BELKIN®

Wireless Network Access Point

User Manual

F5D6130

Table of Contents

Introduction

Thank you for purchasing the Belkin 11Mbps Wireless Access Point (WAP) and welcome to the world of wireless networking. 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 WAP acts as a bridge between your existing wired network and your wireless equipped computers. 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 WAP.

Key Features

Wide Area Coverage at High Speeds
The Belkin WAP provides coverage over an indoor area up to 300 feet in radius and an outdoor area over 1,800 feet in radius.

Up to 128-bit Security Encryption
Your Belkin WAP is capable of encrypting (scrambling) the transmitted radio waves so you can be sure that your data is secure. The optional encryption feature allows you to encrypt at 64-bits or 128-bits using a key that you enter yourself.

MAC Address Filtering
For added security, you can set up a list of MAC addresses (unique client identifiers) that are allowed access to your wireless network. Every computer equipped with a wireless network adapter has its own MAC address. Simply enter these MAC addresses into a list using the Belkin Wireless 802.11b Network Manager software, and access to your network through the WAP is restricted to only those MAC addresses.

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Applications

- **Wireless roaming with a laptop around the home or office**
  Gain the freedom you need around the home or office with no cables.

- **Difficult-to-wire environments**
  For use in buildings with solid or finished walls or open areas where wiring is difficult to employ.

- **Frequently Changing Environments**
  Offices or environments that frequently rearrange the workplace and change location.

- **Temporary LANs for special projects or peak time**
  Trade shows, exhibitions, and construction sites that need a network on a temporary basis. Companies that need additional workstations for a peak activity period.

- **SOHO (Small Office/Home Office)**
  SOHO users who need easy and quick setup.

Package Contents

- Belkin Wireless Network Access Point
- Power Supply
- Belkin 802.11b Wireless Manager Software
- User Manual

System Requirements

- At least one computer equipped with an 802.11b compliant wireless Ethernet adapter
- TCP/IP networking protocol installed on each computer

Specifications

Wireless Standard:	802.11b
Radio Technology:	Direct Sequence Spread Spectrum (DSSS)
Operating Channels:	IEEE 802.11 compliant 11 channels (US, Canada) 13 channels (ETSI) 14 channels (Japan)
Data Rate:	11, 5.5, 2, 1Mbps per channel (Auto-Rollback)
Typical Indoor Operating Range:	590 ft.(180M) @ 11Mbps 984 ft.(300M) @ 5.5Mbps 1476 ft.(450M) @ 2Mbps 1800 ft.(550M) @ 1Mbps
Network Standards:	IEEE 802.3 10BaseT
LED Indicator:	Link, Activity, and Power
Frequency Band:	ISM Band, 2400 ~ 2483.5MHz
Modulation Type:	QPSK, BPSK, CCK
Data Rate:	1/2/5.5/11Mbps per channel
Protocol:	CSMA/CA (Collision Avoidance) with ACK
Output Power:	13dBm ~ 20dBm (50 mW) (max.)
Receive Sensitivity:	Min. -78dBm for 11Mbps @BER 10E-5; Min. -82dBm for 5.5/2/1Mbps @BER 10E-5
Encryption:	64/128-bit WEP (Wired Equivalent Privacy)
Antenna Type:	2dBi (max.) @ External PCB patch diversity antenna
Power Consumption:	5V, 750mA max.
Physical Dimensions:	114.5 x 54 x 5.0mm
Weight:	50 g
OS Support:	Windows® 95 (OSR2), 98, 2000, NT, Millennium Edition
Certification:	FCC Class B, CE Mark, C-Tick

