OptoWave
Wireless
Optical Probe

Installation and Use Manual
December 2007

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Linksys is a registered trademark of Cisco Systems.

I. Getting Started

Unpack and inspect the shipment. Be sure all items are included. The following is a list of components for each type of kit. Check the packing list for the kit type ordered.

Optowave
Includes:
    1 Optowave Optical Probe,
    Optowave Instructions

Optowave Quick Kit
Includes:
    1 Optowave Optical Probe,
    4 AA Batteries,
    1 Battery Case,
    1 Kit Carrying Case,
    Optowave Instructions

Optowave Deluxe Kit
Includes:
    1 Optowave Optical Probe, **A**
    4 AA Batteries, **B**
    2 Battery Cases (1 four cell and 1 two cell), **C**
    1 Optowave Belt Holster, **D**
    1 USB Cable,* **E**
    1 Linksys USB Bluetooth Adapter,* **F**
    1 Linksys CD and Installation Instructions,* **G**
    1 Kit Carrying Case, **H**
    Optowave Instructions **I**
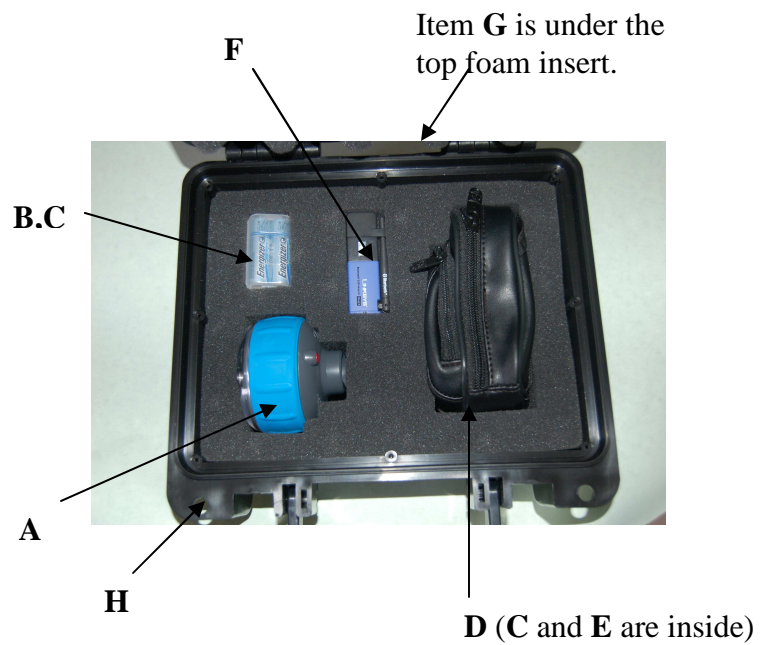
Optowave Premium Kit
Includes:
    1 Optowave Optical Probe,
    4 AA Batteries,
    2 Battery Cases (1 four cell and 1 two cell),
    1 Optowave Optical Probe Belt Holster,
    1 Universal AA Battery Charge w/ 12V adapter,
    1 USB Cable with 2 Cable Ties and Velcro Tape,*
    1 Linksys USB Bluetooth Adapter,*
    1 Linksys CD and Installation Instructions,*
    1 Kit Carrying Case,
    Optowave Instructions

F

Item **G** is under the top foam insert.

B.C

A

H

D (**C** and **E** are inside)

OptoWave Deluxe Kit
w/ Linksys Adapter

Note Kits sold "w/ Linksys" contain these additional items. The basic kits do not.

If any items are missing or appear damaged please notify a Probe-Tec representative right away or email t.houck@probe-tec.com, or call 765-252-0257.

II. About Bluetooth Devices

Probe-Tec engineers have evaluated numerous Bluetooth adapters. While almost all adapters work with the Optowave Wireless Optical Probe some work better than others. The major differences between adapters are the power class, the version, and the software and drivers used.

There are 2 power classes – Class 1 and Class 2. Class 1 devices have more power output and thus can result in better range. Probe-Tec recommends the use of a Class 1 device. Preferably a device with an external antenna – for the best possible range. However, there is a tradeoff to consider when selecting a Bluetooth device. External devices and antennas improve the range but these devices are more likely to be damaged due to their increased exposure. The user should consider their circumstances before deciding which device to use.

