FLUKE networks™

OptiView™

Wireless Network Analyzer

Getting Started Guide

PN 1998593
August 2002, Rev. 2, 2/03

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Introduction

OptiView Wireless Network Analyzer, hereafter referred to as the "analyzer", the newest member of the OptiView™ family, brings the ruggedness, portability and ease-of use of OptiView™ Analzer to wireless LANs. Unlike software-only solutions, OptiView Wireless Network Analyzer is designed to work wherever the wireless LAN network extends: in the conference room, on the production floor or at the outdoor receiving dock. Whether you're detecting rogue access points, designing your first wireless LAN deployment, verifying a recent installation or troubleshooting wireless connectivity problems, the OptiView Wireless Network Analyzer gives you the vision you need to manage your wireless network.

Caution

The OptiView Wireless Network Analyzer is equipped with a wireless network access card allowing use of channels 1 through 14.

Channel selection based on the country is an easily modified configuration accessed in the analyzer's Setup menu (Setup | Options). Based on this information, only those channels that are allowed for the selected country are displayed as legal channels. IT IS YOUR RESPONSIBILTY TO USE ONLY LEGAL CHANNELS.

Note

In the United States, the FCC allows use of channels 1 through 11. United States users need to be aware that FCC regulations, within the United States, do not permit use of Channels 12 through 14, and use of these channels is illegal.

Note

The OptiView Wireless Network Analyzer software requires that the OptiView Integrated Network Analyzer's software version must be 2.0 or greater. Check the software version before installing the OptiView Wireless Network Analyzer software. To view the OptiView Integrated Network Analyzer software version number, startup the OptiView Integrated Network Analyzer user interface and go to the ***Setup | Version*** *tab and view the User Interface Version field.*

Before You Start

Safety Information

The OptiView Wireless Network Analyzer complies with:

- FCC part 64, class A
- FCC part 15, class A

Refer to the back of the Wireless LAN card for compliance symbols.

The following symbols are used throughout this document:

⚠ PLEASE READ MANUAL FOR SAFETY

⚠Warnings

To avoid possible electric shock or personal injury, follow these guidelines:

- **Do not operate the product around explosive gas, vapor or dust.**
- **If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.**

Contacting Fluke Networks Sales, Service, and Support Centers

Visit the Fluke Networks website at **www.flukenetworks.com.** Send email to support@flukenetworks.com.

For operator assistance in the USA, call 1-800-28-FLUKE (1-800-283-5853).

To order accessories or get the location of the nearest Fluke Networks distributor or service center, call:

USA: 1-888-99-FLUKE (1-888-993-5853)
Canada: 1-800-36-FLUKE (1-800-363-5853)
Europe: 00800 632 632 00 or +44 1923 281 300
Beijing: 86 (10) 6512-3435
Japan: +81-3-3434-0181
Singapore: +65 6738-5655
Anywhere in the world: +1-425-446-4519

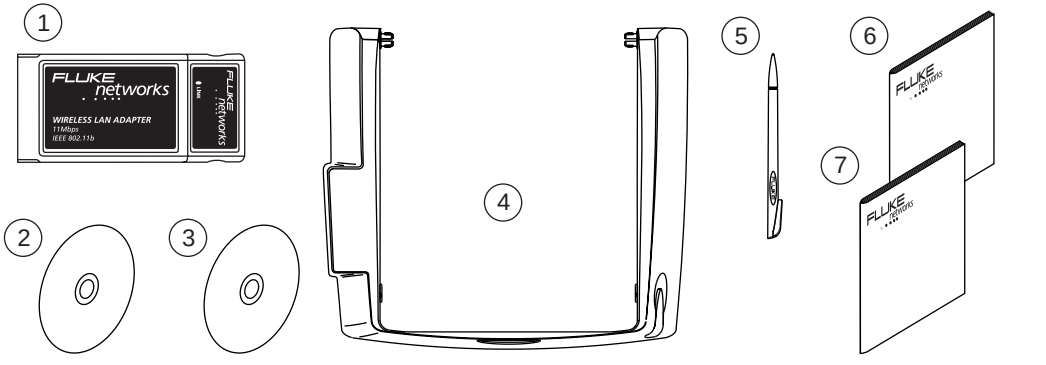
OptiView Wireless Network Analyzer Support

As a registered user, you are entitled to entry level product support, including three free telephone support incidents during the first 60 days of ownership, access to entry level online Knowledge Base library of product operation and Software information, and Web-based trouble ticketing. We will also be sending you Fluke Networks company and product information updates.