**Ethernet
Link/Activity LED**

Transmit/Receive LED
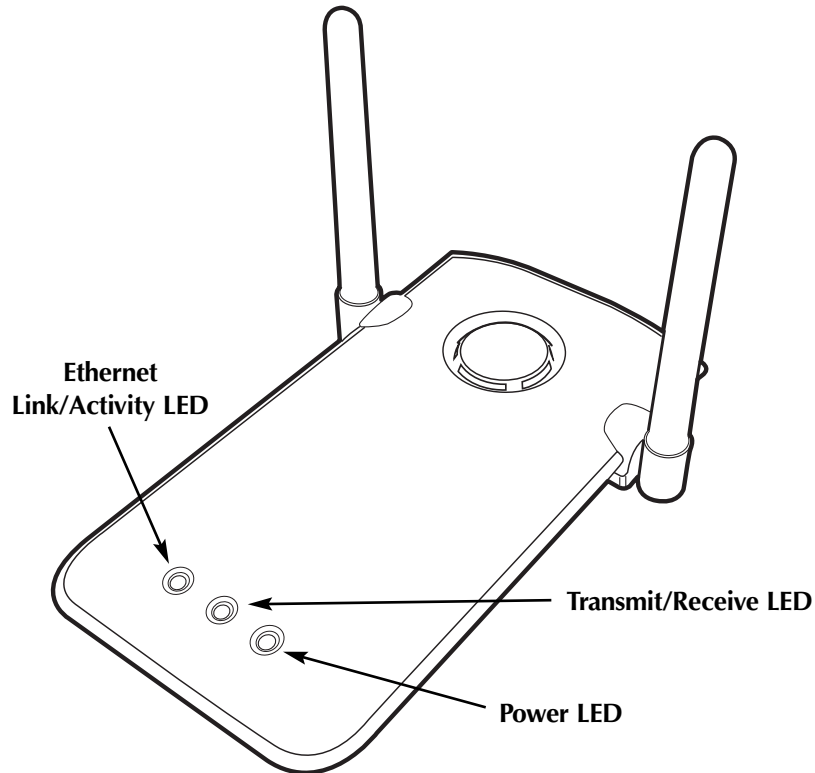
Power LED

Power LED
Indicates that the WAP is receiving power

Transmit/Receive LED
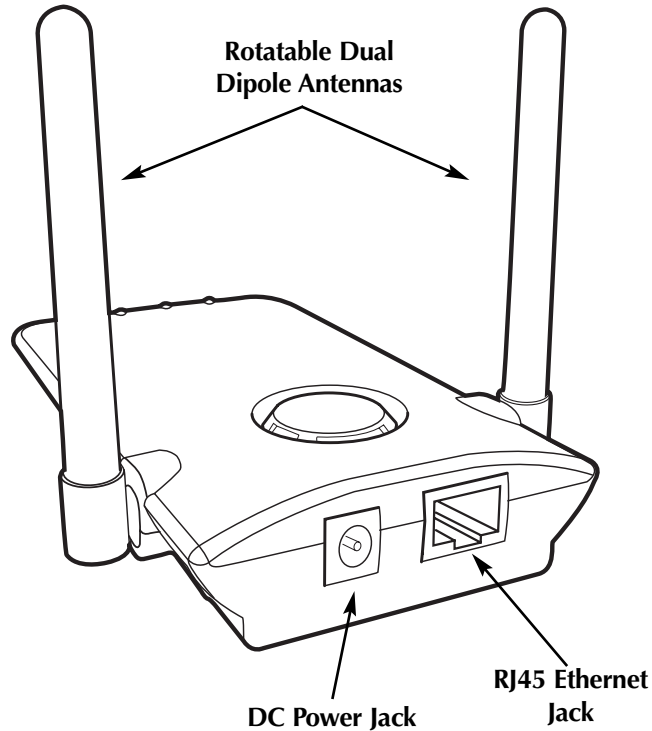Flashing Green: Indicates data is being transmitted
Flashing Amber: Indicates data is being received

Ethernet Link/Activity LED
Solid Green: Indicates a valid Ethernet (Wired) cable link
Flashing Orange: Indicates Ethernet (Wired) activity

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**Rotatable Dual
Dipole Antennas**

**RJ45 Ethernet
Jack**

DC Power Jack

DC Power Jack
Connect the 9V DC connector from the power supply to this jack.

RJ45 Ethernet Jack
Connect an Ethernet cable to this socket, and connect to an open RJ45
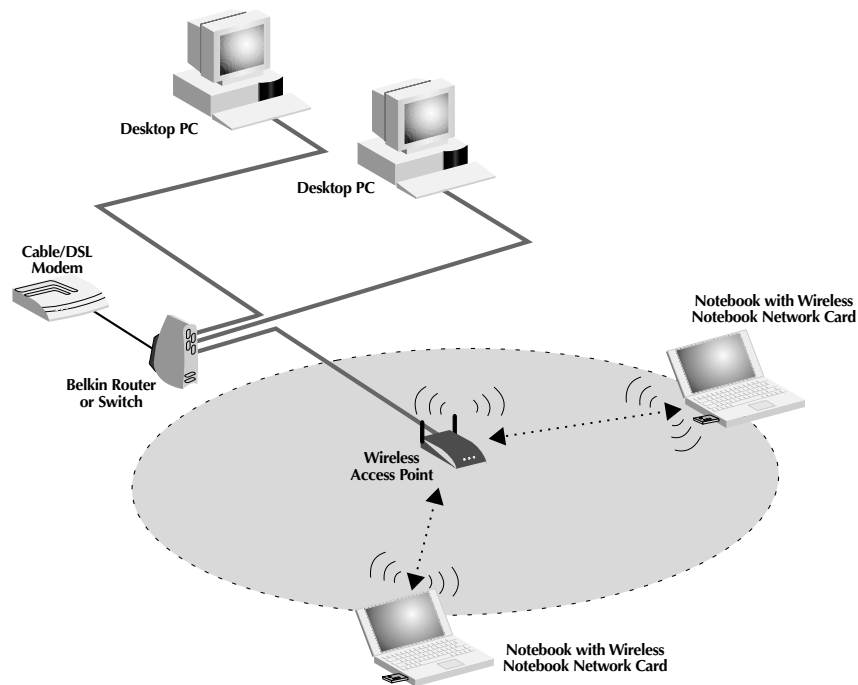10BaseT port on a switch or hub.

Rotatable Dual Dipole Antennas
Two unidirectional dipole antennas are located on the side of the WAP. The
antennas can rotate 360 degrees. The antennas should be oriented in the
vertical position for best operation.

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Quick Setup—Connecting the WAP to your existing network

The factory settings of the Belkin WAP were chosen to get you up and running quickly.

Desktop PC

Desktop PC

Cable/DSL
Modem

Notebook with Wireless
Notebook Network Card

Belkin Router
or Switch

Wireless
Access Point

Notebook with Wireless
Notebook Network Card

Step 1: Installation Site Selection
In general, the best location to place the WAP is at the center of your wireless coverage area, within line-of-sight of all wireless stations. Ensure all stations are within the service range of the WAP.

Step 2: Hardware Setup
1. Connect your wired LAN to the WAP via a 10Mbps connection using a Category 3 or Category 5 cable with a standard RJ45 connector (not a

crossover cable). This connection from your wired LAN would come from a hub or switch connected to your LAN or a cable/DSL router.

2. Connect the external power supply to the 5V DC socket on the rear panel of the WAP.

Step 3: Install the Belkin WAP Manager Software

1. Insert the CD into the CD-ROM drive.

2. Access your CD-ROM drive by double-clicking on the CD-ROM icon in the "My Computer" window. Double-click on the "Setup" icon and follow the directions in the installation wizard.