Bluetooth devices come in Version 1.2 and Version 2.0. The version refers to the core specification of the device compliance. Version 1.2 is older and has lower overall data rates. Version 2.0 is newer and has a broader feature set. With the Enhanced Data Rate (EDR) Version 2.0, devices can reach data speeds of 3Mbps. Probe-Tec does not support Version 1.2.

While class and packaging affect the range and version affects the speed, software and drivers affect usability. For most users an easy to use interface and full feature set will have the biggest impact on overall satisfaction. Poorly designed software results in a clumsy user interface. Poorly designed drivers result in a limited feature set. Select your Bluetooth device accordingly. Probe-Tec recommends devices that utilize the Widcomm drives and the Linksys software.

Cellphones, wireless computer keyboards and mice, digital cameras, printers, and other devices utilize Bluetooth technology. As you use the Optowave Wireless Optical Probe you may become aware of other Bluetooth devices. Before allowing your computer to interact with any Bluetooth device be sure to understand what the device does, who controls the device, and how the device may impact your overall system. When in doubt seek the advice of an IT professional.

Bluetooth is a radio technology that has been designed to a robust standard and is used in millions of devices. It operates in the 2.4 to 2.485GHz frequency range under relatively low power. As such, it is subject to interference from any radio frequency noise source. If the Optowave device works intermittently or does not work in specific locations the problem could be radio interference. Radio interference can also result in reduced operating range or slower operating speeds. If these conditions occur, reposition the laptop/handheld computer or situate it closer to the Optowave probe.

To learn more about Bluetooth technology visit: http://www.bluetooth.com/Bluetooth/Learn/Basics/

