1 YEAR
WARRANTY

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User's Guide

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UWTC-RPT1
Long Range Wireless Repeater/Receiver System For UW Series Transmitters

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NOTES:

Section 1 - Introduction

Please read this manual completely before installing and operating your wireless repeater 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, repeater, 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 connector/transmitter and can transmit simultaneously with your UWTC unit.
- Never install UWTC transmitters, repeaters, or receivers within 20 cm or less from each other.
- Never install and/or operate your UWTC repeater closer than 20 cm to nearby persons.
- Never use your UWTC repeater 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 Receiver Front Label

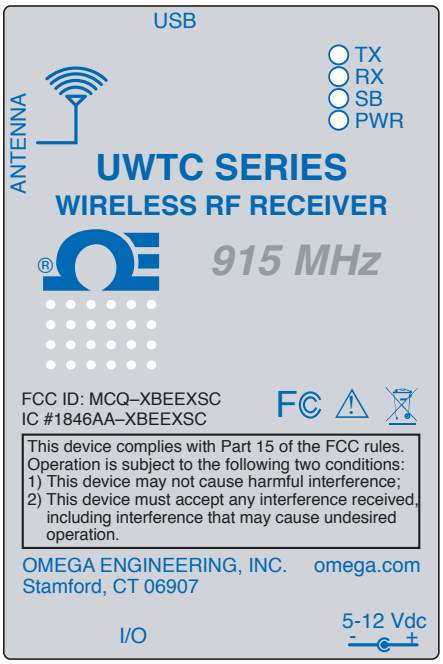

Figure 1-2. Receiver Front Label UWTC-REC1-915

1.3.2 Repeater Front Labels

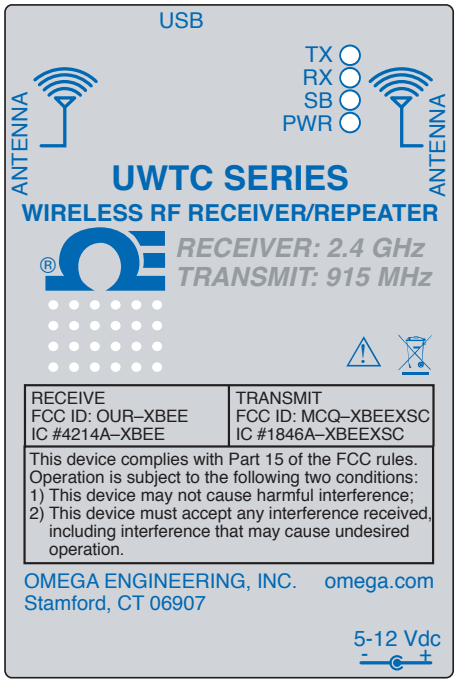

Figure 1-3. Repeater Front Label UWTC-RPT1

1.4 Statement on FCC and CE Marking

1.4.1 FCC Marking

RECEIVE: FCC ID: OUR-XBEE IC #4214A-XBEE
TRANSMIT: FCC ID: MCQ-XBEEXSC IC#1846A-XBEEXSC

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.

1.4.2 CE Marking

It is the policy of OMEGA® to comply with all worldwide safety and EMI/EMC regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification. For additional information see Section 10 - Approvals & Regulatory Compliance.

1.5 General Description & System Components

1.5.1 General Description

The UWTC-RPT1 long range wireless repeater extends the transmitting range of the Omega UW Series wireless connectors, probes and industrial transmitters. The UWTC-RPT1 collects transmitted data from Omega UWTC, UWRTD, UWIR, UWPH, UWPC, UWRH and UWXL end devices and instantaneously re-transmits the data to your USB base receiver. While the standard repeater can extend the range up to 1.8 miles (3 km), using the repeater with a high-gain antenna accessory can increase the reading range up to 5 miles (8 km).

NOTE:

The UWTC-RPT1 can only be used with the UWTC-REC1-915 Receiver.

1.5.2 System Components

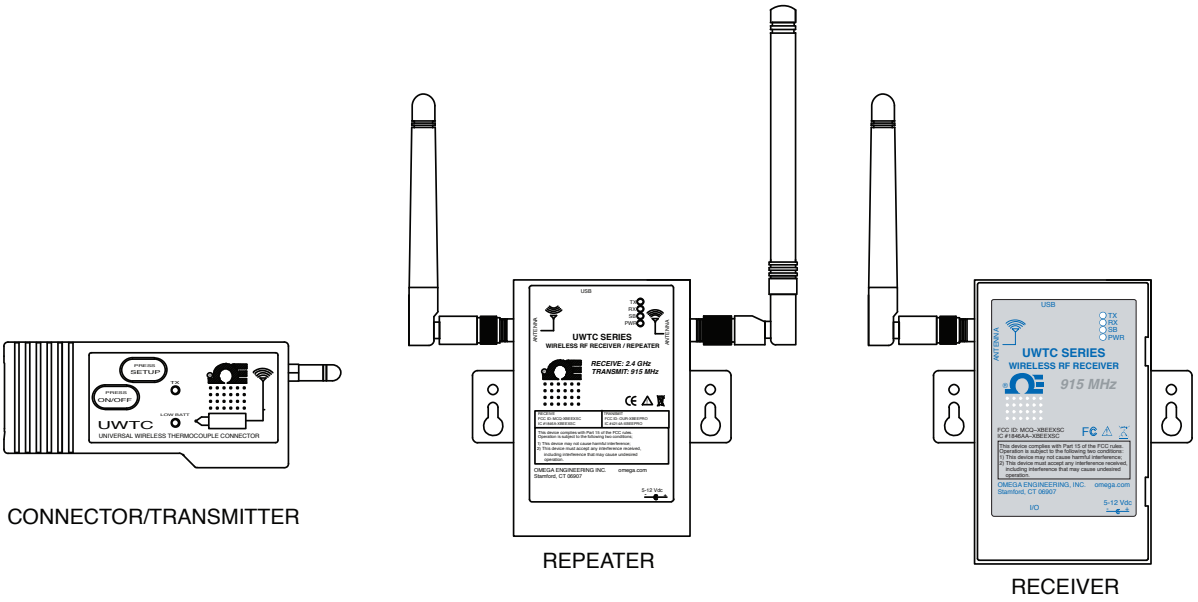

Figure 1-4. System Components

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 UWTC-RPT1 box:

- 1 Wireless Repeater with two Antennas attached (UWTC-RPT1)
- 1 UWTC-RPT Manual (M4938)
- 1 PC-Based User Software
- 1 AC Wall Adaptor
- 1 USB Programming Cable

2.3 Accessories

The UWTC-RPT1 is offered with the following accessory:

- UWTC-RPT-ANT-900 (or 868): High Gain Antenna, used to increase range of repeater readings up to 5 miles (8 km).

Please see Section 6.3 for more information

Section 3 – Software

3.1 Getting Started

The following program files are included on the UWTC User Software CD supplied with your Receiver. These files can also be downloaded from the omega.com website should you misplace your CD.

- UWTC Connector/Transmitter Setup Utility Program
- UWTC TC-Central Measurement and Data Logging Program

3.2 Software Installation

3.2.1 System Requirements

Your PC should meet the following minimum requirements:

- Pentium Class processor
- Hard Drive Space: 210 meg
- Ram: 256 meg or higher
- 1 Available USB Port
- 1 CD-ROM Drive
- Windows 2000, XB, or Vista (32bit) Operating System
- Adobe Acrobat Reader

3.2.2 Software Installation

Insert the UWTC Series User CD that was included with your receiver unit into the CD-ROM drive on your PC. Your system should begin the installation process automatically. If the software installation does not start automatically please see the "Troubleshooting" Section 7.

Figure 3-1. Welcome Screen

This welcome screen should be visible on your computer screen. To continue with installing the program click the "Next >" button.

