

D-Link *AirPlus*
DWL-810+
2.4GHz Ethernet-to-Wireless Bridge

Manual

D-Link[®]
Building Networks for People

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1. Package Contents



Contents of Package:

- **D-Link AirPlus DWL-810+** Ethernet-to-Wireless Bridge
- AC Power Adapter – 5V; 2.5A
- Manual and Warranty on CD
- Ethernet Cable (*the DWL-810+ Auto MDI/MDIX Ethernet port works with straight-through or crossover cable*)
- Quick Installation Guide

If any of the above items are missing, please contact your reseller.

System Requirements for Configuration:

- A computer with an Ethernet adapter. (We recommend that you use an Ethernet connection to configure the DWL-810+.)
- A current web-browser (e.g., Internet Explorer 6.0 or Netscape Navigator 6.0 or later) for configuration

For Use: You will need an Ethernet-enabled device such as a game console, laptop or desktop computer, network printer or set top box. The DWL-810+ will transform virtually any Ethernet device into a wireless device, enabling wireless communication over your network or in an ad-hoc/peer-to-peer mode.

2. Introduction

The D-Link AirPlus DWL-810+ Ethernet-to-Wireless Bridge is a device that can be implemented in a variety of ways to provide wireless access by converting an Ethernet connection. For devices with a built-in Ethernet port, the DWL-810+ provides a cost effective way to gain wireless connectivity, virtually transforming wired devices into wireless units! Connect any Ethernet-enabled device to an existing 802.11b wireless network using the DWL-810+.

Typical applications include connecting a printer to a wireless network and connecting Ethernet-enabled devices such as game consoles or set top boxes to a Wireless Local Area Network (WLAN). Simply connect the DWL-810+ to the Ethernet (RJ-45) port of a network device, such as a network storage device, Internet camera, network printer, network scanner, or other similar device. Using the DWL-810+ allows the flexibility of placing network devices in remote locations while maintaining a high-speed connection.

You can use the convenient *Setup Wizard* for the easy installation of your DWL-810+. Whether you are using it in Ad-Hoc mode or Infrastructure mode, you can begin with the *Setup Wizard*. Please refer to the *Quick Installation Guide* that is included with your purchase for instructions on how to use the *Setup Wizard*.

This manual provides a quick introduction to wireless technology and its application as it relates to networking. Please take a moment to read through this manual if you need to get acquainted with wireless technology.

Features and Benefits

- Transforms an Ethernet device into a wireless device
- Up to 22Mbps transfer rates*
- Fully compatible with standard 802.11b-compliant devices
- Equipped with one 10/100 Ethernet port, Auto-MDI/MDIX
- Quick and Simple connectivity via Ethernet
- Supports Ad Hoc or Infrastructure modes
- Easy web-based configuration when changing settings
- Encryption to provide a level of security for data transfers

LEDs

LED stands for **L**ight-**E**mitting **D**iode. The DWL-810+ has two LEDs:



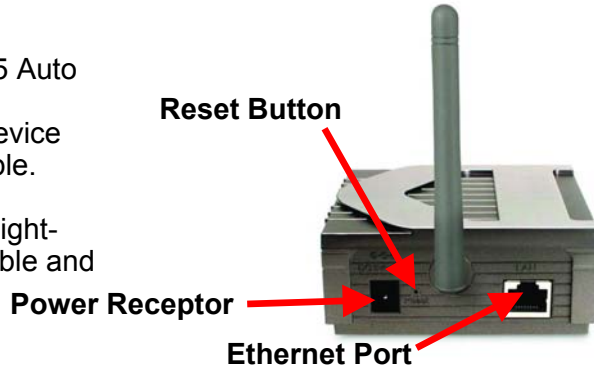
Wireless Link/Act – a steady **Yellow** light indicates a wireless connection. A blinking light indicates that the DWL-810+ is receiving/transmitting from/to the wireless network.

Power – a steady **Green** light indicates a proper connection to a power source.

** When used with other D-Link AirPlus (Texas Instruments® chip-based) products, when used with standard 802.11b products transfer rates can be up to 11Mbps.*

Connections

Ethernet Port – this RJ-45 Auto MDI/MDIX port provides connection to a network device using a Cat 5 Ethernet cable. (The auto MDI/MDIX port accommodates either Straight-Through or Cross-Over cable and is auto-sensing.)



Reset Button – press this button to revert to the factory default settings of the DWL-810+

Power Receptor – connect one end of the 5V DC Power Adapter (included) to the power receptor on the DWL-810+ and connect the other end of the Power Adapter to a power outlet.

