PCI 2.2 Bus Wireless Adapter

AT-WCP201G

Installation Guide

613-000282 Rev. A

Allied Telesyn

Regulatory Notes and Statements

Wireless LAN, Health and Authorization For Use

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. However, the energy levels of these emissions are far less than the electromagnetic energy emissions from similar wireless devices such as mobile phones. Wireless LAN devices are safe for use with frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments for example:

- ❑ On board airplanes
- ❑ In an explosive environment
- ❑ If the interference risk to other devices or services is perceived or identified as harmful

If the policy regarding the use of Wireless LAN devices in specific organizations or environments (for example, airports, hospitals, chemical/oil/gas industrial plants, or private buildings, etc.) is not clear, please ask for authorization to use these devices prior to operating the equipment.

Regulatory Information and Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, of the substitution or attachment. The manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

USA-FCC (Federal Communications Commission) Statement

This device complies with Part 15 of FCC Rules. Operation of this device is subject to the following two conditions:

- ❑ This device may not cause harmful interference
- ❑ This device must accept any interference received, including interference that may cause undesired operations.

CE Caution

CE ! CAUTION

European standards dictate the maximum radiated transmit power of 100mW EIRP and a frequency range of 2.400-2.4835GHz (channels 1 -13). In France, the equipment must be restricted to the 2.4465-2.4835GHz (channels 10 -13) frequency range and must be restricted to indoor use.

The following equipment: AT-WCP201G 54Mbps PCI 2.2 Wireless Adapter.

Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to the Electromagnetic Compatibility (89/336/EEC). Low-voltage Directive (72/23/ECC) and the Amendment Directive (93/68/EEC), the procedures given in European Council Directive 99/5/EC and 89/3360EEC.

The equipment passed. The test was performed according to the following European standards:

- ❑ EN 300 328 V.1.4.1 (2003-04)
- ❑ EN 301 489-1 V.1.3.1 (2001-09) / EN 301 489-17 V.1.1.1 (2000-09)
- ❑ EN 50371: 2002
- ❑ EN 60950: 2000

FCC Radio Frequency Exposure Statement

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65 and found compliant to the requirements as set forth in CFR 47 Sections 2.1091, 2.1093, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices.

FCC RF Radiation Exposure Statement: This equipment complies with the FCC RF radiation limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC 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. If not installed and used in accordance with the instructions, it 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 and correct the interference by one or more of the following measures:

- ❑ Reorient or relocate the receiving antenna.
- ❑ Increase the distance between the equipment and the receiver.
- ❑ Connect the equipment to 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.

Warning
In Canada, the equipment must be restricted to indoor use.

Export Restrictions

This product or software contains encryption code that may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license.

Safety Information

Your device contains a low power transmitter. When device is transmitted it sends out radio frequency (RF) signal.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Protection Requirements for Health and Safety - Article 3.1a

Testing for electric safety according to EN60950 has been conducted. These are considered relevant and sufficient.

Protection Requirements for Health and Safety - Article 3.1b

Testing for electromagnetic compatibility according to EN301 489-1, EN301 489-17 and EN55024 has been conducted. These are considered relevant and sufficient.

Effective Use of the Radio Spectrum - Article 3.2

Testing for radio test suites according to EN300 328-2 has been conducted. These are considered relevant and sufficient.

Contents

Preface

This guide contains the installation instructions for the AT-WCP201G wireless network adapter card.

This preface contains the following sections:

Document Conventions

This guide uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Where to Find Web-based Guides

The installation and user guides for all Allied Telesyn products are available in Portable Document Format (PDF) from our web site at **www.alliedtelesyn.com**. You can view the documents on-line or download them onto a local workstation or server.

Contacting Allied Telesyn

This section provides Allied Telesyn contact information for technical support as well as sales or corporate information.

Online Support

You can request technical support online by accessing the Allied Telesyn Knowledge Base from the following web site: **www.alliedtelesyn.com/kb**. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Email and Telephone Support

For Technical Support via email or telephone, refer to the Support & Services section of the Allied Telesyn web site: **www.alliedtelesyn.com**.

Returning Products

Products for return or repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to Allied Telesyn without a RMA number will be returned to the sender at the sender's expense.

To obtain a RMA number, contact Allied Telesyn's Technical Support at our web site: **www.alliedtelesyn.com**.

For Sales or Corporate Information

You can contact Allied Telesyn for sales or corporate information at our web site: **www.alliedtelesyn.com**. To find the contact information for your country, select Contact Us -> Worldwide Contacts.

Adapter Card Driver Updates

You can download new releases of network adapter card drivers from either of the following Internet sites:

- Allied Telesyn web site: **www.alliedtelesyn.com**
- Allied Telesyn FTP server: **ftp://ftp.alliedtelesyn.com**

To download new firmware from the Allied Telesyn FTP server at your workstation's command prompt, you need FTP client software and must log in to the server. Enter "anonymous" as the user name and your email address for the password.

Chapter 1

Installing the AT-WCP201G Wireless Adapter Card

This chapter contains the installation instructions for the AT-WCP201G wireless network adapter card. Sections in the chapter include:

The AT-WCP201G wireless adapter is shown in Figure 1.

Figure 1. AT-WCP201G Wireless Adapter

Features

- PCI local bus 2.2 compliant interface
- IEEE 802.11b and 802.11g compliant
- 6, 9, 12, 18, 24, 36, 48, and 54 Mbps dynamic transmission rates for IEEE 802.11g
- 1, 2, 5.5, and 11 Mbps dynamic transmission rates for IEEE 802.1b
- Microsoft Windows 2000 and XP compatible
- 2.4 ~ 2.5 GHz frequency band
- Infrastructure and Ad-hoc network compatible
- Wired Equivalent Privacy (WEP) with 64, 128, and 152-bit encryption
- Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access 2 (WPA2) Preshared Key (PSK)
- WPA Extensible Authentication Protocol (EAL) and WPA2-EAL
- Extensible Authentication Protocol (EAP) authentication types — Transport Layer Security (TLS), Message Digest-5 Challenge Handshake Authentication Protocol (MD-5 CHAP), and Protected EAP (PEAP)
- Temporal Key Integrity Protocol (TKIP)
- Advanced Encryption Standard (AES)
- External omni-directional antenna
- Super G mode with 108 Mbps transmission rate (Only supported with wireless routers and access points that feature Super G)

LEDs

The two LEDs on the AT-WCP201G adapter are defined in Table 1.

Table 1. LED Descriptions

LED	State	Description
Power	On	The adapter is receiving power.
	Off	The adapter is not receiving power.
Link	On	The adapter has established a connection to a wireless router or access point. If the LED is blinking, the adapter is transmitting or receiving traffic.
	Off	The adapter has not established a connection to a wireless router or access point.

Reviewing the Package Contents

The shipping package should contain the following items. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance:

- AT-WCP201G Wireless Adapter
- Omni-directional antenna with 0.5m cable and magnetic stand
- Software and Documentation CD
- Warranty card

Installing the AT-WCP201G Adapter Card

The procedure in this section installs the wireless adapter card in the computer. Refer to system's instruction manual for specific information on installing peripheral devices.

To install the wireless adapter card, perform the following procedure:

1. Shutdown your system and disconnect the power cord from the outlet.

2. Remove the system's cover by removing the screws from the chassis and gently sliding off the cover. See Figure 2.

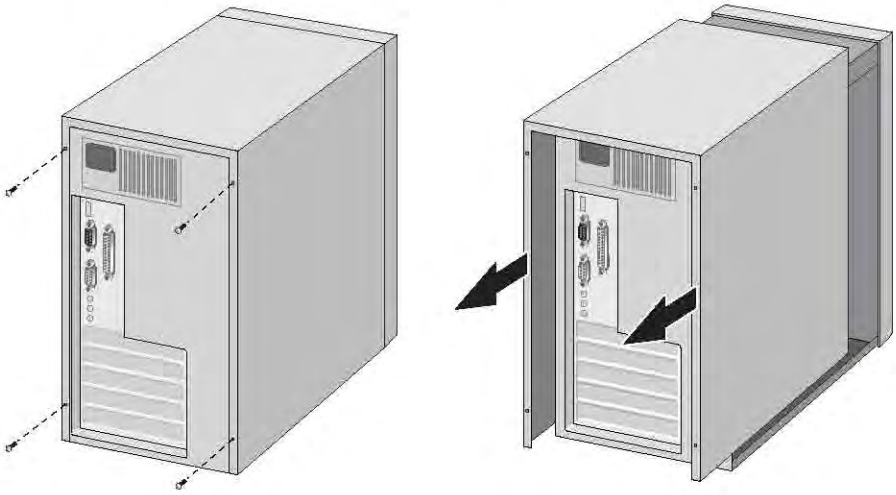

Figure 2. Removing the PC Cover

3. Select an empty, non-shared PCI 2.2 slot and remove the faceplate. Keep the faceplate in a safe place. You may need it for future use. See Figure 3.

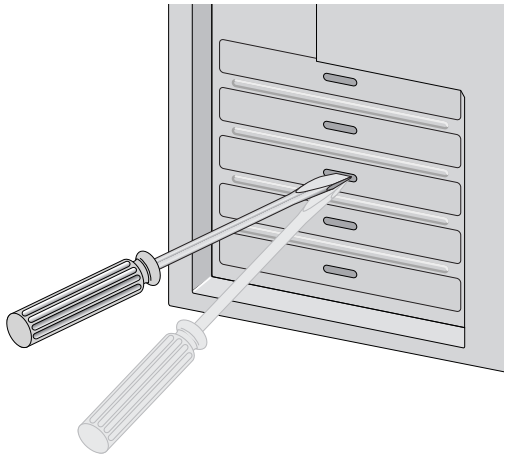

Figure 3. Removing the Faceplate From PCI Slot

Note
If you cannot locate or know how to find an PCI slot, refer to the documentation that came with your system.