Step 4: Configure the Wireless-Equipped Computer(s) to Communicate with the WAP

1. Start up the wireless-equipped computer and configure the wireless-equipped PC to connect to an SSID of "WLAN" or "Any".

2. If not done already, configure the wireless-equipped PC to "Obtain IP Address Automatically".

3. Restart the wireless-equipped PC.

Your Belkin WAP is now fully configured. To configure advanced features, please reference the Installation section.

Default Settings:

WAP Parameter	Default Value
AP Name	MiniAP
SSID	WLAN
Channel	11
RTS Threshold	2346
IP Address	192.168.0.254
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Client	Enabled
Encryption	Disabled
MAC Address Filter	Disabled
Password	MiniAP (case-sensitive)

Selecting an appropriate site for your WAP

Selecting an appropriate site for your WAP will ensure the best performance. First, a few rules of thumb:

• Avoid locating the WAP near metal objects such as appliances like refrigerators, ovens, and washer/dryers. Keep in mind that your appliances may be on the other side of the wall in the area that you may be considering to locate the WAP.

• For best performance, locate the WAP as close to the center of the area that you will be covering. Keep in mind that radio waves radiate outward from the WAP in a circular pattern. Typical range is 100-150 feet indoors at 11Mbps. If the area you wish to cover is smaller than 200-300 feet wide, then locating the WAP in the center of the area becomes less critical.

• Normally, the higher that you locate the WAP, the better the performance and range will be. However, in an area such as an average-sized house or small office, height is less critical.

• Remember that many things can cause a degrade of the radio signal such as brick walls, metal-reinforced concrete, the metal housing of appliances, or even wiring in the walls.

Connecting the WAP to a cable/DSL router, Ethernet switch, or hub

1. Select a suitable site for your WAP.

2. Connect a CAT5 cable between the WAP and your cable/DSL router's LAN port, Ethernet switch, or hub by plugging one end of the cable into the RJ45 jack on the WAP and the other end into an open RJ45 jack on the cable/DSL router, Ethernet switch, or hub.

3. Connect the power supply to the WAP by plugging the round DC connector into the DC jack on the WAP. Plug the power supply into the wall. Verify that the Power LED and the Link LED are illuminated. If both LEDs are illuminated, this indicates that the WAP is connected properly.

4. Place the WAP on a desktop or mount it to a wall in the location that you have chosen. Next, swivel the antennas so they are both pointing up.

Connection and placement of your WAP is now complete. Go to "Installing the WAP Manager Software" to learn how to configure the WAP.
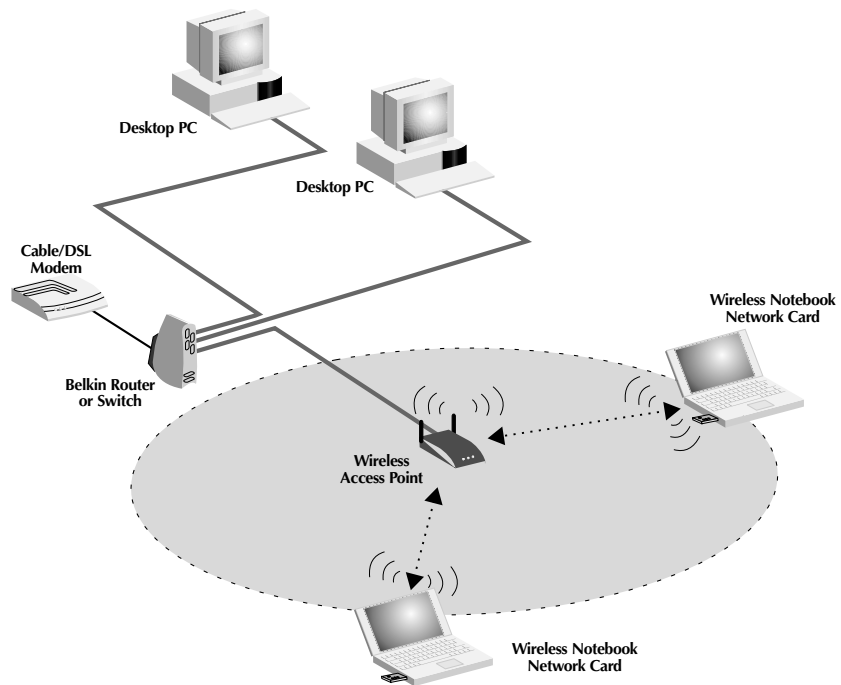
Desktop PC
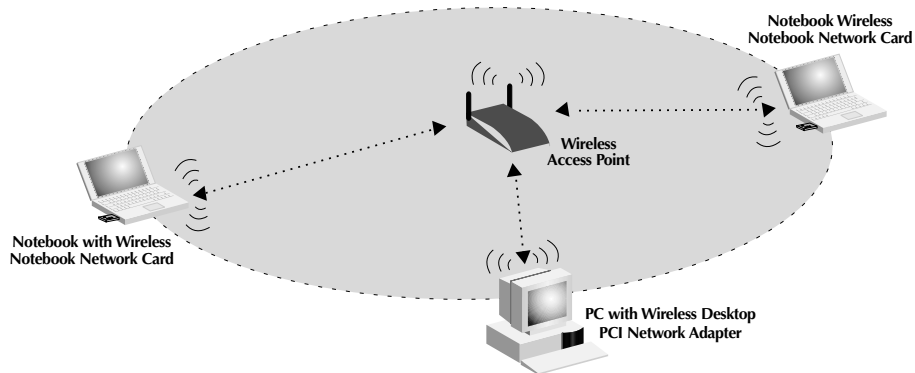
Desktop PC

Cable/DSL
Modem

Wireless Notebook
Network Card

Belkin Router
or Switch

Wireless
Access Point

Wireless Notebook
Network Card

Fig. 1 Connecting the WAP to a cable/DSL router, Ethernet switch, or hub

Using the WAP to expand local coverage

The WAP can act as a central point of communication of your wireless-equipped computers without connecting it to a wired network. Using the WAP in this manner will effectively double the range between your wireless-equipped computers by relaying the data from one computer to another. Simply locate the WAP in the center of the area you will be operating your network. The diagram below illustrates this concept.