*Category 5 is the most reliable grade of twisted-pair cable. It is available as either **Straight-Through** cable or **Cross-Over** cable. Always check your installation instructions to make sure that you have selected the correct type of Category 5 cable for your other networking devices. The DWL-810+ will accept either kind of cable and will automatically sense the cable that you are using.*

Default Settings

| | |
|--------------------|--------------------------|
| Operating Mode | Infrastructure |
| SSID | default |
| Channel | 6 |
| Transmission rates | Auto |
| Encryption | Disabled |
| IP Address | 192.168.0.30 |
| IP Subnet | 255.255.255.0 |
| User Name | admin (all lower case) |
| Password | None (leave field blank) |

3. Wireless Basics

With the DWL-810+ you can provide instant wireless access to the LAN (Local Area Network) for Ethernet-enabled devices. With an Ethernet (CAT5) cable simply connect the DWL-810+ to the Ethernet port of a network device (such as a printer or web camera) to establish a wireless connection with another device equipped with a wireless network adapter set to Ad-Hoc mode.

If you are planning a larger wireless network, D-Link offers a wide array of products for most of your wireless local area network (WLAN) needs. In this section, we discuss typical WLANs and their components. Much of the advice given here may be helpful in setting up the DWL-810+. It may also give you some ideas, if you plan to expand your wireless network.

D-Link wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or wherever a wireless network is available. D-Link wireless products will allow you access to the data you want, when and where you want it. No longer will you be limited to one location or forced to run new wiring through your home or office. You will be able to enjoy the freedom that wireless networking brings.

A WLAN is a cellular computer network that transmits and receives data with radio signals instead of wires. WLANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility with the absence of cabling and other fixed infrastructure has proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems, support the same protocols as Ethernet adapter cards. For most users, there is no noticeable functional difference between a wired Ethernet computer and a wireless computer equipped with a wireless adapter other than the added benefit of the ability to roam within a wireless-cell. Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Access Point (AP) is one device used to provide this link.

Wireless Basics

People use WLAN technology for many different purposes.

Mobility - Productivity increases when people have access to data in any location within the operating range of the WLAN. Management decisions based on real-time information can significantly improve worker efficiency.

Low Implementation Costs – WLANs are easy to set up, manage, change and relocate. Networks that frequently change, both physically and logically, can benefit from WLANs ease of implementation. WLANs can operate in locations where installation of wiring may be impractical.

Installation and Network Expansion - Installing a WLAN system can be fast and easy and can eliminate the need to install cable through walls and ceilings. Wireless technology allows the network to go where wires cannot go - even outside the home or office.

Inexpensive Solution – Wireless network devices are as competitively priced as conventional Ethernet network devices.

Scalability - WLANs can be configured in a variety of ways to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users that allow roaming over a broad area.

The DWL-810+ is compatible with the D-Link Air Wireless family of products, and other 802.11b products, including:

- ◆ DWL-650 2.4GHz Wireless Cardbus Adapter for laptop PCs
- ◆ DWL-520 2.4GHz Wireless PCI card for desktop PCs
- ◆ DWL-120 Wireless USB Adapter

Wireless Basics

The DWL-810+ is also compatible with the following D-Link AirPlus family of products:

- ◆ DWL-650+ Enhanced 2.4GHz Wireless Cardbus Adapter for laptop PCs
- ◆ DWL-520+ Enhanced 2.4GHz Wireless PCI card for desktop PCs
- ◆ DWL-900AP+ Wireless Access Point
- ◆ DI-614+ Wireless Router

Standards - Based Technology

The IEEE standard-based technology assures that this product is interoperable with existing compatible wireless technology. This means you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. The technology works by using multiple frequencies in the 2.4GHz range. This D-Link *AirPlus* product will automatically sense the best possible connection speed to ensure the greatest speed and range possible with the technology.

Installation Considerations

Designed to go up to 984 feet (300 meters) outdoors and up to 328 feet (100 meters) indoors, the D-Link *AirPlus* DWL-810+ lets you access your network devices wirelessly from virtually anywhere within its operating range. Keep in mind, however, that the number, thickness and location of walls, ceilings or other objects that the wireless signal must pass thru may limit range. Typical ranges vary depending on the types of materials and any background RF (radio frequency) noise in your home or business. The key to maximizing range is to follow these basic guidelines:

1. Keep the number of walls and ceilings between the DWL-810+ and your receiving device (e.g., the DWL-520+) to a minimum - Each wall or ceiling can reduce your D-Link *AirPlus* Wireless product's range from 3-90 feet (1-30 meters.) Position your DWL-810+, Access Points, Residential Gateways, and computers so that the number of walls or ceilings is minimized.
2. Be aware of the direct line between the DWL-810+ and the device with which it communicates, as well as between Access Points, Residential Gateways (routers), and computers. A wall that is 1.5 feet thick (.5

Wireless Basics

meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Position Access Points and Adapters so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.

3. Building Materials can impede the wireless signal - A solid metal door or aluminum studs may have a negative effect on range. Try to position the DWL-810+, the Access Points, and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.
4. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that may generate extreme RF noise.

Using radio frequency (RF) technology, the DWL-810+ transmits and receives data over the air, eliminating the need for a wired connection.

