

IEEE 802.11b Mini PCI Module

EM9-NB

Users Guide

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Table of Contents

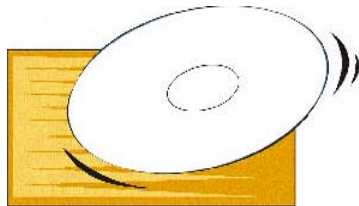
Regulatory Information	錯誤! 尚未定義書籤。
Table of Contents	2
1. Quick Software Installation Guide	3
2. Step-by-Step Software Installation Guide	6
2.1 INSTALLATION UNDER WINDOWS XP	6
2.2 INSTALLATION UNDER WINDOWS 98SE/2000/ME	7
3. Software Uninstallation Guide	9
3.1 UNINSTALLATION UNDER WINDOWS XP	9
3.2 UNINSTALLATION UNDER WINDOWS 98SE/2000/ME	11
4. Configuration	12
4.1 CONFIGURATION UNDER WINDOWS XP	12
4.2 CONFIGURATION UNDER WINDOWS 98SE/2000/ME	16
5. Using IEEE802.11b WLAN Utility	20
5.1 LAN STATUS	20
5.2 LINK INFORMATION	21
5.3 STE SURVEY	21
5.4 DIAGNOSTIC	22
5.5 ABOUT	22
6. Networking Applications	23
6.1 SURVEYING THE NETWORK NEIGHBORHOOD	23
6.2 FILE SHARING	24
6.3 USING THE SHARED FOLDER	25

1. Quick Software Installation Guide

If you are familiar with computer networking, this Quick Start Guide is the fastest way for you to establish your wireless network.

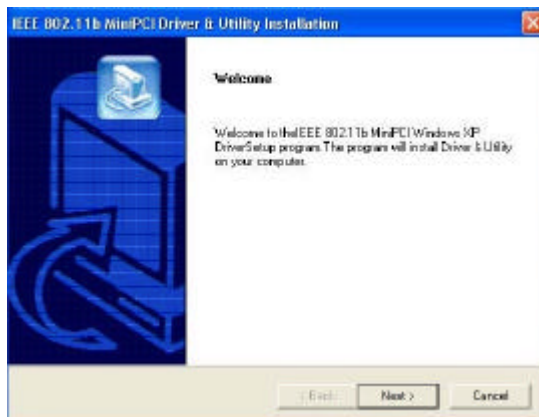
If you need more information than this Quick Start Guide can provide, the following chapters will guide you through the necessary steps. The quick installation guide is based on Windows XP.

1.



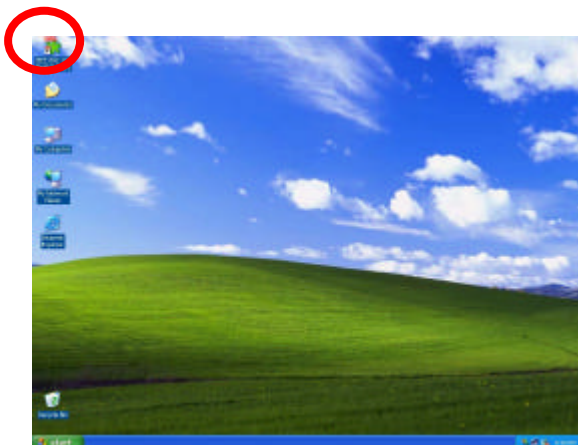
Insert the installation software CD into the computer.

2.



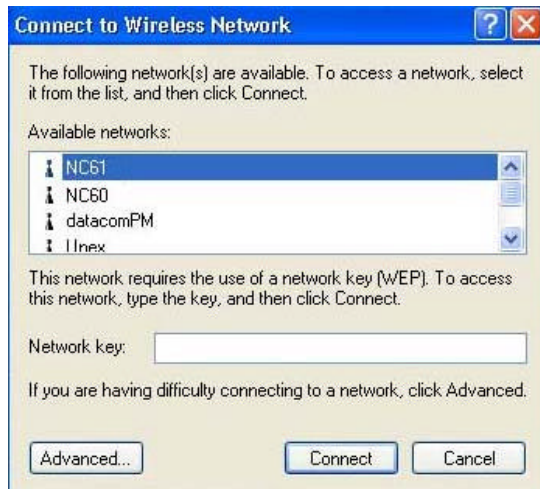
Follow the displayed instructions to complete installation.

3.



WLAN icon displays on the desktop after the installation.

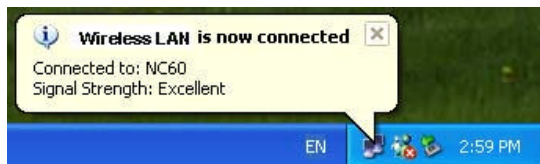
4.



Click Start>Settings>Network Connections, and double click the Wireless Network Connection of “802.11b Wireless LAN PCI Card”.

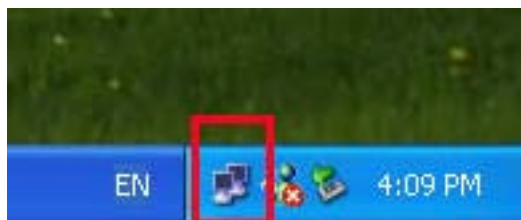
From the available networks list, choose one network and enter the network key (if necessary). Click “Connect”.

5.



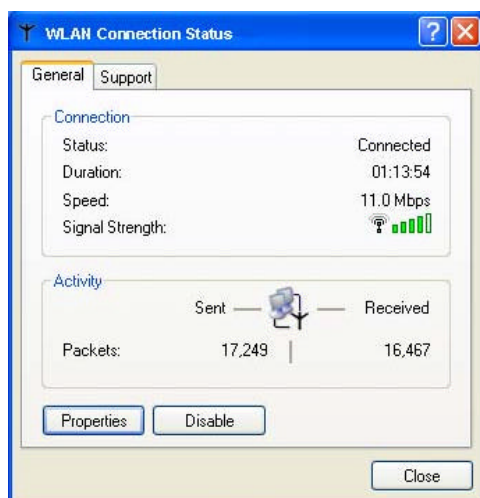
From Windows System Tray, a dialog box pops up which shows you the Network name and the Signal Strength.

