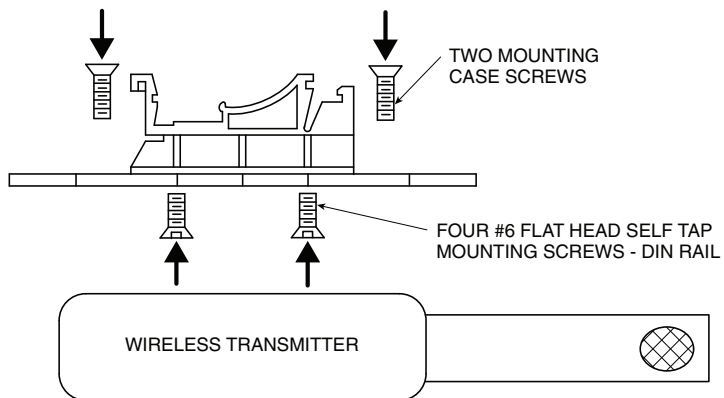


Figure 7. Transmitter Mounting Bracket With DIN Rail Mount

2 - Configuration

The wireless transmitter and receiver have the following factory default configuration:

Transmission time interval: 2 seconds

Channel Frequency: 915 MHz (US & Canada) or 868 MHz (Europe)

Unit ID: 00 (Both transmitter & receiver)

The user does not have to do any configuration to the transmitter or the receiver if the factory configuration is satisfactory. However, if the user wants to change the configuration, then you need to run the configuration software that comes with the unit. Through the configuration software, the user can change the transmission interval, channel frequency and the unit ID number. First install the configuration software on your PC.

Configuring the wireless Transmitter – Turn off the battery power. Connect the transmitter to the USB port of the PC with the cable provided. Run the configuration software. Figure 8 shows the main menu of the software. The buttons and the menu selections are described as follows:

Run – It will display the temperature/humidity in real time.

Program – It will save the new settings to the transmitter.

Read – It will read the current settings of the transmitter

Settings – It will take you to the communication settings menu

Frequency – You can select between 910/ 915/920 MHz frequencies.

Time interval – You can select from 2 seconds up to 2 minutes.

Unit ID - You can select a unit ID from 00 to 63.

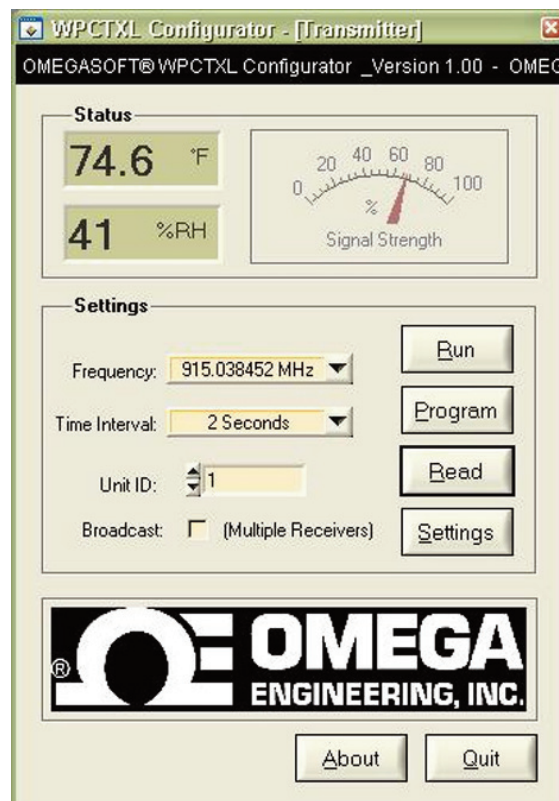


Figure 8. Wireless Transmitter, Main Menu

You can have up to a total of 64 wireless transmitters in one location with different unit ID numbers, so that there will not be any conflict between any of the transmitters.

If you select the Broadcast option, the transmitter will transmit to any receiver in the area at the same frequency regardless of its unit ID number.

After saving the new configuration, exit the program. Un-plug the transmitter from the USB port, turn the battery power back on and you are good to go.

Configuring the wireless Receiver – Unplug the receiver from the chart recorder. Connect the receiver to the USB port of the PC with the cable provided. Set the slide switch to "Config". Run the configuration software. Figure 9 shows the main menu of the software. The buttons and the menu selections are described as follows:

Run – It will display the temperature/humidity in real time from the transmitter. There is an RF signal strength gauge where it shows the signal strength of the transmitter being received by the wireless receiver. This is a guide to show the user how to install the transmitter with respect to the receiver so that you maintain good signal strength and as a result good and reliable RF communication.