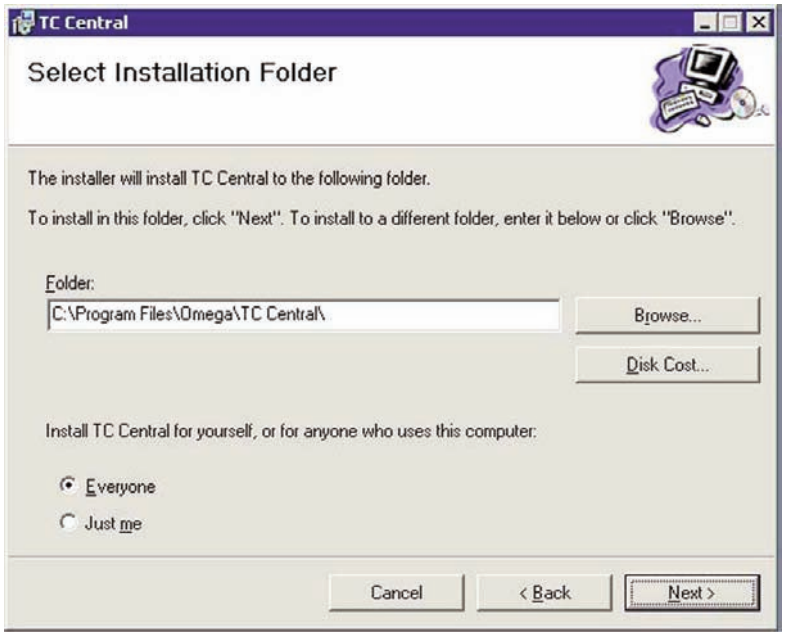

Figure 3-2.
Select Install Screen

From this screen you select the folder were you want the program files installed on your PC. The default setting will install the software under your "Program" folders in a new folder named "Omega" To continue with installing the program click the "Next >" button.

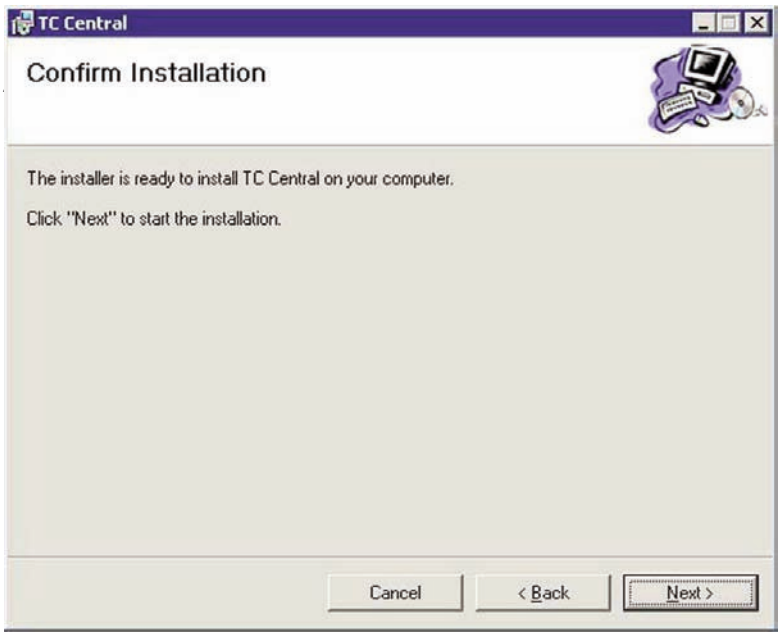

Figure 3-3.
Confirm Installation Screen

The setup wizard now has all the information to complete the installation of the software on your PC. To continue with installing the program click the "Next >" button.

Figure 3-4. License Agreement Screen

From this screen you must select "Agree" to continue installing your program. After making your selection click the "Next >" button. The setup wizard will now install the software.

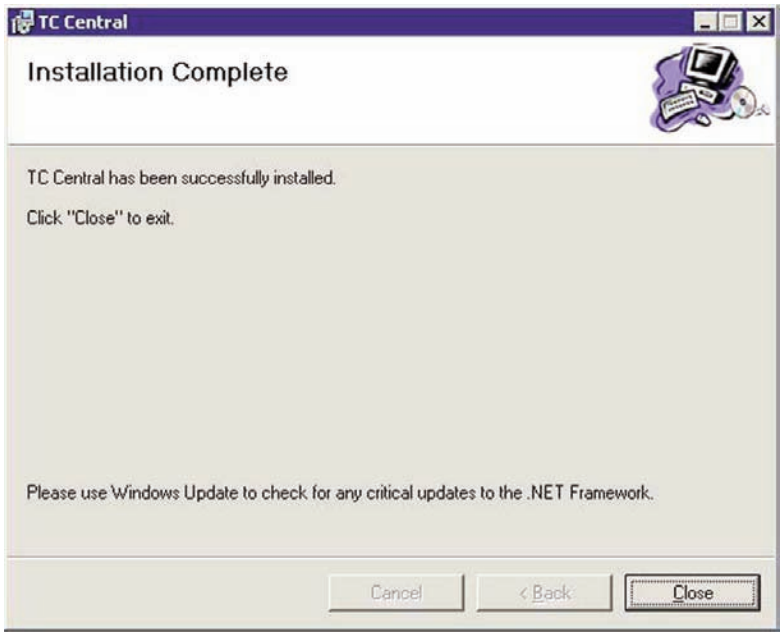

Figure 3-5. Installation Complete Screen

Congratulations! You have just successfully installed the TC-Central Program on your PC. To end installing the program and close the setup wizard click the "Close" Button.
Congratulations! You have just successfully installed the WTC Central Program on your PC. To end installing the program and close the setup wizard click the "Close" button.

3.3 USB Driver Installation

To install the USB software drivers that are required for your UWTC system components to operate correctly follow these procedures.

NOTE:

You need to have the TC-Central User Software CD that was supplied with your receiver loaded into the CD drive on your PC.

1. Connect your UWTC receiver to your computer with the USB cable provided in the box with your device. You should get a notice box that indicates that your computer "Has Found New Hardware"
2. Your computer will then launch the Found New Hardware Wizard. Follow the instructions indicated on the Wizard boxes and the additional instructions noted in this manual with each box.

NOTE:

After completing the Found New Hardware Wizard your system will ask that you repeat this process. This is normal. You should repeat the steps outlined here twice. After the second driver is installed you should then get the "New Hardware Ready For Use" notice.

Figure 3-6. Welcome To The Found New Hardware Wizard Screen

From this box you should check the "No, not at this time" button. Then click the "Next >" button to continue with the driver installation process.

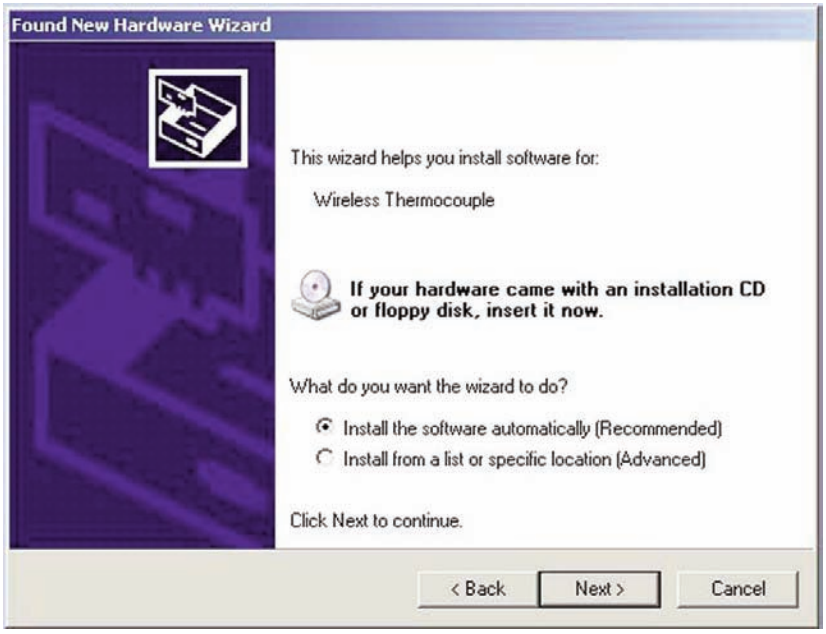

Figure 3-7. Install Software Automatically Wizard Screen

Next, check the "Install the software automatically" button. Then click the "Next>" button to continue.