6.



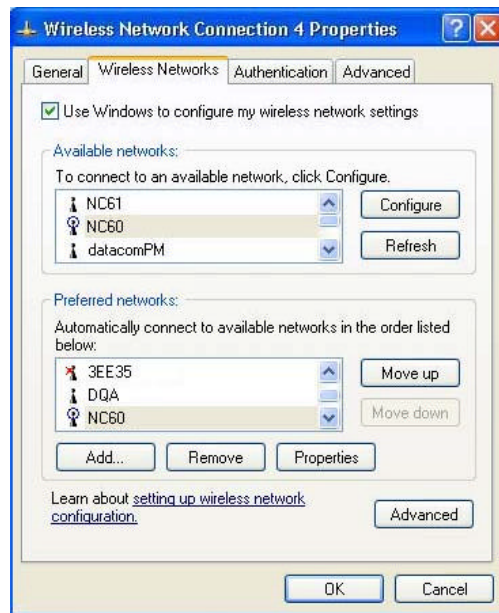
Double click on “Wireless Network Connection” icon from the Windows System Tray.

7.



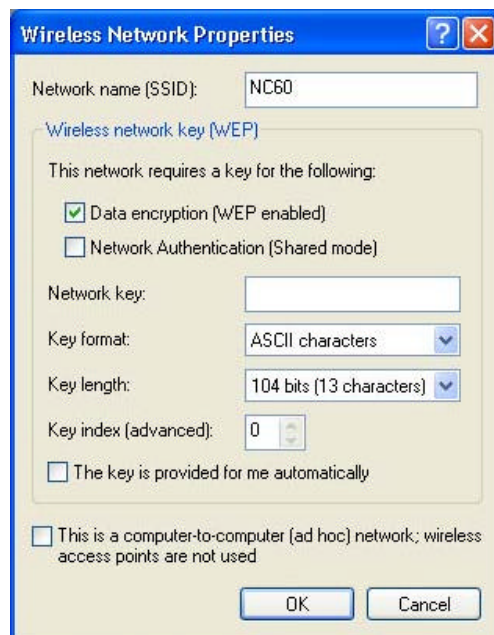
Click “Properties”.

8.



Select “Wireless Networks” tab.

9.



Click “Configure” button to view and edit the WEP settings.

You may click “[Learn about setting up wireless network configuration](#)” on Wireless Networks tab to learn more about wireless network configuration.

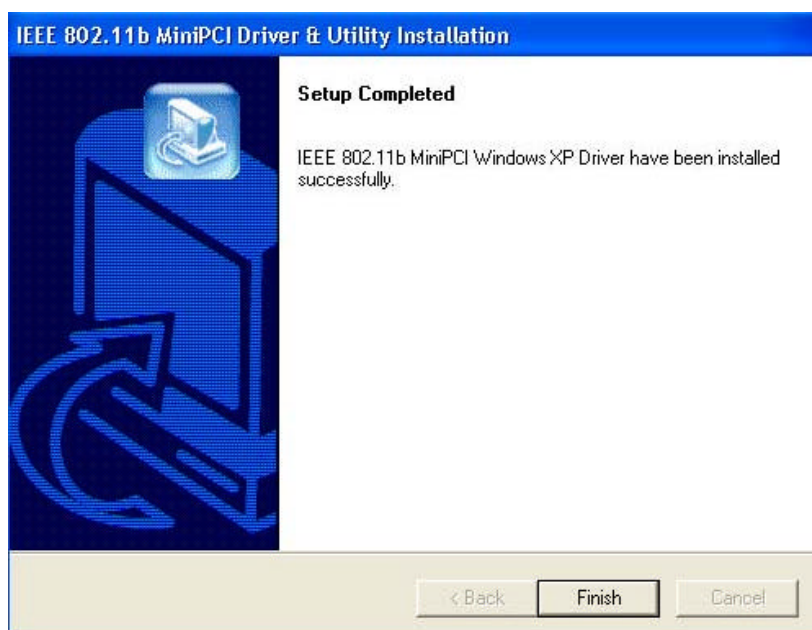
2. Step-by-Step Software Installation Guide

2.1 Installation Under Windows XP

1. Insert the IEEE802.11b WLAN installation CD into your CD-ROM drive.
The setup program will then automatically start.
2. Click "Next".