Please take the time to register your analyzer. A registration card is supplied in the shipping box. You can also register by going to **www.flukenetworks.com**, click on **support**, then click on **Registration**. A *Log in* screen is displayed. Click on **create** to setup an account password if you have not done so before. Then you will be able to log in using your email address and password. Once logged in, you can fill out the online registration form by clicking on **Register a product**, selecting **OptiView Models**, selecting **Select a Model**, and choosing **OptiView Wireless Network Analyzer** (end of list).

OptiView Wireless Network Analyzer and Accessories

The analyzer is designed for troubleshooting and monitoring Wireless Local Area Networks (WLANs).



Item		Description	Model/Part Number
1	Wireless LAN Adapter	802.11b Wireless LAN PCMCIA card, 11Mbps	1778198
2	CD-ROM	OptiView Wireless Network Analyzer CD-ROM. Contains installation software.	1998606
3	CD-ROM	OptiView Resource CD-ROM. Contains the latest OptiView Analyzer installation software. **Note:** The OptiView™ Integrated Network Analyzer installation software version must be 2.0 or greater.	1626397
4	Bail	OptiView™ Integrated Network Analyzer replacement bail. Used with Wireless LAN Adapter.	1671671
5	Stylus	Stylus used on the OptiView™ Integrated Network Analyzer touch panel display.	1671659
6	OptiView Wireless Network Analyzer Getting Started Guide	Provides basic operating information, accessory part numbers, and specifications for the OptiView Wireless Network Analyzer.	1998593
7	OptiView Integrated Network Analyzer Getting Started Guide	Provides basic operating information, accessory part numbers, and specifications for the OptiView Integrated Network Analyzer.	1560817
	Registration Card	Fluke Networks can serve you best by registering online at www.flukenetworks.com. If you cannot register online, please fill out and return the supplied registration card.	N/A
	Warranty Card		N/A

Figure 1. The OptiView Wireless Network Analyzer and Supplied Accessories

Installing the Supplied Replacement Bail and Stylus

With the bail nearly closed on the analyzer, grip one side of the bail by where it pivots on the analyzer, and gently pull. It should pop out with little effort. Do the same for the opposite side. See figure 2 below.

Caution

The bail must be nearly shut before removing or installing, or damage may occur to the analyzer case.

With the new analyzer bail placed in the nearly shut position, install it one side at a time by placing the pivot arm in the pivot hole on the analyer and gently pushing until it pops into the hole and pivots freely. Do the same for the other side.

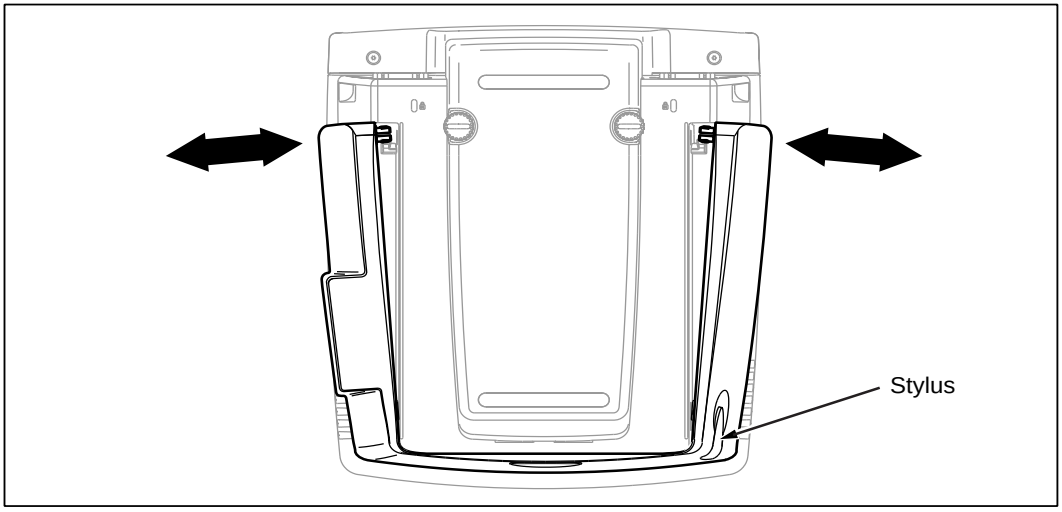


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Figure 2. OptiView Wireless Network Analyzer Bail Removal

Installing the Wireless LAN Card

Before installing the WLAN PC Card, install the new bail as described above. The new bail is supplied with the OptiView Wireless Network Analyzer kit. The new bail prevents the WLAN card from being damaged when the bail is closed.