Figure 3-8. Completing The Found New Hardware Wizard Screen

This screen will be displayed to indicate that the software drivers have been installed. You should click the "Finish" button to complete the process.

Section 3.4 UWTC Connector/Transmitter Setup Utility Program UWTC TC-Central Measurement and Recording Program

For detailed information on setting up your connector/transmitter, as well as using the TC-Central Measurement and Recording Program, please refer to the manual for the connector/transmitter you are using in your long range wireless system.

Section 4 - Receiver Setup

Model: UWTC-REC1-915
(1) Antenna
(2) USB Port (mini-B)
(3) Indicator Lights

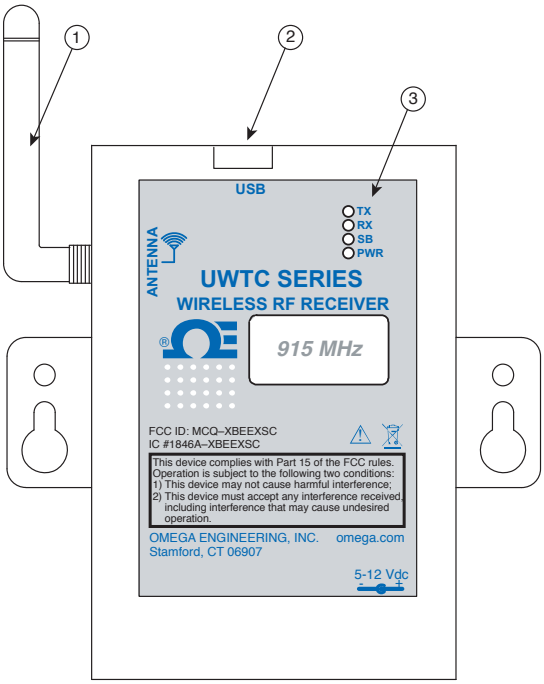

Figure 4-1. Receiver Setup - UWTC-REC1-915

4.1 Connecting Your Receiver To Your PC

Connect the USB cable to your receiver unit and also to an available USB port on your PC. See figure below. This cable was provided in the box with your receiver unit.

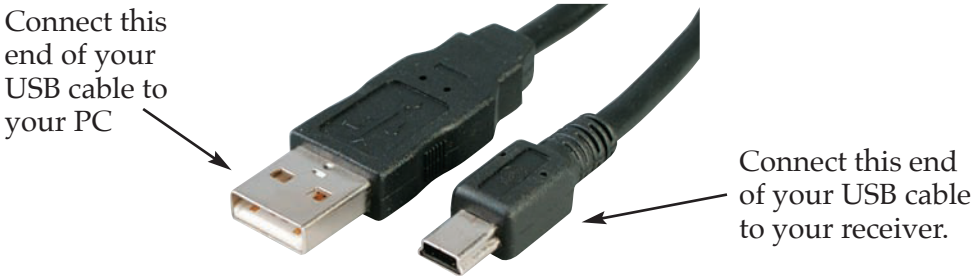

Figure 4-2. Connecting Your Receiver

Section 4.1.1 Configure Your Receiver (UWTC-REC1-915)

To complete this procedure your UWTC-REC1-915 receiver must be connected to a USB port on your PC. Open TC-Central Software and select "Configure Receiver" from the TOOLS menu.

RF Network Settings:

RF Channel

This setting determines the operating channel on which RF connections are made between the transmitter, repeater and receiver. The repeater must be set to the same channel as the transmitter and receiver in order for them to communicate.

Network ID

This sets the ID of the Network that the transmitter will be joining. It must match the setting of the receiver in order for them to communicate.

Receiver Address

This sets the destination address for RF packets sent by the transmitter. It must match the address of the receiver in order for them to communicate.

NOTE:

It is possible to have multiple RF networks operating in the same vicinity. Each network must have at least one unique RF Network Setting in order to differentiate the networks.