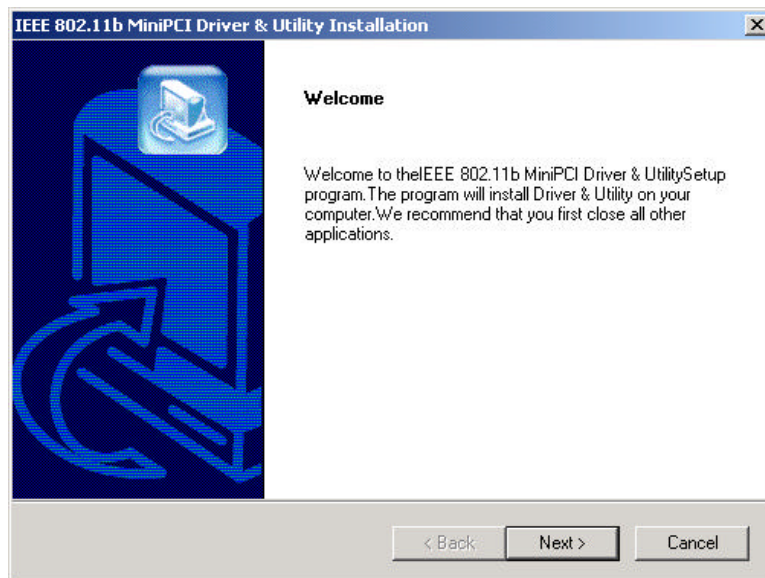


3. Click "Finish".

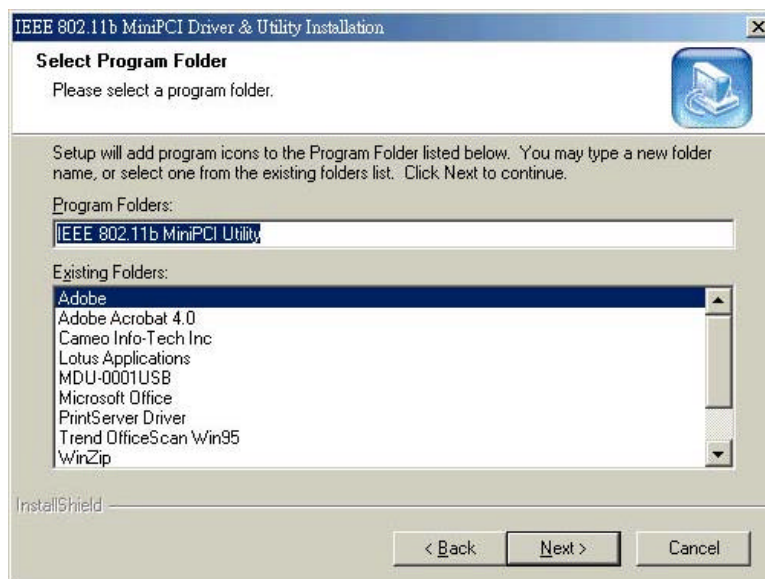


2.2 Installation Under Windows 98SE/2000/ME

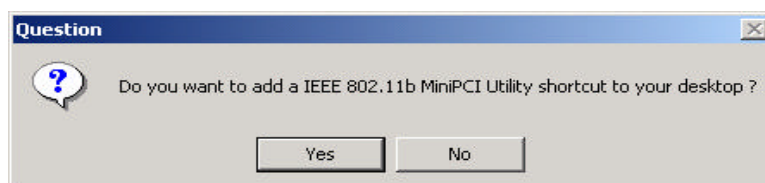
1. Insert the IEEE802.11b WLAN installation CD into your CD-ROM drive.
The setup program will then automatically start.
2. Click **"Next"**.



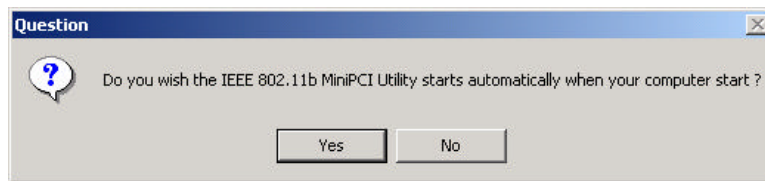
3. Click **"Next"**.



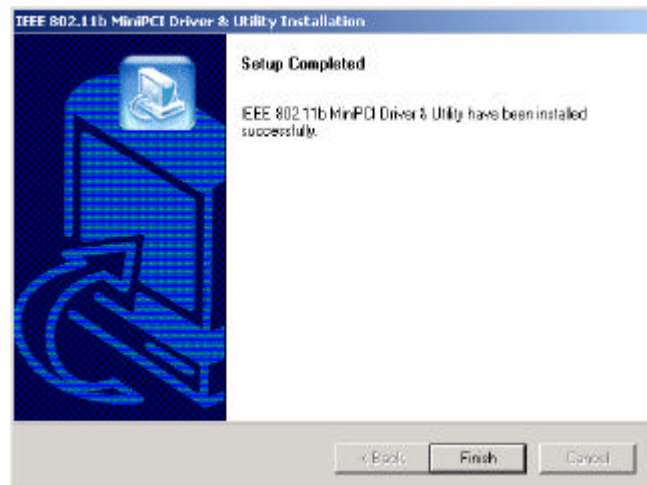
4. Click **"Yes"** to create a shortcut.



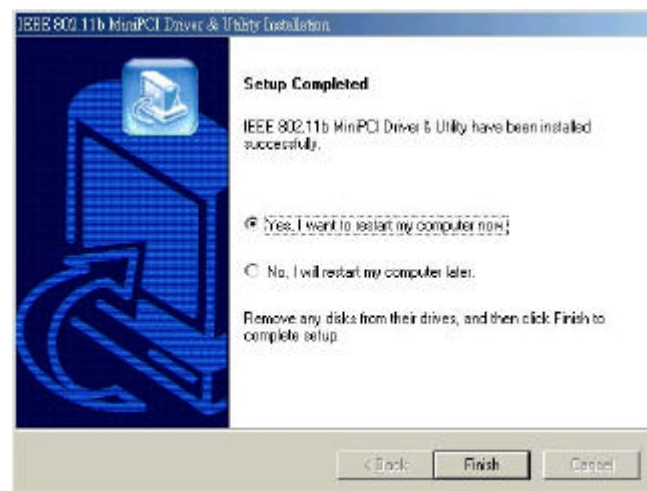
5. Click **“Yes”** to auto start the IEEE802.11b MiniPCI Utility every time the computer starts.



6. The installation is complete. Click **“Finish”**.



Restart your computer if necessary.



7. From the Windows System Tray, you can find a connection status icon.
Three different colors indicate different connection status.

-  Connected (Green)
-  Low quality (Yellow)
-  Disconnected (Red)