4. Getting Started

Setup #1:

This example illustrates an **Ad-Hoc** setup. Simply connect the DWL-810+ (refer to the *Quick Installation Guide*) to your Ethernet-capable network device (in this case, a gaming console) and you will be able to connect wirelessly with other gaming consoles also connected to DWL-810+'s.



Getting Started

Setup #2: This example illustrates an **Infrastructure** setup. To connect the DWL-810+ to a wireless network with a wireless router or access point, please refer to the printed Quick Installation Guide included with the product. Web configuration is required to connect the DWL-810+ in Setup #2.

Setup #2



5. Web Configuration

Before using the Web Configuration for the DWL-810+, please consider the following:

You will need a JavaScript-enabled web-browser such as the Internet Explorer 6.0 or later, or the Netscape Navigator 6.0 or later.

The computer that you are using for initial configuration must have an IP Address within the same range as the IP Address of the DWL-810+. The DWL-810+ has a default IP Address of 192.168.0.30 with a subnet mask of 255.255.255.0

You will need to assign a Static IP Address to the computer that you are using to configure the DWL-810+, within the IP Address Range of the DWL-810+. For example, you can assign a Static IP address of 192.168.0.2 with a subnet mask of 255.255.255.0 (Please refer to the Appendix section of the Quick Installation Guide.)

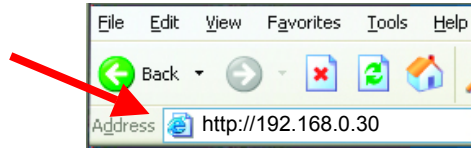
Factory Default Settings for the DWL-810+

| | |
|------------------------|----------------------------|
| Operating Mode | Infrastructure |
| SSID | default |
| Channel | 6 |
| Transmission rates | Auto |
| Encryption | No |
| Administrator password | Blank (no password needed) |
| IP Address mode | Static |
| IP Address | 192.168.0.30 |
| IP Subnet | 255.255.255.0 |
| username | admin (all lower case) |

Configuration Menu

Whenever you want to configure your network or the DWL-810+, you can access the **Configuration Utility** by opening the web-browser and typing in the IP Address of the DWL-810+. The DWL-810+ default IP Address is shown below:

- Open the web browser
- Type in the **IP Address** of the Access Point



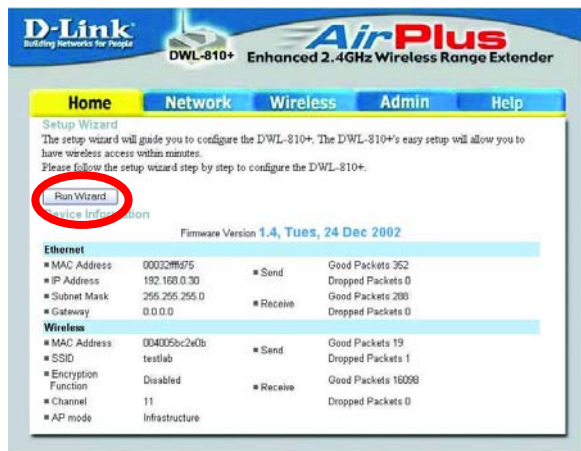
(The IP Address shown in the example above is the default setting. Use this IP address when connecting to a network consisting of other D-Link devices set to their default settings. If you have changed the IP Address of the DWL-810+ to conform to a network other than one with D-Link devices, at their default setting, then input that IP Address in the web browser, instead of the default IP Address shown.)

- Type **admin** in the **User Name** field
- Leave the **Password** blank
- Click **OK**



Home

The **Home** window will appear. Please refer to the *Quick Installation Guide*, included with your purchase, for more information regarding the *Setup Wizard*, accessible here. Once you have completed the configuration of the DWL-810+, the current settings will be displayed in this window.



Configuration Menu

This window displays the default settings of the DWL-810+. The default IP Address is 192.168.30. If you select **Dynamic IP Address**, you will obtain a dynamic IP Address from a DHCP server on your network. The **Subnet Mask** is 255.255.255.0. Input the IP Address of the **Gateway** (the router on your network.) Click **Apply** if you have made any changes.

Network



The screenshot shows the 'Network' configuration page for the DWL-810+ Enhanced 2.4GHz Ethernet-to-Wireless Bridge. The page has a navigation bar with 'Home', 'Network', 'Wireless', 'Admin', and 'Help'. The 'Network' tab is selected. The 'IP Address Settings' section includes:

- LAN IP: Dynamic IP Address, Static IP Address
- IP Address:
- Subnet Mask:
- Gateway:

At the bottom right, there are 'Apply' and 'Cancel' buttons with green and red icons respectively.

Operating Mode:

Select **Ad-hoc** or **Infrastructure**. *Infrastructure* is the default setting.

AP Name: You may choose to rename your DWL-810+, especially if you have more than one Access Point on your network.

SSID: (Service Set Identifier) default is the default setting. The SSID is a unique name that

identifies a network. All devices on a network must share the same SSID name in order to communicate on the network. If you choose to change the SSID from the default setting, input your new SSID name in this field. The SSID can be up to 32 characters in length.