Notebook Wireless Notebook Network Card

Wireless Access Point

Notebook with Wireless Notebook Network Card

PC with Wireless Desktop PCI Network Adapter

The Belkin 802.11b Wireless Manager Software allows you to connect to the WAP and make changes to the configuration. Follow these steps to install the software.

1. Insert the Belkin Wireless Network Access Point "CD-ROM" into your CD-ROM drive.

2. Access your CD-ROM drive by double-clicking on the "CD-ROM" icon in the "My Computer" window. Double-click on the "Setup" icon to start the installation process.

3. The following screen will appear. Click "Next".
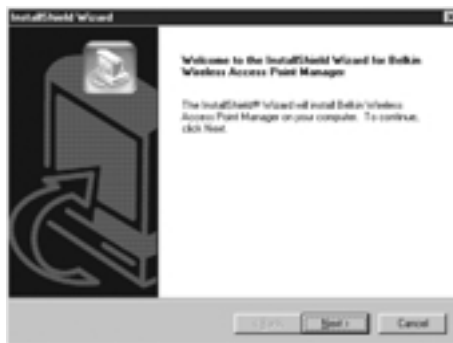
4. The installer will install the needed files to a folder named "C:\Belkin\Belkin Wireless Access Point". If you wish to change this, click "Browse" and select a folder. Click "Next" to continue.
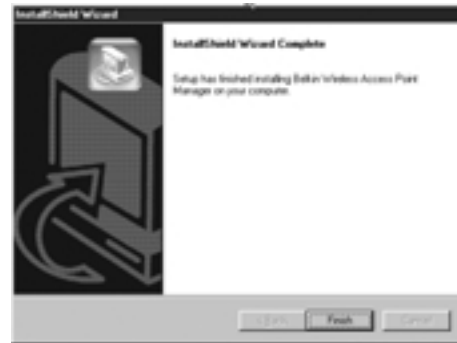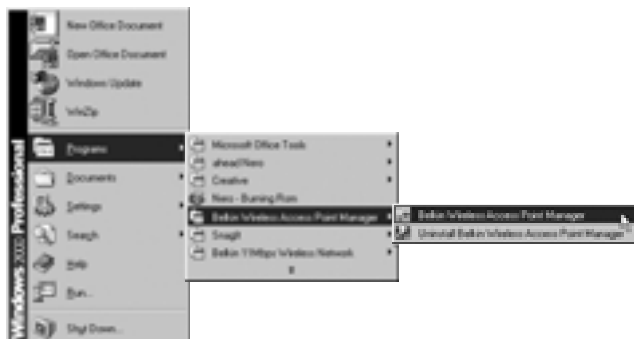
5. The installer will create a program folder called "Belkin Wireless Access Point Manager". If you wish to change this, enter a name or select from the list below. Click "Next" to continue.

6. Click "Finish" to complete the installation.

Start the WAP Manager Software by clicking "Start", "Programs", then select "Belkin Wireless Access Point Manager", then click on "Belkin Wireless Access Point Manager".

Once you launch the WAP Manager Software, a window will open and begin scanning for your WAP. The words "Scanning AP" will be displayed in the bottom right corner of the window. When finished scanning, "Scanning complete" will be displayed. You can connect to the WAP from any computer on the network that is either wired or wireless. Your WAP is shipped from the factory with the name "MiniAP". Instructions to change this are covered later in this manual. If your WAP is installed properly, you should see the name "MiniAP" in the "Wireless Manager" window when scanning has completed. If not, see troubleshooting tips at the end of this manual.

Connecting to the WAP

To make any changes to the configuration of the WAP, you must connect to the WAP by entering a password. The WAP is password-protected to keep unauthorized users from changing settings.
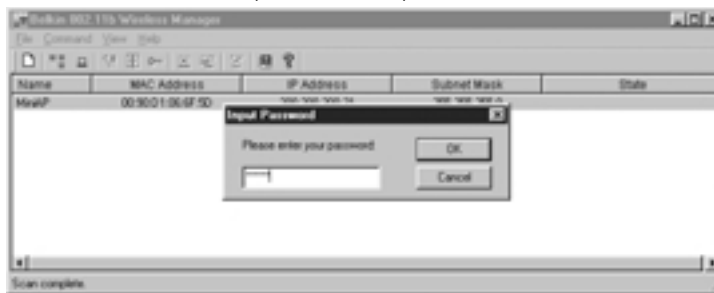
1. Click on "Command" and select "Connect AP…" in the drop-down menu.

2. The "Input Password" window will appear. Your WAP ships from the factory with the password set to "MiniAP". Keep in mind that the password is case-sensitive, and enter the password.