4. Remove the network adapter card from the shipping package and store the packaging material in a safe location.

Caution
Wear a grounding device and observe electrostatic discharge precautions when installing the network adapter card in a system. Failure to observe this caution could result in damage to the card.

5. Gently insert the network adapter card into the PCI slot. Make sure the card is securely seated.

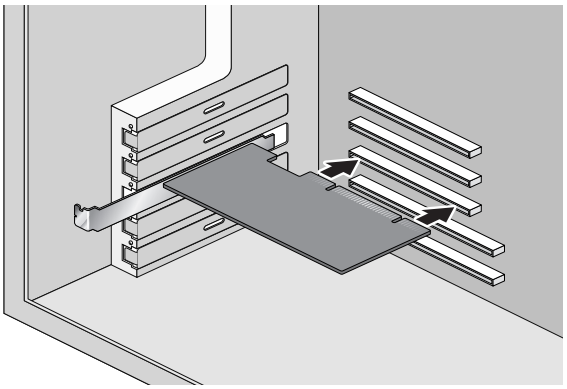

Figure 4. Inserting the Network Adapter Card

6. Secure the network adapter card to the chassis with a Phillips-head screw, not provided.

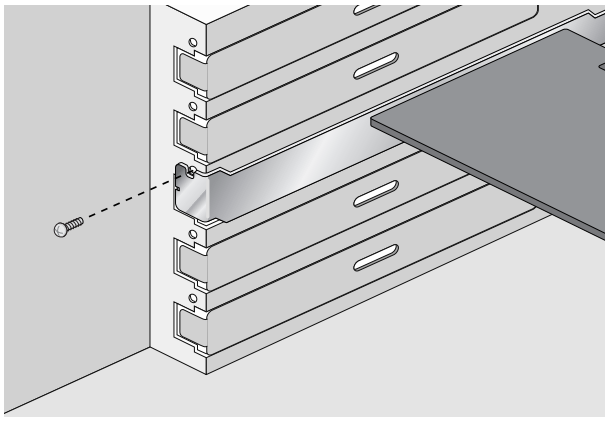

Figure 5. Securing the Adapter Card

7. Replace the system's cover and secure it with the screws removed in Step 2.

8. Connect the cable on the omni-directional antenna to the connector on the outside of the faceplate of the AT-WCP201G adapter.

   This completes the procedure for installing the adapter in the computer. Go to the next procedure to install the adapter driver.

Installing the Adapter Driver

To install the adapter driver, perform the following procedure:

1. Power ON the computer.

   Windows detects the new adapter and launches the Found New Hardware Wizard. The first window of the wizard is shown in Figure 6.

Figure 6. Found New Hardware Wizard Window (1 of 3)

2. Insert the Software and Documentation CD into the CD drive of the computer.

Note
If your computer launches the web browser when you insert the CD, minimize or close the web browser window.

3. In the Found New Hardware Wizard window, select **No, not this time** and click **Next**. The window shown in Figure 7 is displayed.

Figure 7. Found New Hardware Wizard Window (2 of 3)

4. Select **Install the software automatically (Recommended)** and click **Next**.

   The following prompt is displayed after the driver is copied to the computer from the CD.

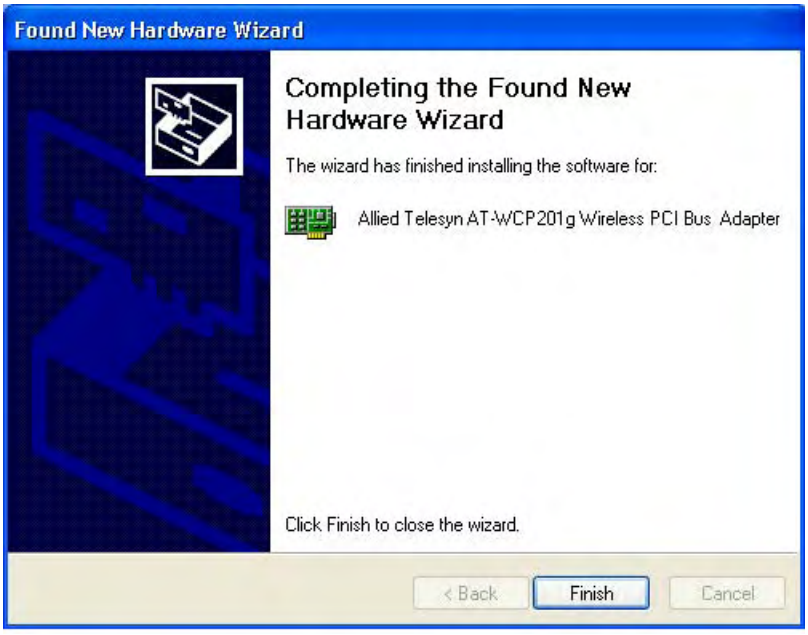

Figure 8. Found New Hardware Wizard (3 of 3)

5. Click **Finish**.

   This completes the procedure for installing the adapter driver on a Microsoft Windows system.

Check **Setting**

To check setting , perform the following procedure:

1. Open the **Control Panel**.
2. Double-click on **System**.

   The System Properties window is shown in Figure 9.

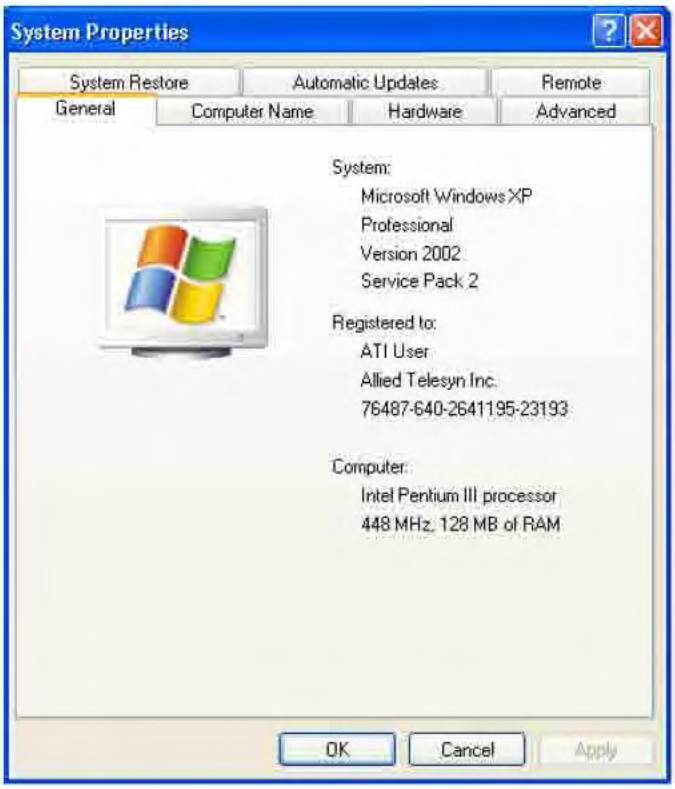

Figure 9. System Properties Window - General Tab (Microsoft Windows XP)

3. Click the **Hardware** tab.

   The Hardware tab is shown in Figure 10.

Figure 10. System Properties Window - Hardware Tab (Microsoft Windows XP)

4. Click **Device Manager**.

The Device Manager window is shown in Figure 11.

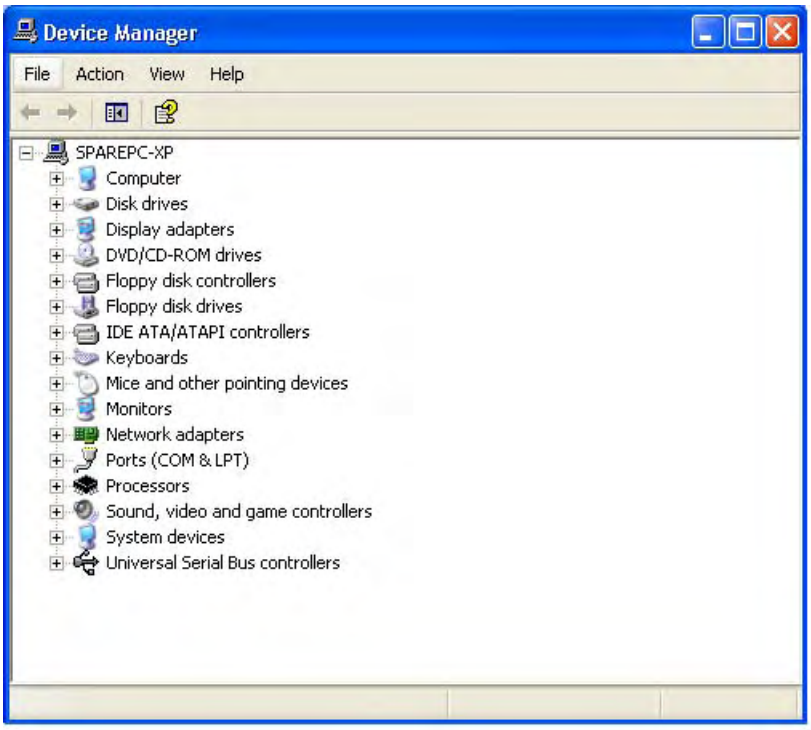

Figure 11. Device Manager Window

5. Expand **Network adapters** by either double-clicking on it or by clicking once on the expansion box next to it.

   The selection expands to display the network adapter cards installed in the system. An example is shown in Figure 12.

