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NORWALK, CT



MANCHESTER, UK

UWXL-24-TC/RTD **Long Distance Industrial Wireless** **Thermocouple/RTD Transmitters**



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Section 1 - Introduction

Please read this manual completely before installing and operating your wireless connector / transmitter and receiver system. It's important to read and follow all notes, cautions, warnings and safety precautions before operating this device. "Device" refers to your transmitter or receiver unit.

1.1 Precautions

- This device is not designed for use in any medical or nuclear applications.
- Do not operate this device in flammable or explosive environments.
- Never operate with a power source other than the one recommended in this manual or listed on product labels.
- This device has been designed for dry, moisture free indoor applications only.
- Do not operate this device outside of the recommended use outlined in this manual.
- No co-location with other radio transmitters is allowed. By definition, co-location is when another radio device or it's antenna is located within 20 cm of your transmitter and can transmit simultaneously with your UWXL unit.
- Never install UWXL transmitters within 20 cm or less from each other.
- Never install and /or operate your UWXL transmitter closer than 20 cm to nearby persons.
- Never use your UWXL transmitter as a portable device. Your unit has been designed to be operated in a permanent installation only.

NOTE:

There are no user serviceable parts inside your device. Attempting to repair or service your unit may void your warranty:

1.2 Safety Warnings and IEC Symbols

This device is marked with international safety and hazard symbols in accordance with IEC standards. It is important to read and follow all precautions and instructions in this manual before operating or commissioning this device as it contains important information relating to safety and EMC. Failure to follow all safety precautions may result in injury and or damage to your device. Use of this device in a manner not specified will void your warranty

IEC symbols

Description



Caution, refer to accompanying documentation

EU's Waste Electrical and Electronic Equipment Compliance

Figure 1-1. IEC Symbols

1.3 Product Labeling

1.3.1 Connector Front Labels



Figure 1-2. Transmitter Top Label

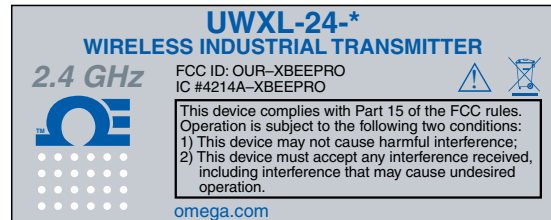


Figure 1-3. Transmitter Rear Label

1.4 Statement on FCC and CE Marking

1.4.1 FCC Marking

FCC ID: OUR-XBEEPRO IC #4214A-XBEEPRO

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.

1.5 General Description & System Components

1.5.1 General Description

Your UWXL Series Long Distance Industrial Transmitter features stand-alone, rugged, battery powered, wireless transmitters that send their readings back to a host receiver up to 450 m (1500') away. Each thermocouple unit can be programmed in the field to work as a type J, K, T, E, R, S, B, N or C calibration connector. Each RTD connector can be programmed for a 100 ohm, 2 or 3 wire configuration with a 0.000385 or 0.000392 curve. When activated the connector will transmit readings continuously at a pre-set time interval that was programmed by the user during the initial setup. Each unit measures and transmits: Process Input Reading, Ambient Temperature, RF Signal Strength and Battery Condition to the host and is displayed on the PC screen in real time using the provided software. When used with host receiver model UWTC1 data from up to 48 wireless connectors can be received and displayed. Each unit includes free software that converts your PC into a strip chart recorder or data logger so readings can be saved and later printed or exported to a spread sheet file.

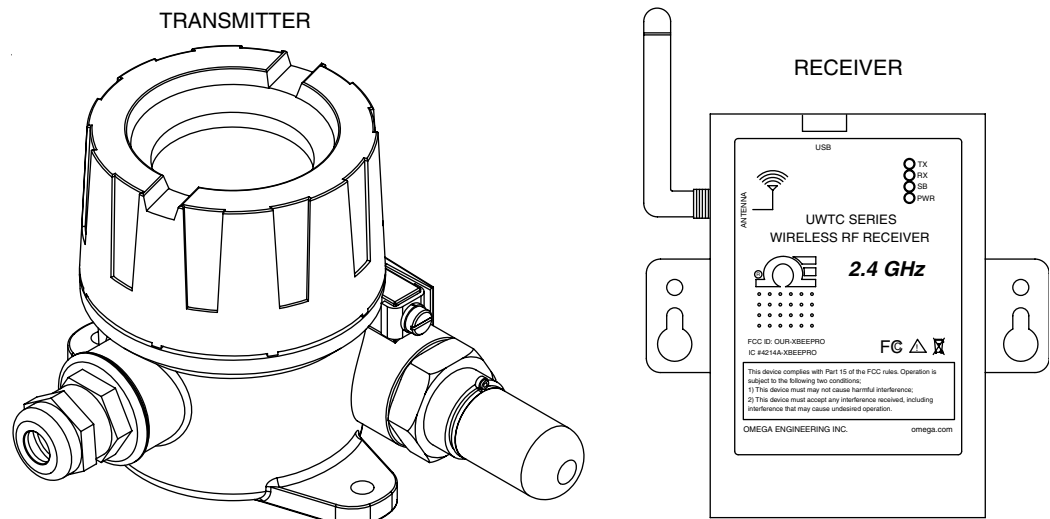


Figure 1-4. System Components

Section 2 – Hardware

It is important that you read this manual completely and follow all safety precautions before operating this instrument.

2.1 Package Inspection

Remove the packing list and verify that you have received all your equipment. If you have any questions about the shipment, please call our Customer Service Department at **1-800-622-2378** or **203-359-1660**. We can also be reached on the Internet at **omega.com**, e-mail: **cservice@omega.com**. When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE:

The carrier will not honor any damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

2.2 Included Items

The following items are supplied in the box.

With the model UWXL-24-TC, UWXL-24-RTD Transmitter

- 1 Transmitter w/ Antenna
- 1 User's Guide

With model UWTC1, UWTC2-D Receiver

- 1 Receiver Device
- 1 UWXL Receiver Manual
- 1 USB Interface Cable
- 1 TC Central User Software CD

Section 3 – Transmitter Operation

3.1 Setup and Configuration

3.1.1 Connecting your device

Connect the USB cable to your transmitter unit and also to an available USB port on your computer. See figure below. This cable was provided in the box with your receiver unit. This same cable is used for programming your transmitter units and for running your receiver later.