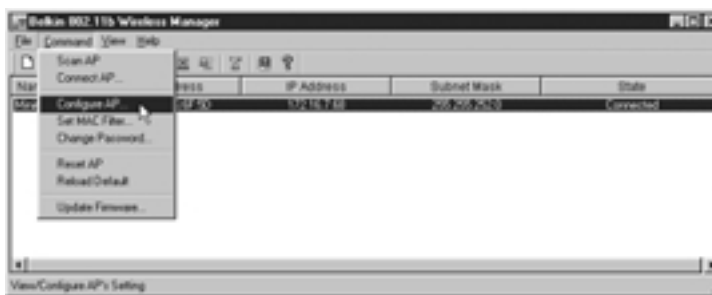   Password = "MiniAP" (case-sensitive)

3. When connected, the word "Connected" will appear under the column labeled "State". If you cannot connect, see the troubleshooting tips at the end of this manual.

Configuring to the WAP

The WAP can be configured for many different parameters—from setting the password to enabling the encryption. To configure the WAP, click on "Command" and select "Configure AP".

The "AP Setting" screen will appear.

This screen displays the WAP's status and settings.

Fixed Parameters

A **BSSID**
This displays the MAC address of the adapter. The MAC address is fixed and cannot be changed.

B **Regulation Domain**
Each country's regulatory commission (FCC for the US) has specified a specific set of channels for 802.11b to operate on. Each country is different. To comply with the standards for each country, the WAP is programmed at the factory for the proper regulatory domain. The regulatory domain is fixed and cannot be changed.

C **WEP**
This displays the status of the WEP encryption. Disabled = OFF. Enabled = ON.

D **Associated Stations**
This indicates the number of wireless clients (computers) connected to the WAP. A total of 64 wireless clients can be connected at a single time.

E **Firmware Version**
Displays the version of firmware programmed into the WAP. Belkin may from time to time upgrade the firmware and provide it, at no cost, for download from the Belkin website. For more on upgrading the firmware, visit www.networking.belkin.com/update.

Programmable Parameters

F **AP Name**
The AP Name is used to help identify an WAP when multiple APs are being used. For instance, in a large building using 20 APs, the names may be "AP 1:WEST ROOM", or in a large house, "AP 5:Kitchen". To enter a name, click in the name field and enter a name. When finished making changes, click "Save" for the changes to take effect.

G **SSID**
The Service Set Identifier (SSID) is like a name for the wireless network and is sometimes called the "Network Name". All WAPs in a wireless network should be set to the same SSID to enable clients to roam from WAP to WAP. The wireless-equipped computers in the wireless network should also be set to the same SSID to gain access to the network. The default setting is "WLAN" (Wireless Local Area Network). To change the SSID, simply click in the SSID field and enter a new SSID. When finished making changes, click "Save" for the changes to take effect.

H **Channel**
The 802.11b wireless standard supports up to 14 channels. The number of available channels are limited to local regulations that determine which channels are available. (FCC/IC: Channels 1-11; ETSI: Channels 1-13; France: Channels 10-13; Spain: Channels 10-11; MKK: Channels 1-14.) The default channel is 11. To change the channel, click the UP/DOWN arrows next to the channel field. When finished making changes, click "Save" for the changes to take effect.

I **RTS Threshold**
This is the rate at which errors are checked. We recommend not changing this.

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(J) **IP Address**
An IP address can be manually entered. The default IP address is 192.168.0.254. To enter the IP address, click in the "IP Address" field and enter the IP address.

(K) **Subnet Mask**
A Subnet Mask can be manually entered. The default Subnet Mask is 255.255.255.0. To enter the Subnet Mask, click in the "Subnet Mask" field and enter the Subnet Mask.

(L) **Default Gateway**
A Default Gateway address can be manually entered. The Default Gateway address is 0.0.0.0. To enter a Default Gateway address, click in the "Subnet Mask" field and enter the Default Gateway address.

(M) **DHCP Client**
The WAP can obtain an IP address, Subnet Mask, and Default Gateway information automatically in a dynamic network environment. The default setting is "Enabled". If the WAP is connected to a network that does not employ DHCP, the default IP address, Subnet Mask, and Default Gateway will be used. To enable or disable the DHCP Client, click on the down arrow and select "Enabled" or "Disabled". When finished making changes, click "Save" for the changes to take effect.

Security

The WAP features some methods of keeping your wireless network secure. Using these methods can greatly increase your security and peace of mind.

Method 1: Encryption
For secure data transmissions, the Belkin WAP is capable of encrypting, or "scrambling", the information that is sent over the air between your computers. The WAP uses a form of encryption called WEP (Wired Equivalent Privacy). There are two levels of WEP encryption—64-bit and 128-bit. As the numbers imply, 128-bit encryption is more secure than 64-bit encryption. However, using 128-bit encryption can slow down the rate at which data is sent between the wireless-equipped computers and the WAP. WEP encryption uses keys to scramble and unscramble the data that is being sent between wireless-equipped computers and the WAP. The

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WAP and the computers must use the same key to be able to communicate using encryption. For more information, go to the section called "Using WEP Encryption".

Method 2: MAC Address Filtering

The WAP can be programmed with a list of MAC addresses that are allowed to connect to the WAP. A MAC address is a unique "serial number" that is assigned to every wireless adapter. For instance, if you own a Belkin F5D6020 Wireless Notebook Network Adapter for your laptop, it has been assigned its own MAC address at the factory. The MAC address is located on a small sticker on the bottom of the product. Programming the WAP with this MAC address and enabling the MAC address filtering feature lets you manage which computers are allowed to connect to the WAP.

Using WEP Encryption

In the "Configuration" menu, click "Encryption". The following screen will appear.