The WLAN PC Card is installed in the PC Card (PCMCIA) card slot located on the right side of the OptiView™ Integrated Network Analyzer. When inserting the card, make sure it is aligned and installed properly in the slot holder.

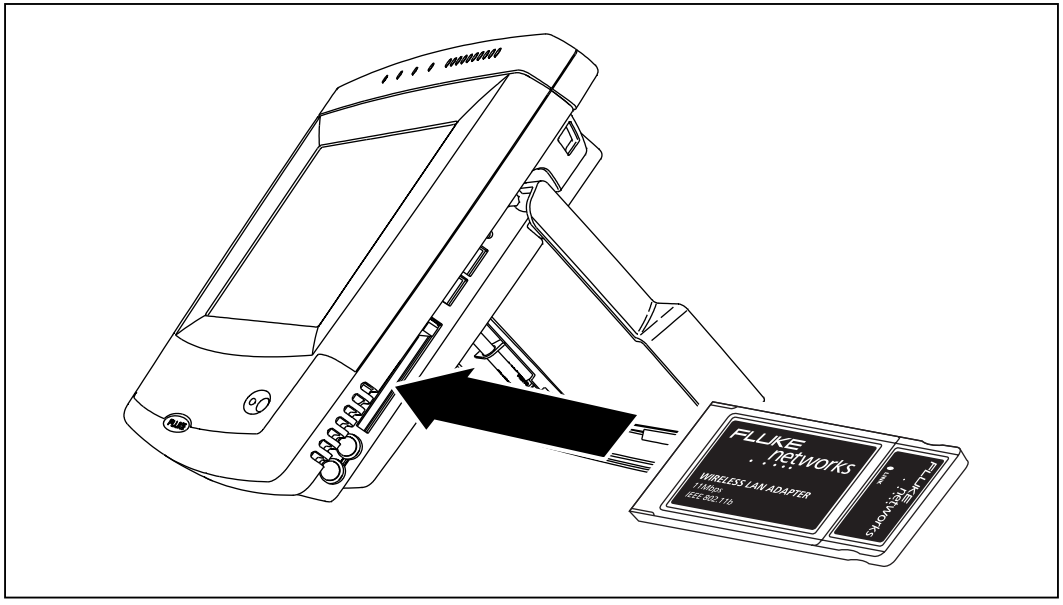

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Figure 3. Wireless LAN Card Installation

Installing the OptiView Wireless Network Analyzer Software

If the OptiView Wireless Network Analyzer icon does not appear on your OptiView Integrated Network Analyzer desktop, you will need to install the software. There are three steps involved in the installation:

- Move the self-extracting software file onto the Analyzer's hard disk
- Install the software on the Analyzer
- Installing the Wireless LAN Adapter card

Moving the Software to Your OptiView Integrated Network Analyzer

There are two methods for moving the software file:

- Download the software file from the Fluke Networks Web Site directly to the Analyzer (this is the easiest option)
- Download the software file to your PC and then transfer the file to the Analyzer using one of the methods listed below:
  - Use a direct point-to-point connection
  - From the Analyzer, use Microsoft Networking to map a drive on the PC, and copy the file to the Analyzer
    - Transfer the software file to the Analyzer Using the Analyzer's TFTP Server software

Once the software file is on your Analyzer, you will need to install it as described in ***Installing the Software on the Analyzer***.

Downloading the Software File From the Fluke Networks Web Site Directly to the Analyzer

This is the easiest method to update your Analyzer. If your Analyzer is connected to a network that has Internet connectivity, perform this procedure.

1. Connect the Analyzer to your network and correctly configure the IP configuration. Refer to the Analyzer documentation for help if needed.
2. Start your web browser and point it at the following Fluke Networks web page: http://www.flukenetworks.com/us/LAN/Handheld+Testers/OptiView/_software.htm
3. Select the **OptiView Wireless Network Analyzer** link to download the software file to your Analyzer.
4. You are now ready to ***Install the Software on the Analyzer***.

