54g Wireless Notebook Network Card

Share your broadband Internet connection and files
Thank you for purchasing the Belkin 54g Wireless Notebook Network Card (the Card). Now you can take advantage of this great new technology and gain the freedom you need around the home or office without using cables. The Wireless Notebook Network Card works like a conventional network card, but without the wires. The easy installation and setup will have you networking wirelessly in minutes. Please be sure to read through this manual completely to be sure that you are getting the most out of your Wireless Notebook Network Card.
OVERVIEW

Applications and Advantages

- **Wireless roaming with a laptop around the home or office**
  Offers the freedom of networking without cables.

- **Connection rates of up to 54Mbps**
  Provides immediate, higher-speed wireless connectivity at home, work, and hot spot locations without compromising the use of existing 802.11b products.

- **Compatibility with 802.11b products**
  54g wireless LAN solutions are backward-compatible with existing Wi-Fi (IEEE 802.11b) products and with other products that display the 54g mark.

- **Difficult-to-wire environments**
  Enables networking in buildings with solid or finished walls, or open areas where wiring is difficult to install.

- **Frequently changing environments**
  Adapts easily in offices or environments that frequently rearrange or change locations.

- **Temporary LANs for special projects or peak time**
  Sets up temporary networks such as at trade shows, exhibitions, and constructions sites, which need networks on a short-term basis; also companies who need additional workstations for a peak activity period.

- **SOHO (Small Office/Home Office) networking needs**
  Provides the easy and quick, small network installation SOHO users need.

Features

The Card complies with the IEEE 802.11b standard in order to communicate with other 802.11b-compliant wireless devices at 11Mbps as well as other 54g products at 54Mbps that have the 54g™ badge on the package.

54g products run at speeds of up to 54Mbps and operate on the same 2.4GHz frequency band as 802.11b Wi-Fi products.

- 2.4GHz ISM (Industrial, Science, and Medical) band operation
- Integrated easy-to-use Wireless Configuration Utility
- Wireless interface compliance with the IEEE 802.11b standard and 54g products
- PCMCIA interface, for operation in virtually any notebook computer
- 64 or 128-bit Wireless (WEP) Encryption
- Wireless access to networked resources
- Support for both Infrastructure and Ad-Hoc (peer-to-peer) networking modes
- Data rate of up to 54Mbps
  - Supports 11, 5.5, 2 or 1Mbps rates (802.11b)
  - Supports 54, 48, 36, 24, 18, 12, 9, or 6Mbps rates (54g)
- Easy installation and use
- Internal antenna
- LED power and network link indicators
OVERVIEW

Product Specifications
- Host Interface: 32-bit CardBus
- Power Consumption: Tx/Rx peak 550/350mA @ 3.3VDC (max.)
- Certification: FCC Class B, CE Mark, C-Tick
- Operating Temperature: (0–85 degrees C)
- Storage Temperature: (-40–90 degrees C)
- Humidity: Max. 95% (non-condensing)
- Typical Operating Range: 802.11b: 590.6 ft. (180m) @ 11Mbps, 984.3 ft. (300m) @ 5.5 Mbps or lower
  54g: 164 ft. (50m) @ 54Mbps, 492.1 ft. (150m) @ 18Mbps

System Requirements
- PC-compatible laptop with one available PCMCIA slot
- Windows® 98, 2000, Me, XP

Package Contents
- Belkin 54g Wireless Notebook Network Card
- Quick Installation Guide
- Installation Software CD
- User Manual

KNOWING YOUR CARD

(a) Power LED
When the Card receives power, this light will be on.

(b) Link LED
When the Card has a link to a wireless network, the light will be solid.
When not linked to a wireless network, the light will slowly flash.

(c) Card Connector
This is the side of the Card that fits into the PCMCIA slot of your laptop

(d) Antenna
Installing your Card is done in three easy steps.

1. Install the software FIRST. If you plug your Card into your laptop before you install the software, it will not work.
2. Plug the Card into your laptop.
3. Let Windows operating system finish installing the Card.

Note: Install the software first before you install the card into your notebook.