Figure 3-1. Connecting Your Device

3.1.2 Configure Your Transmitter

Now that you have connected your USB cable to your PC and transmitter you will complete the following steps to configure your transmitter before placing the unit into operation. You will be using the configuration software utility that you installed onto your PC. If you have not installed the configuration software utility you should do so now.

During this procedure you will be setting the following parameters in your connector transmitter.

Thermocouple Type

This will program your device to provide the correct temperature readings to your receiver for the type of thermocouple you will be using. Available types are J, K, T, E, R, S, N, B.

RTD Type

This will program your device to provide the correct temperature readings to your receiver for the type of RTD you will be using.

Connector Address

This sets a unique address number into your connector / transmitter. Later, when you set up your measurement software you will again set channel numbers to receive readings from the corresponding unit(s). Each connector must be set for a different channel number for your system to operate correctly.

NOTE:

If you will be using more than one receiver unit in your area it is important to set the transmitter address numbers to be a corresponding number in your TC-Central software. See Examples below.

For the first receiver:

Set the channels on your transmitters to 101, 102, 103, 104, etc. Then set the channels in your TC-Central user software to match.

For the second receiver:

Set the channels on your transmitters to 201, 202, 203, 204, etc. Then set the channels in your TC-Central user software to match.

This numbering scheme can be expanded to match the number of receivers you are using.

Sample Rate

This will program your device to transmit 1 data reading to your receiver at a specified time interval. Available settings are 2, 3, 5, 15, 30, 45, 60, 75, 90 or 120 seconds

NOTE:

The sample rate you set will have the most direct effect on the life of the battery in your transmitter. It is recommended that you set the longest sample time that your application can live with to extend time between battery replacement. See Section 6 for more information on battery life.

STEP 1. Enter the "SETUP" mode.

To place your transmitter into the "SETUP" mode for programming follow this procedure.

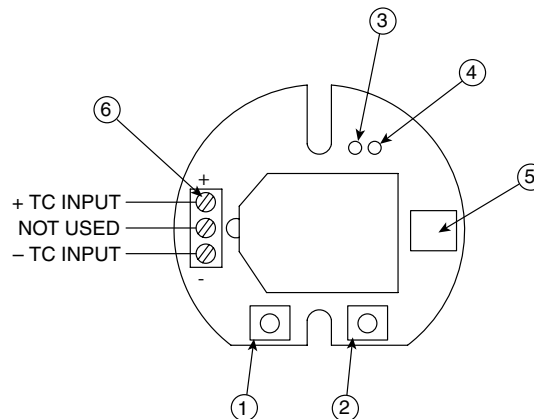


Figure 3-2. Setup Mode

- (1) "SETUP" Button (2) "ON/OFF" Button (3) Transmit Indicator
(4) Battery Indicator (5) USB Port (6) Sensor Input

Press and hold the "ON/OFF" button. While the "ON/OFF" button is being held, press the "SETUP" button one time and then release the "ON/OFF" button. The green (TX) indicator on the front of your device should be blinking at a steady rate. This indicates your transmitter is ready to run the configuration utility software.

STEP 2. Launch Setup Utility Program.

To launch the End Device setup utility program on your PC begin by accessing the “Programs” list under your “Start Menu”.

Scroll through the list of to find the “TC-Central” folder, then select the End Device Configuration Program.

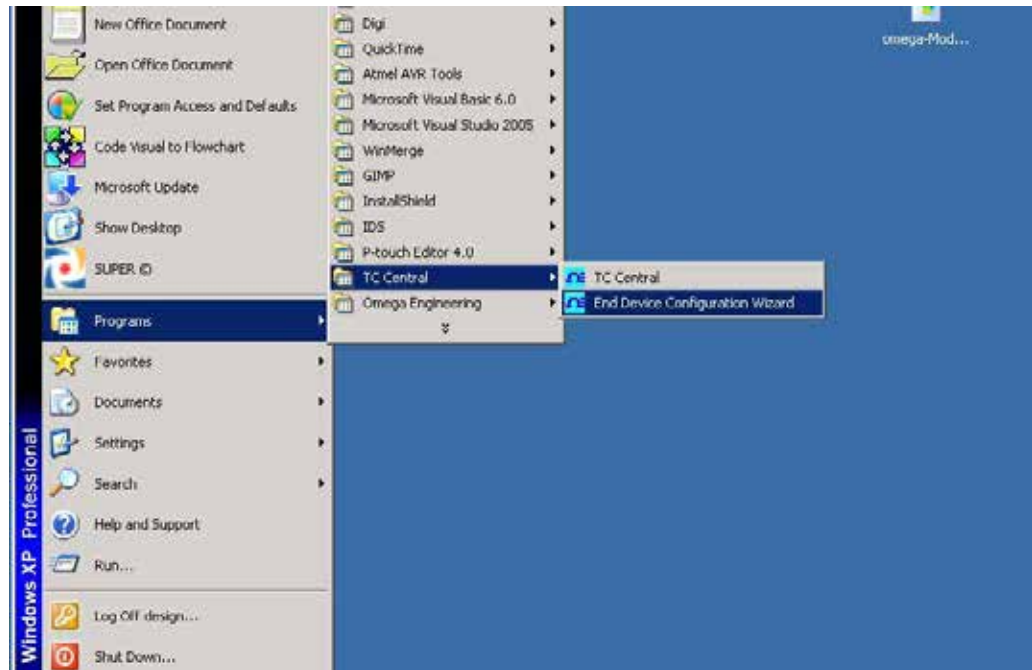


Figure 3-3. Launch Setup Utility Program

STEP 3. Programing your settings into a transmitter.



Figure 3-4.
Welcome To
Universal
Wireless
Screen

After starting the setup utility program this will be the first screen you will see. Click the “Next >” button to proceed and continue setting up your transmitter. Each screen will provide instruction details on how to proceed.



Figure 3-5.
Setup The
Transmitter
Screen

If you have not already placed your transmitter into the “Setup” mode you should do this now before continuing. After your unit has been placed into the “Setup” mode click the “Next >” button to proceed and continue setting up your transmitter.