Transferring the Software from your PC to the Analyzer

You can transfer the software file from your PC to the Analyzer either by:

- Using a Point-to-Point Connection to transfer the software file
- Using the Analyzer's TFTP Server application to transfer the software file
- Mapping a drive and copying the software file to the Analyzer

Configuring for a Point-to-Point Connection

If you are connecting the Analyzer directly to your PC's network interface card (NIC) through an Ethernet connection, you will need to configure the Analyzer and PC Network Properties.

If your PC is using a static address, you will need to configure the Analyzer to the same subnet, and select an IP address (that is different than the PC IP address). To do so, perform the following:

1. Go to your PC's Network Properties window and determine what the IP address and subnet (mask) are set to.
2. Go to the Analyzer **Setup | TCP/IP** screen and set the Source and Mask addresses. You do not need to set the router address. The Mask needs to be set to the same subnet as the PC, and the Source address needs to be set to an unused IP address.

Note

You should see link on the Analyzer once these settings are set.

If your PC is configured for DHCP, it will "time out" after several minutes to the Microsoft default address. Follow the procedures above to configure the Analyzer to the same subnet, and different IP address.

Note

Some Ethernet card vendors' auto speed detection may conflict with the Analyzer's auto speed detection. In this case, manually set the Analyzer link speed to 10Mb half duplex in the Analyzer's ***Setup | Ethernet*** *screen. If this does not work, manually set the PC NIC to 10Mb half duplex.*

Using the Analyzer's TFTP Server Application to Transfer the Software from your PC to the Analyzer

Note

If you are connecting the Analyzer directly to your PC via an Ethernet connection, see the section Configuring for a Point-to-Point Connection.

1. Make sure the PC and Analyzer have a valid IP configuration.

Note

Do not change the Analyzer IP configuration for the TCP/IP -> Intel 8255x-based PCI Ethernet Adapter (10/100). The IP must stay at 192.168.111.111 or the Analyzer will not work.

2. On the Windows desktop of your Analyzer, select **Start | Programs | Start TFTP Server**. The **TFTPD32 by Ph. Jounin** server dialog is displayed as shown below:

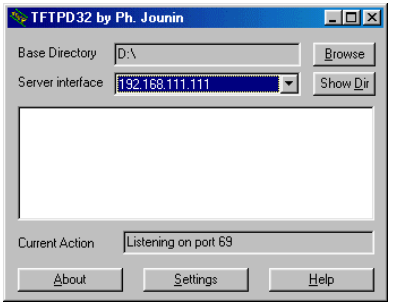

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Figure 4. TFTP Startup Screen

Note

Do not change the server address 192.168.111.111. This is an internal IP address used by the Analyzer to communicate with the PC portion of the Analyzer.

3. Select **Settings**. The **Tftpd32: Settings** dialog is displayed as shown below:

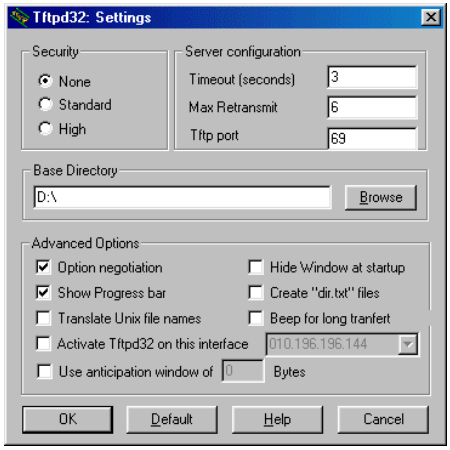

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Figure 5. TFTP Setup Screen

4. Set Security to None.
5. Specify an Analyzer Base Directory (D:\temp recommended) for the *OPV-WNA.EXE* file to be copied to.

Note

If you put the OptiView Wireless Network Analyzer software on the D: drive, you can perform a disk recovery on the C: drive and not loose the OptiView Wireless Network Analyzer setup file.

6. Select OK to save the settings.
7. On your PC, open a DOS window.
8. Change directories to the directory where the *OPV-WNA.EXE* file resides.
9. Type *tftp -i* <ip address> *PUT OPV-WNA.EXE,* and press Enter.

Note

The <ip address> is the IP address of the Analyzer as shown in the OptiView Front Page screen, not the IP address 192.168.111.111 shown above.

10. On the Analyzer, close the TFTP server dialog to terminate the TFTP session.
11. You are now ready to ***Install the Software on the Analyzer***.