Wireless



The screenshot shows the 'Wireless' configuration page for the DWL-810+ Enhanced 2.4GHz Ethernet-to-Wireless Bridge. The page has a navigation bar with 'Home', 'Network', 'Wireless', 'Admin', and 'Help'. The 'Wireless' tab is selected. The 'Wireless Settings' section includes:

- Operating Mode: Ad-hoc, Infrastructure
- AP Name: (disabled)
- SSID:
- Remote AP MAC:
- Channel: (for ad-hoc mode only)
- WEP: Enabled, Disabled
- WEP Encryption:
- WEP Mode:
- Key1:
- Key2:
- Key3:
- Key4:
- TX Rate: 1-2(Mbps), 1-2-5-5-11(Mbps), 1-2-5-11-22(Mbps)
- Authentication: Open System, Shared Key, Auto

At the bottom right, there are 'Apply' and 'Cancel' buttons with green and red icons respectively.

Configuration Menu

Channel: **Channel 6 is the default channel.** Input a new number if you want to change the default setting. All devices on the network must be set to the same channel to communicate on the network.

WEP Encryption: Select **Enable Encryption** to use **WEP (Wired Equivalent Privacy)** on the network. All devices on the network, and the Access Point, must share the same WEP selection – either **Enable** or **Disable**, and they must share the same WEP key. The WEP key is generated from **ASCII** or **Hexadecimal** entries that are either 64, 128, or 256 bits in length. When enabling encryption, select the **Key Type** (ASCII or Hexadecimal) and then input the appropriate digits or letters. You can create up to 4 keys. Select the key you wish to use.

Hexadecimal digits consist of the numbers 0-9 and the letters A-F
ASCII (American Standard Code for Information Interchange) is a code for representing English letters as numbers from 0-127

Transmission Rate: Select the transmission rate for the network. The default setting is 1-2-5.5-11-22 (Mbps)

Authentication:

Open System – communicates the key across the network

Shared Key – devices must have identical WEP settings to communicate

Auto – automatically adjusts to the Authentication mode of the wireless client

Click **Apply** if you have made any changes or additions.

Configuration Menu

Admin

The screenshot shows the configuration interface for a D-Link AirPlus DWL-810+ Enhanced 2.4GHz Ethernet-to-Wireless Bridge. The interface has a blue header with the D-Link logo and product name. Below the header is a navigation bar with tabs for Home, Network, Wireless, Admin (selected), and Help. The main content area is titled 'Administrator Settings' and contains three sections: 1. Password Change: Two input fields for 'New Password' and 'Confirm Password', both masked with dots. Below them are 'Apply' and 'Cancel' buttons. 2. System Settings: A 'Save' button, a 'Load Settings From Local Hard Drive' section with a 'Browse...' button and a 'Load' button, and a 'Restore to Factory Default Settings' section with a 'Restore' button. 3. Firmware Upgrade: A 'Current Firmware Version: 1.5' and 'Firmware Date: Monday, December 30, 2002', followed by a 'Browse...' button. At the bottom right, there are 'Apply' and 'Cancel' buttons with green and red icons respectively.

Administrator Settings: Change your password in this window. Re-enter the new password to confirm. It can be up to 14 characters in length. Please keep a copy of your password in a safe place. Click **Apply**, if you have made any changes.

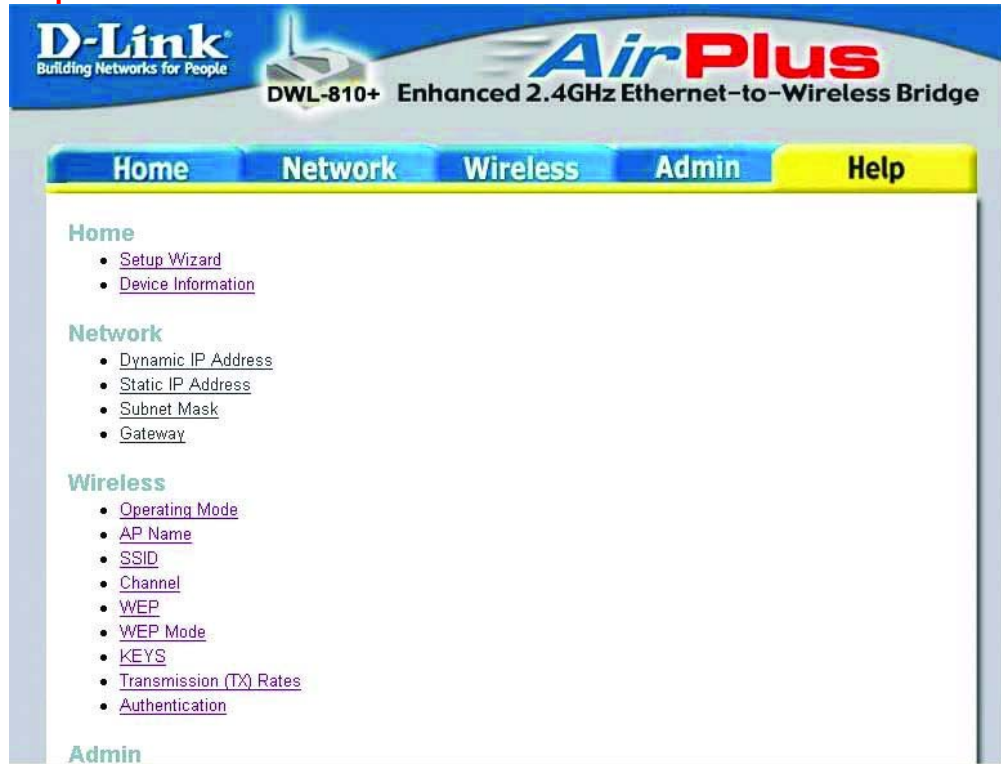
System Settings: The current system settings can be saved as a file onto the local hard drive by clicking **Save**. The saved file can be loaded back on the DWL-810+ by clicking **Browse**. When you have selected the settings file, click **Load**.