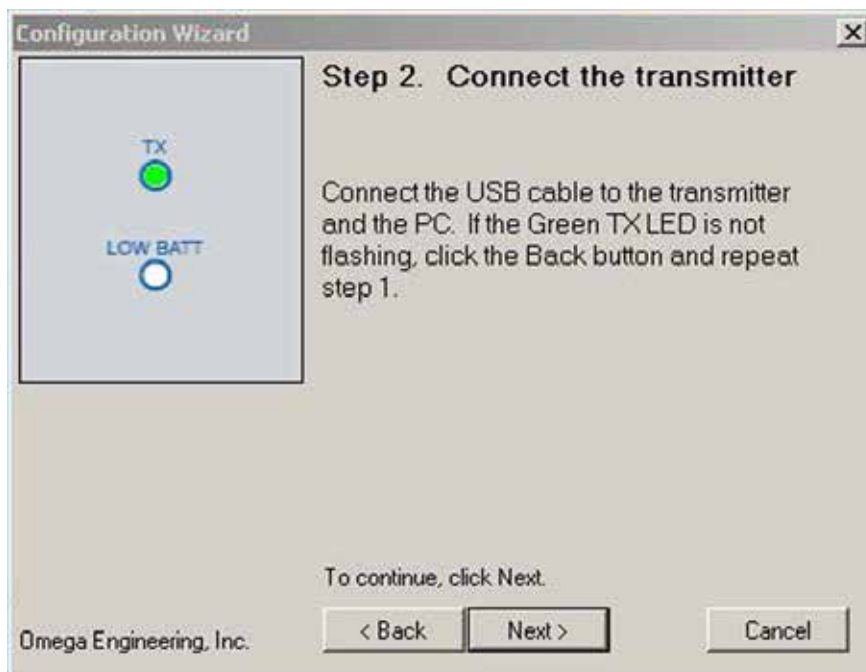


Figure 3-6.
Connect The
Transmitter
Screen

If you have not already connected your transmitter to a USB port on your PC you must do this now before continuing. After your unit has been connected click the “Next >” button to proceed and continue setting up your transmitter.



Figure 3-7.
Establish A
Link Screen

After successful communication between your transmitter has been established you can click the "Next >" button to proceed and continue setting up your transmitter. If you did not receive this confirmation of proper communication you should click the "Back" button to try connecting again. If you still do not obtain a good connection visit the "Troubleshooting" Section of this users guide for additional help.



Figure 3-8.
Choose
Options
Screen

From this screen you will select the main operating settings for your transmitter. Start by selecting the type of Thermocouple you will be using. Then select the address setting for this unit. (Note: Each transmitter must have a different address number than other units in your system for proper operation). Then select the sample rate that your unit will transmit data to the receiver. After making your selections click the "Next >" button to proceed and program your settings into transmitter.



Figure 3-9. Send Settings To Transmitter Screen

Congratulations! You have successfully programmed your transmitter. After your unit has been programmed click the “Finish” button to close the utility program or click the “Start” button to begin setting up a second unit. You can now disconnect your transmitter from the programming cable. Press the “Setup” button on the transmitter one time to exit the “Setup” mode.

3.2 Mounting, Installation and Antenna Connection

3.2.1 Mounting

The diagram below shows dimensions of the transmitter that allows you to mount it.

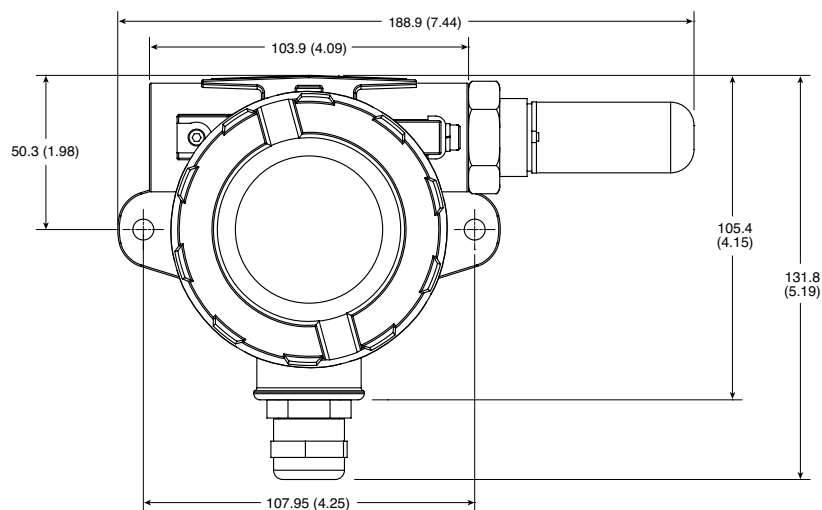


Figure 3-10. Mounting Dimensions, mm (inches)

When mounting your transmitter, care should be taken to make sure it is as far away from any metal objects. If nearby metal gets too close to your transmitter, it has the potential to interfere with the way the unit radiates and may cause signal loss or possibly even the inability to communicate at all with your receiver.

3.2.2 Installation

When installing your transmitter it is important to position your device in such a way as to optimize the antenna location within what's known as the "Fresnel Zone".

The Fresnel Zone can be thought of as a football-shaped invisible tunnel between two locations that provides a path for RF signals between your transmitter and your receiver.

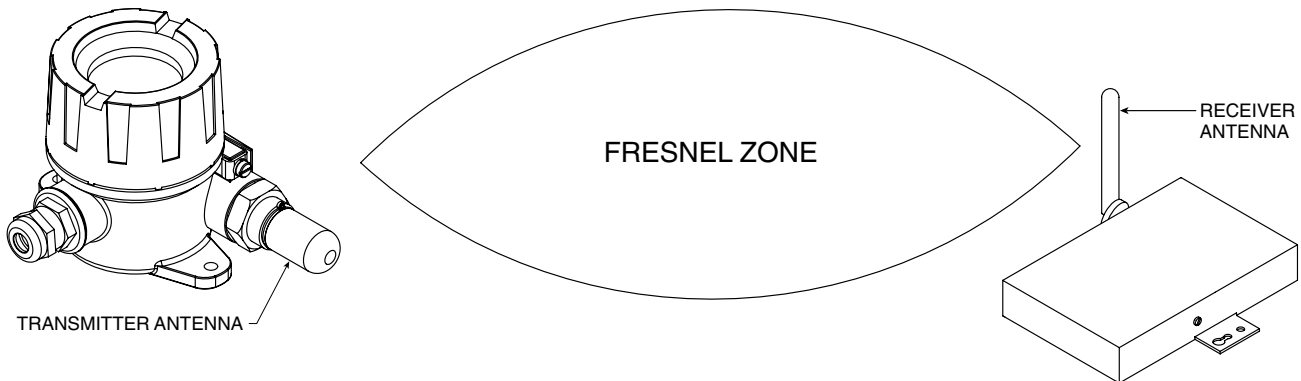


Figure 3-11. Fresnel Zone

In order to achieve maximum range, the football-shaped path in which radio waves travel must be free of all obstructions. Obstacles in the path (especially metal) will decrease the communication range between your transmitter and receiver. Also, If the antennas are mounted just barely off the ground, over half of the Fresnel zone ends up being obstructed by the earth resulting in significant reduction in range. To avoid this problem, the antennas should be mounted high enough off of the ground so that the earth does not interfere with the central diameter of the Fresnel zone.