Select "64-bit" from the drop-down menu. You will notice when using 64-bit encryption, there are four keys labeled "Key 1" through "Key 4". Only one key can be used at a time. Keys can be entered manually, but for ease-of-use, the software can generate keys using a "passphrase" that you enter. This passphrase can be easily distributed to wireless-equipped computer users in your network. For instance, creating a key using the passphrase "Passphrase" generates four keys in 64-bit encryption mode and one key in 128-bit encryption mode. Users of laptops need only to enter the passphrase and the key number into their computers' wireless management software to be able to communicate while using encryption. All computers on the network must use the same encryption rate and passphrase. The passphrase can be changed as often as desired.

Setting 64-bit Encryption
1. Select 64-bit from the drop-down menu.

2. Select "Create with Passphrase".

3. Enter a passphrase and click "Apply".

4. Select the "Default Key ID" from the drop-down menu. These are labeled 1–4. Click "Apply".

64-bit encryption is now enabled in the WAP. Each wireless-equipped computer (client) that needs to communicate with the WAP must be set to the same encryption settings.

Setting 128-bit Encryption
1. Select 128-bit from the drop-down menu.

2. Select "Create with Passphrase".

3. Enter a passphrase and click "Apply".

128-bit encryption is now enabled in the WAP. Each wireless-equipped computer (client) that needs to communicate with the WAP must be set to the same encryption settings.
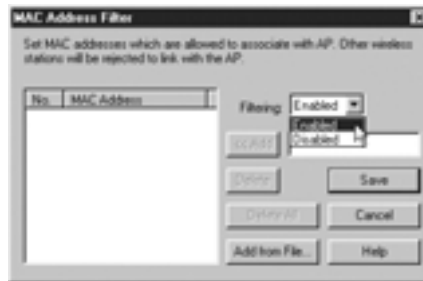
Using MAC Address Filtering
1. To set up the MAC filtering, click on "Command" and select "Set MAC Filter".

2. The "MAC Address Filter" screen will appear. The WAP comes from the factory with the MAC Address Filter disabled. To enable the filtering, select "Enabled" from the drop-down menu.

3. In the field next to "<<Add", type in the MAC address of the adapter you want to add to the list. Click "<<Add".

A total of 20 addresses can be entered into the WAP. To continue adding addresses, repeat Step 3 until finished. Click "Save" when finished. It is also possible to load a list of MAC addresses from a text file (.txt).

Adding a List of MAC Addresses from a File
1. Click "Add from File".

2. Select a .txt file from the browsing window and click "Open".

3. The list of addresses will appear in the "MAC Address" window.

4. Click "Save".
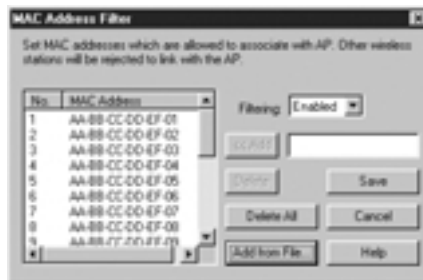
Changing the Password
1. Select "Configure", then "Change Password".

2. Enter the new password, then confirm it. Press "OK".

After changing the password, you will need to connect to the AP again.

Resetting the WAP
If the WAP stops working properly, performing a reset can solve the problem. From the main screen, select "Configure", then "Reset AP". The AP will reset itself. After resetting, you will need to connect to the AP again.

Restoring Factory Default Settings
To restore the factory default settings, select "Configure", then "Reload Default". The AP default settings will be restored. After restoring the defaults, you will need to connect to the AP again.

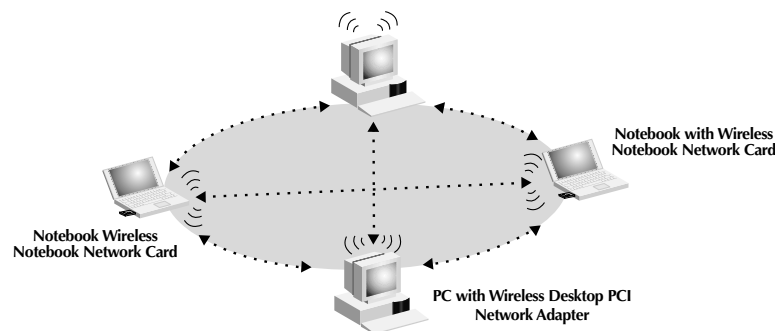| WAP Parameter	Default Value
AP Name	MiniAP
SSID	WLAN
Channel	11
RTS Threshold	2346
IP Address	192.168.0.254
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Client	Enabled
Encryption	Disabled
MAC Address Filter	Disabled
Password	MiniAP (case-sensitive)

Wireless Networking Using 802.11b

To form a wireless network, two basic components are used. The first is a wireless adapter for a PC. This can be either a USB wireless adapter or a PCMCIA adapter. The adapter gives the PC wireless Ethernet capabilities. The second is a WAP. A WAP can connect to a wired LAN and allow the wireless PCs to be able to access the wired LAN. A WAP can be a standalone component or it can be embedded into a cable/DSL router, thus forming a wireless Gateway/Router. The uses of each of these types of products is outlined later in this article.