Click **Restore** to return to **Factory Default Settings**.

Firmware Upgrade: Upgrade the firmware for the DWL-810+. Find upgrades to the firmware on the *D-Link* website at <http://support.dlink.com>. After you have downloaded a firmware upgrade to your local drive, click **Browse**. Select the firmware and click **Apply** to complete the upgrade.

Configuration Menu

Help



The screenshot displays the configuration interface for a D-Link DWL-810+ AirPlus Enhanced 2.4GHz Ethernet-to-Wireless Bridge. The interface features a blue header with the D-Link logo and product name. Below the header is a navigation bar with tabs for Home, Network, Wireless, Admin, and Help. The Help tab is currently selected and highlighted in yellow. The main content area shows a list of links for each menu item: Home (Setup Wizard, Device Information), Network (Dynamic IP Address, Static IP Address, Subnet Mask, Gateway), Wireless (Operating Mode, AP Name, SSID, Channel, WEP, WEP Mode, KEYS, Transmission (TX) Rates, Authentication), and Admin.

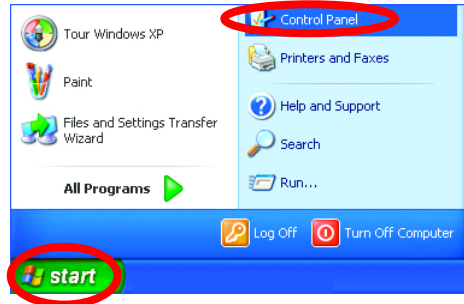
The **Help** window displays information about each window in the Configuration menu. When you change the settings in the Configuration menu, you will need to restart the DWL-810+ for the changes to take effect.

6. Troubleshooting

This section provides solutions to situations that can occur during the installation and operation of the DWL-810+ Ethernet-to-Wireless Bridge. Read the following descriptions if you are having problems.

1. How do I assign a Static IP Address in Windows XP/2000?

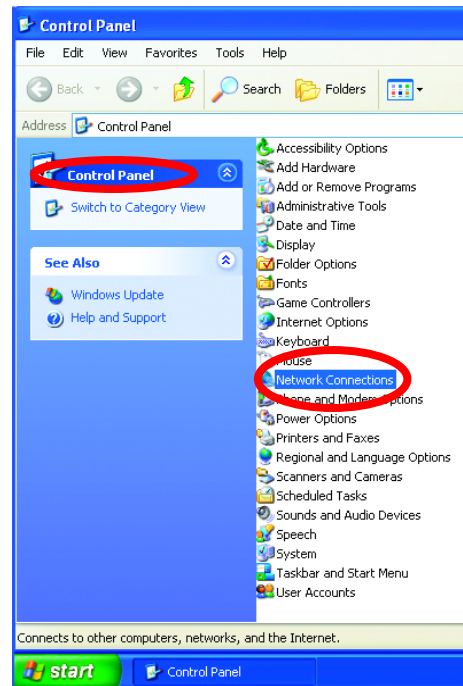
Please note that Residential Gateways/Broadband Routers will automatically assign IP Addresses to the computers on the network, using DHCP (Dynamic Host Configuration Protocol) technology. If you are using a DHCP-capable Gateway/Router you will not need to assign Static IP Addresses.