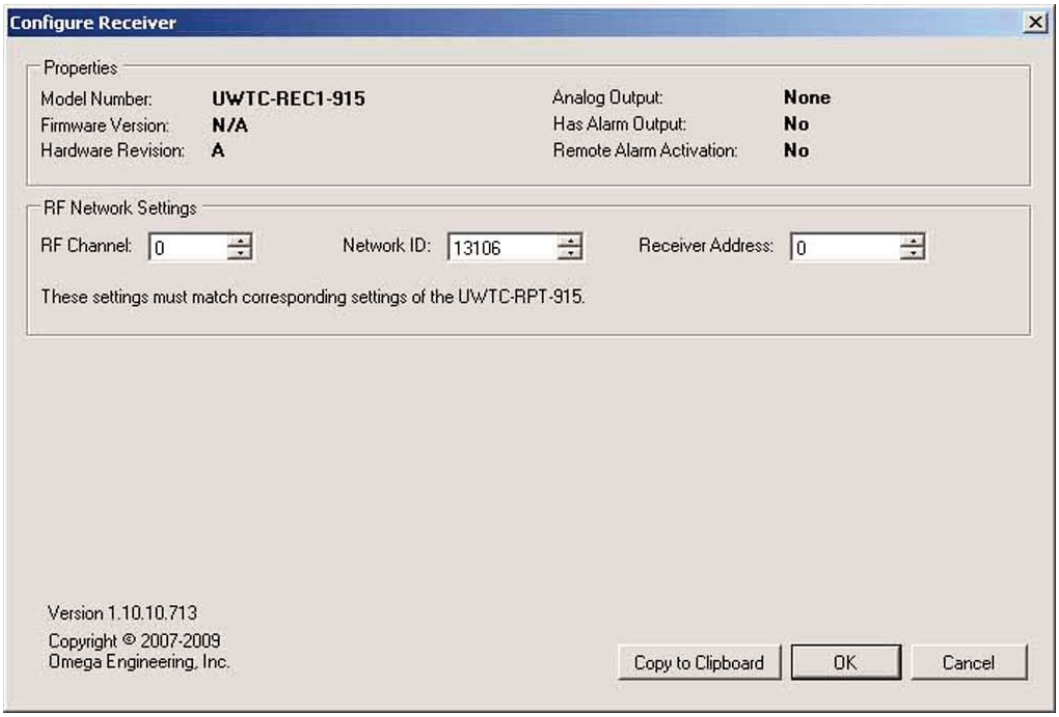

Figure 4-3. Configure Receiver Screen

Section 5 - Repeater Setup

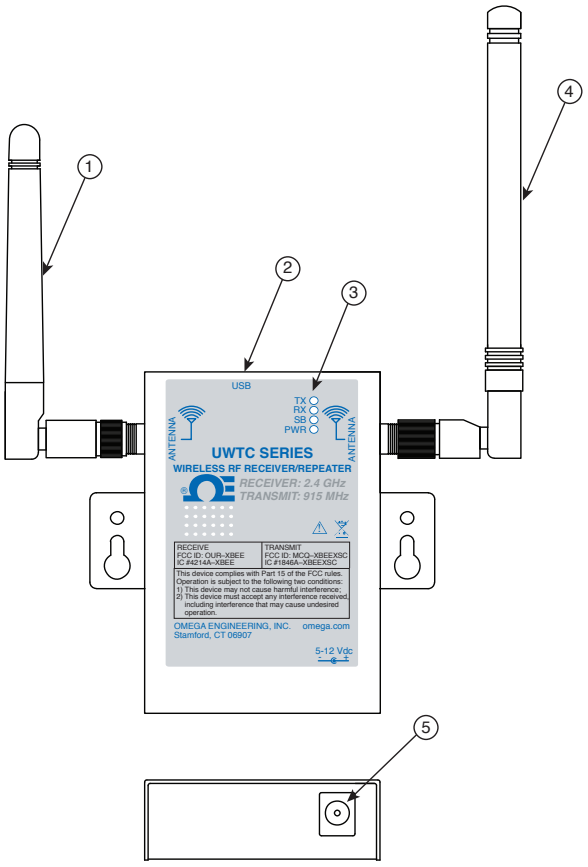

Figure 5-1. Repeater Operation - Model UWTC-RPT1

(1) Receiving Antenna
(2) USB Port (mini-B)
(3) Indicator Lights
(4) Transmitting Antenna
(5) AC Power

5.1 Connecting Your Repeater to Your PC

Connect the USB cable to your repeater unit and also to an available USB port on your PC. See figure below. This cable was provided in the box with your repeater unit.

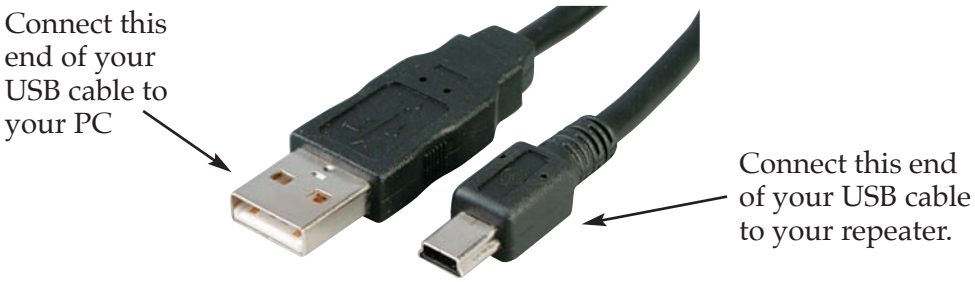

Figure 5-2. Connecting Your Repeater

5.1.1 Configure Your Repeater

Start the End Device Configuration Wizard or select "Configure End Device" from the TOOLS menu in TC-Central.

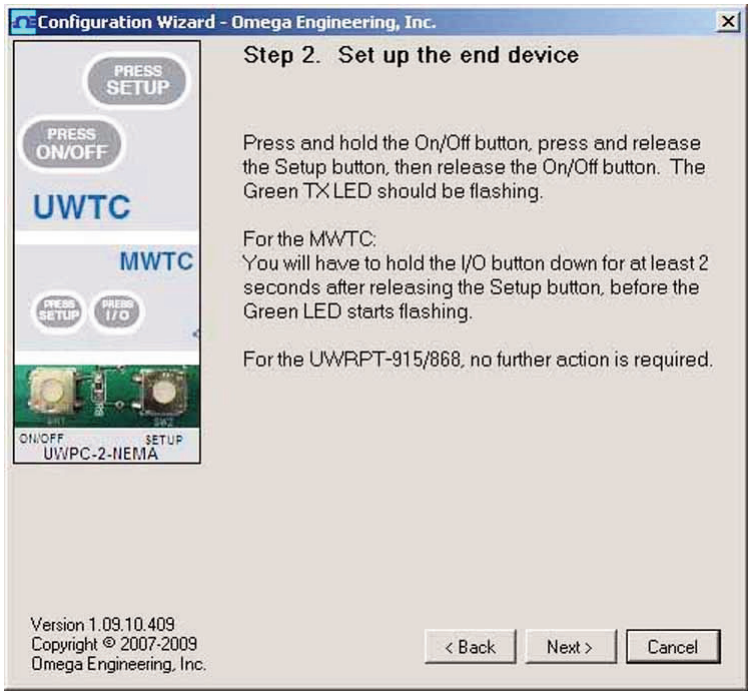

Figure 5-3. Setting Up the End Device

If you have not already placed your End Device into 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 unit.

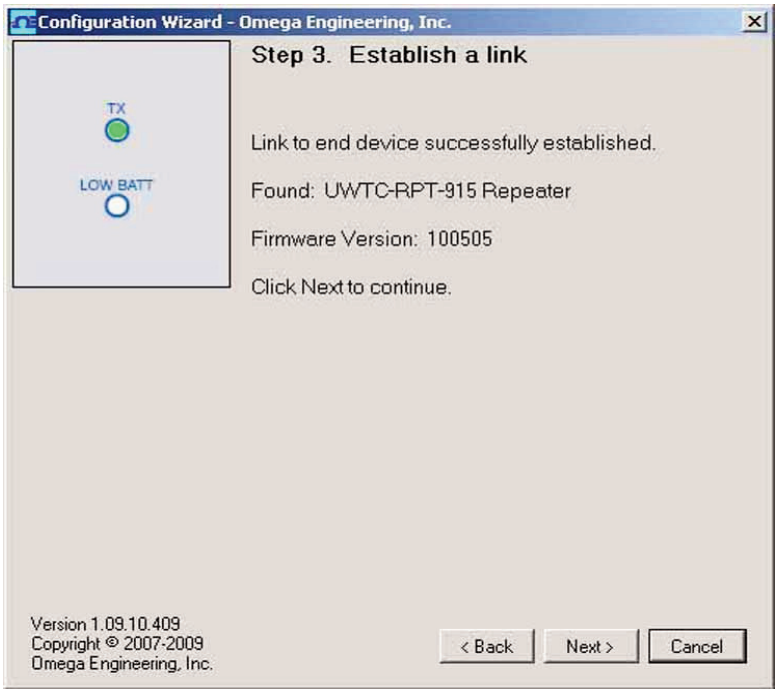

Figure 5-4. Establish A Link

The window should show that the Repeater has been detected, and a link has been established.