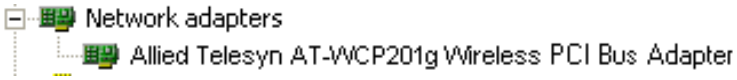

Figure 12. Expanded Network Adapters Selection

6. Double-click **Allied Telesyn AT-WCP201G Wireless PCI Bus Adapter**.

The Properties window for the adapter is shown in Figure 13.

Figure 13. AT-WCP201G Wireless Adapter Properties Window

7. Select the **Advanced** tab. The Advanced tab is shown in Figure 14.

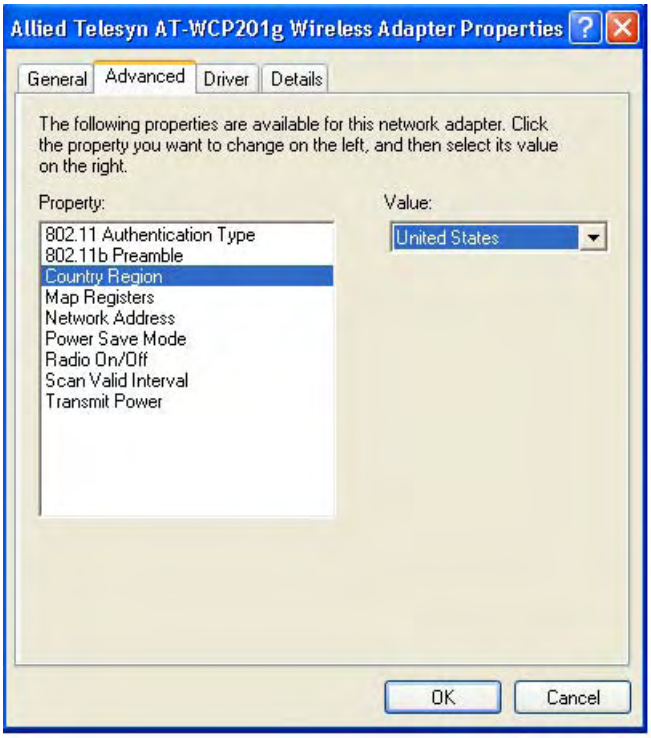

Figure 14. Properties Window - Advanced Tab

8. Click **OK**.

   This completes the procedure for installing the wireless adapter's driver on your computer.

Verifying the Driver Installation

To verify the installation of the driver into the Microsoft Windows operating system, perform the following procedure:

1. Open the **Control Panel**.
2. Double-click on **System**.

   The System Properties window with the General tab is shown in Figure 9 on page 23.
3. Click the **Hardware** tab.

   The Hardware tab is shown in Figure 10 on page 24.
4. Click **Device Manager**.

   The Device Manager window is shown in Figure 11 on page 25.
5. Expand **Network adapters** by either double-clicking on it or by clicking once on the expansion box next to it.

   The selection expands to display the network adapter cards installed in the system. An example is shown in Figure 12 on page 25.
6. Double-click on **Allied Telesyn AT-WCP201G Wireless Adapter**.

   The Properties window of the adapter is shown in Figure 13 on page 26.
7. Verify that the Device Status contains the following: “The device is working properly.”

Removing the Adapter Driver

To remove the driver from the computer, perform the following procedure:

> **Note**
> The adapter must be installed in the computer in order to remove its driver.

1. Open the **Control Panel**.
2. Double-click on **System**.

   The System Properties window is shown in Figure 9 on page 23.
3. Click the **Hardware** tab.

   The Hardware tab is shown in Figure 10 on page 24.
4. Click **Device Manager**.

   The Device Manager window is shown in Figure 11 on page 25.
5. Expand **Network adapters** by either double-clicking on it or by clicking once on the expansion box next to it.

   The selection expands to display the network adapter cards installed in the system. An example is shown in Figure 12 on page 25.
6. Right-click on the wireless adapter driver to be removed and select either **Remove** or **Uninstall** from the pop-up menu, as shown in Figure 15.

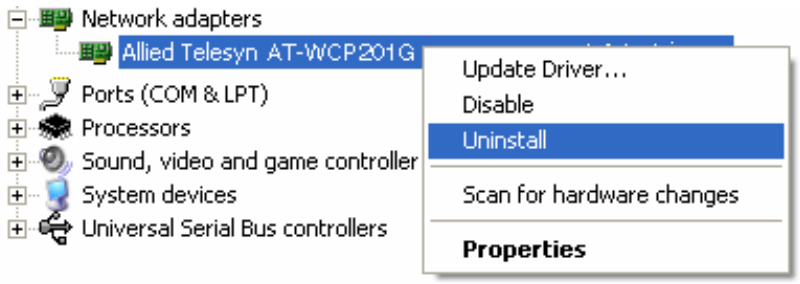

Figure 15. Unistall Menu Selection

A confirmation prompt is displayed.

7. Click **OK**.

   The adapter's driver is removed from the computer.

8. Power off the computer and remove the wireless adapter from the unit. For instructions, refer to the documentation shipped with the computer.

Chapter 2

Using the Adapter's Configuration Utility

This chapter describes the Wireless Configuration utility that comes on the CD included with your adapter. You can use the utility to configure the parameter settings on the adapter, such as its IP address and security settings. The installation and use of this program is optional. If you prefer, you can use Microsoft Windows to configure the adapter settings.

Sections in the chapter include:

Installing the Configuration Utility

To install the configuration program on your computer from the Software and Documentation CD, perform the following procedure:

1. Power ON the computer.
2. Insert the Software and Documentation CD into the CD drive of the computer.

   Your system should automatically launch the CD and display the main window, shown in Figure 16. If this window does not appear, double-click on the My Computer icon, then double-click on the Allied Telesyn Installation CD icon.

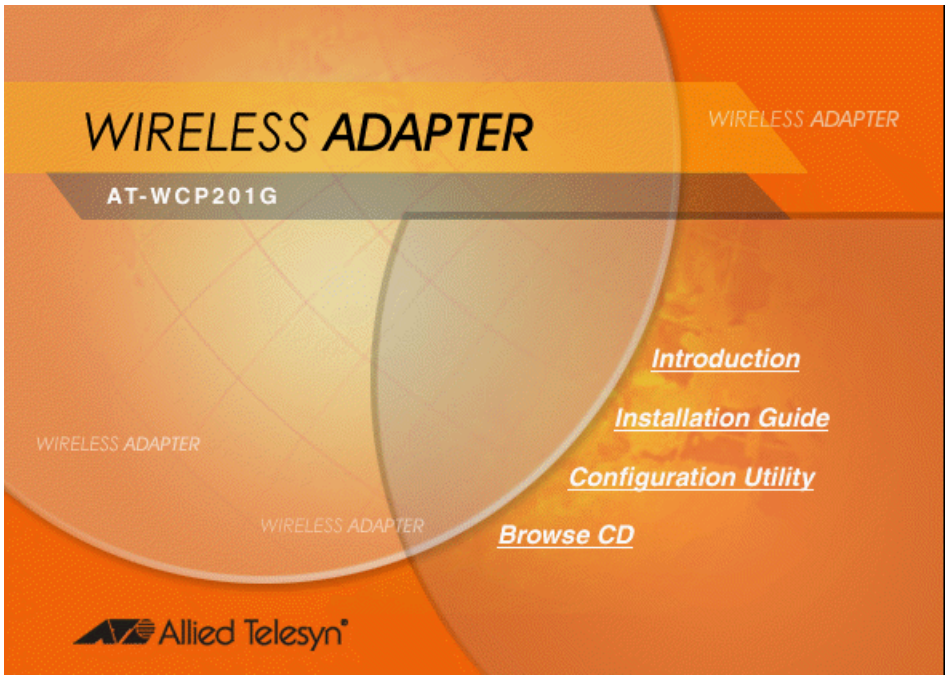

Figure 16. Software and Documentation CD Main Window

3. Click **Configuration Utility**.

Note
The security prompts in Figure 17, Figure 18, and Figure 19 are from Microsoft Internet Explorer version 6.0. You may not see these prompts or you may see different prompts if you are using a different version of Microsoft Internet Explorer or a different web browser.

The prompt in Figure 17 is displayed.

Figure 17. Internet Explorer - Active Content Warning Prompt

4. Click **Run**.

   The prompt in Figure 18 is displayed.

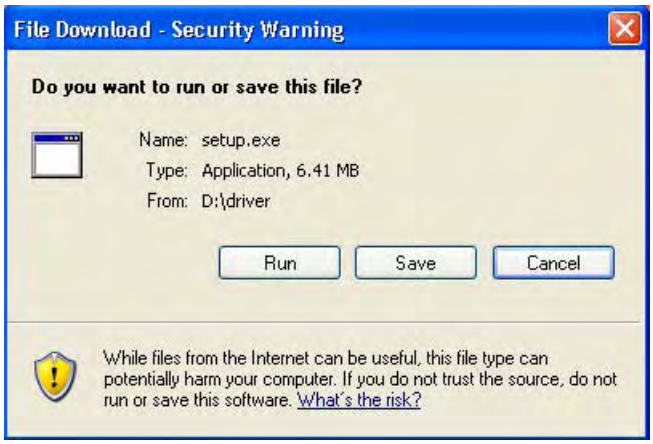

Figure 18. File Download - Security Warning Prompt

5. Click **Run**.

   The security warning prompt in Figure 19 is displayed.

Figure 19. Internet Explorer - Security Warning Prompt

6. Click **Run**.

   The Welcome window of the InstallShield Wizard is shown in Figure 20.