Software and Driver Installation
1. Insert the CD into your CD-ROM drive.
2. The Belkin Wireless Notebook Network Card Setup Utility screen will automatically appear. If it does not appear within 15-20 seconds, then select your CD-ROM drive and double-click on the folder named “Files”. Next, double-click on the icon named “F5D7010W_UTILITY.exe”.
3. In the menu window, drag your mouse over the “Install” button then select “Click here” to start the software installation program.

4. The installer will start. If you are using Windows XP, it is recommended that you use the Belkin Wireless Notebook Network Card Utility to manage the Card’s wireless settings. If you want to use Windows XP to manage the Card, check “Use the Windows XP Wireless Network Connection Utility”. Instructions on how to use Windows XP's Connection Utility are available from Microsoft. Click “Next” to continue.

5. Accept the Belkin Software License Agreement by clicking the “YES” button.
6. Select a folder where you would like to install the program files. It is recommended that you use the default folder “C:\Program Files\Belkin\Belkin 54Mbps Wireless Utility”. Click “Next” to install the files.

7. During the install process, you will be prompted to insert your Card. Insert the Card, label side UP, into your computer’s PCMCIA slot firmly until it stops. The power light on the top will turn on when it is inserted properly.

8. After the software installation is complete, click “Finish”. You are now ready to install the Wireless LAN notebook adapter hardware.

9. After connecting your Card, Windows will detect that new hardware has been installed. Depending on which version of Windows you are using, a window similar to the one pictured below will appear. Select the option that will automatically install the software.
10. If you are using Windows 2000 or Windows XP, you may see a screen similar to the one below. This does not mean there is a problem. Select "Continue Anyway".

11. If you are using Windows 98 or Me, you will be asked to restart your computer. Select "Restart". If you are using Windows 2000 or XP, you will see a window similar to the one below. Click "Finish".

12. When the installation is complete, a small icon in your system tray (bottom right corner of most screens) will appear. This is your shortcut to the Belkin WLAN Monitor. It also indicates the status of your connection.

   Green Icon: Connected to a wireless network, good connection
   Yellow Icon: Connected to a wireless network, fair connection
   Red Icon: No connection to a wireless network

   Note: The Wireless LAN Utility icon will also appear in your Control Panel. To open the Wireless LAN Utility, double-click on this icon.
Connecting to your Wireless Network
If you already have a wireless router or an access point in your home or office, the Card will automatically attempt to connect to your wireless network. In most cases, the Card will be able to connect to your network automatically. If your wireless network is using encryption, you will need to set the encryption settings of your Card to match that of your wireless network. For information about configuring your Card, see the next section in this manual.

Uninstalling the Software and Drivers
If you need to remove the software and drivers for any reason, you can easily accomplish this in one of two ways. You can insert the software CD and click on the “Uninstall” option in the menu, or you can go to the Windows Control Panel and select the “Add/Remove Programs” option. The Belkin Wizard will walk you through the removal process.

Proceed with the following instructions for configuring your network profiles. The instructions explain how to open the Utility and how to use it to configure a network profile.

When you launch the Wireless LAN Utility (the Utility), you will be presented with the “Connect to Wireless Network” screen.

The following small icon will also be present in your system tray.

Once installed, the Wireless LAN Utility will automatically display when Windows boots up.

The Utility can be set to always show up in your system tray. You can hide the icon if you right-click on it in your system tray. Although no icon will be displayed, your preferred network will continue to be managed by the Card. The system tray icon can be re-enabled from the Wireless LAN Configuration Utility, available from the Control Panel.

Single-clicking on the icon in the system tray will open the window.

Note: You may double-click on the Utility icon on your system tray to go directly to the “Advanced Configuration” window.
The Utility will automatically detect all the 802.11b and 54g wireless networks in the area. Select an available listed network and click on the “Connect” button to connect to that network.

If the wireless network you want to connect with has WEP encryption enabled, the “Network key” text box will be active. Type the network key for that network to connect.

Click “Cancel” to exit.

The “Advanced” button will allow you to view and configure more options of your Card.