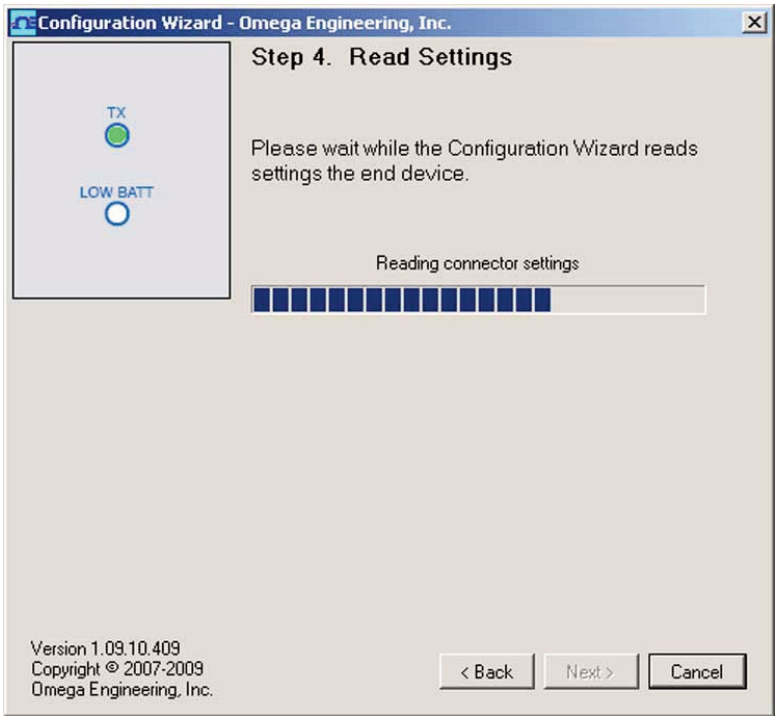

Figure 5-5. Read Settings

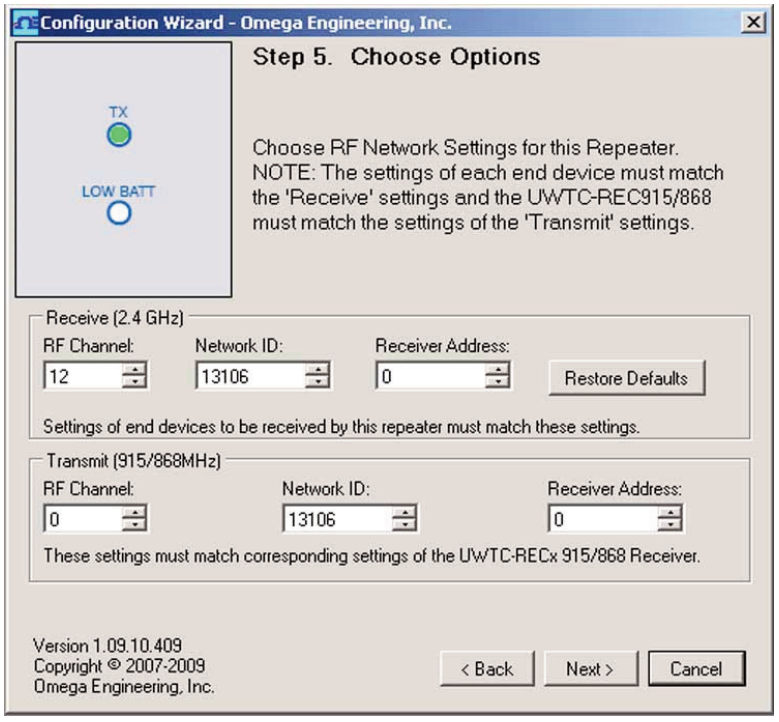

Figure 5-6. Choose Options

Choose the RF Network settings for the Repeater. Be sure to match "Receive" settings to that of the transmitter/connector, and the "Transmit" to that of the UWTC-REC1-915 receiver.

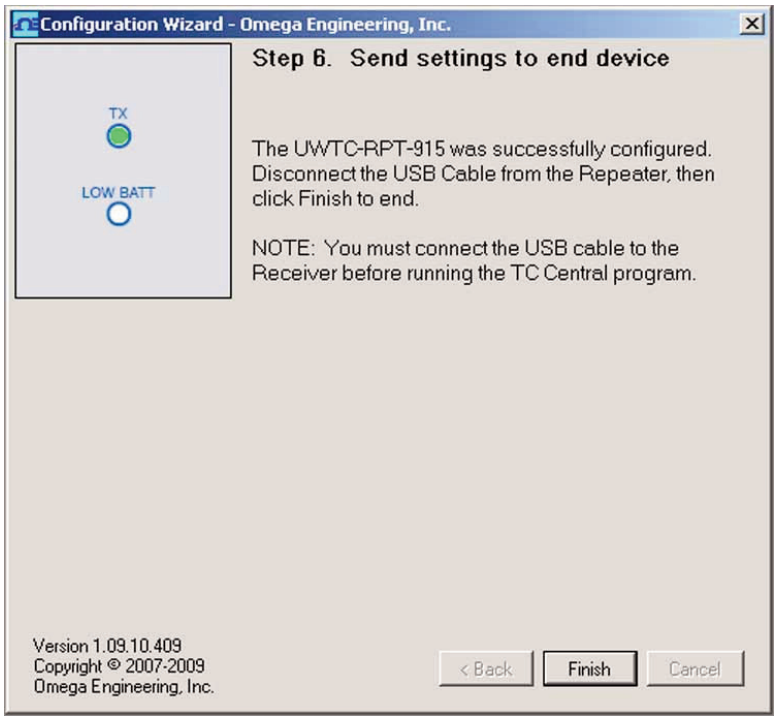

Figure 5-7. Send Setting To End Device

Congratulations! You have successfully programmed your repeater. After your unit has been programmed click the Finish button to close the utility program.

NOTES:

Section 6 – Repeater Mounting and Installation

6.1 Mounting

Mounting ears are built-in to your repeater enclosure The diagram below shows dimensions and mounting hole location. Rubber bumpers have also been supplied with your repeater should you wish to use the device on a desk or a work bench next to your PC.

When mounting your repeater, care should be taken to make sure it is as far away from any metal objects. If nearby metal gets too close to your repeater's antennas, it has the potential to interfere with the way the unit receives and transmits data and may cause signal lose or possibly even the inability to communicate at all with your other devices.

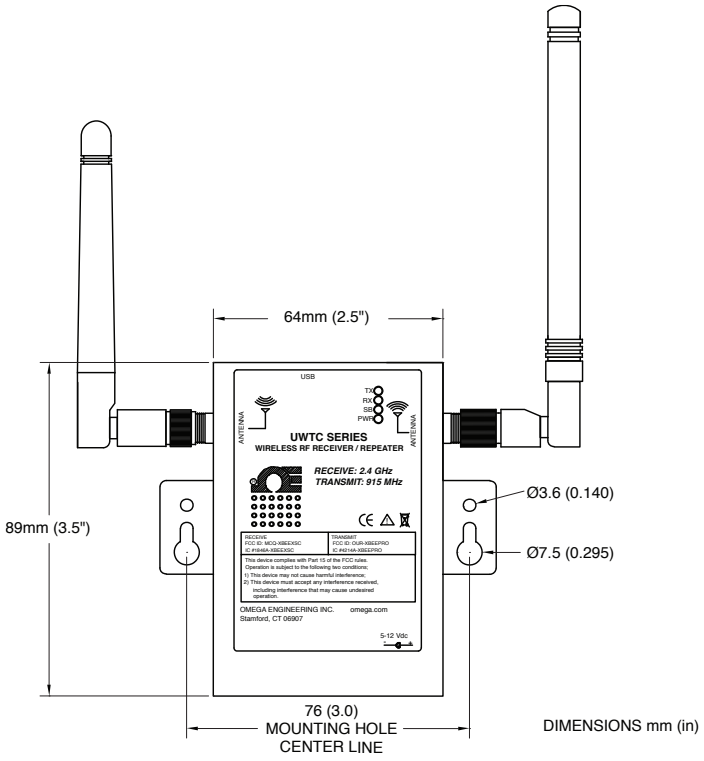

Figure 6-1. Mounting Dimensions

6.2 Installation

When installing your repeater 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 connector/transmitter and your repeater, as well as between your repeater and receiver.

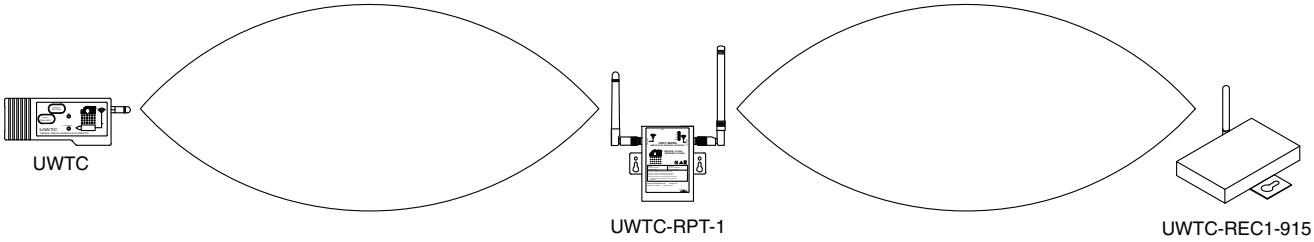

Figure 6-2. Installation

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 connector/transmitter, repeater, 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 connector/transmitter, repeater, and receiver, the devices can be raised on one end or on all ends to hopefully clear the Fresnel Zone of obstructions.