Figure 20. InstallShield Wizard — Welcome Window

7. Click **Next**.

   The Choose Destination Location window of the InstallShield Wizard is shown in Figure 21.

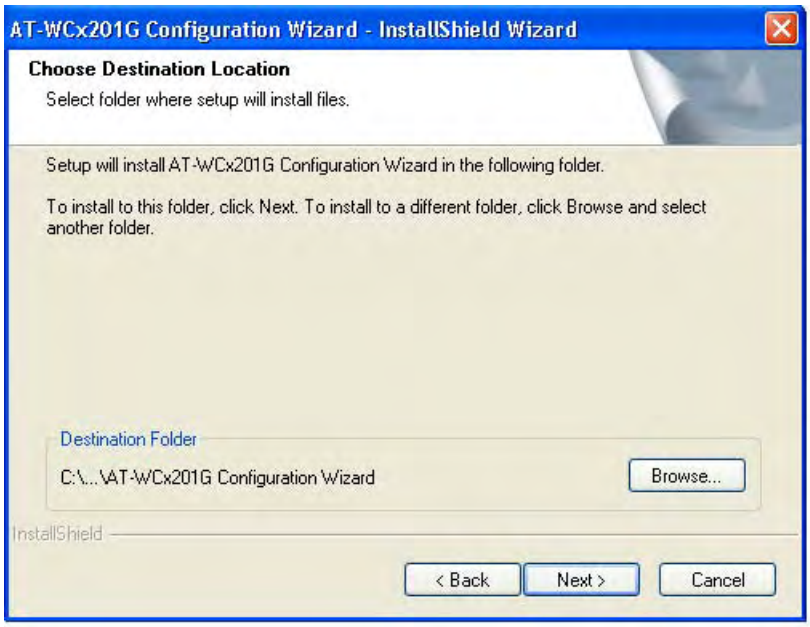

Figure 21. InstallShield Wizard — Choose Destination Location Window

8. Select a destination folder on the system for storing the configuration utility. To select the default directory, click **Next**. To select a different directory, click **Browse** and then select the folder in the Select Program Folder window.

   The InstallShield Wizard displays the Select Program Folder window in Figure 22.

Figure 22. InstallShield Wizard — Select Program Folder

9. Select the location where you want InstallShield to store an icon for the configuration utility and click **Next**. The default is the Allied Telesyn folder. (InstallShield Wizard creates the folder if it does not already exist.)

10. The InstallShield Wizard Complete window, shown in Figure 24, is displayed when the file transfer is finished.

Figure 24. InstallShield Wizard Complete Window

11. Remove the Documentation and Software CD from the CD drive.

12. Select **Yes, I want to restart my computer now** and click **Finish**.

    This completes the procedure for installing the configuration utility on your computer. To start the program, go to "Starting the Configuration Utility" on page 37.

Starting the Configuration Utility

To start the Wireless Adapter Configuration utility, double-click the configuration utility icon in the Windows toolbar.

Figure 25. Configuration Utility Icon

Alternatively, select the following from the Start Menu: **Start** -> **Programs** -> **Allied Telesyn** -> **AT-WCP201G Configuration Wizard**.

The program consists of four tabs: Configuration, Status, Option, and About. The Configuration tab, shown in Figure 26, is displayed by default when you start the program.

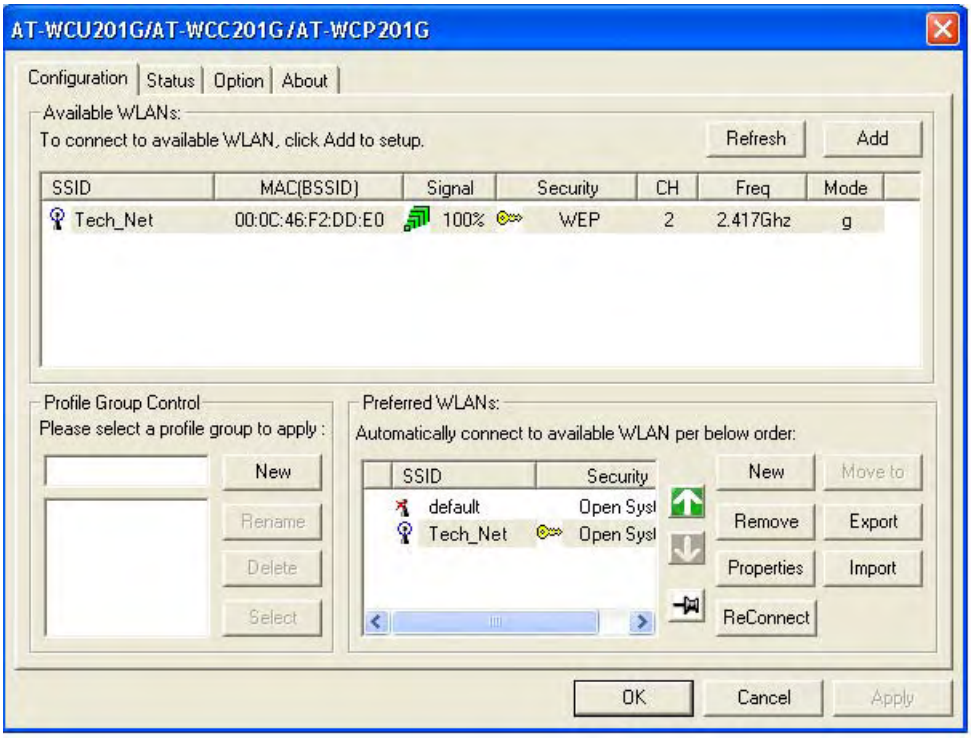

Figure 26. Configuration Tab

The sections in the Configuration tab are described here:

Available WLANs
This section of the Configuration tab displays information about the wireless routers and access points of the networks detected by the wireless adapter. This section will be empty if no wireless networks are detected.

The section is useful in reviewing the networks that are currently available for you to connect to with the adapter, as well as viewing basic information about the networks. This information includes the following:

- ESSID - The name of the network. The name will be blank if the wireless router or access point is configured not to broadcast it.
- MAC (ESSID) - The MAC address of the wireless router or access point.
- Signal - The signal strength from the wireless router or access point. The range is 0% (low) to 100% (high).
- Security - The security mode of the router or access point.
- CH - The frequency channel being used by the wireless router or access point.
- Frequency - The operating frequency of the router or access point.
- Mode - The radio mode.

This section has the following two buttons:

- Refresh - This button updates the Available WLANs section of the tab with any newly detected wireless routers or access points.
- Add - You use this button to create a new Preferred WLAN profile. A Preferred WLAN profile contains the configuration settings for connecting to an available wireless network.

Each wireless router or access point in the list is preceded by one of the icons in Figure 27. The icons indicate the wireless router or access point to which the wireless adapter is currently connected. The wireless adapter can be connected to only one router or access point at a time.

Connected Not Connected

Figure 27. Connection Status Icons

Preferred WLANs

This section of the Configuration tab displays a list of the networks the wireless adapter is configured to access and use. The information includes the following:

- ESSID - The name of the network.
- Security - The security mode of the network.

In order for the wireless adapter to access one of the networks listed in Available WANs, you have to configure it with the network's name and the appropriate security information. This is referred to as creating a Preferred WLAN profile. After you have created a profile, the wireless adapter can connect to the specified network whenever it detects a wireless router or access point that is a part of the network.

This section contains the following buttons:

- New - You use this button to create a new Preferred WLAN profile when the network is not listed in the Available WLANs section. For instructions, refer to "Creating a Preferred WLAN Profile" on page 40.
- Remove - You use this button to remove a Preferred WLAN profile from the adapter. Once a network's corresponding Preferred WLAN profile is removed, the adapter can no longer access that network. For instructions on using this button, refer to "Deleting a Preferred WLAN Profile" on page 50.
- Properties - You use this button to view or modify the settings of a Preferred WLAN profile.
- Reconnect - Prompts the adapter to reestablish a connection to a Preferred WLAN.
- Move to - This button moves a Preferred WLAN profile to a different group. For instructions, refer to "Moving a Preferred WLAN Profile" on page 55.
- Export - This button exports a Preferred WLAN profile into a separate file for transfer to another computer. For instructions, refer to "Importing and Exporting Preferred WLAN Profiles" on page 51.
- Import - This button imports a Preferred WLAN profile into the configuration program. For instructions, refer to "Importing and Exporting Preferred WLAN Profiles" on page 51.

Creating a Preferred WLAN Profile

The following procedure explains how to create a Preferred WLAN profile for the following wireless network environments:

- No security
- WEP security
- WPA-PSK and WPA2-PSK security

> **Note**
> The AT-WCP201G wireless adapter also supports Ad Hoc, WPA/WPA2 Enterprise, and 802.1x authentication. These topics are beyond the scope of this manual.

To create a Preferred WLAN, perform the following procedure:

1. Start the Wireless Configuration utility, as explained in "Starting the Configuration Utility" on page 37.
2. If you created groups for storing your Preferred WLAN profiles, click the name of the group in the Profile Group Control list where you want to store the new profile. Creating profile groups is optional. For instructions, refer to "Working with Profile Groups" on page 54.
3. Do one of the following:
   - If the network that you want to configure as a Preferred Network is listed in Available WLANs, double-click it or click it once and then click the **Add** button. (If you know that the computer is within reception distance of a wireless router or access point of the network, but the network is not listed under Available WLANs, try clicking **Refresh**.)
   - If the network is not listed in Available WANs because the wireless adapter is not in range of the network, click the **New** button in the Preferred WLANs section of the tab.