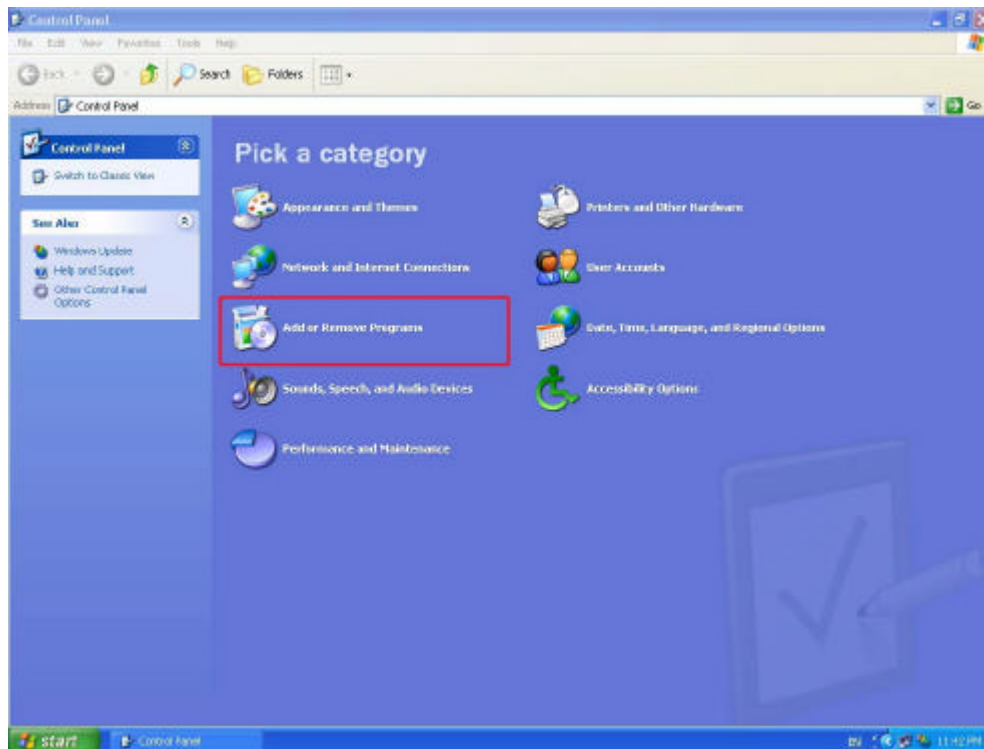
3. Software Uninstallation Guide

3.1 Uninstallation Under Windows XP

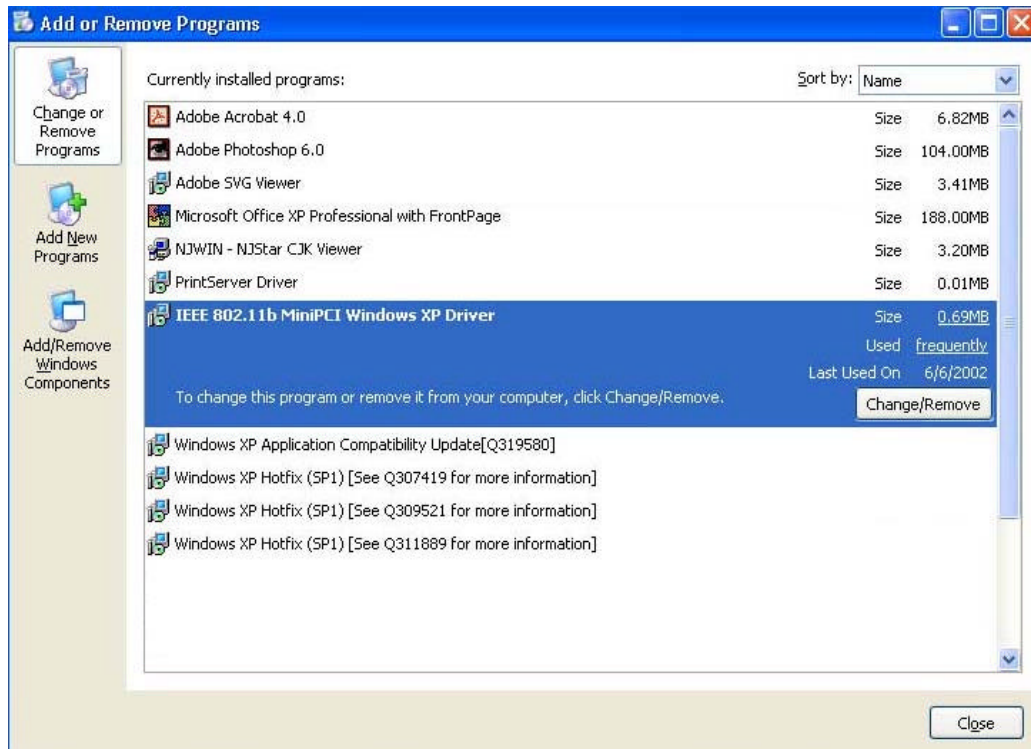
1. Close the IEEE802.11b MiniPCI Utility.
2. Click Start >Settings>Control Panel.



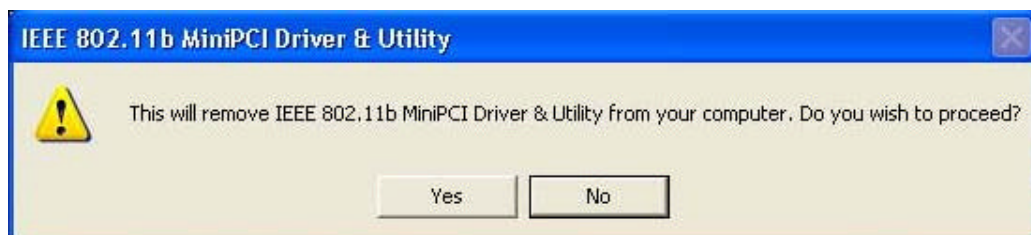
3. Select “Add or Remove Programs”.