If you are not using a DHCP capable Gateway/Router, or you need to assign a Static IP Address, please follow these instructions:

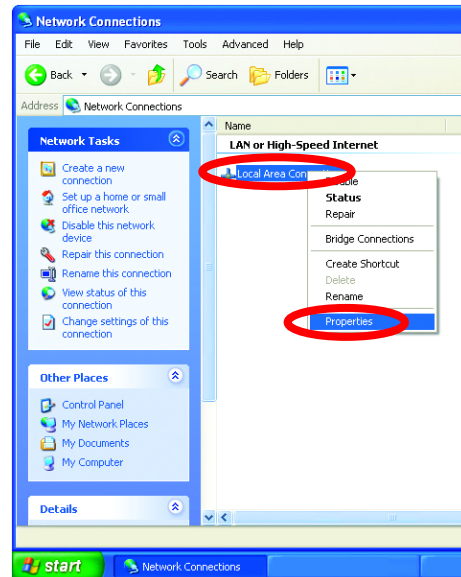
- Go to **Start**
- Double-click on **Control Panel**

- Double-click on **Network Connections**



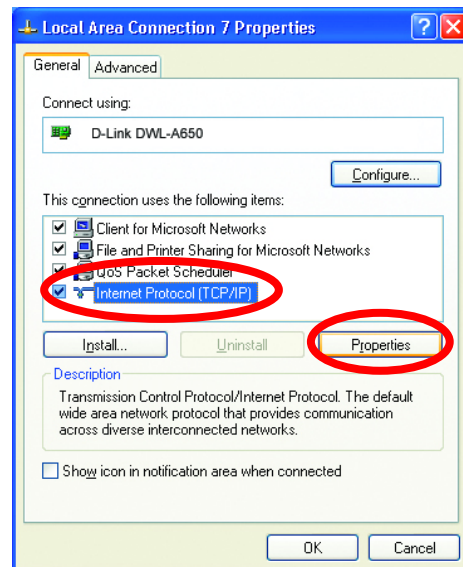
How do I assign a Static IP Address in Windows XP/2000? (continued)

- Right-click on **Local Area Connections**
- Double-click **Properties**



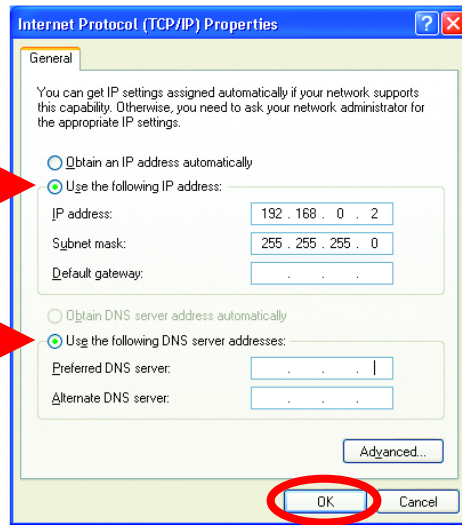
- Click on **Internet Protocol (TCP/IP)**
- Click **Properties**
- In the window below, select **Use the following IP address**

- Input your **IP address** and **subnet mask**. (The IP Addresses on your network must be within the same range. For example, if one computer has an IP Address of 192.168.0.2, the other computers should have IP addresses that are sequential, like 192.168.0.3 and 192.168.0.4. The subnet mask must be the same for all the computers on the network.)



How do I assign a Static IP Address in Windows XP/2000? (continued)

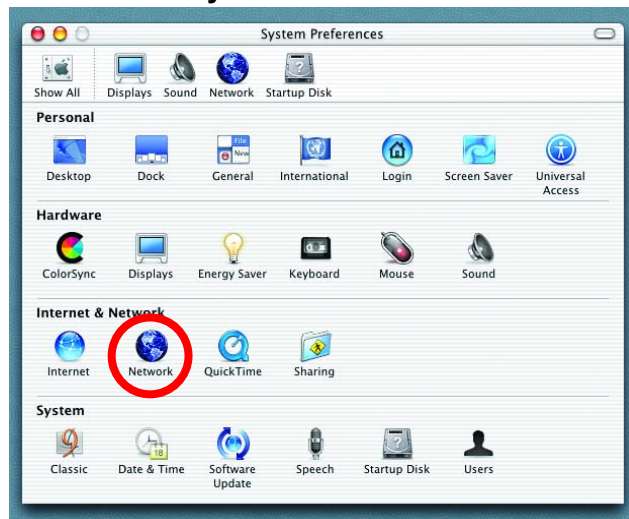
- **IP Address:** e.g., 192.168.0.2
- **Subnet Mask:** 255.255.255.0
- **Default Gateway:** Enter the LAN IP address of the wireless router. (D-Link wireless routers have a LAN IP address of 192.168.0.1)
- **Select Use the following DNS server address.** Enter the LAN IP address of the Wireless Router. (D-Link wireless routers have a LAN IP address of 192.168.0.1)
- Click **OK**



You have completed the assignment of a Static IP Address in Windows XP/2000.

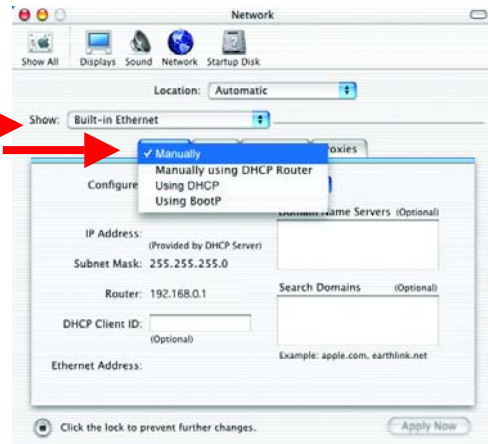
2. How do I assign a Static IP Address in Macintosh OSX?

- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**

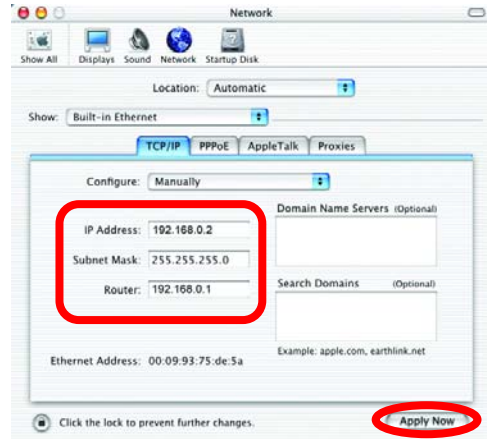


How do I assign a Static IP Address in Macintosh OSX? (continued)

- Select **Built-in Ethernet** in the **Show** pull-down menu
- Select **Manually** in the **Configure** pull-down menu



- Input the **Static IP Address**, the **Subnet Mask** and the **Router IP Address** in the appropriate fields.



- Click **Apply Now**

3. The DWL-810+ Ethernet-to-Wireless Bridge Power light is not on.

- Check to see if the DWL-810+ Ethernet-to-Wireless Bridge power adapter is connected properly to a known good power outlet.

4. The DWL-810+ Ethernet-to-Wireless Bridge Link light is not on.

- Make sure that the Ethernet cable is connected properly.
- Make sure the AC power adapter is plugged in properly.

Advanced Setup (optional)

For advanced setup features, enter <http://192.168.0.30> into your Internet browser and gain access to the web configuration of the DWL-810+. The advanced setup features can be used to change the LAN and wireless settings for your DWL-810+ Ethernet-to-Wireless Bridge.

5. I cannot connect to another wireless client in Ad-Hoc mode.

- The DWL-810+ Ethernet-to-Wireless Bridge has a default SSID of **default**. Make sure that the SSID on the DWL-810+ Ethernet-to-Wireless Bridge is exactly the same as the SSID on the other wireless client.
- The DWL-810+ Ethernet-to-Wireless Bridge has a default channel of **6**. Make sure that the channel on the DWL-810+ Ethernet-to-Wireless Bridge is exactly the same as the channel on the other wireless client.

6. I cannot connect to an access point or wireless router.

- Make sure that the SSID on the DWL-810+ is exactly the same as the SSID on the Access Point or wireless router.
- Move the DWL-810+ and Access Point or Wireless router into the same room and then test the wireless connection.
- Disable all security settings. (WEP, MAC Address Control, AES)
- Turn off your Access Point and the device with the DWL-810+. Turn on the Access Point, and then turn on the device with the DWL-810+.
- Make sure that the DWL-810+ is set to Infrastructure mode.

7. I forgot my encryption key.

- Reset the Access Point to its factory default settings and restore the DWL-810+ to its factory default settings. You may do this by pressing the **Reset** button on the back of the unit. You will lose the current configuration settings.

8. I cannot connect the DWL-810+ to my network.

- Check that the LED indicators for the broadband modem are indicating normal activity. If not, there may be a problem with the broadband connection.
- Check that the LED indicators on the wireless router are functioning properly. If not, check that the AC power and Ethernet cables are firmly connected.
- Check that the IP Address, subnet mask, gateway, and DNS settings are correctly entered for the network
- In **Infrastructure** mode, make sure the same Service Set Identifier (SSID) is specified on the settings for the wireless clients and access points. The SSID factory default setting for the D-Link Air, AirPlus and AirPro products is default.
- In **Ad-Hoc mode**, both wireless clients will need to have the same SSID. Please note that it might be necessary to set up one client to establish a BSS (Basic Service Set) and wait briefly before setting up other clients. This prevents several clients from trying to establish a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple clients associated to it.
- Check that the **Network Connection** for the wireless client is configured properly. Select **Infrastructure** when connecting to a wireless router and select **Ad-Hoc mode** when connecting without an access point.
- If **Security** is enabled, make sure that the correct encryption keys are entered on both the DWL-810+ and the wireless router or ad-hoc client.

9. What variables may cause my wireless products to lose reception?

- D-Link products let you access your network from virtually anywhere you want. However, the positioning of the products within your environment will affect the wireless range. Please refer to **Installation Considerations** in the **Wireless Basics** section of this manual for further information about the most advantageous placement of your D-Link wireless products.

10. Why does my wireless connection drop?

- Antenna orientation – try different antenna orientations for the DWL-810+. Try to keep the antenna at least 6 inches away from the wall or other objects

- If you are using 2.4GHz cordless phones, X-10 equipment or other home security systems, ceiling fans, and lights, your wireless connection will degrade dramatically or drop altogether. Try changing the Channel on your Router, Access Point and all other devices on the network to avoid interference.
- Keep your product away (at least 3-6 feet) from electrical devices that generate RF noise, like microwaves, Monitors, electric motors, etc.