Wireless networking is not very different from wired networking. There are only a few basic concepts one must grasp. There are two different ways to network computers using 802.11b. The first, and least used method, is the Ad-Hoc method, also known as Peer-to-Peer. The more commonly used method is called Infrastructure.
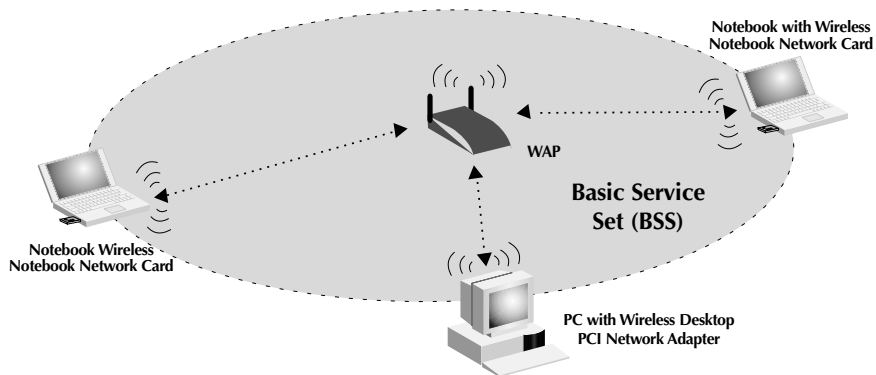
Ad-Hoc (Peer-to-Peer)
Ad-Hoc, or Peer-to-Peer, refers to a configuration where each computer in the wireless network communicates directly with another. An Ad-Hoc wireless LAN consists of a group of computers, each equipped with a wireless adapter, connected directly via radio signals to form an independent wireless LAN. Computers in a specific Ad-Hoc wireless LAN must be configured to the same radio channel to communicate with one another. More than one Ad-Hoc network can exist in the same space if it is configured to operate on a different channel. There are a varying number of channels depending on the part of the world you are operating in. The US has 11 channels, Europe has 13 channels, and Japan has 14 channels. The following diagram shows a typical Ad-Hoc wireless LAN configuration.

**Notebook with Wireless
Notebook Network Card**

**Notebook Wireless
Notebook Network Card**

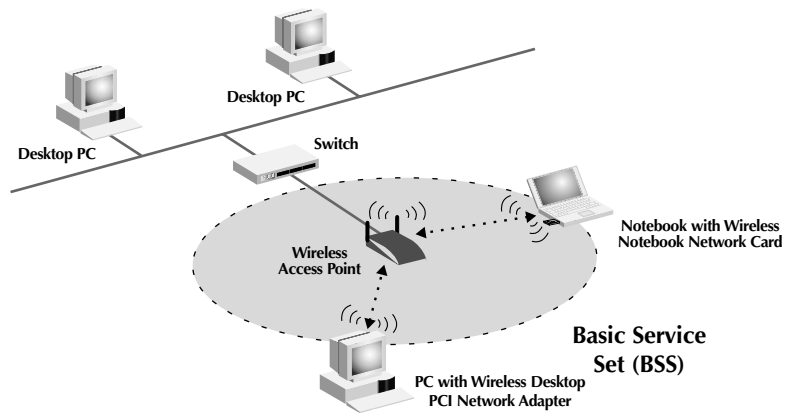**PC with Wireless Desktop PCI
Network Adapter**

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Infrastructure Mode

The use of a WAP to connect a wireless LAN to a wired LAN is called Infrastructure. A WAP serves as a bridge between the wired and wireless network. Connecting the WAP to any port on the wired network will give wireless access to all wireless-equipped computers within its coverage area. A WAP is configured with a Service Set Identifier. This is a "name" that is given to the wireless network and is used by the wireless-equipped computers to access the wireless network. WAPs can also be configured to use encryption or grant access to computers with specific MAC addresses. A WAP also effectively doubles the distance that computers in the wireless LAN can be located from one another. This is because the WAP serves as a central point for routing of all the wireless network traffic between the wireless computers. Wireless-equipped computers networked together in Infrastructure mode form a group called a Basic Service Set (BSS). Up to 64 individual computers can exist at a single time in a BSS. This is due to the ability of the WAP to handle no more than 64 clients. The diagram below illustrates how the WAP will effectively double the distance between wireless-equipped computers in a BSS.

Notebook with Wireless Notebook Network Card

WAP

Basic Service Set (BSS)

Notebook Wireless Notebook Network Card

PC with Wireless Desktop PCI Network Adapter

Wireless Networking Using 802.11b

The diagram below illustrates how a WAP acts as a bridge between the wireless BSS and the wired network.

Desktop PC

Desktop PC

Switch

Wireless
Access Point

Notebook with Wireless
Notebook Network Card

PC with Wireless Desktop
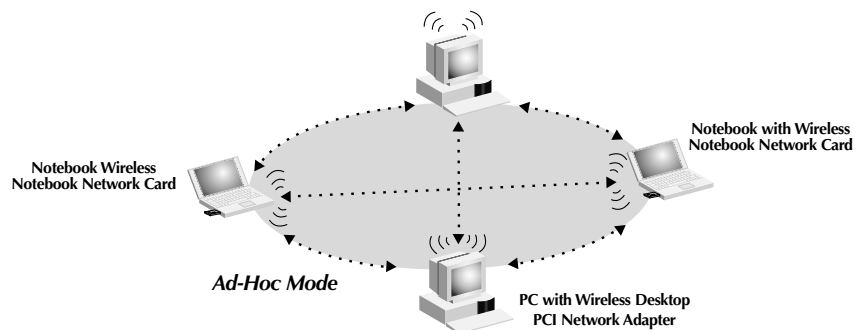PCI Network Adapter

Basic Service
Set (BSS)

Roaming

More than one WAP can be used to increase the wireless coverage in a wireless LAN. The diagram below shows two WAPs configured to extend coverage beyond that of a single WAP. The overlapping area of each BSS is called an Extended Service Set (ESS). When a wireless computer enters the ESS, the signal strength and link quality is evaluated by the computer and the computer chooses the WAP with the best quality signal and link. This activity is known as roaming. To configure WAPs to allow roaming inside of the wireless network, each WAP will be assigned the same Service Set Identifier (SSID). Strategically placing multiple WAPs around an office or inside of the home can extend the wireless coverage to the entire premise. The illustration below shows two Basic Service Sets overlapping to form an Extended Service Set.