III. Installing the Linksys USB Bluetooth Adapter

Follow the instructions for the Bluetooth Adapter selected. If you are using the Linksys USBBT100 adapter supplied by Probe-Tec, refer to the Quick Start Guide inside the case cover.
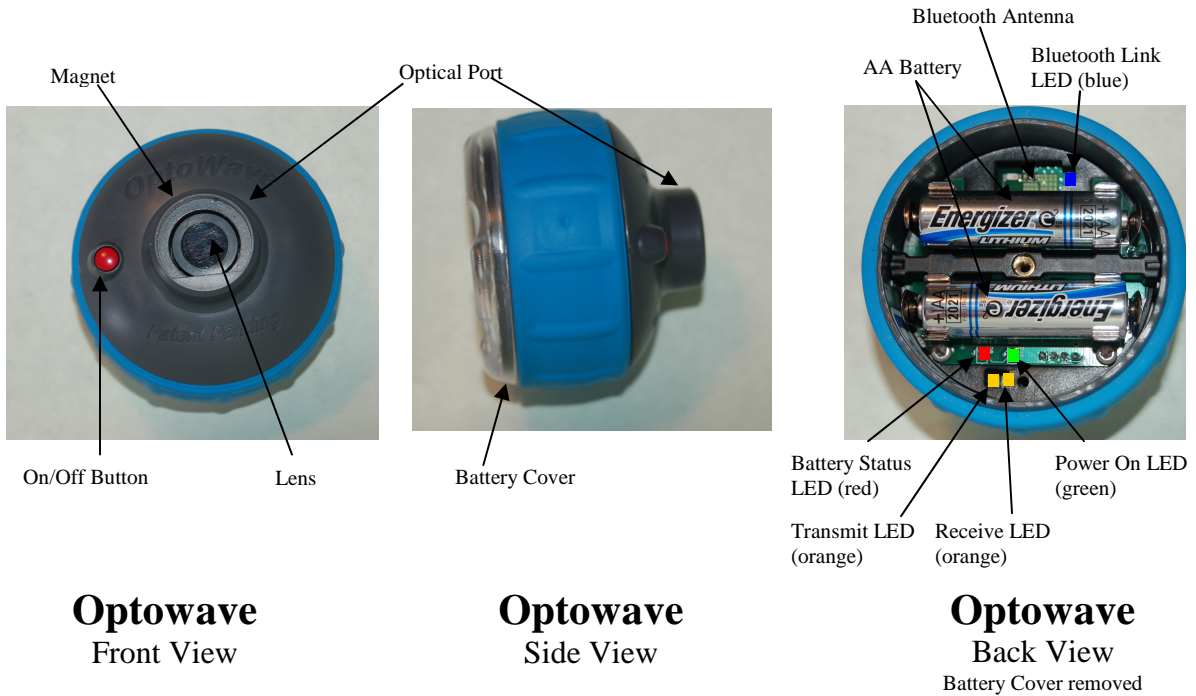
If installing the Linksys USBBT100, when the install screen appears make sure you are installing Version 2.0.
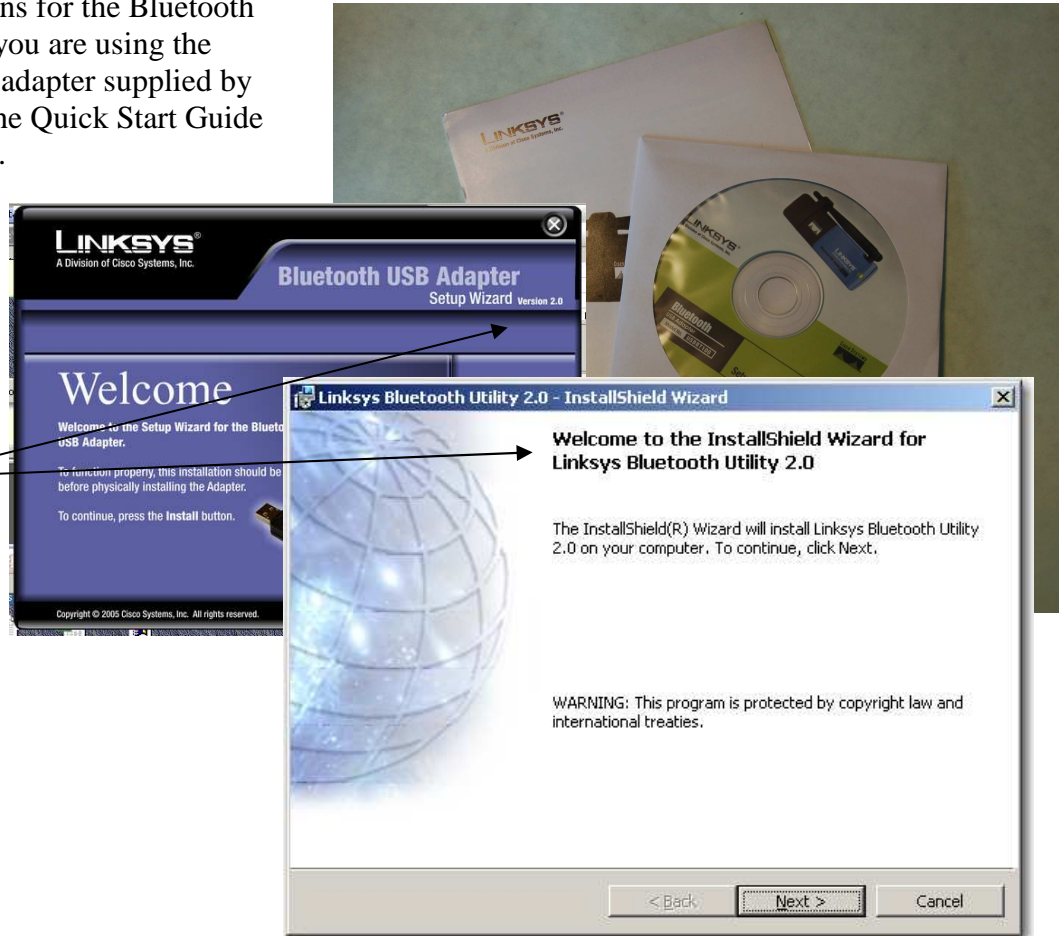
It is important to not install the Linksys adapter on the PC until instructed to do so. Installing the adapter before instructed to do so could result in the installation of the wrong drivers, intermittent operation, or missing features.