Program – It will save the new settings to the receiver.

Read – It will read the current settings of the receiver

Settings – It will take you to the communication settings menu

Frequency – You can select between 910/915/920 MHz frequencies.

Time interval – You can select from 2 seconds up to 2 minutes.

Unit ID - You can select a unit ID from 00 to 63.

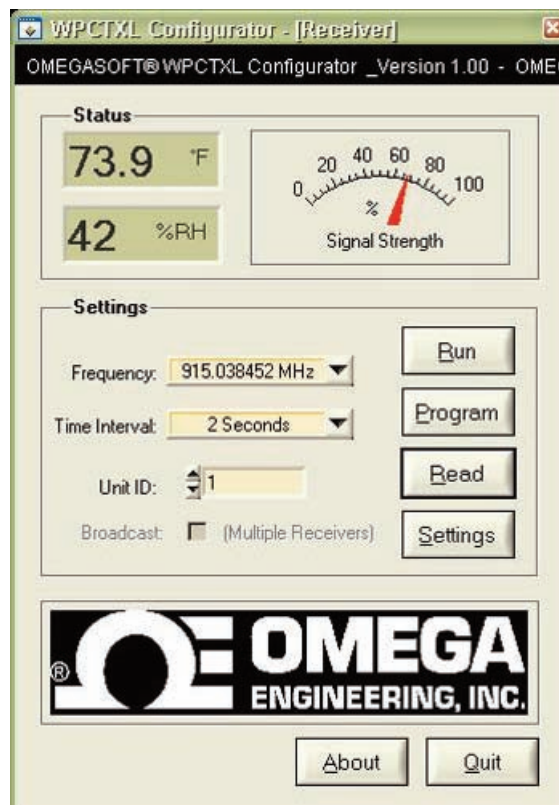


Figure 9. Wireless Receiver, Main Menu

You can have up to a total of 64 wireless receivers in one location with different unit ID numbers, so that there will not be any conflict between any of the receivers.

In order for a pair of wireless transmitter and receiver to communicate properly, the time interval, channel frequency and the unit ID should be the same for both.

After saving the new configuration, exit the program. Un-plug the receiver from the USB port, set the slide switch to "Normal", plug the receiver back to the chart recorder and you are good to go.

Figure 10 shows the settings menu for selecting the COM port, and the temperature Engineering unit.



Figure 10. Settings Menu (Transmitter/Receiver)

3 - Specifications

GENERAL

Temperature:

Range:	-18 to 49°C (0 to 120°F)
Display Accuracy:	1°C (2°F)
Chart Accuracy:	1.5°C (3°F)
Display Resolution:	0.1° F or C

Relative Humidity:

Range:	2 to 98% RH
Display Accuracy:	3% RH (From 15 to 90% RH), 5% RH (< 15 or >90 %RH)
Chart Accuracy:	4% RH (From 15 to 90% RH), 6% RH (<15 or >90 % RH)
Display Resolution:	1% RH

Display Data Sampling Rate: Once every 2 seconds

WIRELESS TRANSMITTER

Transmit time interval: 2 seconds – default, 10 seconds, 30 seconds, 1 minute, 2 minutes

Radio Frequency: ISM 915 MHz or ISM 868 MHz

RF Power Output: 5 dBm (3.16 mW)

Approvals:

Model: CTXL-TRH-(W or G)-W9:	FCC, Class A, 915 MHz (US & Canada)
Model: CTXL-TRH-(W or G)-W8:	CE, 868 MHz (Europe)
Model: CTXL-PT-W9:	FCC, Class A, 915 MHz (US & Canada)
Model: CTXL-PT-W8:	CE, 868 MHz (Europe)

RF Link Range:

Outdoor, line of sight:	Up to 90 m (300')
Indoor/urban:	Up to 33.5 m (110')

PC Interface: USB, 115200 baud rate, 8-bit Data, 1 Stop bit, No Parity

Operating Environment: -18 to 49°C (0 to 120°F), 2 to 98% RH

LED indicators:

Green LED:	Transmit indication, blinks every time interval
Red LED:	Low Battery and other communication error indications

Power: One 3.6 Vdc AA size Lithium Battery, 2400 mAH capacity or Optional AC adapter

Battery Life: 1 year typical at transmitting every minute
6 months typical at transmitting every 2 seconds

Dimensions: 70 x 51 x 20 mm (2.75" x 2" x 0.8")