**Note:** Under Windows XP, clicking on the “Advanced” button for the first time will display the following window. The “Use Windows to configure my wireless network settings” option will be enabled by default. Click on the check box to disable it and use the Belkin Wireless Network Utility instead.
**USING THE BELKIN WIRELESS LAN UTILITY**

### The Wireless Networks Tab

- **Enable Radio**
  - Use this option to toggle your wireless network radio ON or OFF. You may want to turn the radio off while in airplanes or to conserve the battery life of your mobile computer. When the radio is disabled, the power LED on your Card will turn off and the system tray wireless network icon will be depicted with an “X”.

- **Available Networks**
  - This displays a list of all available wireless networks in your area. Select a network by clicking on the network name or click on the “Refresh” button to rescan the area for available wireless networks to connect to.
  - Once you select a network, you can click on the “Configure” button. Click “OK” in the “Wireless Network Properties” box. The network name and icon will appear at the top of the “Preferred Networks” list. Wait up to one minute for the network connection to be made. Your computer is connected to the selected network when you see a blue bubble on top of the icon for that network.

- **Preferred Networks**
  - Displays a list of the networks that you have configured. You may rank the networks by selecting the network name in the “Preferred Networks” list then clicking on the “Move UP” and “Move Down” buttons. Networks appearing higher on the list will be preferred over networks listed lower on the list. If a preferred network is unavailable, the Card will attempt to connect to the next available network on the list.
  - **Note:** You must click on the “Apply” button before any changes take into effect.

- **Preferred Network**
  - The blue bubble on top of the icon for that network specifies that you are currently connected to that network.

- **Add, Remove**
  - You may “Add” and “Remove” networks from the Preferred Networks list by using these buttons.

- **System Tray Icon**
  - Check this box so that the wireless icon appears on your system tray.

- **Properties**
  - To check the properties and WEP settings of the preferred network, select a network then click on the “Properties” button.
Encryption

To configure a profile for a listed network that requires a WEP key:

1. After opening the Utility, select the network from the “Available networks” list and click “Configure”.

2. Select the “Data encryption (WEP enabled)” box.

3. Clear the “The key is provided for me automatically” box.

4. Type the network key in the “Network key” box.

Notes: You do not need to select the “Key format” or the “Key length” before typing the network key. These settings automatically change to the appropriate setting as you type the network key.

5. Click “OK”.

Notes: You must click on the “Apply” button before any changes take into effect.
USING THE BELKIN WIRELESS LAN UTILITY

The Link Status Tab

(a) SSID
The SSID is the wireless network name. This field shows the current SSID with which the Card is associated. The Card will automatically look for any wireless network in the area. To connect to a specific wireless network, you can manually select the SSID of the known wireless network in the Wireless Networks tab.

(b) MAC Address
Shows the MAC address of the wireless network that you are connected to.

(c) WEP
Shows whether the network you are associated with has WEP encryption enabled or disabled.

(d) Speed
Displays the data rate of the current connection.

(e) Channel
Shows the current channel the Card is operating on. When operating in Infrastructure mode, the channel is set automatically by the access point or wireless router that the Card is connected to. You cannot change the channels in Infrastructure mode. In Ad-Hoc mode, the channel can be set manually.

(f) Client IP Address
Shows the IP address of the your wireless client. The IP address is obtained automatically by default. You may set the IP address manually through Windows Networking Properties.

(g) Network Connection Type
Shows the current wireless mode the Card is operating in. There are two operating modes: Infrastructure and Ad-Hoc. Infrastructure is the most common mode to operate in. Infrastructure mode is used when connecting your PC to a wireless access point or to a wireless router. Ad-Hoc mode is used to connect two or more computers together without the use of an access point or wireless router.

(h) Radio State
Shows whether the IP address of your wireless client is enabled or disabled. The IP address is obtained automatically by default. You may set the IP address manually through Windows Networking Properties.

(i) Signal Strength
Displays the strength of the wireless signal from 0 to 100%. The closer to 100%, the better the signal strength is. The closer you are to a wireless router or access point, the stronger the signal should be.