4. Select “IEEE802.11b miniPCI Windows XP Driver”. Click “Change/Remove”.



5. Click “Yes”.

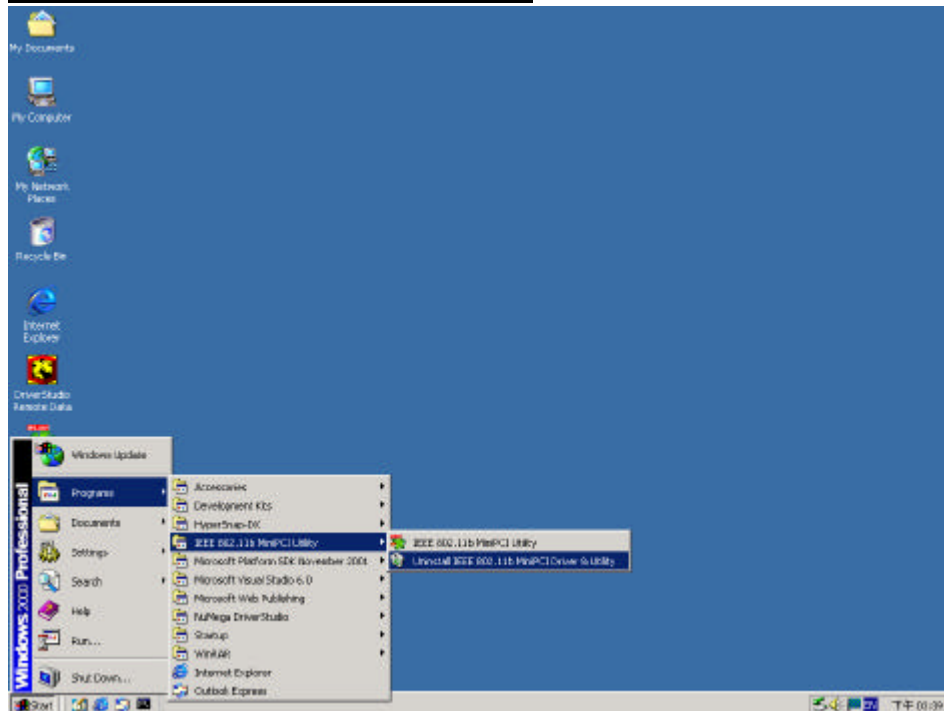


6. Click “OK”.

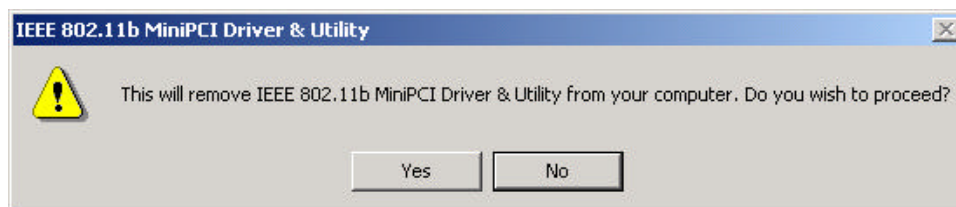


3.2 Uninstallation Under Windows 98SE/2000/ME

1. Close the IEEE802.11b MiniPCI Utility.
2. Click **Start > Programs > IEEE802.11bMiniPCI Utility>Uninstall**
IEEE802.11b MiniPCI Driver & Utility.



3. Click "Yes".



4. Configuration

4.1 Configuration Under Windows XP

1. Click “Start>Settings>Network Connections, and double click the Wireless Network Connection of “802.11b Wireless LAN PCI Card”.
2. From the available networks list, choose one network and enter the network key (if necessary). Click “Connect”.
3. From Windows System Tray, a dialog box pops up which shows you the Network name and the Signal Strength.
4. **Double click on “Wireless Network Connection” icon** from the Windows System Tray.
5. Click “Properties”.
6. View and edit the settings from each tab: General, Wireless Networks, Authentication and Advanced.
7. On Wireless Networks tab, click “Configure” button to view and edit the WEP settings.
8. You may click “Learn about [setting up wireless network configuration](#)” on Wireless Networks tab to learn more about wireless network configuration.

Contents are as follows:

To set up automatic wireless network configuration

1. Open [Network Connections](#).
2. Right-click **Wireless Network Connection**, and then click **Properties**.
3. On the **Wireless Networks** tab, do one of the following:
 - o To enable automatic wireless network configuration, select the **Use Windows to configure my wireless network settings** check box. This check box is selected by default. For information about what happens when you enable automatic wireless network configuration, see Notes.
 - o To disable automatic wireless network configuration, clear the **Use Windows to configure my wireless network settings** check box.
4. To connect to an existing wireless network, do one of the following:
 - [Access point \(infrastructure\)](#)
 - o To connect to an existing access point (infrastructure) network, under **Available networks**, click the network name, and then click **Configure**.

In **Wireless Network Properties**, specify the wireless network key (Wired Equivalent Privacy) settings, or, if the network key is automatically provided for you (for example, the key is stored on the wireless network adapter given to you by your administrator), select the **The key is provided for me automatically** check box. If you are unsure about whether a network key is needed or which settings you need to enter, contact your network administrator or the wireless network adapter manufacturer.

Important

- o If a network does not broadcast its network name, it will not appear under **Available networks**. To connect to an access point (infrastructure) network that you know is available but that does not appear under **Available networks**, under **Preferred networks**, click **Add**. In **Wireless Network Properties**, specify the network name (Service Set Identifier) and, if needed, the wireless network key settings.

Computer-to-computer (ad hoc)

- o To connect to an existing computer-to-computer (ad hoc) network, under **Available networks**, click the network name, and then click **Configure**.

In **Wireless Network Properties**, specify the wireless network key (Wired Equivalent Privacy) settings, or, if the network key is automatically provided for you (for example, the key is stored on the wireless network adapter given to you by your administrator), select the **The key is provided for me automatically** check box. If you are unsure about whether a network key is needed or which settings you need to enter, contact your network administrator or the wireless network adapter manufacturer.

If you want to connect to a computer-to-computer (ad hoc) network and both computer-to-computer and access point (infrastructure) networks are within range of your computer, click **Advanced**, and then click **Computer-to-computer (ad hoc) networks only**.

5. To configure a new wireless network connection, click **Add**, and then do the following:
 - o In **Wireless Network Properties**, specify the network name (Service Set Identifier) and, if needed, the wireless network key settings.
 - o If the network connection that you are configuring is to a computer-to-computer (ad hoc) network, select the **This is a computer-to-computer (ad hoc) network; wireless access points are not used** check box.
6. To change the order in which connection attempts to preferred networks are made, under **Preferred networks**, click the wireless network that you want to move to a new position on the list, and then click **Move up** or **Move down**.

7. To change the wireless network connection settings for a network that is listed in **Preferred networks**, click the wireless network for which you want to change settings, click **Properties**, and then change the settings as needed.
8. To remove a wireless network from the list of preferred networks, under **Preferred networks**, click the wireless network that you want to remove, and then click **Remove**.
9. To update the list of available networks that are within range of your computer, click **Refresh**.
10. To automatically connect to available networks that do not appear in the **Preferred networks** list, click **Advanced**, and then select the **Automatically connect to non-preferred networks** check box.