NOTE:

Never install UWTC transmitters, repeaters, or receivers within 20cm or less from each other.

NOTE:

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

6.3 Antenna Connection

Your repeater has been shipped to you with two antennas. Attach the 2.4 GHz shorter antenna on the left side of the unit and the longer 915/868 MHz antenna on the right side of the unit.

In the case that you want to improve range and signal strength for your repeater, you may replace your antenna with a high gain antenna (Omega Model No. RPT-HGA-915/868). This antenna is sold as an accessory.

NOTE:

No co-location with other radio transmitters is allowed. By definition, co-location is when another radio device or its antenna is located within 20cm of your connector/transmitter or repeater and can transmit simultaneously with your UWTC unit.

The Omega High Gain Antenna is used to increase the transmitting range from the repeater to the receiver.

On your repeater, the antenna on the left receives data from the transmitter; the antenna on the right side transmits that data to the receiver. It is the antenna on the right side of the repeater that needs to be replaced with your High Gain Antenna.

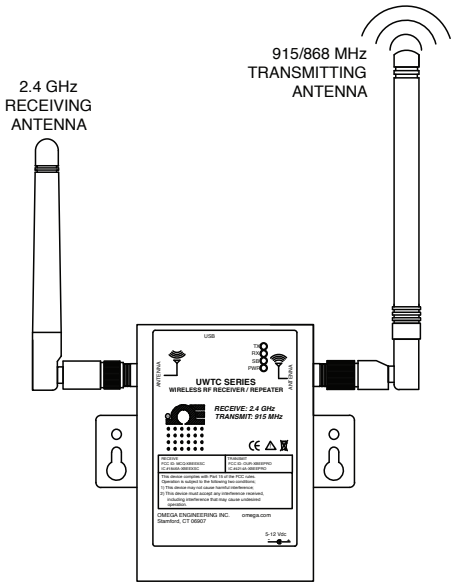

Figure 6-3. Standard Repeater Antennas

On your receiver, there is only one antenna. This must also be replaced with a High Gain Antenna in order for the range to be increased.

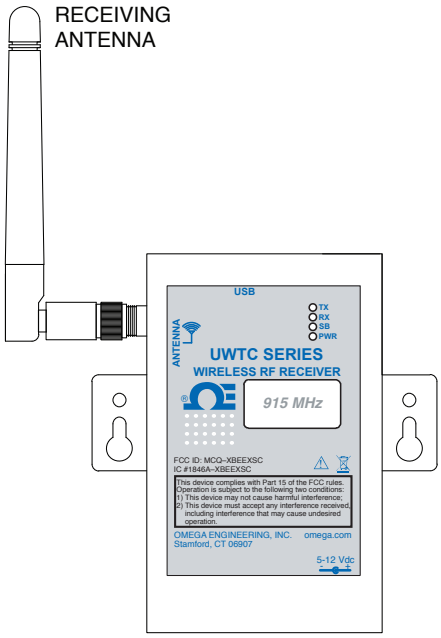

Figure 6-4. Receiver Antenna

Once you have replaced both antennas, the range increase is complete.

NOTE:

In order for the system to work properly, you must use a High Gain Antenna on both the repeater and the receiver.

NOTE:

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

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

NOTES:

Section 7 - System Operation

7.1 Introduction

Compared to wired systems, wireless 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 UWTC Series system.

7.2 RF Communication Basics

In a basic UWTC series system, the UW series transmitter sends wireless transmissions to the UWTC-REC1-915 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.

With the UWTC-RPT1 repeater in your UWTC series system, you are able to maintain a strong signal over a long distance. The UW series transmitter sends wireless transmissions to the UWTC-RPT1 repeater. The repeater serves as a signal extension; it receives the incoming data and transmits it to the receiver. The receiver then checks the incoming data for accuracy and processes it for use on your measurement software.

7.3 Basic System Overview

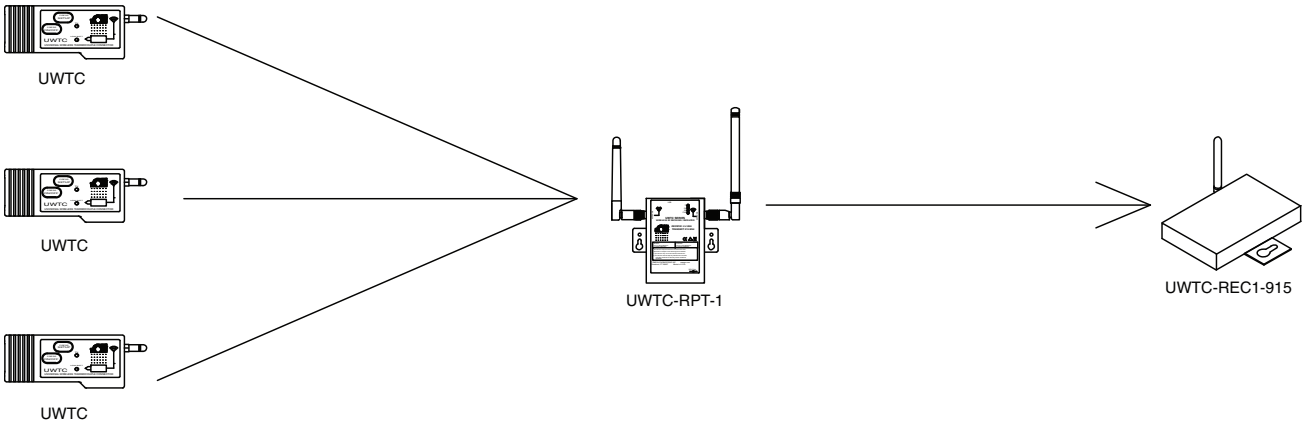

Figure 7-1. Basic System Overview

The UWTC wireless thermocouple system is comprised of three main components; a Thermocouple Connector (with a built-in battery powered 2.4 GHz radio transmitter), a Wireless Repeater (with a 2.4 GHZ receiver and 915 MHz transmitter), and a USB powered 915 MHz receiver.

Up to 48 of each Model UWTC connector/transmitters can be used with one UWTC-RPT1 repeater.

7.4 Connector/Transmitter Operation

7.4.1 Button Operation

(1.) "PRESS ON/OFF"
The "PRESS ON/OFF" button on the front of your connector/transmitter is used to turn your unit "ON" or "OFF"

(2.) "PRESS SETUP"
The "PRESS SETUP" button on the front of your connector/transmitter is only used during the setup and configuration of your unit. See Section 4.1.2 for more information.

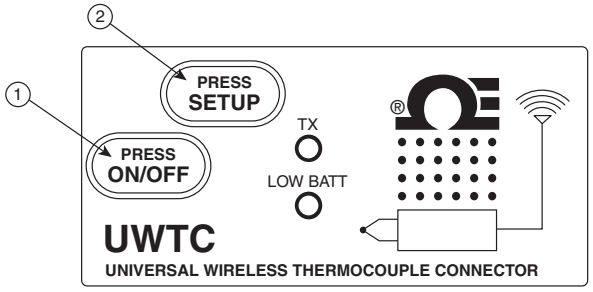

Figure 7-2. Connector/Transmitter Button Operation

7.4.2 Ambient Temperature Readings

The ambient temperature reading displayed on your screen when running the TC-Central program, is the actual ambient temperature that your connector/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 your have exceed the maximum recommended safe operating conditions for your connector/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 connector/transmitter outside the specified ambient conditions listed in Section 9 of this manual may cause your unit to malfunction and stop working correctly.