(j) Link Quality (Noise)
Displays the amount of radio interference in the environment. Lower noise ratings are optimal.
The Site Survey Tab

Clicking on the Site Survey tab will display a list of all available access points in your area. The following information about each is displayed:

(a) **SSID**
The Service Set Identifier (wireless network name) of the access point.

(b) **Channel Number**
The current operating channel of the access point.

(c) **Signal Strength**
The signal strength of the related access point.

The Statistics Tab

The Statistics tab shows you how much data has been sent and received and if any errors occurred. This screen is mostly for diagnostics. Note that the number of data packets lost is recorded. A large number of lost data packets may indicate that there is a problem or interference in your area.

![Belkin Wireless LAN Utility](image)
(d) WEP
Will display “Off” when encryption is disabled, “64-bit” when 64-bit encryption is enabled, and “128-bit” when 128-bit encryption is enabled.

(e) Ad-Hoc Networks Only
Check this box to display available ad-hoc networks only.

(f) Advanced
Displays additional information about the selected network.

(g) Freeze
Takes a “snapshot” of the signal strength at the time of the site survey. Click again to unfreeze.

Diagnostics Page
This Page allows you to perform several diagnostic tests that are available for your Belkin Wireless Network adapter.

Control Registers
This test verifies the read and write capabilities of the network controller registers by writing various values to the registers and verifying the result. The device driver uses these registers to perform network functions such as sending and receive information. If the test fails, the network adapter may not work properly.

SPROM Format Version
This test verifies the content of the SPROM by reading a portion of the SPROM and computing the checksum. The test fails if the computed checksum is different than the checksum stored in the SPROM.
TROUBLESHOOTING

Cannot Connect to the Network
If your Card appears to be functioning properly but you cannot connect to the network, the problem may be that there is a mismatch between the “Network name (SSID)” and “Wireless network key (WEP)” settings in your wireless network properties and the name and WEP key of the network you are trying to connect to. The network name and WEP key are case-sensitive. Verify that the spelling and case of these parameters are correct and that the settings are exactly the same on all computers on the network.
If you have verified that the spelling and case of these parameters are correct and that the settings are exactly the same on all computers on the network and you are still unable to connect to the network, see “Performance and Connectivity Problems”.

Problem or Symptom
The computers seem to be communicating, but they do not appear in the “My Computer” window or in the “My Network Places” window

Possible Solution
Windows 2000 Environment
Verify that “File and Printer Sharing” is enabled on all the computers on your network.
From the desktop, click the “Start” button, go to “Settings”, and click “Control Panel”.
In Control Panel, double-click the “Network and Dial-up Connections” icon.
In the “Network and Dial-up Connections” window, double-click the “Local Area Connection” icon.
In the “Local Area Connection Status” box, click “Properties”.
In the “Local Area Connection Properties” box, verify that the “File and Printer Sharing for Microsoft Networks” check box is selected. If the check box is cleared, select it. If the check box is not present, click “Install”. In the “Select Network Component Type” box, select “Service” and click “Add”. In the “Select Network Service” box, select “File and Printer Sharing for Microsoft Networks” and click “OK”. Close the “Local Area Connection Properties” box.
Close the “Local Area Connection Status” box.
Close the “Network and Dial-up Connections” window.
TROUBLESHOOTING

The computers seem to be communicating, but they do not appear in the “My Computer” window or in the “My Network Places” window.

Windows XP Environment

Verify that “File and Printer Sharing” is enabled on all the computers on your network.

From the desktop, click the “Start” button and click “Control Panel” (if you are looking at Category View, click “Switch to Classic View”).

In Control Panel, double-click the “Network Connections” icon.

In the “LAN or High-Speed Internet” area, right-click “Wireless Network Connection” and click “Properties”.

In the “Wireless Network Connection Properties” box, if the “General” tab is not on top, click the “General” tab.

In the “This connection uses the following items” list, verify that the “File and Printer Sharing for Microsoft Networks” check box is selected. If the check box is cleared, select it. If this item is not present, click “Install” in the “Select Network Component Type” box, select “Service” and click “Add”. In the “Select Network Service” box, select “File and Printer Sharing for Microsoft Networks” and click “OK”. Close the “Wireless Network Connection Properties” box.