Notes

- To open Network Connections, click **Start**, point to **Settings**, click **Control Panel**, and then double-click **Network Connections**.
- When you enable automatic wireless network configuration, you can connect to an existing wireless network, change wireless network connection settings, configure a new wireless network connection, and specify preferred wireless networks. You will be notified when new wireless networks are available. After you select a wireless network, your wireless network adapter will be automatically configured to match the settings of that network, and a network connection attempt will be made. For more information, see Related Topics.
- To configure settings on the **Wireless Networks** tab, you must be logged on as an administrator, and you must use a wireless network adapter that supports the Wireless Zero Configuration service. If you are unsure whether your wireless network adapter supports the Wireless Zero Configuration service, contact your network administrator or the wireless network adapter manufacturer. For more information about automatic wireless network configuration, see Related Topics.
- If you are using third-party wireless networking software, clear the **Use Windows to configure my wireless network settings** check box.
- If you are unable to connect to an existing wireless network and the name of the network that you want to connect to appears under the **Preferred networks** list, click the preferred network name, and then click **Properties**. In **Wireless Network Properties**, review the settings to ensure that they are correct. If you are unsure whether the settings are correct, contact your network administrator or the wireless network adapter manufacturer.
- If the **Preferred networks** list includes both access point (infrastructure) and computer-to-computer (ad hoc) networks, you cannot move a computer-to-computer

network to a position in the list that is higher than the position of an access point network.

- To provide enhanced security for 802.11 wireless networks and for wired Ethernet networks, IEEE 802.1x authentication is enabled by default. For more information about how to set up 802.1x authentication, see Related Topics.

[Related Topics](#)

4.2 Configuration Under Windows 98SE/2000/ME

1. Click the connection status in Windows System Tray. Select “Site Survey” tab.
2. From the available network list, you can check the Signal Strength and then decide which network to join.
3. Select “Setting” tab. Enter the SSID and then choose the Network Type. Choose a channel if 802.11 AdHoc mode is selected.
4. Click “Advance” button to set Transmission Rate, Power Saving and WEP. Click “Apply”.
5. Click “Apply” to implement the modified settings.

Details of each setting are as follows:

- ◆ **SSID** is the group name that will be shared by every member of your wireless network. You will only be able to connect with an Access Point (AP), which has the same SSID. Note that the SSID will be case sensitivity.
- ◆ **Channel:** If the Infrastructure Mode is selected, this parameter will not be active. **Channel** shows radio channel numbers used for networking. Channel number must be the same between stations so computers can communicate in the same local LAN.

Country	Channel Range
USA/Canada	11 (1~11)
Most of Europe/Australia	13 (1~13)
France	4 (10~13)
Japan	13 (1~13) or 14 th

- ◆ **Transmission Rate**

Four options are available:

- A. Fully Auto (Default)
- B. Fixed 11Mbps
- C. Fixed 5.5Mbps
- D. Auto 1 or 2 Mbps

If you enable the “Power Saving” mode, the PCI module can work with low power consumption but the throughput may be slow down.

◆ Encryption Function

You may enhance the security of your network by enabling the “Encryption” function. The WEP Required Mode enables you to define the encryption keys.

! Caution:

Using “Encryption” function requires all computers of the network to enable the “Encryption” function. The WEP key needs to be the same for all IEEE802.11b stations.

Follow the steps below to set your WEP Required Mode:

- (1) Select one mode by clicking the pull-down button in the WEP Required Mode frame. Set the WEP key in your PCI module by selecting one of the following modes:
 - A. ASCII 64 bits
 - B. ASCII 128 bits
 - C. Hex 64 bits
 - D. Hex 128 bits
 - E. Auto 64 bits
 - F. Auto 128 bits
- (2) If you select “Auto 64 bits” or “Auto 128 bits” mode, type any letter or phrase in the “Pass Phrase” field (i.e. Pass or Test...) and the WEP key will be automatically generated in the Key field.

If you enter out-of range characters for the WEP key, the Utility will prompt a warning message to ask for the correct characters. Without enough hexadecimal value or ASCII character in the “Key” field, the “Apply” button will not be enabled.

- A. ASCII 64 bits: This mode requires 5 ASCII characters range from 0~9 and a(A)~z(Z).

The 'Advanced Setting' dialog box shows the following configuration:

- Transmission Rate:** Fully Auto (dropdown menu)
- Power Saving Mode:** Disable (radio button selected)
- WEP Required Mode:** ASCII 64 bits (dropdown menu)
- Pass Phrase:** (empty text field)
- Key1:** 12345 (radio button selected, text field)
- Key2:** (empty text field)
- Key3:** (empty text field)
- Key4:** (empty text field)
- Buttons:** Apply, Cancel

- B. ASCII 128 bits: This mode needs 13 ASCII characters range from 0~9 and a(A)~z(Z).

The 'Advanced Setting' dialog box shows the following configuration:

- Transmission Rate:** Fully Auto (dropdown menu)
- Power Saving Mode:** Disable (radio button selected)
- WEP Required Mode:** ASCII 128 bits (dropdown menu)
- Pass Phrase:** (empty text field)
- Key1:** 1234567890123 (radio button selected, text field)
- Key2:** (empty text field)
- Key3:** (empty text field)
- Key4:** (empty text field)
- Buttons:** Apply, Cancel

- C. Hex 64 bits: This mode needs 10 hexadecimal numbers for use and will have the limit of 10 Hexadecimal value of 0~9 and a(A)~f(F).

The 'Advanced Setting' dialog box shows the configuration for Hex 64 bits WEP. The 'Transmission Rate' is set to 'Fully Auto'. The 'Power Saving Mode' has 'Disable' selected. The 'WEP Required Mode' is set to 'Hex 64 bits'. The 'Pass Phrase' field is empty. There are four key fields: 'Key1' contains '1234567890', 'Key2' contains '0000000000', 'Key3' contains '0000000000', and 'Key4' contains '0000000000'. 'Apply' and 'Cancel' buttons are at the bottom.

- D. Hex 128 bits: This mode needs 26 hexadecimal value for use and will have the limit of 26 Hexadecimal number from range of 0~9 and a(A)~f(F).