Mapping a Drive and Transferring the Software File from your PC to the Analyzer

Microsoft Networking allows you to share a folder on your PC as a network drive that you can then access across your local network from your Analyzer, thus allowing you to copy the software file from your PC to the Analyzer.

Note

You may need to first go to the Network Properties on your Analyzer (right-click on the Desktop Network Neighborhood and select Properties), highlight Clients for Microsoft Networking and select ***Properties****, and setup Logon Validation for your network domain. Then you will need to restart the Analyzer and log into your network domain.*

The file sharing procedure is slightly different for each Windows operating system. Generally, you will need to perform the following procedure on your PC:

1. On your PC, determine the directory to be shared (default is C:\temp) that contains the software file *OPV-WNA.EXE*. From Windows Explorer, set the folder to be shared by right-clicking on the folder name and selecting the **Sharing** tab. Select the **Shared As:** radio button and enter a **Share Name**.

Note

You don't actually have to copy the software file to the PC hard disk before transferring it to the Analyzer. You can map the CD-ROM drive and copy the file directly from the OptiView Wireless Network Analyzer CD to the Analyzer.

2. Connect the Analyzer to the same local network as the PC.
3. On the Analyzer, open Windows Explorer.
4. Select **Tools | Map Network Drive**.
5. In the **Path** field, enter the IP address of the PC followed by the Share Name (e.g. \\010.010.010.012\sharename .) Click **OK** when done.
6. Copy the file *OPV-WNA.EXE* from your PC to the Analyzer (recommended is d:\temp.)
7. You are now ready to ***Install the Software on the Analyzer***.

Installing the Software on the Analyzer

After the file *OPV-WNA.EXE* has been copied to the Analyzer (preferably to the D: drive), perform the following steps to complete the installation:

1. Run OPV-WNA.EXE file.
2. Follow the **InstallShield Wizard** instructions to install the software. Reboot the Analyzer as indicated in the **InstallShield Wizard**.
3. Once the Analyzer reboots, stop the OptiView application if it is running.

Note

*Running both the OptiView application and the OptiView Wireless Network Analyzer at the same time is **NOT** recommended.*

4. Install the Wireless LAN Adapter card in the PCMCIA slot on the side of the OptiView Integrated Network Analyzer. The **New Hardware Wizard** will detect the card and properly configure the Analyzer.
5. Click on the OptiView Wireless Network Analyzer icon to start the software.

Using the OptiView Wireless Network Analyzer

Starting the OptiView Wireless Network Analyzer

At the desktop, press the OptiView Wireless Network Analyzer icon to launch the software.

Note

The OptiView Wireless Network Analyzer and OptiView™ Integrated Network Analyzer user interface should not be run at the same time. Shut down the OptiView™ Integrated Network Analyzer user interface software before starting the OptiView Wireless Network Analyzer software.

Upon a successful launch of the software, the OptiView Wireless Network Analyzer Front Page will appear as shown below. Monitoring of your WLAN is automatically started. Access Points present on your wireless network are discovered and displayed.

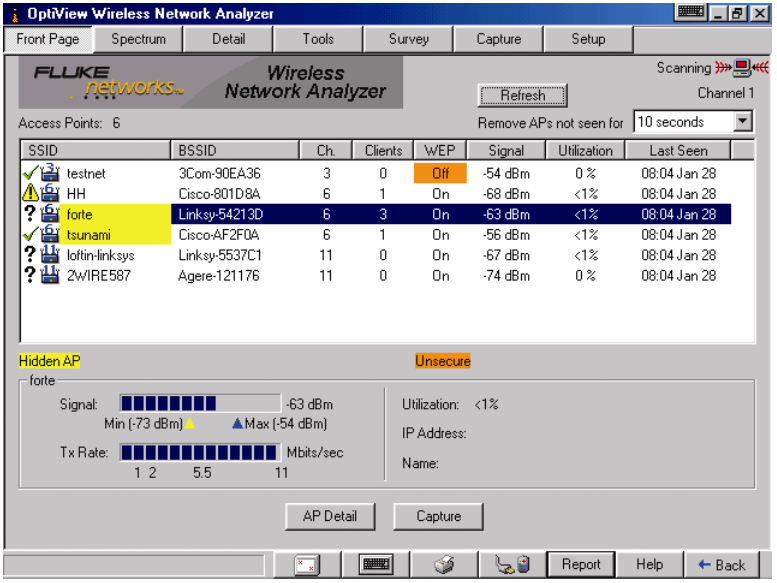

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Figure 6. OptiView Wireless Network Analyzer Front Page Screen

Scanning mode is the active state for the Front Page, Spectrum and Survey tabs.