NOTE:

It is important to understand that the environment may change over time due to new equipment or machinery being installed, building construction, etc. If new obstacles exist between your transmitter and receiver, the devices can be raised on one end or on both ends to hopefully clear the Fresnel Zone of obstructions.

NOTE:

No co-location with other radio transmitters is allowed. By definition, co-location is when another radio device or it's antenna is located within 20 cm of your transmitter and can transmit simultaneously with your UWXL unit.

NOTE:

Never install UWXL transmitters within 20 cm or less from each other.

NOTE:

Never use your UWXL transmitter as a portable device. Your unit has been designed to be operated in a permanent installation only.

3.2.4 Antenna Connection

Your device has been shipped to you with a standard antenna already attached. In some cases the user may wish to install a remote antenna to maximize transmission range to the receiver. In these instances the UWXL-RAK kit can be used. The kit includes a direction antenna, 8" extension cable and mounting bracket.

In some cases, a short RF cable may be used to connect an antenna to your device. Please note that RF extension cables will always add some loss to the transmitting signal strength. The longer the cable the more signal will be lost over that cable. Because of this the length of the cable should be kept as short as possible.

NOTE:

Use of any other antenna than what's supplied with your device will void all FCC regulatory compliance.

Additional Information on installation and system operation can be found in Section 6.

3.3 Thermocouple/RTD Connection

Your transmitter features a screw terminal connection which allows you to connect a wide range of sensors and probes. Models with integral probes are available from the factory. To connect a wire thermocouple or RTD, first remove the nut from the cable gland and put the wire through the nut and seal. Then feed the wire up through the cable gland fitting and around the outside of the PCB mounting bracket. Connect the wires to the proper terminals on the terminal block and then position the wire so that it does not interfere with the housing cap when installed. Once the wire is positioned you can remove any slack and tighten the cable gland nut to seal around the wire.

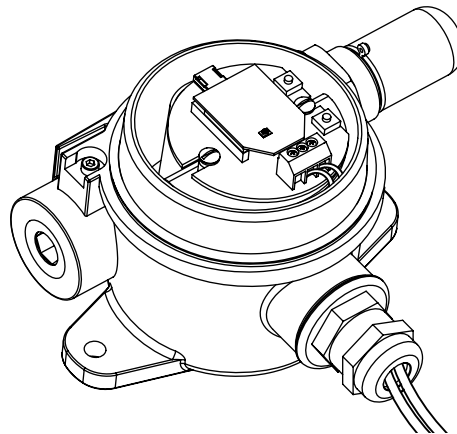


Figure 3-12. Thermocouple/RTD Connection

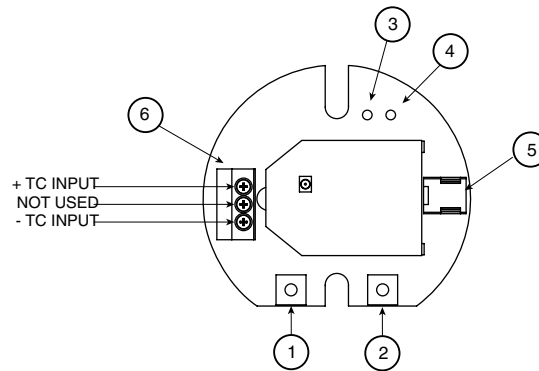


Figure 3-13. Thermocouple Terminal Block Connections

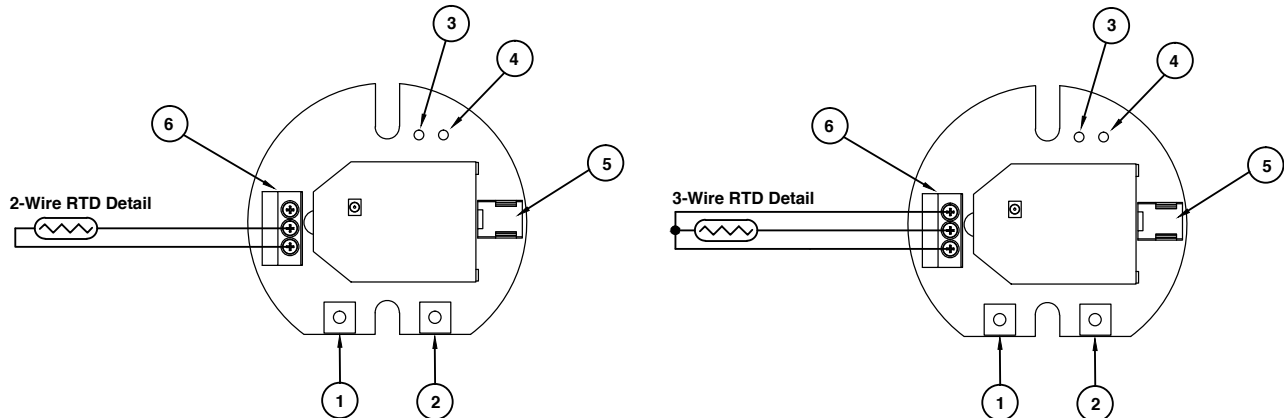


Figure 3-14. RTD Terminal Block Connections

3.3.1 Ambient Temperature Concerns

Your transmitter is rated for use in ambient temperatures between -10°C (14°F) to 70°C (158°F). Exposure to temperatures below or above these stated temperatures can cause your device to malfunction and produce incorrect operation. When installing your thermocouple probe care should be taken to make sure your transmitter will not be operated in an environment outside the specifications outlined in Section 7.

CAUTION:

Installing your transmitter in an application where the device will be exposed to ambient temperatures above or below the operating limits specified in this manual will damage your unit and cause the unit to malfunction and produce incorrect operation.

3.4 Battery Installation or Replacement

Your UWXL transmitter is equipped with a "C" size lithium power cell assembly, Omega Part Number: UWTC-BATT-C. To install a replacement battery assembly follow the steps on the next page.

NOTE:

It may be necessary for you to unplug your thermocouple/RTD from the transmitter before replacing your battery.