The 'Advanced Setting' dialog box shows the configuration for Hex 128 bits WEP. The 'Transmission Rate' is set to 'Fully Auto'. The 'Power Saving Mode' has 'Disable' selected. The 'WEP Required Mode' is set to 'Hex 128 bits'. The 'Pass Phrase' field is empty. There are four key fields: 'Key1' contains '12345678901234567890123456', 'Key2' is empty, 'Key3' is empty, and 'Key4' is empty. 'Apply' and 'Cancel' buttons are at the bottom.

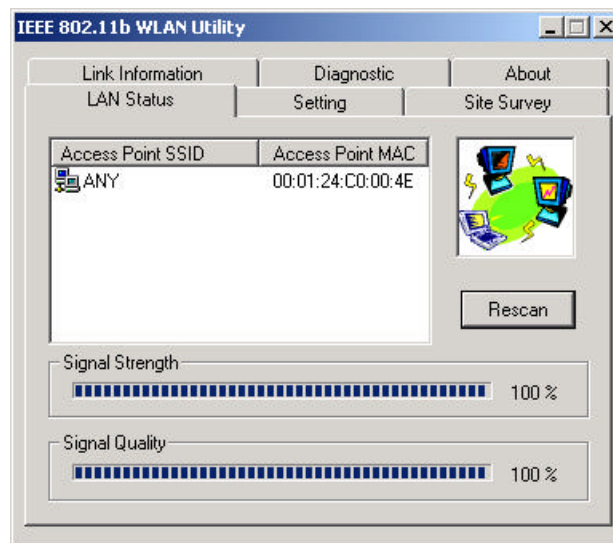
5. Using IEEE802.11b WLAN Utility

5.1 LAN Status

If you want to know the connecting status in Infrastructure Mode or 802.11Ad Hoc Mode, choose LAN Status tab in IEEE802.11b WLAN Utility window.

1. Infrastructure Mode:

- The columns of SSID and MAC of the Access Point, which your computer connects to, will appear in the screen if you choose the Infrastructure Mode.
- Double click the Access Point SSID (under the Infrastructure Mode) to access to the Microsoft Network Neighborhood folder to find other on-line computers.
- You can see the status of the Link Quality and Signal Strength under the LAN Status page.



2. 802.11 Ad Hoc Mode:

- The columns of Station Name and MAC Address of your station will appear if you choose the 802.11Ad Hoc Mode.
- Double click the name to display the content of your computer or double click Network Neighbors to access to the Microsoft Network Neighborhood folder to find other on-line computers.
- Click “ Rescan “ to find other computers.

5.2 Link Information

The link information provides information of Current Channel, Current Transmission Rate, Own MAC Address, Current Connection State, Wireless Network Adapter IP Address, Wireless Network Adapter Subnet Mask, and Wireless Network Adapter Default Gateway.

The screenshot shows the 'IEEE 802.11b WLAN Utility' window with the 'Link Information' tab selected. The window has a title bar with standard Windows controls. Below the title bar are three tabs: 'LAN Status', 'Setting', and 'Site Survey'. Under 'LAN Status', there are three sub-tabs: 'Link Information' (selected), 'Diagnostic', and 'About'. The 'Link Information' sub-tab contains several text boxes with the following values:

Field	Value
Current Channel	10
Current Transmission Rate	11 Mbits/s
Own MAC Address	00:01:24:D0:00:00
Current Connection State	00:90:4B:08:3F:AC
Wireless Network Adapter IP Address	192.168.253.101
Wireless Network Adapter Subnet Mask	255.255.255.0
Wireless Network Adapter Default Gateway	192.168.253.254

5.3 Site Survey

In this dialog box, you may get all the information of each Access Point within the communication range of your MiniPCI module. You may choose a preferred one to connect to according to the information (Connecting to the Access Point with the strongest signal is recommended.).

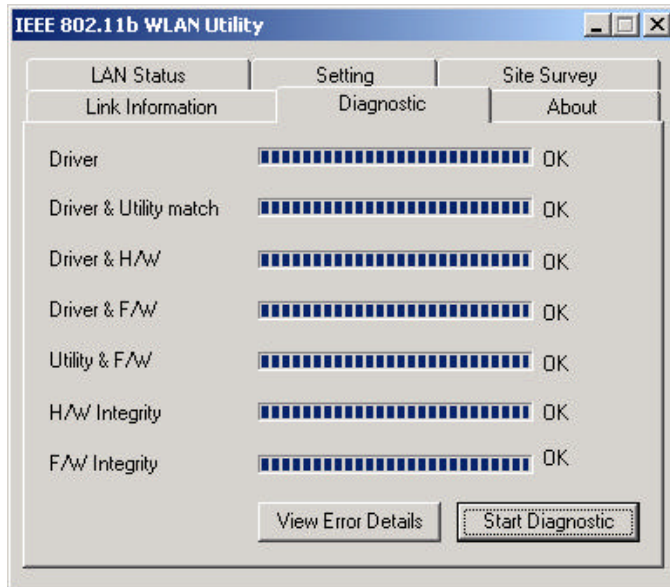
The screenshot shows the 'IEEE 802.11b WLAN Utility' window with the 'Site Survey' tab selected. The window has the same title bar and 'LAN Status' sub-tabs as the previous screenshot. The 'Site Survey' sub-tab contains a table listing detected access points. Below the table is a 'Rescan' button.