   The Wireless Network Properties window is displayed, as shown in Figure 28 on page 41.

The Wireless Network Properties window is shown in Figure 28.

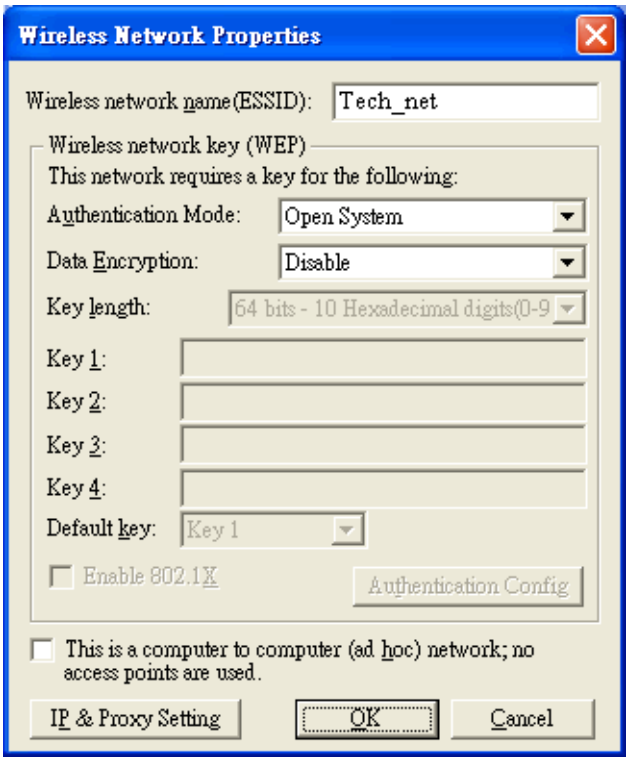

Figure 28. Wireless Network Properties Window

Depending on how you opened the Wireless Network Properties window, some of the information may already be filled in for you.

4. Go to the appropriate subsection below for instructions on how to configure the Wireless Network Properties window for your wireless security system:

   - ❒ “No Security” on page 42
   - ❒ “WEP Security” on page 42
   - ❒ “WPA/WPA2-PSK Security” on page 44

No Security

A Preferred WLAN without security is appropriate in a wireless network environment where there is no encryption or authentication between the wireless nodes and the wireless routers or access points.

Caution
A wireless network without security is vulnerable to unauthorized access.

To configure the Wireless Network Properties window for a Preferred WLAN with no security, perform the following procedure:

1. Click **Wireless Network Name (SSID)** and enter the name of the network. The name is case sensitive.
2. Click **Authentication Mode** and select **Open System** from the pull-down menu.
3. Click **Data Encryption** and select **Disable** from the pull-down menu.

Note
You must assign the profile an IP address. To set the IP address for the profile now, go to step 5 in "Configuring the IP Address" on page 47. To set the IP address ar another time, complete this procedure.

4. Click **OK** to close the Wireless Network Properties window.

   The Preferred WLANs section of the Configuration tab should now include a new Preferred WLAN for the network.

5. Click **Apply**.

   This completes the procedure for creating a Preferred WLAN profile with no security.

WEP Security

To configure the Wireless Network Properties window for WEP security, do the following:

1. Click the **Wireless network name (SSID)** field and enter the name of the wireless network. The name is case sensitive.
2. Select the Authentication Mode parameter and from the pull-down menu select either **Open System** or **Shared Key**.

   - In an Open System environment a node does not provide authentication to the access point in order to access the network. It only needs to provide the SSID of the network.

- In a Shared Key environment a node must authenticate itself to the access point using a shared WEP key that is present on both the node and the access point. Only after a node is successful authenticated will the access point allow it access to the network.

This setting must be the same on both the wireless adapter and the wireless router or access point.

3. Click the **Data Encryption** parameter and from the pull-down menu select **WEP**. If in step 2 you selected Shared Key, WEP is the only available option for the Data Encryption parameter.

4. Click the **Key Length** parameter and select from the pull-down menu the desired encryption key length and type. Options are:

   - 64 bit hexadecimal or ASCII key (40 bit encryption key and 24 bit initialization vector)
   - 128 bit hexadecimal or ASCII (104 bit encryption key and 24 bit initialization vector)
   - 152 bit hexadecimal or ASCII (128 bit encryption key and 24 bit initialization vector)

   This setting must be the same on the wireless client and the access point.

5. Enter the WEP encryption keys. You can enter from one to four keys.

   The wireless client uses the encryption keys to decode the network traffic that it receives from the access point as well as to encrypt the network traffic that it sends to the access point. If in Step 6 you selected Share Key, the client also uses a key when authenticating itself to the access point.

   When entering the WEP keys, note the following rules:

   - The order of the keys here must match the order of the keys on the wireless router or access point.
   - Valid ASCII characters are a - z, A - Z, and 0 - 9. Valid hexadecimal characters are 1 - 9 and A - F. (A WEP key of ASCII characters is case sensitive.)
   - The key lengths for a hexadecimal key are as follows:
     - A key length of 64 bits requires 10 hexadecimal characters.
     - A key length of 128 bits requires 26 hexadecimal characters.
     - A key length of 152 bits requires 32 hexadecimal characters.

- The key lengths for an ASCII key are as follows:
  - A key length of 64 bits requires 5 ASCII characters.
  - A key length of 128 bits requires 13 ASCII characters.
  - A key length of 152 bits requires 16 ASCII characters.
- The wireless client and access point can use different keys to encode the network traffic that they each send. However, both keys must be entered on both devices and the keys must occupy the same positions in the encryption key tables (Key 1, Key 2, etc.) on the devices.

6. Select **Default Key** and from the pull-down menu select the key that the wireless adapter should use to encryption its outgoing traffic. If in Step 5 you selected Share Key, the default key is also used by the client when authenticating itself to the access point.

Note
You must assign the profile an IP address. To set the IP address for the profile now, go to step 5 in "Configuring the IP Address" on page 47. To set the IP address at another time, complete this procedure.

7. Click **OK** to close the Wireless Network Properties window.

   The Preferred WLANs section of the Configuration tab should now include a new Preferred WLAN for the network.

8. In the main window of the configuration utility, click **Apply**.

   This completes the procedure for creating a Preferred WLAN profile with WEP security.

WPA/WPA2-PSK Security

To configure the Wireless Network Properties window for Wi-Fi Protected Access (WPA) Preshared Key (PSK) or WPA2-PSK security, do the following:

1. Click the **Wireless network name (SSID)** field and enter the name of the network. The name is case sensitive.

2. Click **Authentication Mode** and select either **WPA-PSK** or **WPA2-PSK** from the pull-down menu.

Note
Do not select WPS2-PSK unless the wireless access point features WPA2.

3. Click **Data Encryption** and select either **TKIP** (Temporal Key Integrity Protocol) or **AES** (Advanced Encryption Standard) from the pull-down menu. The encryption method must be the same on both the wireless node and the wireless access point.

4. Click the **Authentication Config** button.

   The Advance Security Settings window is shown in Figure 29.

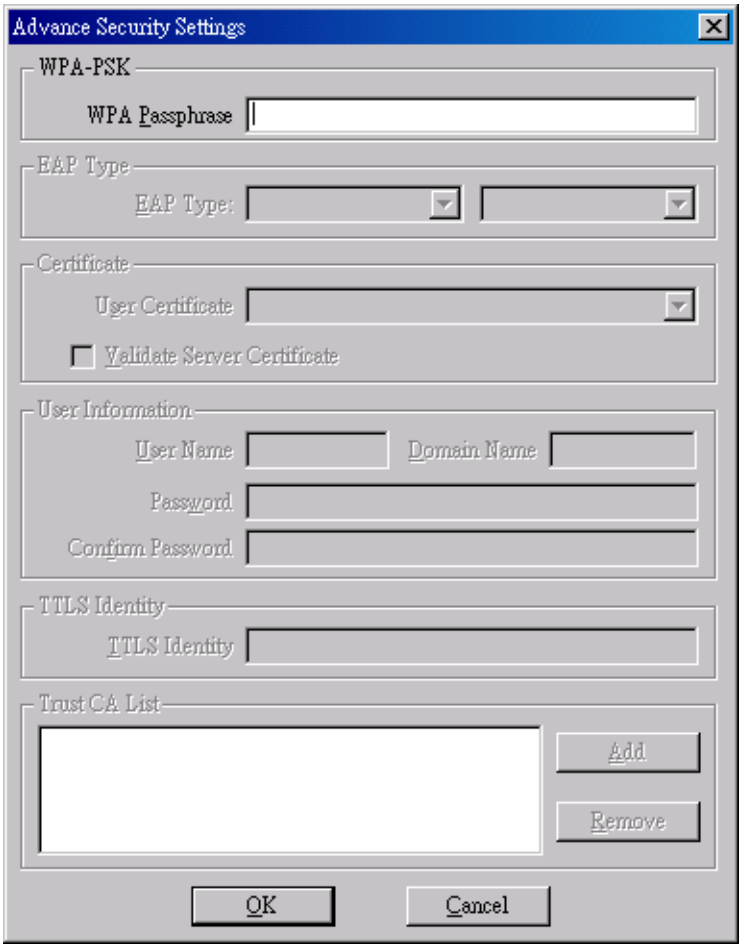

Figure 29. Advance Security Settings Window

5. Click the **WPA Passphrase** field and enter the passphrase (also referred to as the shared secret) from the wireless router or access point.

6. Click **OK** to close the Advance Security Settings window.

Note
You must assign the profile an IP address. To set the IP address now, go to step 5 in “Configuring the IP Address” on page 47. To set the IP address at another time, complete this procedure.