- A. Remove the two screws that secure the main circuit board assembly.
- B. Lift the circuit board just high enough to allow you to unplug the connector that attaches the battery assembly to the bottom of the circuit board.
- C. Remove the old power cell.
- D. Install your new battery assembly into the housing in the same position as the old battery was located.
- E. Connect the battery assembly connector to the mating connector on the bottom of the circuit board.
- F. Install the circuit board back into the housing and secure with the two screws you removed in step one.
- G. Installation complete.

WARNING:

Lithium batteries may get hot, explode or ignite and cause serious injury if exposed to abusive conditions. Be sure to follow the safety warnings listed below:
Your transmitter operates with one 3.6V Lithium Battery. Omega Replacement Part Number UWTC-BATT-C. Never operate your transmitter with a different battery than what is specified in this manual or on the product data sheet.

Do not discharge the battery using any device except your Transmitter unit. When the battery is used in devices other than the specified device, it may damage the battery or reduce its life expectancy. If the device causes an abnormal current to flow, it may cause the battery to become hot, explode or ignite and cause serious injury.

Refer to the Omega technical data sheet or this manual for the temperature ranges over which the battery can be operated. Use of the battery outside this temperature range may damage the Transmitter or reduce the performance and life of the battery.

- Do not place the battery in fire or heat the battery.
- Do not store batteries with other hazardous or combustible materials.
- Do not install the battery backwards so the polarity is reversed.
- Do not connect the positive terminal and negative terminal of the battery to each other with any metal object (such as wire).
- Do not carry or store the battery together with metal objects.
- Do not pierce the battery with nails, strike the battery with a hammer, step on the battery or otherwise subject it to strong impacts or shocks.
- Do not solder directly onto the battery.
- Do not expose battery to water or salt water, or allow the battery to get wet.
- Do not disassemble or modify the battery.
- When the battery is discharged, insulate the terminals with adhesive tape or similar materials before disposal.
- Immediately discontinue use of the battery if, while using or storing the battery, the battery emits an unusual smell, feels hot, changes color or shape, leaks or appears abnormal in any other way. Contact Omega if any of these problems are observed.
- Do not place the battery in microwave ovens, high-pressure containers.

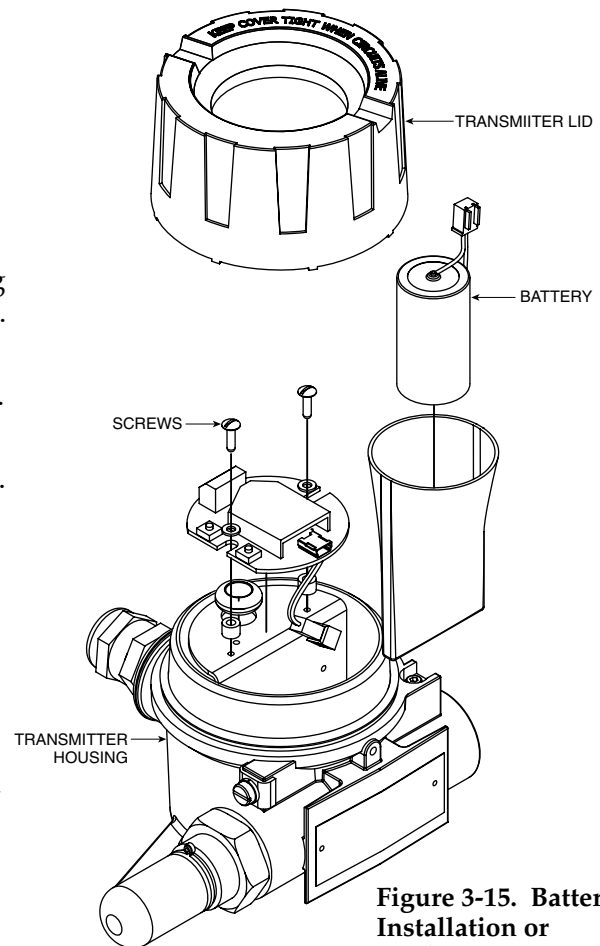


Figure 3-15. Battery Installation or Replacement

Section 4 - System Operation

4.1 Introduction

Compared to wired thermocouple systems, wireless thermocouple systems provide much simpler installation. Based on the physical principle of the propagation of radio waves, certain basic conditions should be observed. The following simple recommendations are provided to insure proper installation and correct operation of your UWXL Series system.

4.2 RF Communication Basics

The Model UWXL wireless Thermocouple Transmitter sends wireless transmissions to the UWTC-REC1 receiver. The receiver checks the incoming data for accuracy and processes this data for use by the measurement software on your PC. Radio signals are electromagnetic waves, hence the signal becomes weaker the further it travels. While radio waves can penetrate some solid materials like a wall, they are dampened more than when a direct line-of-sight between the transmitting and receiving antenna exist.

4.3 Basic System Overview

The UWXL wireless thermocouple system is comprised of only two main components; a Thermocouple Connector with a built-in battery powered 2.4 GHz radio transmitter, and a USB powered 2.4 GHz radio receiver.

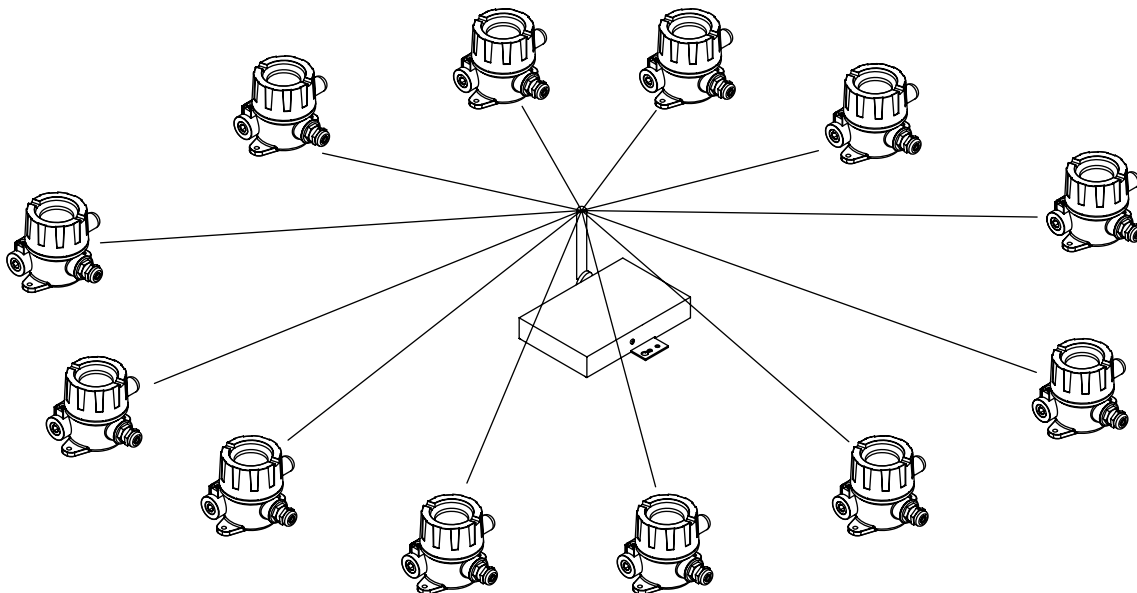


Figure 4-1. Basic System Overview

Up to 48 UWXL transmitters can be used with one Model UWTC-REC1 receiver.