If instructed to do so reboot the system before proceeding.

IV. Understanding the Optowave Wireless Optical Probe Features

Magnet · Optical Port · On/Off Button · Lens · Battery Cover · Bluetooth Antenna · AA Battery · Bluetooth Link LED (blue) · Battery Status LED (red) · Transmit LED (orange) · Receive LED (orange) · Power On LED (green)

Optowave
Front View

Optowave
Side View

Optowave
Back View
Battery Cover removed

On/Off button – press and hold for more than 2 sec to latch the Optowave into the Power On mode. The green Power On LED will light. When the power is on press and hold again until the blue LED lights to power off the Optowave probe.

Optical Port – the part of the probe that contains the optical interface.

Magnet – holds the probe to the meter's optical port. Be careful to keep this powerful magnet way from magnetic media such as hard drives, floppy drives and magnetic strip cards such as credit cards and ID badges.

Lens – this is an optical filter lens that prevents natural ultraviolet light from interfering with the photodiodes. Keep the lens free from dirt and scratches.

Battery Cover –twisting this cover off accesses the battery compartment.

Power On LED – this LED glows green when the probe is powered on.

Battery Status LED – this LED glows red when the battery voltage has dropped to 20% of the required value. When the battery voltage drops to 10% of the required value the intensity of this LED increases.

Bluetooth Link LED – this LED glows blue when the Optowave probe is paired with a PC.

Transmit/Receive LED's – these LED's glow orange when there is activity over the optical link.

V. Install 2 AA batteries into the Optowave Wireless Optical Probe

Grip Optowave Wireless Optical Probe with the optical port in the palm of your weaker hand. With your other hand grip around the rim of the battery cover, much the same as opening a jar. Twist the cover counterclockwise. If the cover is tightly installed you will notice a number of bumps as you first begin loosening the cover. This bumping is normal. As the cover loosens the bumping will stop and the cover will turn freely. Spin the cover free. *(The screw in the center of the cover will remain with the cover as it is removed. Do not remove the cover by unthreading the screw unless the battery cover is seized and you cannot loosen it by hand. If the screw should come loose or if you unscrewed it, rethread it into the cover until the rubber gasket is tight against the cover. Then screw the cover on to the Optowave device.)*

If there are batteries already in the probe, remove them by forcing your thumb under the mid-section of the battery while pushing up.

Install fresh batteries in the probe according to the polarity markings on the circuit board below each battery position. Improperly installing batteries will prevent the Optowave Wireless probe from powering-up. Be sure each end of each battery snaps into place in the respective battery clip. If the batteries are not seated properly they may interfere with the complete installation of the battery cover. While the battery cover is not in place be careful that no dust, dirt, liquid or other foreign matter is allowed to enter into the device cavity.

Once the batteries are installed screw on the battery cover until the rim begins to make contact with the rubber grip section. Notice that after the cover begins to make contact with the rubber grip slight bumps will be felt as the cover is further tightened. Continue to tighten the cover until between 3 and 5 bumps have been noticed. The final stop should be between the high point of the bumps. Tightening the cover in this manner helps to maintain a water resistant seal.

Note: If the device is to be stored for a long period of time the batteries should be removed and the cover should not be fully tighten.

Note: Operating the Optowave without the Battery Cover in place can void the device warranty.

VI. Powering-Up the Optowave Wireless Optical Probe

Once the batteries and the cover are correctly installed, hold the probe so that the battery cover is facing you and the optical port is facing away. With your other hand find the power button on the other side of the probe. Depress the button while looking at the battery cover. You should notice the green Power LED lights after a slight delay. You will also notice the orange transmit LED and the blue Bluetooth Link LED both flash briefly. Hold the power button for more than three seconds to latch the probe into the Power On mode. After you release the power button, the green LED should remain lit and the wireless probe is now ready for use. If the green LED does not remain lit press the power button again and hold it for slightly longer.

Press the power button and hold (about 5 sec.) until the blue LED lights, then release the power button to Power Off the Optowave. The green LED and the blue LED should turn off. The Optowave is now off.