7. Click **OK** to close the Wireless Network Properties window.

   The Preferred WLANs section of the Configuration tab should now include a new Preferred WLAN profile for a wireless network using WPA-PSK or WPA2-PSK security.

8. In the main window of the configuration utility, click **Apply**.

   This completes the procedure for creating a Preferred WLAN profile with WPA/WPA-PSK security.

Configuring the IP Address

To configure the IP address for a Preferred WLAN profile or to activate the DHCP client, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

   Note
   Perform step 2 if you created profile groups, which are optional. For further information, refer to "Working with Profile Groups" on page 54

2. In the Profile Group Control section of the Configuration tab, click the group containing the profile whose IP address you want to assign or modify.

3. In the Preferred WLANs section of the window, click the Preferred WLAN profile whose IP address you want to assign or change.

4. Click **Properties**.

5. The Wireless Network Properties window, containing the parameter settings of the selected WLAN profile, is displayed. An example of the window is shown in Figure 28 on page 41.

6. Click **IP & Proxy Setting**.

The LAN Settings window is shown in Figure 30.

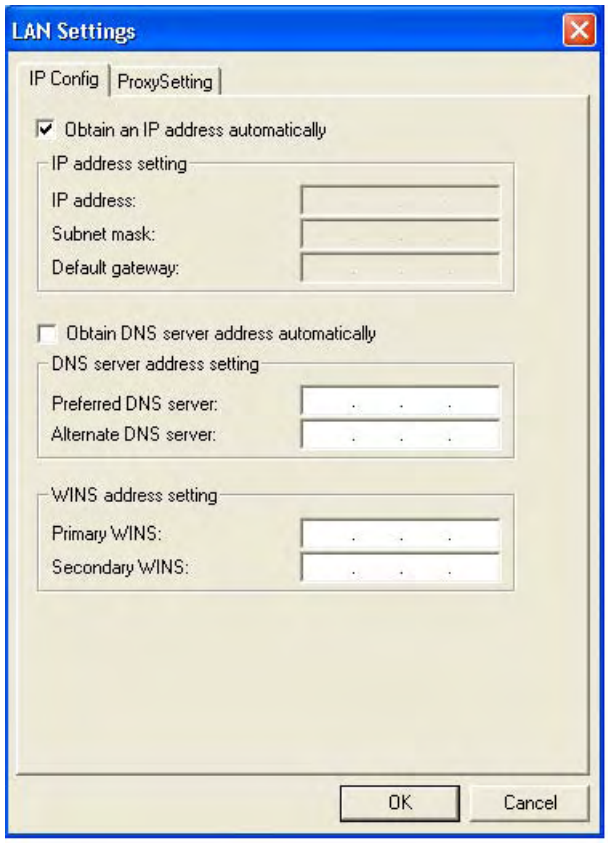

Figure 30. LAN Settings Window

7. If you want the adapter to obtain its IP address, subnet mask, and default gateway from a DHCP server on your network, click **Obtain an IP address automatically**. A check in the dialog box activates the DHCP client.

8. If you want to manually enter an IP address, do the following:

   a. Click **Obtain an IP address automatically** to remove the check from the dialog box.

   b. In the **IP address** field, enter an IP address for the adapter.

   c. In the **Subnet mask** field, enter the adapter's subnet mask.

   d. If the wireless node needs to communicate through a router, enter the IP address of the router in the **Default gateway** field.

9. If your network has a domain name service, which converts domain names into IP addresses, and you want the computer to obtain the IP address of the domain name server from a DHCP or BOOTP server, select **Obtain DNS server address automatically**. To enter the IP address of a domain name server manually, select **Use the following**

DNS server addresses and enter the IP address in the field. You can enter up to two IP addresses of domain name servers. The alternate DNS server address is used only if the server specified as the preferred DNS server does not respond.

10. Click **OK** to close the LAN Settings window.

11. Click the **Option** tab.

12. Verify that the option **Enable IP Setting and Proxy Setting in Profile** has a check mark. If it does not, click it once to add a check mark. If you do not activate this option, the IP address for the wireless adapter must be set using Windows, as explained in “Setting the IP Address” on page 60.

13. Click the **Configuration** tab.

14. In the Configuration tab, click **Apply**.

Note
The actual initial assignment of an IP address to a wireless adapter using the configuration program can take up to a minute to occur.

15. If you are finished using the configuration utility, click **OK**.

Deleting a Preferred WLAN Profile

To delete a Preferred WLAN profile, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

   Note
   Perform step 2 if you created profile groups, which are optional. For further information, refer to "Working with Profile Groups" on page 54

2. In the Profile Group Control section of the Configuration tab, click the group containing the profile to be deleted.
3. In the Preferred WLANs section of the Configuration tab, click the Preferred WLAN you want to delete.
4. Click **Remove**.

   The selected Preferred WLAN is deleted from the Wireless Adapter Configuration Utility.

5. Click **Apply**.
6. If you are finished using the configuration utility, click **OK**.

Importing and Exporting Preferred WLAN Profiles

You can export a Preferred WLAN profile into a separate file and then import the file onto another computer. This can simplify the task of configuring a large number of AT-WCP201G adapters that are to have similar or identical Preferred WLAN profiles.

Exporting a Preferred WLAN Profile

To export a Preferred WLAN profile into a separate file for transfer to another system, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

   Note
   Perform step 2 if you created profile groups, which are optional. For further information, refer to "Working with Profile Groups" on page 54

2. In the Profile Group Control section of the Configuration tab, click the name of the group containing the profile to be exported.

3. In the Preferred WLAN section of the Configuration tab, click the profile to export.

4. Click **Export**.

   The Profile Password window is shown in Figure 31.

Figure 31. Profile Password

5. In the Input Profile Password and Confirm Again fields, enter a password for the profile. The password protects the exported profile from unauthorized use. The password can be from 1 to 16 alphanumeric characters. The password is case sensitive. Spaces are allowed. You are prompted for this password when you import the profile onto another computer.

6. Click **OK**.

The Save As window is displayed for saving the profile file.

7. Specify the location where you want to store the profile and a filename. The filename extension must be ".AWP".

8. Click **OK**.

   The profile is saved as a separate file on your computer.

   This completes the procedure for exporting a Preferred WLAN profile. By saving the profile onto a floppy disk or CD, you can transfer the disk to another computer that has an AT-WCP201G adapter and the configuration utility, and import the profile onto that system, as explained in the next procedure.

Importing a Preferred WLAN Profile

To import a Preferred WLAN profile into the configuration utility, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

   Note
   Perform step 2 if you created profile groups, which are optional. For further information, refer to "Working with Profile Groups" on page 54

2. In the Profile Group Control section of the Configuration tab, click the name of the group where you want to import the profile.

3. Click **Import**.

4. In the Open window, specify the filename and location of the profile to import and click **OK**.

   The Profile Password window is shown in Figure 32.

Figure 32. Profile Password Window

5. Enter the profile's password and click **OK**. The password is case sensitive.

The profile is incorporated as a Preferred WLAN into the configuration utility. The wireless adapter will establish a connection if it is within range of a wireless router or access point of the network defined by the profile.

Working with Profile Groups

Profile groups allow you to organize your Preferred WLAN profiles. You can place the profiles in different groups to make them easier to find and manage. Creating profile groups is optional.

There can be only one active profile group at a time. The wireless adapter uses the profiles in the active group to establish a connection to a wireless network. The profiles in the other groups are inactive. You can work on all the profiles in all the groups, not just the active group, but only the profiles in the active group are used to make a wireless connection. For instructions on how to designate the active group, refer to "Selecting the Active Profile Group" on page 57.

Creating a Profile Group

To create a new profile group, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

2. In the Profile Group Control section of the Configuration tab, click the empty field to the left of the New button and enter a name for the new profile group. The name can be up to 15 alphanumeric characters. Spaces are allowed.

3. Click **New**.

   The new group is added to the list in the Profile Group Control section. If this is the first profile group, note the following:

   - All of the existing profiles in the Preferred WLAN section are automatically added to the group.
   - The group is automatically marked as the active group, designated with the icon in Figure 33. The computer uses the profiles in the active group to connect to a wireless network. There can only be one active group at a time. To change the active group, refer to "Selecting the Active Profile Group" on page 57.

Figure 33. Active Group Icon

4. Click the name of the new group to select the group.

5. You can now add profiles to the new group by either creating them or, if they already exist, moving them from an existing group to the new group. For directions, refer to “Creating a Preferred WLAN Profile” on page 40 and “Moving a Preferred WLAN Profile” on page 55.

Moving a Preferred WLAN Profile

To move a profile to a different group, perform the following procedure:

1. Start the configuration program by clicking the program’s icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

2. In the Profile Group Control section of the Configuration tab, click the group that contains the profile to be moved.

   The profiles of the group appear in the Preferred WLANs section.

3. In the Preferred WLAN section, click the profile to be moved to a different group and click **Move to**.

   A list of the existing profile groups is displayed. An example is shown Figure 34.

Figure 34. Move to Another Group Window

4. Click the new group for the profile and click **OK**.

   The profile is moved to the designated group.

Renaming a Group

To rename a profile group, perform the following procedure:

1. Start the configuration program by clicking the program’s icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

2. In the Profile Group Control section of the Configuration tab, click the name of the group to be renamed. You can rename only one group at a time.

3. Click **Rename**.

   The Group Rename window is shown in Figure 35.

Figure 35. Group Rename Window

4. Enter the new name for the group and click **OK**. The name can be up to 15 alphanumeric characters. Spaces are allowed.