BSSID	SSID	Signal	Channel
00:01:24:c0:00:4e	NDTESTWEPO	30%	11
00:01:24:90:c4:05	DQA	21%	10
00:01:24:90:00:68	NC61	22%	5
00:01:24:90:00:67	NC60	22%	4
00:90:4b:08:40:10	Unex	18%	10
00:90:4b:08:3f:ac	Warp	14%	10
00:90:4b:08:14:92	datacom	12%	6
00:01:24:90:00:6a	NC60	13%	2
5e:a9:c8:6b:82:3d	ILING	31%	11

Rescan

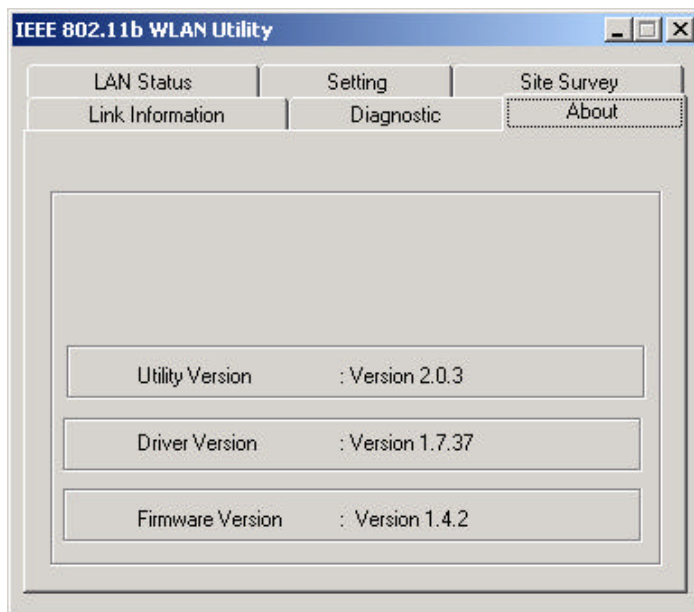
5.4 Diagnostic

To check if there are any errors in the hardware, firmware, and software of your PCI module, you may enter this dialog box and click the “Start Diagnostic” button. If there are any errors, please click the “View Error Details” and print it out to present to your dealer/ distributor.



5.5 About

From this dialog box, you can get the details such as the version information of each Software component.



6. Networking Applications

Available network applications are as follows:

- To Survey the network neighborhood
- To Share Your Folder with Your Network Member(s)
- To Share Your Printer with Your Network Member(s)
- To Access the Shared Folder(s)/File(s) of Your Network Members(s)
- To Use the Shared Printer(s) of Your Network Member(s)

In fact, the network applications of IEEE802.11b MiniPCI are the same as they are in a wired network environment. You may refer to the following 3 examples of Surveying the Network Neighborhood, File Sharing and Using the Shared Folder.

6.1 Surveying the Network Neighborhood

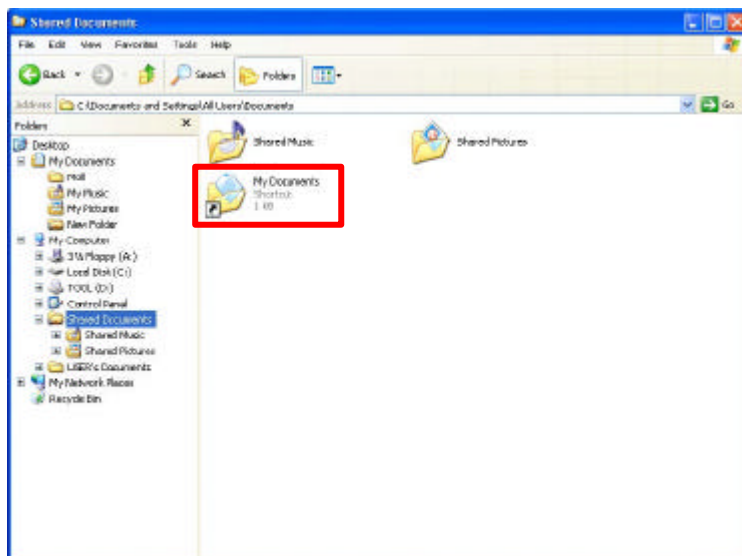
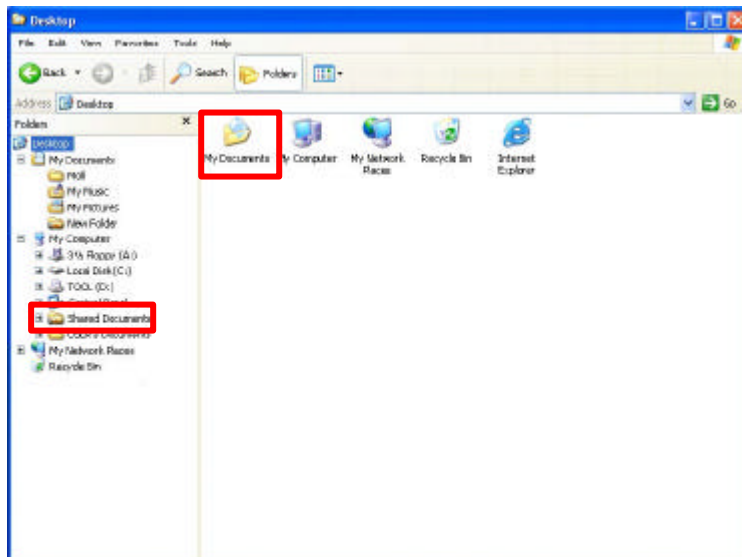
When multiple base stations are used in your wireless network, follow the steps below to display other computers:

1. **Double-click My Network Places** to display all stations in your Microsoft Windows Network Group.
2. To display other workgroups in the network environment, **double-click Entire Network**.
3. If there is a **second network operating system** running in your network environment (for example a Novell NetWare network), the “Entire Network” window will also display available servers running under the second network operating system. If you click on these servers, you may be asked to **enter your user name and password** that applies to the other network operating system. If you cannot find it, verify whether the other wireless computers are:
 - Powered up and logged on to the network.
 - Configured to operate with identical Microsoft Network settings concerning:
 - Networking Protocol.
 - Wireless Network Name.

To enable the sharing of **Internet access**, you should set the WLAN mode as “**Infrastructure**” and connect to the access point.

6.2 File Sharing

You may share files between computers that are logged onto the same wireless network. For example, if you want to share your folder “My Documents” with other computers of the wireless network, please **highlight** the folder “My Documents” and drag it to Shared Documents folder.



Sharing files in the IEEE802.11b wireless network will be like sharing files on a wired LAN.

6.3 Using the Shared Folder

If you would like to access a shared folder stored in other stations of the same network, please follow the process below:

1. Double-click the “My Network Places” icon, and then double-click the computer where the shared folder is located.
2. Double-click the folder you want to connect to.
3. Now you may open the needed file(s).

Note: If a password is required, the Windows will prompt a password column to you. Then you need to enter the password that had been assigned to this shared folder.