In scanning mode the wireless PC card rotates (sweeps) through all channels and then performs an active scan (sends out a stimulus for Access Points to respond) at the end of sweep. To disable the active phase option while scanning, navigate to the **Setup | Options** screen and uncheck the box labeled “Enable Active Channel Scan”.

Monitor mode is the active state for the Detail tab.

In monitor mode the wireless PC card is parked on a particular channel, and all packets received on that channel are processed for passive discovery of Access Points and clients.

Linked mode is the active state for Tools tab.

Selecting the Country Location

The first task that needs to be done after starting the OptiView Wireless Network Analyzer is the country selection. This is configured in the **Setup | Options** screen. Country selection determines which channels are displayed as legal and illegal. By default, the country is United States, with channels 1 to 11 displayed as legal channels.

Channels that are illegal for a country are displayed in red throughout all screens.

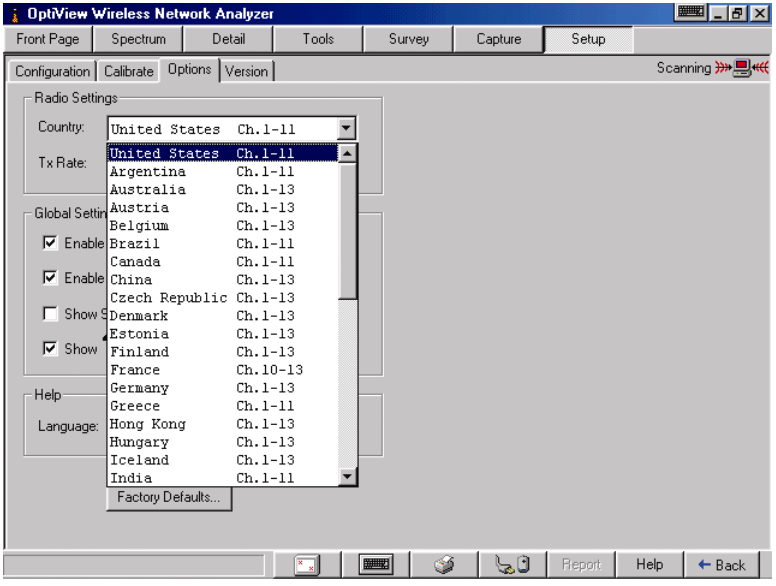

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Figure 7. Options Screen Country Selection Drop-Down List

Troubleshooting Your Analyzer

Resetting and Powering the Analyzer Completely Off

If you suspect the Windows environment has locked-up, you may have to reset the analyzer. This is done by pressing the **Reset** button. If you are not sure if the Windows environment or the analyzer (hardware) has locked-up, you may have to completely power-down the analyzer by forcing the power off as described below.

Resetting the Analyzer

The **Reset** button resets the Windows portion of the analyzer without shutting down the data acquisition board. The **Reset** button should only be used if the Windows environment has stopped responding.

Forcing Power Off

Power can be forced off by pressing and holding the **On/Off** button for approximately 7 seconds.