## VII. Configuring the Bluetooth Connection

Before the Optowave can be used the Bluetooth software must be properly installed per Section III. Then the Bluetooth services must be setup on the PC. Bluetooth setup varies by device manufacturer. The process outlined in this section is for the Linksys USB adapter.

If the Bluetooth software was installed there should be a Bluetooth icon in the systems tray. There should also be a desktop icon called My Bluetooth Places. Left click on the My Bluetooth Places icon.

Be sure the Optowave is powered on and the green LED is lit. Now select the icon named Bluetooth Setup Wizard.
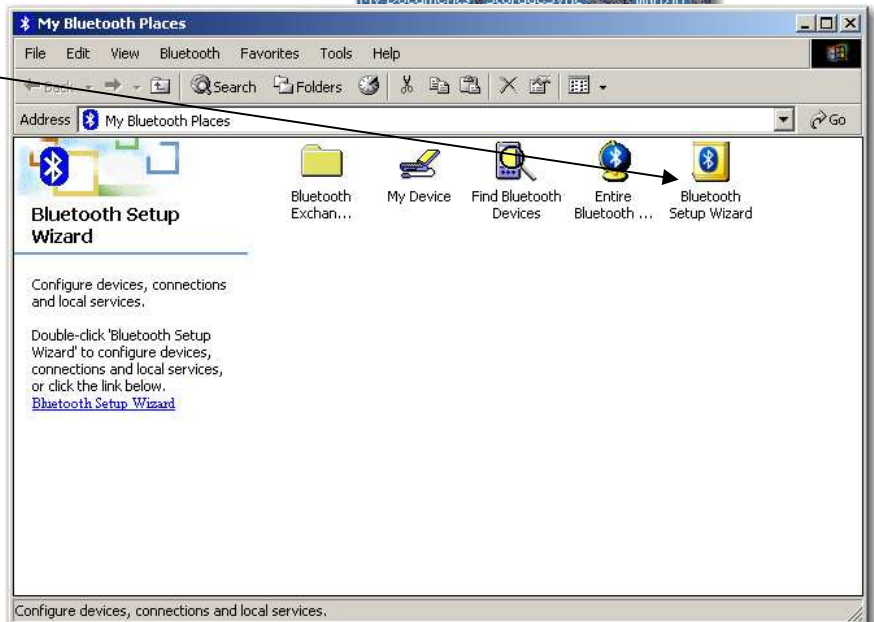
The system will now search for Bluetooth devices. The program will show icons for each device detected. You may notice other devices appear on the screen. Ignore them. Look for a device named "Optowave" with a number following it.
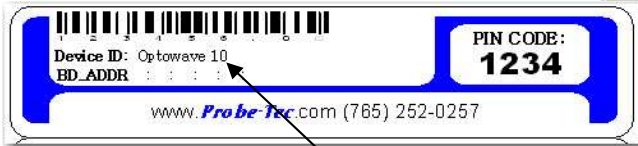
A label on the lower inside wall of the Optowave probe indicates the device name for that probe. The name should be "Optowave XXX", where the XXX are numbers. The name on the label should match the name of one of the devices discovered by the Bluetooth software. Select that device by clicking on the icon.

Be careful to check the name of the device you select matches the name inside the probe you are trying to connect to. If other probes powered on, your computer will detect them and attempt to connect with them.
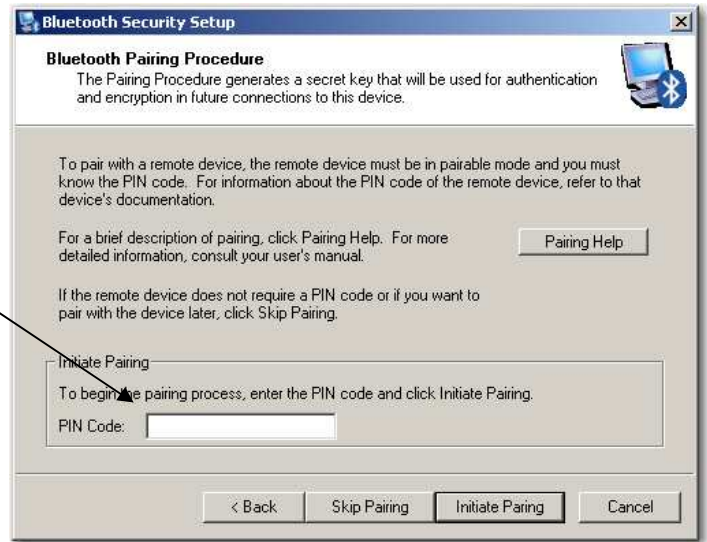
VIII. Pairing The Optowave with the PC