4.4 Connector/Transmitter Operation

4.4.1 Button Operation

(1.) "PRESS ON/OFF"

The "PRESS ON/OFF" button on the front of your transmitter is used to turn your unit "ON" or "OFF"

(2.) "PRESS SETUP"

The "PRESS SETUP" button on the front of your transmitter is only used during the setup and configuration of your unit. See Section 3.1.2 for more information.

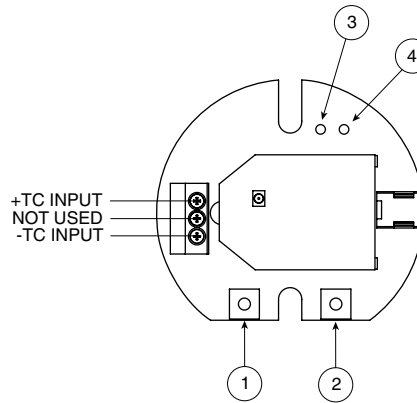


Figure 4-2. UWXL Industrial Wireless Transmitter Button Operation

- (1) "SETUP" Button (2) "ON/OFF" Button (3) Transmit Indicator
(4) Battery Indicator

4.4.2 Indicator Lights

(1) Transmit (TX) Green Indicator Light

The green indicator light marked "TX" on the front of the connector / transmitter will blink every time the unit sends data to the receiving unit. Example; If you selected a 5 sec sample rate the green TX led will blink one time every 5 seconds.

(2) Low Battery (Low Bat) Red Indicator Light

The red indicator light marked "Low Bat" on the front of the transmitter will turn on when the battery reaches a level at or below the power level required for normal operation. When this indicator turns on it's time to install a fresh battery in your unit. For information on battery life see Section 6.11.

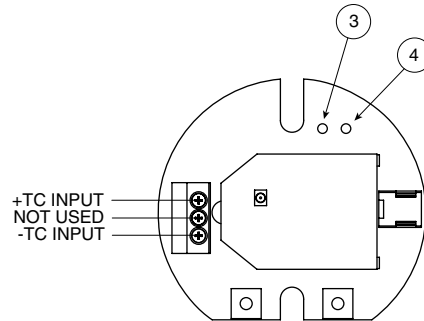


Figure 4-3. UWXL Industrial Wireless Transmitter Transmit and Low Battery Lights

- (1) "SETUP" Button (2) "ON/OFF" Button (3) Transmit Indicator
(4) Battery Indicator

4.5 Environment/Operating Conditions

4.5.1 Environment

Omega's UWXL series transmitters are designed to be fixed mounted and operated in either indoor or outdoor environments; they are also weather and dust-resistant. Care should be taken to prevent the components of your wireless system from being exposed to toxic chemicals and extreme hot or cold temperatures outside the specifications listed in this manual.

4.5.2 Operating Conditions

The following is a list of basic good practice you should apply when operating your wireless system.

- Never operate your wireless device outside the recommended environmental limits specified in this manual.
- Never operate your wireless device in flammable or explosive environments.
- Never use your wireless device in medical, nuclear or other dangerous applications where failure can cause damage or harm.
- Never operate your transmitter with any other battery or power source than what's specified in this manual or on the battery compartment label.
- 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 transmitter and can transmit simultaneously with your UWXL unit.
- Never install a transmitters within 20 cm or less from each other.
- Never use your transmitter as a portable device. Your unit has been designed to be operated in a permanent installation.
- Never install and/or operate your transmitter closer than 20 cm to nearby persons.
- Never operate your transmitter with any other antenna than what is supplied or listed here in this manual for approved use.

4.6 Determining and Maximizing Range

NOTE:

The available maximum range specified for the wireless Series system in this manual is only achievable under optimum installation conditions. Mounting height, obstructions in your “Fresnel Zone” and ambient conditions can cause a decrease in signal strength resulting in a shorter range between your transmitter and receiver unit.

The following recommendations will help to improve the range of your wireless system.

Position your receiver in a central location

When multiple transmitters are in operation, position your receiver unit in a central space if possible in equal distance to each connector transmitter.

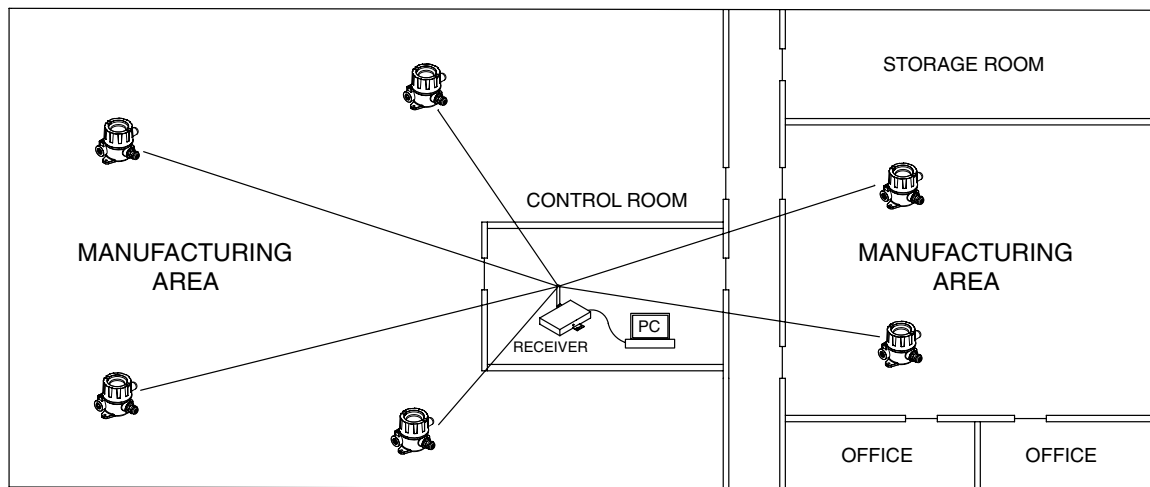


Figure 4-4. Determining Maximum Range

Test your system before permanent mounting

Before permanently mounting your transmitters in your application try moving the devices to different locations and mounting angles to determine what installation achieves the best signal strength.