WIRELESS RECEIVER

PC Interface:	USB, 115200 baud rate, 8-bit Data, 1 Stop bit, No Parity
Operating Environment:	-18 to 49°C (0 to 120°F), 2 to 98% RH
LED indicators:	
Green LED:	Receive indication, blinks every time interval
Red LED:	Reflects transmitter low battery and other communication error indications
Power:	From the CTXL recorder through the round DIN connector
Dimensions:	70 x 51 x 20 mm (2.75 x 2 x 0.8")

4 - Error Codes**Transmitter Error Codes**

The wireless transmitter uses the Red LED to provide different error information to the user and to the wireless receiver as follows:

2 Red LED Blinks means there is an RF communication error such as Framing, CRC, buffer overflow, etc.

3 Red LED Blinks means that the transmitter fails to communicate with the sensor probe

4 Red LED Blinks means Low Battery indication.

The highest priority error code is 2 blinks for RF communication error. The lowest priority error code is 4 blinks to indicate low battery. If multiple errors occur at the same time such as bad sensor probe and low battery, the transmitter's red LED will blink 3 times. Only when this error clears, then the transmitter's red LED will blink 4 times to indicate the low battery.

The red LED error reporting occurs every 30 seconds regardless of the transmission time interval.

Receiver Error Codes

The wireless receiver basically reflects all the error codes of the wireless transmitter as follows:

1 Red LED Blink means No good message has been received from the transmitter within 4 transmission time intervals (like 4 minutes for 1 minute time interval), or 30 seconds minimum. The receiver will continue to search for the transmitter's message 10 more minutes before deciding that the transmitter is either off, out of order, or out of range at which point the receiver will shut itself off to conserve power.

If the wireless transmitter is back on line after 10 minutes, then the user needs to un-plug the receiver from the recorder and plug it back in to reset the wireless receiver.

2 Red LED Blinks means there is an RF communication error such as Framing, CRC, buffer overflow, etc.

3 Red LED Blinks means that the transmitter fails to communicate with the sensor probe

4 Red LED Blinks means the transmitter's Battery is low.

The highest priority error code is 1 LED blink for No good message from the transmitter. The lowest priority error code is 4 LED blinks to indicate transmitter's low battery. If multiple errors occur at the same time such as bad sensor probe and low battery, then the receiver's red LED will blink 3 times. Only when this error clears at the transmitter, the receiver will then blink 4 times to indicate the next error, if any.

The red LED error reporting occurs every 10 seconds regardless of the transmission time interval.

Any error code except for the low battery means Probe Error for the chart recorder.

Wireless Transmitter Error Codes	Description
2 Red LED Blinks	RF Communication Error
3 Red LED Blinks	Failed to communicate with sensor probe
4 Red LED Blinks	Low Battery

Wireless Receiver Error Codes	Description
1 Red LED Blink	No Good Message received from Transmitter
2 Red LED Blinks	RF Communication Error
3 Red LED Blinks	Transmitter Failed to communicate with Sensor
4 Red LED Blinks	Transmitter Low Battery

5- Statement on FCC and CE Marking:

5.1 FCC - USA & Canada

FCC ID: WR3-CTXLPT

IC: 8205A-CTXLPT

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

Changes or modifications not expressly approved by Omega Engineering, Inc. could void user's authority to operate this equipment.

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

5.2 International Usage & CE Marking (Pending)

The Wireless CTXL (868 MHz mode) Series system components are CE marked and certified for use in several European countries. Please contact OMEGA for information on International Regulatory Compliance for each country.

It is your (the user's) responsibility to insure that these products are operated within the guidelines here in this manual and in conformance with all local or national regulations and laws.

PRE-CAUTIONS - Transmitter Operation

- Do not operate your wireless device outside the recommended environmental limits specified in this manual.
- Do not operate your wireless device in flammable or explosive environments.
- Do not operate your wireless device in medical, nuclear, or other dangerous applications.

- No co-location with other radio transmitters is allowed. By definition, co-location is when another radio device or its antenna is located within 20 cm of your wireless device and can transmit simultaneously.
- Do not install two wireless CTXL transmitters within 20 cm of each other.
- Do not operate your wireless transmitter closer than 20 cm to nearby persons.

PRE-CAUTIONS - Battery Operation

Your wireless transmitter is supplied with one AA size 3.6V Lithium battery (Omega p/n OM-NOMAD-BATT). This battery is not re-chargeable. An optional 5V DC adapter is available (Omega p/n UNIV-AC-100/240-5V) for permanent power installation.

- Do not operate your wireless transmitter with any other battery other than what is specified in this manual.
- Do not place the battery in fire or heat the battery.
- Do not solder to or short the battery terminals.
- Do not disassemble or modify the battery.
- Dispose of your discharged batteries in accordance with your local, state, and national laws.