Deleting a Group

This procedure explains how to delete a profile group.

Caution
Deleting a profile group deletes all the Preferred WLAN profiles in the group. If you want to retain the profiles, move them to a different group as explained in "Moving a Preferred WLAN Profile" on page 55, or, alternatively, export the profiles into separate files, as explained in "Exporting a Preferred WLAN Profile" on page 51.

To delete a profile group, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

2. In the Profile Group Control section of the Configuration tab, click the group to be deleted. You can delete only one group at a time.

3. Click **Delete**.

   A confirmation prompt is displayed.

4. Click **Yes** to delete the group or **No** to cancel the procedure.

   If you select Yes, the group and its profiles are deleted from the computer.

Selecting the Active Profile Group

This procedure selects the active profile group for an adapter. The switch uses the profiles in the active group to establish a connection to a wireless network. There can be only one active group at a time for a wireless adapter. The active group is designated with the icon in Figure 33 on page 54.

To select the active profile group, perform the following procedure:

1. Start the configuration program by clicking the program's icon, shown in Figure 25 on page 37, located in the toolbar on the desktop.

   The main window of the configuration utility is shown in Figure 26 on page 37.

2. In the Profile Group Control section of the Configuration tab, click the group to be designated as the active group and click **Select**. Alternatively, double-click the group. The selected group is designated with the symbol in Figure 33 on page 54.

   The profiles stored in the selected group are now active. The wireless adapter will attempt to establish a connection to a wireless network using the profiles in the active group.

Chapter 3

Microsoft Windows XP

This chapter contains the procedures for configuring the wireless adapter on a Microsoft Windows XP system. Sections in the chapter include:

Note
The wireless adapter is supported on Microsoft Windows 2000, but this guide does not contain instructions for configuring the adapter on that operating system.

Note
You can use either the procedures in this chapter to configure the wireless adapter or the Wireless Configuration utility discussed in the previous chapter, but not both simultaneously. If you installed the utility but now prefer to use Windows to configure the adapter, you must indicate your choice by displaying the Wireless Network Connection Properties window for the adapter by performing steps 1 to 4 in “Manually Configuring the Wireless Adapter” on page 66 and at the top of the tab clicking **Use Windows to configure my wireless network settings**.

Setting the IP Address

To set the IP address of the adapter or to activate the DHCP client, perform the following procedure:

1. Open the **Control Panel**.
2. Double-click on **Network Connections**.

   An example of the Network Connections window is shown in Figure 36.

Figure 36. Network Connections Window

3. Right-click on the Wireless Network Connection icon of the wireless adapter and select **Properties** from the pull-down menu, as shown in Figure 37.

Figure 37. Wireless Network Connection Pull-down Menu

The Wireless Network Connections Properties window is shown in Figure 38.

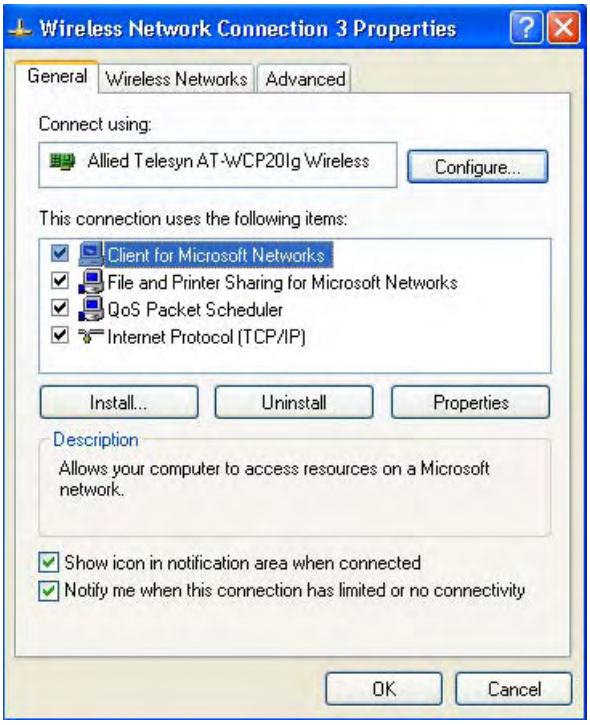

Figure 38. Wireless Network Connection Properties Window

4. Select **Internet Protocol (TCP/IP)**, then click **Properties**.

The Internet Protocol (TCP/IP) Properties window is shown in Figure 39.

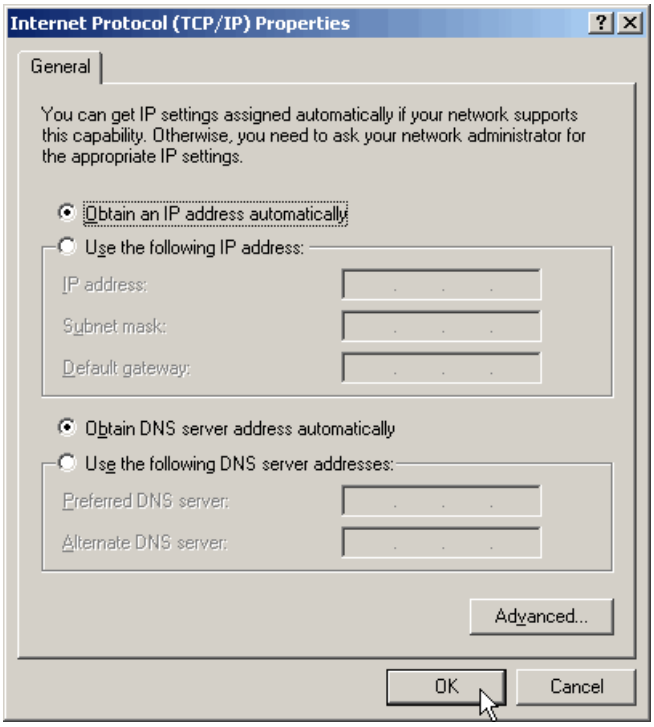

Figure 39. Internet Protocol (TCP/IP) Properties Window

5. If you want the adapter to obtain its IP address, subnet mask, and default gateway from a DHCP server on your network, select **Obtain an IP address automatically**. If you want to set these parameters manually, select **Use the following IP address** and enter the information into the fields.

6. If your network has a domain name service, which converts domain names into IP addresses, and you want the computer to obtain the IP address of the domain name server from a DHCP server, select **Obtain DNS server address automatically**. To enter the IP address of a domain name server manually, select **Use the following DNS server addresses** and enter the IP address in the field. You can enter up to two IP addresses of domain name servers. The alternate DNS server address is used only if the server specified as the preferred DNS server does not respond.

7. Click **OK** to close the Internet Protocol (TCP/IP) Properties window.

8. Click **OK** to close the Wireless Network Connection Properties window.

   This completes the procedure for configuring the IP address and subnet mask of the wireless adapter card. You are now ready to configure the adapter's security system using the Wireless Adapter Configuration program.

Quick Configuration

This procedure explains how to quickly configure the wireless adapter using Microsoft Windows XP. Note the following before performing this procedure:

- You must be within reception range of a wireless router or access point of the network.
- The wireless router or access point must be broadcasting its SSID.
- If the wireless router or access point is running WEP security, the network authentication setting must be Open system or both Open and Shared systems. The quick configuration procedure will not work if WEP security is set to Shared system only.

To perform a quick configuration of the wireless adapter, perform the following procedure:

1. Power on the computer.

   The computer will detect the wireless network and display a prompt above the wireless connection icon in the tool bar on the desktop, as shown in Figure 40.

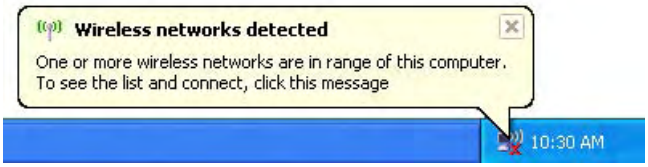

Figure 40. Wireless Icon

2. Click the wireless icon in the toolbar.

Windows displays the SSIDs of the detected wireless networks in the Wireless Network Connection window. An example of the window is shown in Figure 41.

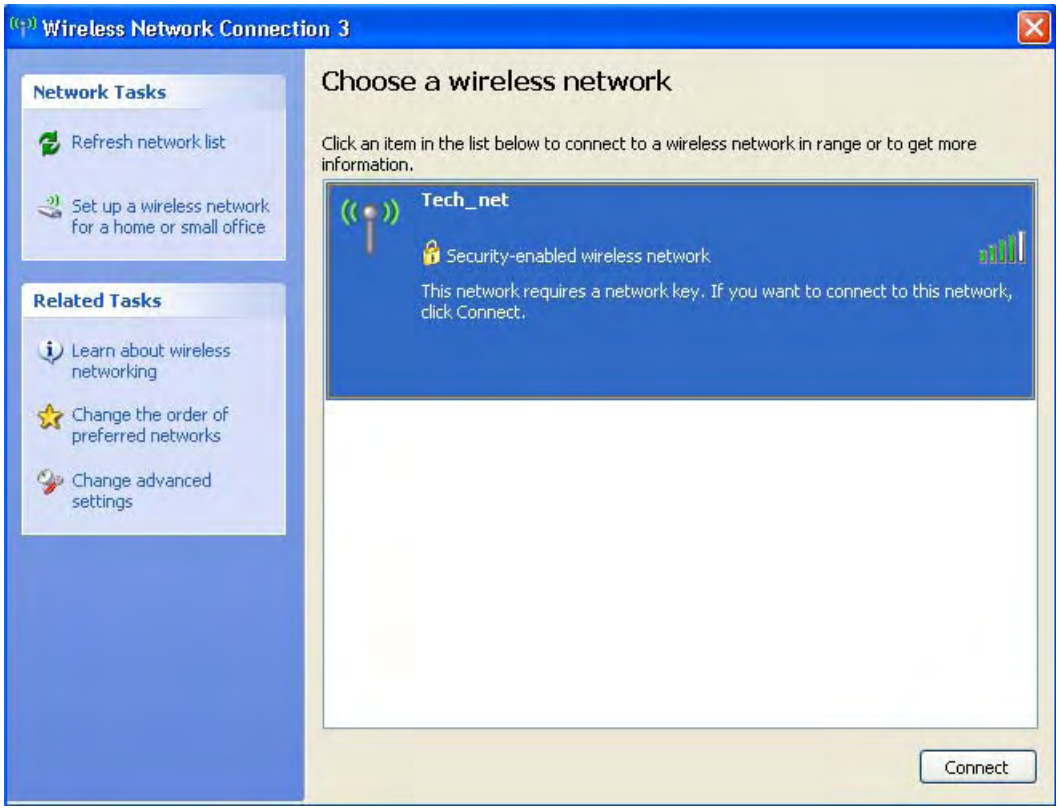

Figure 41. Wireless Network Connection Window

3. Double-click on the wireless network to connect to or, alternatively, click once on the network and click **Connect**.