Move your system components higher off the floor and away from exterior walls

Avoid installing your system components too close to the floor or near your building's exterior walls. The closer your transmitter and receiver unit are to these areas, the greater the interference and loss of signal strength will be.

Maintain a line of sight (LOS) between antennas

Maintaining a line of sight between your transmitter and receiver unit will produce greatly improved signal strength over a system where the antenna's in your system have obstacles blocking them.

Maintain a constant ambient temperature environment

Maintaining a constant ambient temperature environment is important to achieving maximum signal strength. Exposing your system components to extreme heat or cold temperatures, or sudden changes in ambient conditions will have an effect on the performance of your system.

4.6.1 Operation in Buildings

Your transmitter sends wireless data transmissions to a receiver connected to your PC. Radio signals are electromagnetic waves. A radio signal becomes weaker the further it travels. Range is decreased by different types of materials found in the direction of the signals propagation. Radio waves can penetrate most types of wall materials, but they are dampened more than they would be by a direct line-of-sight installation.

4.6.3 Building Materials

Examples of how different types of wall material may reduce your signal:

Material Type	Possible Signal Reduction
Wood, Plaster, Sheetrock, Uncoated Glass w/o Metal, Fiberglass	0 to 10%
Brick, Pressboard	5 to 35%
Reinforced Concrete	10 to 90%
Metal Walls, Metal Doors, Elevators, Metal Stair Cases, Metal Piping, Metal Mesh, Metal Screening	90 to 100%

Figure 4-5 Operation In Buildings

Avoid dampening materials by repositioning the transmitting and/or receiver.

4.6.2. Penetration Angle of Radio Waves Through Walls

The angle at which the transmitted radio signal hits a wall is very important and also has a big effect on maximizing range. Signals between your transmitter should be transmitted as directly as possible.

4.7 Antenna Basics

4.7.1 Antenna Basics

By definition, an antenna is a device used to transform an RF signal, traveling on a conductor, into an electromagnetic wave in free space. Antennas demonstrate a property known as reciprocity, this means that an antenna will always maintain the same characteristics regardless if it is used to transmit or receive. Most antennas are resonant devices, which means they operate efficiently over a relatively very narrow frequency band. An antenna must be tuned to the same frequency band of the radio system to which it is connected, otherwise the reception and the transmission will be impaired. The antennas in your wireless thermocouple connector system have been tuned to operate in the 2.4 GHz band.

NOTE:

In some cases, a short RF cable may be used to connect an antenna to your device. Please note that RF extension cables will always add some loss to the transmitting signal strength. The longer the cable the more signal will be lost over that cable. Because of this the length of the cable should be kept as short as possible.

4.8 Antenna Placement

Proper antenna installation is important and will allow you to achieve maximum performance and range between your transmitter and receiver unit.

NOTE:

Your transmitter should not be installed on the same side of the wall as the receiver. If mounted close to each other on the same wall, the radio waves are likely to be subject to interfering dispersions or reflections. The best positioning is to have the transmitter installed on the opposite or connecting wall to the receiver.

4.8.1 Horizontal Antenna Placement

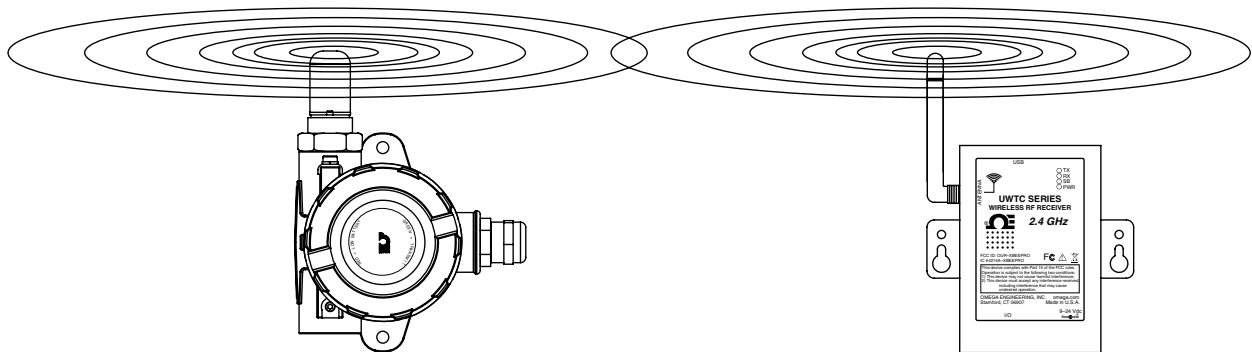


Figure 4-6. Horizontal Antenna Placement

If your transmitter is mounted in a horizontal position in your application you should mount your receiving so that the same polarization is achieved with the receiving antenna. As shown in the “Horizontal” example above.

4.8.2 Vertical Antenna Placement

If your transmitter is mounded in a vertical position in your application you should mount your receiving so that the same polarization is achieved with the receiving antenna. As shown in the “Vertical” example Fig 4-7.

4.9 Factory Preset Values

Your transmitter has been factory programmed for the following default operation; Channel Number: 1, Transmit Rate: 1 sample/5 sec

4.10 Transmit Rate vs. Battery Life

Many factors such as ambient temperature conditions and transmitting rate can have a big effect on the life of the battery used in your transmitter. Transmitting data places a big demand of the battery in your transmitter. The transmit rate is the single most contributing factor in the life of your battery. The slower the transmit rate you set, the longer the battery in your device will last. The table below give some estimates on how long the battery should last vs. the transmit rate you selected when you setup your transmitters and under normal operating conditions.