7.4.3 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 connector/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 procedures on how to change your battery see Section 4.5. For information on battery life see Section 6.11.

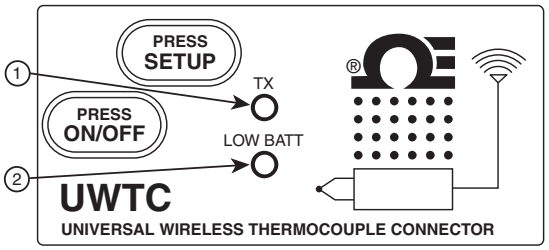

Figure 7-3. Transmit and Low Battery Lights

7.5 Repeater Operation

7.5.1 Indicator Lights

(1) Transmit (TX) Green Indicator Light

The top green indicator light marked "TX" on the front of the repeater will only blink when the repeater is connected to your PC and you initialize your measurement software. After the repeater establishes communication with the program the light will no longer blink. Note: This may happen very fast and will not be noticeable.

(2) Receive (RX) Red Indicator Light

The red indicator light marked "RX" on the front of your repeater will blink each time the repeater receives incoming data from one of your connector/transmitters.

(3) Standby (SB) Yellow Indicator Light

The yellow indicator light marked "SB" on the front of the receiver will blink continuously during normal operation. This indicates that the repeater is in the "Standby" mode and is waiting for incoming data from your connector/transmitter.

(4) Power (PWR) Green Indicator Light

7.6 Receiver Operation

7.6.1 Indicator Lights

(1) Transmit (TX) Green Indicator Light

The top green indicator light marked "TX" on the front of the receiver will only blink when the receiver is connected to your PC and you initialize your measurement software. After the receiver establishes communication with the program the light will no longer blink. Note: this may happen very fast and will not be noticeable.

(2) Receive (RX) Red Indicator Light

The red indicator light marked "RX" on the front of the receiver will blink each time the receiver receives incoming data from one of your connector transmitters.

(3) Standby (SB) Yellow Indicator Light

The yellow indicator light marked "SB" on the front of the receiver will blink continuously during normal operation. This indicates that the receiver is in the

"Standby" mode and is waiting for incoming data from your connector/transmitter.

(4) Power (PWR) Green Indicator Light

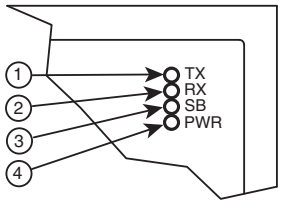

Figure 7-4. Indicator Lights

7.7 Environment/Operating Conditions

7.7.1 Environment

Omega's UWTC or UWRTD series connector/transmitter, repeater, and receiver units have been designed to be fixed mounted and operated in a clean and dry indoor environment. Care should be taken to prevent the components of your wireless system from being exposed to moisture, toxic chemicals and extreme cold or hot temperature that are outside the specifications listed in this manual.

7.7.2 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 were failure can cause damage or harm.
- Never operate your repeater with any other power source than what's specified 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 connector/transmitter or repeater and can transmit simultaneously with your UWTC unit.
- Never install a your devices within 20 cm or less from each other.
- Never use your repeater as a portable device. Your unit has been designed to be operated in a permanent installation.
- Never install and/or operate your devices closer than 20 cm to nearby persons.
- Never operate your repeater with any other antenna than what is supplied or listed here in this manual for approved use.

7.8 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/connector and receiver unit.

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

- Place your repeater in a space equidistant between the transmitter and the receiver.
- When using the repeater in addition to the multiple connectors/transmitters, position your repeater in a central space if possible in equal distance between the connector/transmitters and your receiver.

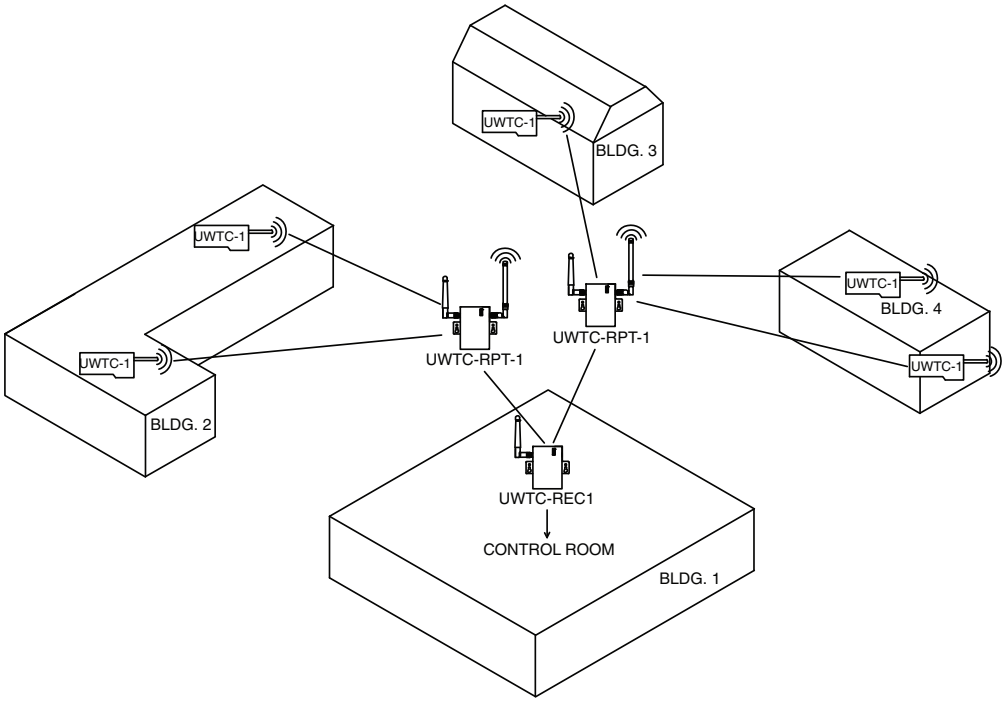

Figure 7-5. Determining Maximum Range

Test your system before permanent mounting

Before permanently mounting your connector/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 buildings exterior walls. The closer your connector/transmitter and receiver unit are 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 connector/transmitter and receiver unit will produce greatly improved signal strength over a system were the antennas 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 hold or cold temperatures, or sudden changes in ambient conditions will have an effect on the performance of your system.

7.8.1 Operation in Buildings

Your Connector/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.

7.8.2 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 7-6. Operation In Buildings

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

7.8.3. 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 connector/transmitter should be transmitted as directly as possible.

7.9 Antenna Basics

7.9.1 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 repeater have been tuned to operate in the 2.4 GHz band to receive, and the 915 MHz band to transmit information.

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.

7.10 Antenna Placement

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

NOTE:

Your connector/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 connector/transmitter installed on the opposite or connecting wall to the receiver.

7.10.1 Horizontal Antenna Placement

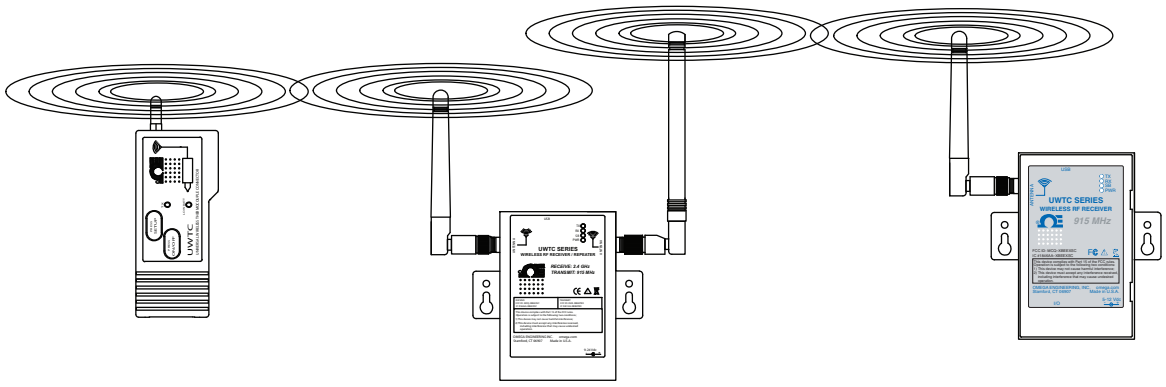

Figure 7-7. Horizontal Antenna Placement

If your Connector/Transmitter is mounded in a horizontal position in your application you should mount your receiving so that the same polarization is achieved with the corresponding receiving antenna. As shown in the "Horizontal" example above.