A pairing dialog box should appear. When prompted for a PIN code, enter the code found on the label inside the Optowave probe. This code should be 1234.
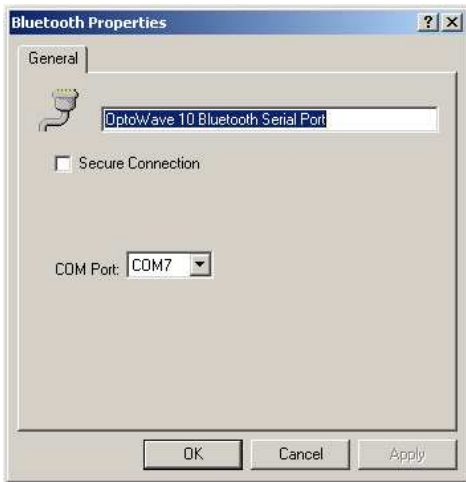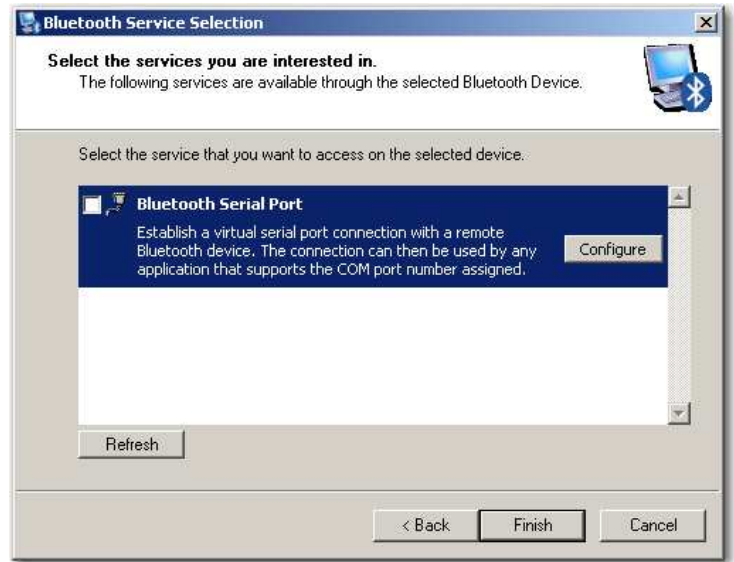
The program should indicate that the code was accepted.

IX. Starting Bluetooth Services

Once the Optowave has been discovered and paired, the Bluetooth services need to be set. The following dialog box should appear.

Select the Bluetooth Serial Port option. After the check mark appears select the Configure button.

A Bluetooth Properties dialog box should appear. Be sure it is named Optowave XXX Bluetooth Serial Port. Set the serial port to the desired setting from the list in the pull down menu. Select OK. Select Finish.

Note: Some meter software packages do not support the higher numbered virtual serial ports that the Bluetooth software may offer as a selection. Before setting the comm. port be sure which comm. ports are supported by the software packages to be used.

X. Configuring the Meter Software

Remember to configure the meter software package to use the comm. port selected in Section IX. In some cases timeout or packet size settings may also need adjusted. If you experience any problems with a particular configuration, contact Probe-Tec for more details or visit www.probe-tec.com/support .

XI. Using the Optowave Probe

The Optowave probe is used just like any wired probe except for one action that should be taken each time you power up your PC.

Be sure the Optowave is powered on. The green LED should be lit. Right click on the Bluetooth icon in the system tray. Move the cursor over Quick Connect, then over Bluetooth Serial Port, and finally select the Optowave device you wish to connect to.

