

WIRELESS 11G PCI ADAPTER

WPI-100G

User Guide



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Introduction

Thank you for purchasing your **WPI-100G Wireless PCI Adapter**.

This user guide will assist you with the installation procedure.

The Gemtek Wireless-G PCI Adapter installs in most desktops and lets you put your computer almost anywhere in the building, without the cost and hassle of running network cables. Now you don't have to drill holes in your walls and climb through the attic or cellar to get connected to the network. Once you're connected, you can keep in touch with your e-mail, access the Internet, use instant messaging to chat with friends, and share files and other resources such as printers and network storage with other computers on the network.

The Wireless-G PCI Adapter connects you with Wireless-G networks at an incredible 54Mbps! And for added versatility, it can also interoperate with all the 11Mbps Wireless-B (802.11b) products found in homes, businesses, and public wireless hotspots around the country. And in either mode, your wireless communications are protected by up to 128-bit encryption, so your data stays secure.

So don't hassle with running cables through your house - get your desktop connected the easy way with the Gemtek Wireless-G PCI Adapter.

The package you have received should contain the following items:

- Operates in the 2.4Ghz frequency spectrum with throughput of up to 54 Mbps
- Complies with IEEE 802.11g draft standards, and backwards compatible with IEEE 802.11b products
- Up to 128-bit WEP encryption
- 32-bit PCI Interface
- Compatible with Windows 98SE, Millennium, 2000 and XP

Note: if anything is missing, please contact your vendor

Planning Your Wireless Network

Network Topology

A wireless local area network (WLAN) is exactly like a regular local area network(LAN), except that each computer in the WLAN uses a wireless device to connect to the network. Computers in a WLAN share the same frequency channel and SSID, which is an identification name for wireless devices.

Your Wireless **PCI adapter** should be placed in a safe and secure location. To ensure proper operation, please keep the unit away from water and other damaging elements.

Ad-Hoc versus Infrastructure Mode

Unlike wired networks, wireless networks have two different modes in which they may be set up: **infrastructure** and **ad-hoc**. In an infrastructure configuration a WLAN and wired LAN communicate to each other through an access point. In ad-hoc configuration, wireless-equipped computers communicate directly with each other. Choosing between these two modes depends on whether or not the wireless network needs to share data or peripherals with a wired network or not.

If the computers on the wireless network need to be accessed by a wired network or need to share a peripheral, such as a printer, with the wired network computers, the wireless network should be set up in **infrastructure** mode.(See Figure 2-1.)



Figure 2-1

The basis of infrastructure mode centers around an *access point*, which serves as the main point of communications between a wired and wireless network. Access points transmit data to PCs equipped with wireless network adapters, which can *roam* within a certain radial range of the access point. Multiple access points can be arranged to work in succession to extend the roaming range, and can be set up to communicate with your Ethernet (wired) hardware as well.

If the wireless network is relatively small and needs to share resources only with the other computers on the wireless network, then the **ad-hoc** mode can be used. Ad-hoc mode allows computers equipped with wireless transmitters and receivers to communicate directly with each other, eliminating the need for an access point. Communication between the wireless-equipped computers is limited by the distance and interference directly between them.

Getting to Know the Wireless-G PCI Adapter

ACT LED Green. The ACT LED lights up when the Adapter is powered on.

Antenna Port Attach the PCI Adapter's antenna here and position it for maximum performance, which is usually perpendicular to the horizon.

Software Installation and Configuration for Window 98SE , Me , and 2000

1. To install the Adapter, click the **Install** button on the *Welcome* screen, Figure 4-1. Click **User Guide** to view the User Guide or click **Exit** to exit the Setup Wizard.
2. After reading the License Agreement, shown in Figure 4-2, click the **Next** button to continue the installation, or click the **Cancel** button to end the installation.



Figure 4-2

3. The Setup Wizard will display a screen similar to that shown in Figure 4-3, asking you to choose a wireless mode. Click the **Infrastructure Mode** radio button if you want your wireless computers to network with computers on your wired network using a wireless access point. Click the **Ad-Hoc Mode** radio button if you want multiple wireless computers to network directly with each other. Do not use Ad-Hoc mode if you want your wireless computers to communicate with computers on your wired network.

In the *SSID* field, enter the **SSID** of your wireless network. The SSID must be identical for all devices in the network.



Figure 4-3

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4. If you chose Infrastructure Mode, go to **Step 5** now. If you chose Ad-HocMode, you'll see a screen similar to that shown in Figure 4-4. Select the correct operating channel for your network from the *Channel* drop-down menu. Then, select the *Network Mode* from the drop-down menu. Click the **Next** button, and go to **Step 4**. Click the **Back** button to change any settings.

Channel - The channel you choose should match the channel set on the other devices in your wireless network. If you are unsure about which channel to use, select the default channel (Channel 6).



Figure 4-4

5. The Setup Wizard will ask you to review your settings (as in Figure 4-5) before it starts to copy files. Click the **Next** button to save these settings, or click the **Back** button to change any settings.