7.10.2 Vertical Antenna Placement

If your Connector/Transmitter is mounded in a vertical position in your application you should mount your receiving so that the same polarization is achieved with the corresponding receiving antenna. As shown in the "Vertical" example Fig 7-8.

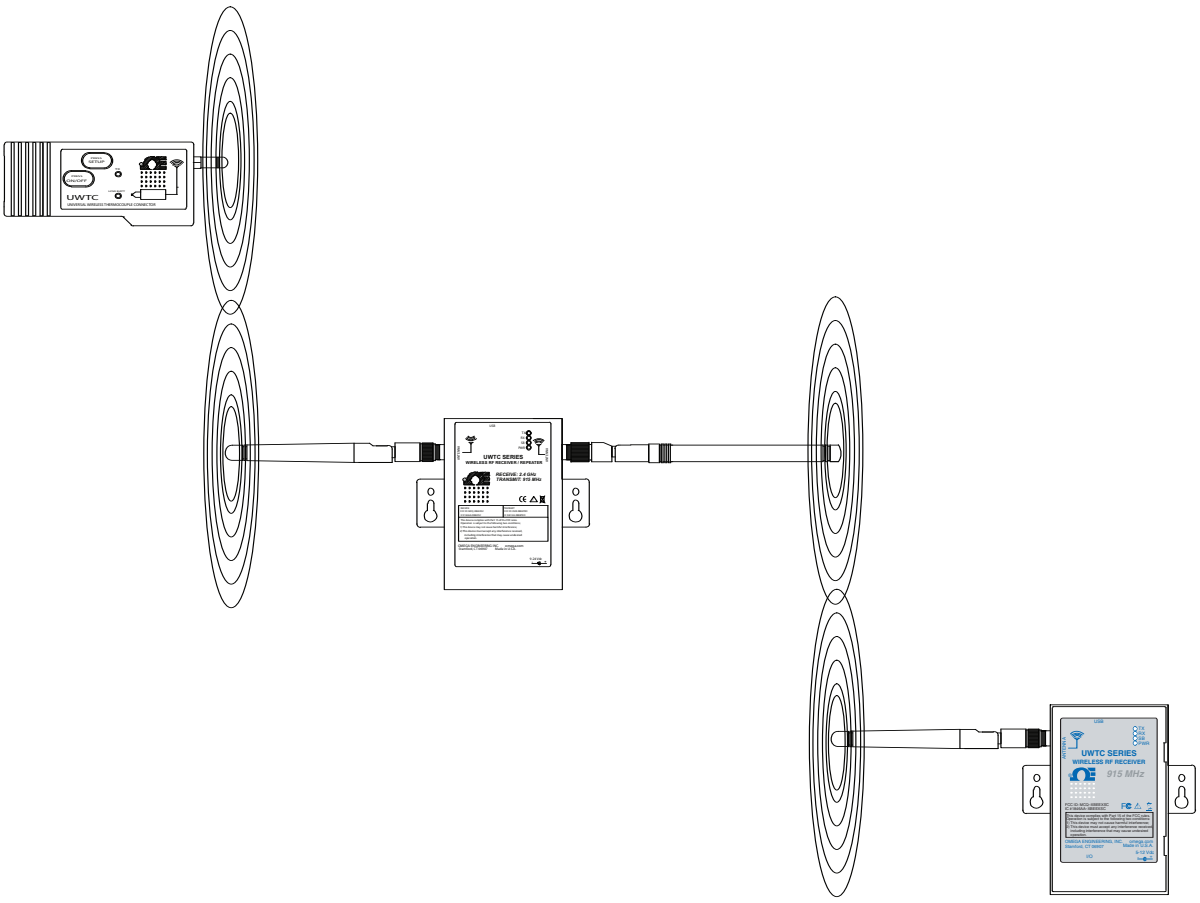

Figure 7-8. Vertical Antenna Placement

7.11 Factory Preset Values

Your Connector/Transmitter has been factory programmed for the following default operation; Channel Number: 1, Thermocouple Type: K, Transmit Rate: 1 sample/5 sec

Your wireless repeater has been factory programmed for the following default operation:

2.4 GHz Receiver:	RF Channel: 12 Network ID: 13106 Receiver Address: 0
915 MHz Transceiver:	RF Channel: 0 Network ID: 13106 Receiver Address: 0
868 MHz Transceiver:	RF Channel: 0 Network ID: 32767 Receiver Address: 0

NOTES:

NOTES:

Section 8 - 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.

8.1 Connector/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

8.2 Receiver Troubleshooting

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

Section 9 – Service & Calibration

Your UWTC and UWRTD 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.

9.1 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 10 – Specifications

10.1 Repeater Specifications

Power:	5-12Vdc @ 500 mA (AC wall adapter included)
Ambient Operating Conditions:	0 to 55°C (32 to 131°F), 90% RH non-condensing
Wireless Communication Receiving Frequency:	2.4 GHz
Transmitting Frequency:	915 MHz (USA/Canada), 868 MHz (Europe)
RF Transmit Power:	100 mW (+20 dBm)
Indoor/Urban Range:	Up to 1000 ft (305 m)
Outdoor/RF Line-of-sight Range:	Up to 1.8 miles (8 km), up to 5 miles (8 km) with optional high gain antenna
Setup & Configuration:	USB (cable included) for Windows 2000, XP, Vista or Windows 7 operating system.
Enclosure Standard Model:	Painted Steel
NEMA Model:	ABS Base, Polycarbonate Lid
Dimensions Standard Model:	92 H x 62 W x 22 mm D (3.6 x 2.43 x .85")
NEMA Model:	160 H x 90 W x 60 mm D (6.3 x 3.54 x 2.36")
Approvals:	FCC, IC, CE

Section 11 – 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 antea will void the product compliance demonstrated in these documents.

11.1 FCC (Domestic Use: USA & Canada)

RECEIVE: FCC ID: OUR-XBEE IC #4214A-XBEE
TRANSMIT: FCC ID: MCQ-XBEEXSC IC#1846A-XBEEXSC

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.

11.2 International Usage & CE Marking (Pending)

The UWTC and UWRTD 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.

Transmitting Power

Your UWTC and UWRTD Series System Components have been designed and manufactured so that the transmitting power will not exceed 2 dBm (10 mW).

11.3 Declaration of Conformity (DOC)

Contact OMEGA for status on CE marking and DOC availability.

11.4 Patent Notice

UWTC PATENT NOTICE

(Product is covered by patents for Super MCJ, Uniconnector and pending wireless connector)

PATENT NOTICE: U.S. PAT. NO. 6,074,089 / Canada 2,228,333; 1,288,142 / UK GB 2,321,712; 2,193,048 / Holland 1008153 / Israel 123052 / France 2 762 908 / Germany 19803351.6 Other U.S. and international patents pending.

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 it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS 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.

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- ☑ Wireless Sensors, Transmitters, & Receivers
- ☑ Signal Conditioners
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- ☑ 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

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