   If the wireless router or access point is running WEP, WPA, or WPA2, the Wireless Network Connection window, shown in Figure 42, prompts you for the WEP encryption key or, in the case of WPA or WPA2, the passphrase, also referred to as the shared secret. Go to Step 5 to enter the encryption key or passphrase.

Figure 42. Wireless Network Connection Prompt (WEP or WPA Security)

If there is no security on the wireless network, the Wireless Network Connections window in Figure 43 is displayed.

Figure 43. Wireless Network Connection - No Security

4. Click **Connect Anyway**.

   At this point, the wireless adapter establishes a connection with the wireless router or access point.

5. For WEP, WPA, or WPA2 security, in the **Network Key** and **Confirm Network Key** fields enter the router or access point's encryption key in the case of WEP security or passphrase for WPA and WPA2 security.

   After entering the key, the wireless adapter connects to the selected network.

Manually Configuring the Wireless Adapter

The following procedure explains how to configure the wireless adapter for the following wireless network environments:

- No security
- WEP security
- WPA-PSK and WPA2-PSK security

> **Note**
> The AT-WCP201G wireless adapter also supports Ad Hoc, WPA/WPA2 (Enterprise), and 802.1x authentication. These topics are beyond the scope of this manual.

To manually configure the wireless adapter's security settings, perform the following procedure:

1. Open the **Control Panel**.
2. Double-click on **Network Connections**.

   An example of the Network Connections window is shown in Figure 36 on page 60.
3. Right-click on the Wireless Network Connection icon of the wireless adapter and select **Properties** from the pull-down menu, as shown in Figure 37 on page 60.

   The Wireless Network Connections Properties window is shown in Figure 38 on page 61.
4. Select the **Wireless Networks** tab.

The Wireless tab is shown in Figure 44.

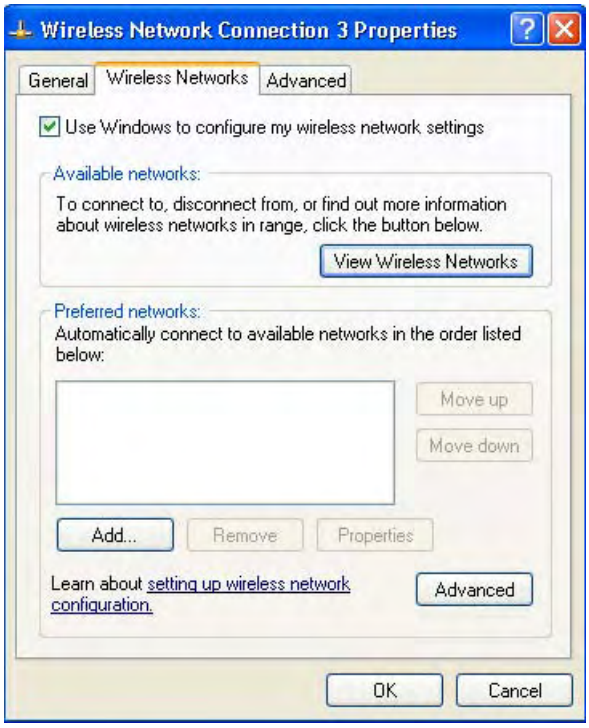

Figure 44. Wireless Tab

5. Click **Add**. The Wireless Network Properties window is shown in Figure 45.

Figure 45. Wireless Network Properties Window

6. Go to the appropriate subsection below for instructions on how to configure the Wireless Network Properties window for your wireless security system:

   - “No Security” on page 68
   - “WEP Security” on page 68
   - “WPA/WPA2-PSK Security” on page 69

No Security

To configure the Wireless Network Properties window for a wireless network that has no security, do the following:

1. Click the **Network Name (SSID)** field and enter the SSID of the wireless network. The network name is case sensitive.
2. Click the **Network Authentication** parameter and select **Open System** from the pull-down menu.
3. Click the **Data Encryption** parameter and select **Disabled** from the pull-down menu.
4. Click **OK**.

WEP Security

To configure the Wireless Network Properties window for WEP security, do the following:

1. Click the **Network Name (SSID)** field and enter the SSID of the wireless network. The network name is case sensitive.
2. Click the **Network Authentication** parameter and from the pull-down menu select either **Open System** or **Shared Key**.

   - A node in an Open System environment is not authenticated by the access point. The node need only provide the SSID of the network.
   - A node in a Shared Key environment is authenticated by the access point using a shared WEP key that is present on both the node and the access point. Only after a node is successful authenticated does the access point allow it access to the network.

3. Click the **Data Encryption** parameter and from the pull-down menu select **WEP**.
4. If the encryption key will not be provided automatically to the wireless adapter, click **The key is provided for me automatically** to deselect the option and perform steps 5 and 6. If the encryption key will be provided automatically to the adapter, leave the option enabled and go to step 7.
5. In the **Network Key** and **Confirm Network Key** fields, enter the encryption key from the wireless router or access point.

6. Click **Key Index** and specify the position of the encryption key in the encryption key table on the wireless router or access point. The range is 1 to 4.

7. Click **OK**.

WPA/WPA2-PSK Security

To configure the Wireless Network Properties window for WPA-PSK or WPA2-PSK security, do the following:

1. Click the **Network Name (SSID)** field, enter the SSID of the wireless network. The network name is case sensitive.

2. Click the **Network Authentication** parameter and from the pull-down menu select either **WPA-PSK** or **WPA2-PSK**.

   Note
   Do not select WPA2-PSK unless the wireless router or access point supports WPA2.

3. Click the **Data Encryption** parameter and from the pull-down menu select either **TKIP** or **AES**.

4. In the **Network Key** and **Confirm Network Key** fields, enter the router or access point's passphrase (also referred to as the shared secret).

5. Click **OK**.

Appendix A

Technical Specifications

This appendix lists the technical specifications of the AT-WCP201G wireless adapter.

General	
Compliance Standard	IEEE 802.11, IEEE 802.11b, IEEE 802.11g
Bus Interface	PCI 2.2 Bus Card
Antenna Type	External Omni-directional dipole with 2dBi, RG-174 cable, and SMA plug reverse connector
IEEE 802.11b Operation	
Standard	IEEE 802.11b
Radio and Modulation Schemes	DQPSK, DBPSK, DSSS, and CCK
Operating Frequency	2412 ~ 2462 MHz ISM band
Channel Numbers	11 channels for United States 13 channels for European countries
Data Rates	1, 2, 5.5, and 11 Mbps
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power	19.31 dBm
Receiver Sensitivity	Typical -84 dBm for 11 Mbps @ 8% Packet Error Rate (PER) Typical -90 dBm for 2 Mbps @ 8% PER
IEEE 802.1g Operation	
Standard	IEEE 802.11g
Radio and Modulation Schemes	BPSK, QPSK, 16QAM, 64QAM, and OFDM
Operating Frequency	2412 ~ 2462 MHz ISM band

Channel Numbers	11 channels for United States 13 channels for European countries
Data Rates	6, 9, 12, 18, 24, 36, 48, 54 Mbps Super G mode (108 Mbps)
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power	Typical RF Output Power at each Data Rate + 22.10 dBm
Receiver Sensitivity	Typical sensitivity at which frame (1000-byte PDUs) error rate equals 10%: -87 dBm at 6 Mbps -86 dBm at 9 Mbps -85 dBm at 12 Mbps -83 dBm at 18 Mbps -80 dBm at 24 Mbps -76 dBm at 36 Mbps -71 dBm at 48 Mbps -66 dBm at 54 Mbps
Physical Specifications	
Dimensions	54 (W) x 5.5 (D) x 110 (H) mm
Weight	38.8 g (main unit)
Physical and Environmental	
Operating Temperature	0° C to 55° C (32° F to 131° F) Humidity: <90% (non-condensing)
Storage Temperature	-20° C to 75° C (-4° F to 167° F) Humidity: <95% (non-condensing)
Power Requirements	
Operating Voltage	3.3VDC +/-10%
Current Consumption	1650 mA at continuous transmit mode 950 mA at continuous receive mode 40 mA in sleep mode

Appendix B

FCC Statement

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.

This device complies with Part 15 of the FCC Rules. Operation is subject to the folowing 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

This equipment has been SAR-evaluated for use in laptops (notebooks) with side slot configuration.