Figure 4-5

6. After the files have been successfully copied, the screen in Figure 4-6 will appear. Click the **Exit** button.



Figure 4-6

Driver Installation and Configuration for Windows XP

Driver Installation for Windows XP

1. Windows XP will automatically detect the Adapter. Insert the Setup CDROM into the CD-ROM drive and the screen in Figure 5-1 should appear. Click the radio button next to **Install the software automatically (Recommended)**. Then click the **Next** button.



Figure 5-1

2. When Windows has finished installing the driver, click the **Finish** button.



Figure 5-2

You have now completed the driver installation for the Adapter. To configure the Adapter, proceed to the next section, “Windows XP Wireless Zero Configuration.”

Windows XP Wireless Zero Configuration

1. After installing the Adapter, the Windows XP Wireless Zero Configuration icon will appear in your computer’s system tray. Double click the icon.

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2. The screen that appears will show any available wireless network. Select the network you want. If you have already enabled WEP encryption on your network, skip ahead to step 3.

If you have NOT enabled WEP encryption on your network, the screen in Figure 5-3 will appear. Check the box next to *Allow me to connect to the selected wireless network, even though it is not secure*. Then click the **Connect** button and continue to step 4.



Figure 5-3

3. The screen in Figure 5-4 will appear. Enter the WEP key of your wireless network in the *Network key* field, and re-enter it in the *Confirm network key* field. Then, click the **Connect** button.



Figure 5-4

Congratulations!

Your PC is now connected to your wireless network.

Troubleshooting

Common Problems and Solution

This chapter provides solutions to problems that may occur during the installation and operation of the Wireless-G PCI Adapter. Read the descriptions below to solve your problems. If you can't find an answer here, check the Gemtek website at www.gemtek.com.tw

1. The Wireless-G PCI Adapter does not work properly.

- Reinsert the Wireless-G PCI Adapter into your PC's PCI slot.
- Right click on **My Computer** and select **Properties**. Select the device manager and click on the Network Adapter. You will find the Wireless-G PCI Adapter if it is installed successfully. If you see the yellow exclamation mark, the resources are conflicting. You will see the status of the Wireless-G PCI Adapter. If there is a yellow question mark, please check the following:
 - Make sure that your PC has a free IRQ (Interrupt ReQuest, a hardware interrupt on a PC.)
 - Make sure that you have inserted the right adapter and installed the proper driver.

If the Wireless-G PCI Adapter does not function after attempting the above steps, remove the adapter and do the following:

- Uninstall the driver software from your PC.
- Restart your PC and repeat the hardware and software installation as specified in this User Guide.

2. I cannot communicate with the other computers linked via Ethernet in the Infrastructure configuration.

- Make sure that the PC to which the Wireless-G PCI Adapter is associated is powered on.
- Make sure that your Wireless-G PCI Adapter is configured on the same channel and with the same security options as with the other computers in the Infrastructure configuration.

8. The *Congratulations* screen (Figure 7-15) will appear next. Click **Activate new settings now** to implement the new settings immediately and return to the *Link Information* screen. Click **Activate new settings later** to keep the current settings active, and return to the *Profiles* screen so that you can edit your profile or create another profile.

Frequently Asked Questions

Can I run an application from a remote computer over the wireless network?

This will depend on whether or not the application is designed to be used over a network. Consult the application's user guide to determine if it supports operation over a network.

Can I play computer games with other members of the wireless network?

Yes, as long as the game supports multiple players over a LAN (local area network). Refer

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to the game's user guide for more information.

What is the IEEE 802.11b standard?

It is one of the IEEE standards for wireless networks. The 802.11b standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11b standard. The 802.11b standard states a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

What is ad-hoc mode?

When a wireless network is set to ad-hoc mode, the wireless-equipped computers are configured to communicate directly with each other. The ad-hoc wireless network will not communicate with any wired network.

What is infrastructure mode?

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

What is Spread Spectrum?

Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade-off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

What is roaming?

Roaming is the ability of a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single access point. Before using the roaming function, the workstation must make sure that it is the same channel number with the access point of dedicated coverage area.

Would the information be intercepted while transmitting on air?

WLAN features two-fold protection in security. On the hardware side, as with Direct Sequence Spread Spectrum technology, it has the inherent security feature of scrambling. On the software side, WLAN offers the encryption function (WEP) to enhance security and access control.

Specification

Standards: Draft 802.11g, 802.11b

Modulation: 802.11b: CCK (11 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps);
802.11g: OFDM

Channels: 802.11b, 11 Channels (USA) draft 802.11g 13 Channels (Europe)
14 Channels (Japan)

Network Protocol: TCP/IP, IPX, NDIS 4, NDIS 5, NDIS 5.1, NetBEUI

Interface: PCI

Transmit Power: 15 dBm

Sensitivity: -80 dBm

LED: ACT

WEP Key Bits: 64-Bit and 128-Bit

Dimensions: 4.8" x 8.66" x 0.91" (122 mm x 220 mm x 23 mm)

Unit Weight: 4.5 oz. (0.13 kg)

Power: 3.3V

Certifications: FCC

Operating Temp.: 32°F to 150°F (0°C to 65°C)

Storage Temp.: -40°F to 185°F (-40°C to 85°C)

Operating Humidity: 0% to 95%, Non-Condensing

Storage Humidity: 0% to 95%, Non-Condensing

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, 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 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.