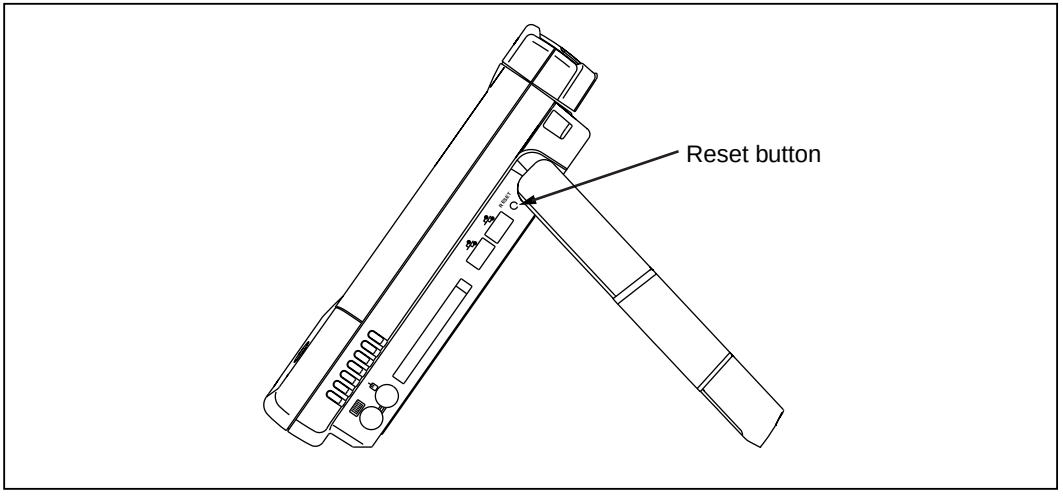

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Figure 8. Reset Button Location

Before Calling Technical Support

Before calling technical support, you can perform these basic analyzer troubleshooting steps to pinpoint many problems:

Do you suspect Windows has locked up?

If yes, press the **Reset** button.

Do you suspect the analyzer has locked up?

If yes, completely power-down the analyzer. See “Forcing Power Off” on page 16.

Does the analyzer power-up?

Connect the AC adapter/charger to determine if the internal battery (or internal and external batteries) is the culprit. The analyzer will not power-up if the batteries are completely discharged.

If the analyzer only powers up with the AC adapter connected, the internal battery may be completely discharged.

The external battery has a charge indicator on the underside of the battery pack. The external battery will need to be removed from the analyzer to view the charge indicator. Press the charge indicator button to determine if the external battery is charged.

Known Issues

1. If you are analyzing multiple Access Points with different WEP keys, IP address, Name and Packet Stats will not be discovered for those devices with a different WEP key than the one currently set in the OptiView Wireless Network Analyzer **Setup | Configuration** screen.
2. In the **Capture** screen, the source/destination MAC filter supports Access Point, and Access Point to client filtering. It does not support client-to-client filtering. Entering two client MAC addresses will yield unexpected results.
3. Decoder issues:
   - Always shows "Long" preamble type.
   - Always shows Control frames as fragments.
   - Shows incorrect Source/Destination MAC addresses if the option "Configuration, Display, Display Network Address" is not checked.
4. Linking issue:
   - Application fails to link if AP Authentication is set to "Open" only. If you wish to link to an Access Point for which WEP is On, use the Management Utility which came with the access point to verify that

Shared Key authentication is enabled. This setting is found under the Advanced radio settings for most APs. The authentication type is not selectable in our wireless application and must be changed on the Access Point instead.

5. Access Point bridge mode issue: Access Points are discovered from their management beacon frames. If a pair of APs configured as a point-to-point bridge transmit data frames but not beacon frames, they will not be discovered by this application.

6. Non-802.11b devices issue: The OptiView Wireless Network Analyzer ships with an 802.11b wireless LAN card using DSSS modulation. It is therefore not capable of discovering 802.11a devices or older 802.11 devices using FHSS (frequency hopping) modulation.

Using the Built-in Help System

Accessing and Navigating the Help System

The help system is an integral part of the OptiView Wireless Network Analyzer. While using the analyzer user interface, help can be accessed by selecting the **Help** button located on the bottom-right of the user interface screen.

When the Help is launched, the current screen topic is displayed. You can also select a topic from the Contents (left pane), choose an Index entry, or perform a full text Search on any analyzer help topic or term.

You can also press the **Back** and **Forward** buttons to move to and from previous viewed topics.

The **Hide** button collapses the left pane of the Help screen giving you more room to view Help topics. The **Hide** button is replaced by the **Show** button. The **Show** button expands the left pane of the Help screen.

The **Print** button allows you to either print the selected topic or print the selected heading and all subtopics.

WLAN Card Specifications

Table 1. Fluke Networks Wireless LAN Adapter Specifications

Specification Compliance	IEEE 802.11b, PCMCIA Spec 5.1
Certifications	FCC, CE Mark Commercial
Interoperability	WECA Wi-fi for 802.11b
Security	40-Bit WEP, 128-Bit WEP
Interface	PC Card Slot
Outdoor Operating Range	Up to 1500 ft.
Indoor Operating Range	Up to 300 ft.
Data Rate	Up to 11 Mbps
Infrastructure Mode	BSS
Ad Hoc Mode	IBSS
Operating Temp	0° C to 65° C
Storage Temp	-20° to 85° C
Operating Humidity	95%