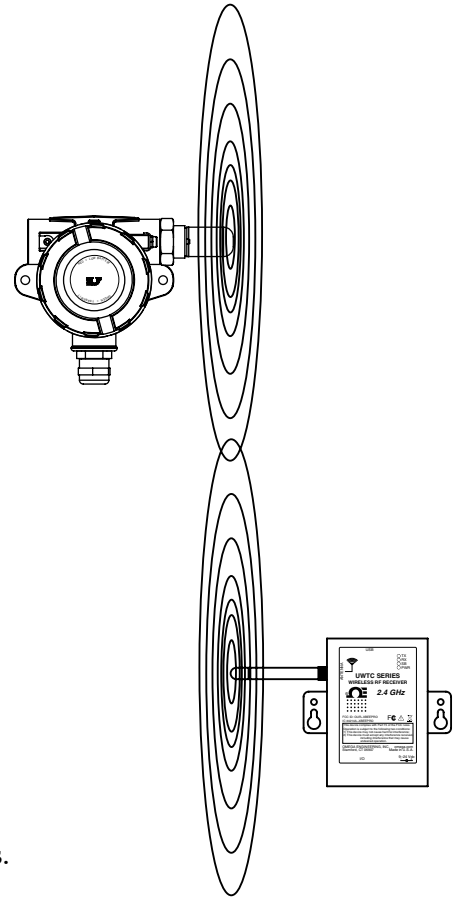


Figure 4-7. Vertical Antenna Placement

For Model UWXL

Transmit Time	Estimated Battery Life
1 Sample/2 Seconds	30 days
1 Sample/3 Seconds	45 days
1 Sample/5 Seconds	75 days
1 Sample/10 Seconds	150 days
1 Sample/15 Seconds	225 days
1 Sample/30 Seconds	450 days
1 Sample/45 Seconds	675 days
1 Sample/60 Seconds	912 days

Section 5 - Troubleshooting

The information provided in this section should solve most of the common problems you may experience when installing or operating your wireless System. If the problems and solutions outlined here do not solve your problem, please contact Omega's customer service department. Contact information can be found in Section 2 of this manual or by visiting omega.com.

5.1 Transmitter Troubleshooting

Problem	Solution
1. Unit will not enter "Setup" mode	a. Check USB cable connection b. Contact Customer Service
2. Configuration Utility will not connect	a. Check USB cable connection to device being programmed b. Confirm you are in the "SETUP" mode. See Section 3 c. Contact Customer Service

5.2 Receiver Troubleshooting

Problem	Solution
1. Unit will not turn on	a. Check power cord connections b. Unit requires service, contact Customer Service

5.3 Ambient Temperature Readings

The ambient temperature reading displayed on your screen when running the TC-Central program, is the actual ambient temperature that your transmitter is being exposed to. This reading is only provided as reference and to aid you in proper installation of your unit. The ambient temperature reading will blink and change to RED digits to alert you that you have exceed the maximum recommended safe operating conditions for your transmitter. You should not rely on this feature as sole protection. Additional protection should be taken by you "the user" to protect your unit from extreme conditions.

NOTE:

Operating your transmitter outside the specified ambient conditions listed in Section 9 of this manual may cause your unit to malfunction and stop working correctly.

Section 6 – Service & Calibration

Your UWXL Series components have been built and factory calibrated to meet or exceed the specifications listed here in this manual. The following two sub-sections provide information on how to have your device serviced and also on how to re-calibrate your unit in the field.

6.1 Service & Calibration

If any of your wireless system components require service or calibration, please call our Customer Service Department at 1-800-622-2378 or 203-359-1660. They will assist you in arranging the return and service of your device. We can also be reached on the Internet at www.omega.com, e-mail: cservice@omega.com

Section 7 – Transmitter Specifications

7.1 UWXL-24-TC & UWXL-24-RTD Specifications

Input

Model UWXL-24-TC:	J, K, T, E, R, S, B, C or N thermocouple, software selectable
Model UWXL-24-RTD:	Pt100 RTD, 0.00385 or 0.00392 curve, software selectable

Measurement Range

Model UWXL-24-TC

J:	-100 to 760°C (-148 to 1400°F)
K:	-100 to 1260°C (-148 to 2300°F)
T:	-200 to 400°C (-328 to 752°F)
E:	-200 to 1000°C (-328 to 1832°F)
R:	260 to 1760°C (500 to 3200°F)
S:	260 to 1760°C (500 to 3200°F)
B:	870 to 1820°C (1598 to 3308°F)
C:	0 to 2315°C (32 to 4200°F)
N:	-100 to 1260°C (-148 to 2300°F)

Model UWXL-24-RTD

Pt100, 0.00385:	-200 to 850°C (-328 to 1562°F)
Pt100, 0.00392:	-100 to 457°C (-148 to 854°F)

Accuracy

Model UWXL-24-TC

Types J and K:	±0.5% rdg or ±1.0°C (1.8°F), whichever is greater
Types T, E, and N:	±0.5% rdg or ±2.0°C (3.6°F), whichever is greater
Types R, S, B and C:	±0.5% FS
Model UWXL-24-RTD:	±0.5°C (1.0°F)

Resolution

Models UWXL-24-TC and UWXL-24-RTD:

1°C/1°F

Sensor Connection

Models UWXL-24-TC and UWXL-24-RTD:

Screw terminals

Computer Interface:

USB

Transmit Sample Rate:

Programmable from 2 sec to 120 sec

Radio Frequency

(RF) Transceiver Carrier: ISM 2.4 GHz, direct sequence spread spectrum, (2.450 to 2.490 GHz - 12 RF channels)

RF Output Power: 18 dBm (63 mW)

Range of RF Link:

Up to 450 m (1500') outdoor line of sight;
up to 90 m (300') indoor/urban

RF Data Packet Standard:

IEEE 802.15.4, open communication architecture

Power:

One 3.6V, Lithium C Cell (included)

Battery Life (Typical):

3 years; at 1 sample/minute reading rate @ 25°C

Section 8 – Approvals, Regulatory Compliance & Patent Notice**NOTE:**

All approvals outlined in this manual are based on testing that was done with antennas that are supplied with your wireless Series System Components. Removing and or installing a different antenna will void the product compliance demonstrated in these documents.

8.1 FCC (Domestic Use: USA & Canada)

(USA) FCC ID: OUR-XBEEPRO (CANADA) IC #4214A-XBEEPRO

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.

WARNING:

To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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- ☑ Wireless Sensors, Transmitters, & Receivers
- ☑ Signal Conditioners
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- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
- ☑ Laboratory Heaters

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- ☑ Refractometers
- ☑ Pumps & Tubing
- ☑ Air, Soil & Water Monitors
- ☑ Industrial Water & Wastewater Treatment
- ☑ pH, Conductivity & Dissolved Oxygen Instruments