8. Technical Specifications

Standards:

- IEEE 802.11
- IEEE 802.11b
- IEEE 802.3 Ethernet
- IEEE 802.3u

Port:

- 10/100 Mbps Fast Ethernet Auto MDI/MDIX

Data Rates with Automatic Fallback:

- 22Mbps
- 11Mbps
- 5.5Mbps
- 2Mbps
- 1Mbps

Encryption:

- 64-bit RC4
- 128-bit RC4
- 256-bit RC4

Media Access Control:

- CSMA/CA with ACK

Frequency Range:

- 2.4GHz to 2.4385GHz

Operating Range:

- Indoors – Up to 328 ft. (100m)*

- Outdoors – Up to 1,312 ft. (400m)*

*Environmental factors may adversely affect range

Modulation Technology:

- PBCC – Packet Binary Convolutional Coding
- DSSS – Direct Sequence Spread Spectrum
- 11-chip Barker sequence

Modulation Techniques:

- PBCC (22Mbps/8.5db)
- PBCC (11Mbps/4.5db)
- CCK (11Mbps/8.5db)
- PBCC (5.5Mbps/1.5db)
- CCK (5.5Mbps/5.5db)
- Barker (2Mbps/3db)
- Barker (1Mbps/0db)

Power Input:

- External Power Supply, DC 5V, 2.5A

LEDs:

- Power (Green)
- WLAN (Yellow)

Transmitter Output Power:

- 15dBm \pm 2dB

External Antenna Type:

- Detachable 1.0dB gain with reverse SMA connector

Over-Driving Levels:

- Tolerates up to +17dBm at the antenna

Device Management:

- Web-Based – Internet Explorer v6 or later; Netscape Navigator v6 or later; or other Java-enabled browsers

Temperature:

- Operating: 32°F to 131°F (0°C to 55°C)
- Storing: 4°F to 167°F (-20°C to 75°C)

Humidity:

- 95% maximum (non-condensing)

Safety & Emissions:

- FCC
- UL

Dimensions:

- L=3.5 inches (90mm)
- W=3.2 inches (82mm)
- H=1.6 inches (40mm)

Weight:

- 0.34 lbs (153g)

Warranty:

- 3 Year

9. Contacting Technical Support

You can find the most recent software and user documentation on the D-Link website.

D-Link provides free technical support for customers within the United States for the duration of the warranty period on this product.

U.S. customers can contact D-Link technical support through our web site, or by phone.

D-Link Technical Support over the Telephone:

(877) 453-5465

24 hours a day, seven days a week.

D-Link Technical Support over the Internet:

<http://support.dlink.com>

When contacting technical support, please provide the following information:

- *Serial number of the unit*
- *Model number or product name*
- *Software type and version number*

10. Warranty and Registration

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited warranty for its product only to the person or entity that originally purchased the product from:

- D-Link or its authorized reseller or distributor and
- Products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, addresses with an APO or FPO.

Limited Warranty: D-Link warrants that the hardware portion of the D-Link products described below will be free from material defects in workmanship and materials from the date of original retail purchase of the product, for the period set forth below applicable to the product type ("Warranty Period"), except as otherwise stated herein.

3-Year Limited Warranty for the Product(s) is defined as follows:

- Hardware (excluding power supplies and fans) Three (3) Years
- Power Supplies and Fans One (1) Year
- Spare parts and spare kits Ninety (90) days

D-Link's sole obligation shall be to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund at D-Link's sole discretion. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or have an identical make, model or part. D-Link may in its sole discretion replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement Hardware will be warranted for the remainder of the original Warranty Period from the date of original retail purchase. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product ("Software") will substantially conform to D-Link's then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days ("Warranty Period"), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link's sole obligation shall be to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software or to refund at D-Link's sole discretion. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Software will be warranted for the remainder of the original Warranty Period from the date of original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty: The Limited Warranty provided hereunder for hardware and software of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim: The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.

- The original product owner must obtain a Return Material Authorization (“RMA”) number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery (“COD”) is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer and shipped to **D-Link Systems, Inc., 53 Discovery Drive, Irvine, CA 92618**. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link, with shipping charges prepaid. Expedited shipping is available if shipping charges are prepaid by the customer and upon request.

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link’s reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered: This limited warranty provided by D-Link does not cover: Products, if in D-Link’s judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. Repair by anyone other than D-Link or an Authorized D-Link Service Office will void this Warranty.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED “AS-IS” WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK’S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY

Governing Law: This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

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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.

FCC 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 communication. 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 or more 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: 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 a minimum distance of about eight inches (20cm) between the radiator and your body.

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

**Register your D-Link product online at
<http://support.dlink.com/register/>**

01/02/03