A dialog box like this one may appear. The Bluetooth icon in the system tray should now be green.
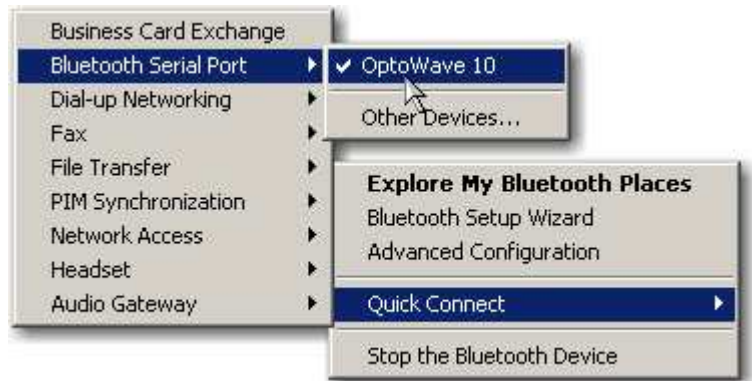
Place the probe on the meter's optical port. Open the meter reading software package. Connect the meter in the normal manner (be sure the comm. port is set correctly). When a connection is established the blue LED should be lit and the Bluetooth icon in the system tray should be green. (If the blue LED is not lit or the icon is not green then there is a problem with the link between the computer and the Optowave probe. Refer to the Troubleshooting Guide.) Read or program the meter in the normal manner. While the meter is communicating with the software package you will notice the orange LEDs flashing rapidly.

When the session is complete disconnect the meter reading software and shut it down. Remove the probe and turn it off. Return the Optowave Wireless probe to the holster or carrying case until its next use.

XII. Automatic Power Off Feature

The Optowave Wireless Optical Probe was designed with an automatic power off feature. After power has been turned on, the probe will monitor its status and communications over the air. If there is no activity for a period of 15 minutes, the Optowave probe will automatically shutdown. 20 seconds before shut down the blue LED will begin flashing as a warning of the pending shutdown. To avoid the automatic shutdown begin communications with a meter or briefly press the power button.

XIII. Batteries

The Optowave Wireless Optical Probe requires 2 AA batteries. The battery type can be either disposable or rechargeable. The battery composition will not affect the Optowave Wireless Optical Probe as long as the voltage battery voltage is 1.5V.

The batteries supplied with the Optowave Wireless Optical Probe are high-energy Lithium disposable batteries. With daily periodic use, such as occasional meter programming, a fresh set of these batteries should last over a month. If the probe is used daily for continuous meter reading the batteries will need changed or recharged more frequently.

Never attempt to recharge batteries while they are installed in the Optowave device. Always follow the battery manufacturers' specific instructions regarding the use, recharging, and disposal of their batteries and the battery charger.

Probe-Tec also offers NiMH rechargeable batteries as an option. This option includes a battery charger that can be powered by the 12V lighter plug of any 12V vehicle.

When installing new batteries be sure both batteries are fresh or fully recharged.

Do not attempt to recharge the Lithium batteries supplied with the probe.

Damaged cause by defective or improper use of batteries is not covered under Probe-Tec's standard warranty.

IVX. Carrying Case

The Optowave Wireless Optical Probe is a sophisticated computerized radio communications device. The Optowave design is robust and it can be used just as wired probes are used. Probe-Tec ships the Optowave with a rugged carrying case that should be used to store the Optowave when not in use. The carrying case not only protects the Optowave from accidental damage it also protects it from dirt, and provides a handy place to keep the various meter reading items.

Appendix

System Requirements	
Operating System	Windows 2000 and Windows XP
Bluetooth Version	Version 2.0 +EDR
Adapter Configurations	USB, PCMCIA, Serial DB9,or internal
Bluetooth Class	Class 1 or Class 2

Meter Software Supported	
Landis + Gyr	1132Com
GE	Metermate
Elster	Alpha Power Plus
Schlumberger	

Meters Supported	
All	ANSI Optical Probe Compliant
Elster	A1, A3
GE	KV, KV2, I210+C
Landis + Gyr	S2, S3, S4, Altimus, DE, DD, DX
Schlumberger	