Close the “Network Connections” window.

Data transfer is always very slow

Some homes and most offices are steel-framed structures. The steel in such buildings may interfere with your network’s radio signals, thus causing a slowdown in the data transmission rate. Try moving your computers to different locations in the building to see if performance improves.

Computers are not communicating with the network.

In Windows 2000, I get the following error message: “Medium cable disconnected”. Also, there is a red X on my network icon in the system tray.

This indicates that your computer is not properly configured to connect to the network. Verify that all of the wireless network properties settings are correct. Also, make sure that your computer is receiving a good signal from the access point.

Network performance is really slow when the system is connected to both a wireless network and an active Ethernet port.

Note: For Windows 2000 only.

This condition occurs if your computer has an active Ethernet port while your Card is still active and connected to an access point. This happens because Windows 2000 must now handle two active network connections. You need to either disconnect the Ethernet cable from your computer, or disable the radio on your Card. To disable the radio on your Card, right-click on the Belkin Wireless Utility icon in the system tray and click “Disable Radio”. Note: The radio is not automatically enabled when your computer starts up again. To enable the radio, right-click on the Belkin Wireless Utility icon and click “Enable Radio”.

Technical Support

You can find technical support information at www.networking.belkin.com or www.belkin.com through the tech support area. If you want to contact technical support by phone, please call 800-223-5546.
FCC Statement

DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY
We, Belkin Corporation, of 501 West Walnut Street, Compton, CA 90220, declare under our sole responsibility that the product,
F5D7010
to which this declaration relates, 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.

Caution: Exposure to Radio Frequency Radiation.
The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such manner that the potential for human contact normal operation is minimized.
When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Federal Communications Commission Notice
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 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.

Modifications
The FCC requires the user to be notified that any changes or modifications to this device that are not expressly approved by Belkin Components may void the users authority to operate the equipment.

Canada- Industry Canada (IC)
The wireless radio of this device complies with RSS 139 & RSS 210 Industry Canada. This Class B digital complies with Canadian ICES-003.
Get appareil numérique de la classe B conforme à la norme NMB-003 du Canada.

Europe-European Union Notice
Radio products with the CE 0682 or CE alert marking comply with the R&TTE Directive (1999/5/EC) issued by the Commission of the European Community.
Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards).
• EN 60950 (IEC60950) – Product Safety
• EN 300 328 Technical requirement for radio equipment
• ETS 300 826 General EMC requirements for radio equipment.
To determine the type of transmitter, check the identification label on your Belkin product.

Products with the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (72/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards).
• EN 55022 (CISPR 22) – Electromagnetic Interference
• EN 55024 (IEC61000-4-2,3,4,5,6,8,11)- Electromagnetic Immunity
• EN 61000-3-2 (IEC61000-3-2) - Power Line Harmonics
• EN 61000-3-3 (IEC61000) – Power Line Flicker
• EN 60950 (IEC60950) – Product Safety
Products that contain the radio transmitter are labeled with CE 0682 or CE alert marking and may also carry the CE logo.
**Belkin Corporation Limited Lifetime Product Warranty**

Belkin Corporation warrants this product against defects in materials and workmanship for its lifetime. If a defect is discovered, Belkin will, at its option, repair or replace the product at no charge provided it is returned during the warranty period, with transportation charges prepaid, to the authorized Belkin dealer from whom you purchased the product. Proof of purchase may be required.

This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication; if the product has been modified without the written permission of Belkin; or if any Belkin serial number has been removed or defaced.

**The warranty and remedies set forth above are exclusive in lieu of all others, whether oral or written, expressed or implied. Belkin specifically disclaims any and all implied warranties, including, without limitation, warranties of merchantability and fitness for a particular purpose.**

No Belkin dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

**Belkin is not responsible for special, incidental, or consequential damages resulting from any breach of warranty, or under any other legal theory, including but not limited to lost profits, down time, goodwill, damage to or reprogramming, or reproducing any program or data stored in, or used with, Belkin products.**

Some states do not allow the exclusion or limitation of incidental or consequential damages or exclusions of implied warranties, so the above limitations of exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.