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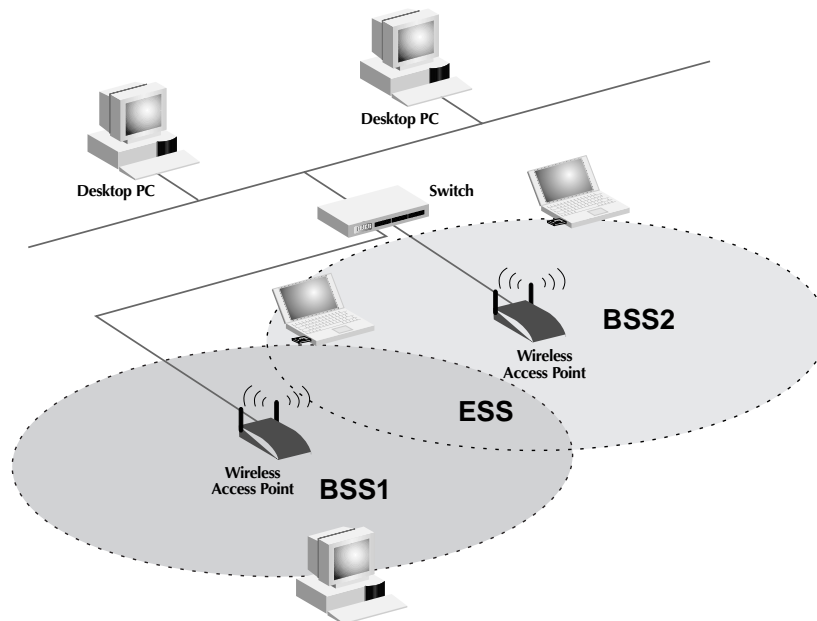
Glossary of Wireless Networking Terms

Ad-Hoc   An Ad-Hoc wireless LAN is a group of computers each with LAN adapters, connected as an independent wireless LAN.

Notebook Wireless Notebook Network Card

Notebook with Wireless Notebook Network Card

Ad-Hoc Mode

PC with Wireless Desktop PCI Network Adapter

Backbone   The core infrastructure of a network. The portion of the network that transports information from one central location to another central location where it is unloaded onto a local system.

Base Station   In mobile telecommunications, a base station is the central radio transmitter/receiver that maintains communications with the mobile radiotelephone sets within its range. In cellular and personal communications applications, each cell or micro-cell has its own base station; each base station in turn is interconnected with other cells or bases.

BSS   BSS stands for Basic Service Set. A Basic Service Set is comprised of a WAP and all the LAN PCs that are associated with it.

**ESS**   ESS (ESS-ID, SSID) stands for Extended Service Set. More than one BSS is configured to become an Extended Service Set. LAN mobile users can roam between different BSSes in an ESS (ESS-ID, SSID).

Ethernet   A popular local area data communications network, which accepts transmission from computers and terminals. Ethernet operates on a 10 or 100Mbps base band transmission rate, using an unshielded, twisted-pair cable.

Glossary of Wireless Networking Terms

Infrastructure An integrated wireless and wired LAN is called an Infrastructure configuration.

Roaming A wireless LAN mobile user moves around an ESS and maintains a continuous connection to the Infrastructure network.

Infrastructure Mode, BSS, and ESS
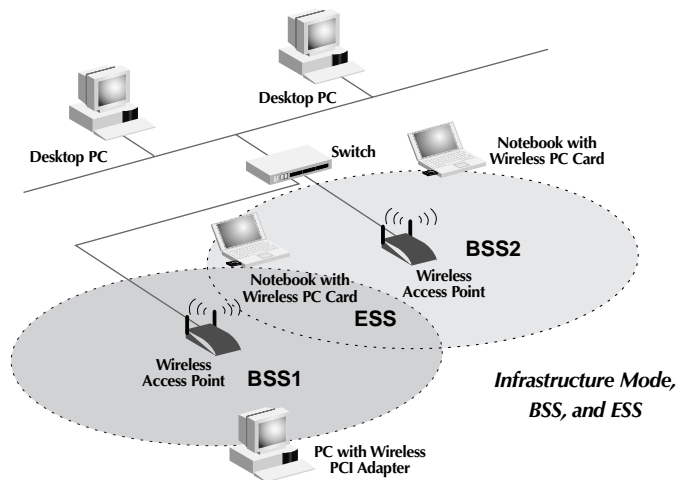
RTS Threshold Transmitters contending for the medium may not be aware of each other. RTS/CTS mechanisms can solve this "Hidden Node Problem". If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will not be enabled.

WEP Wired Equivalent Privacy is based on the use of 64-bit or 28-bit keys and the popular RC4 encryption algorithm. Wireless devices without a valid WEP key will be excluded from network traffic.

Wireless Access Point (WAP) An internetworking device that seamlessly connects wired and wireless networks.

Glossary of Wired Networking Terms

DHCP Dynamic Host Configuration Protocol. This protocol automatically configures the TCP/IP settings of every computer on your home network.

DNS Server Address DNS stands for Domain Name System, which allows Internet host computers to have a domain name (such as belkin.com) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "belkin.com" into your Internet browser), the user is sent to the proper IP address. The DNS server address used by the computer on your home network is the location of the DNS server your ISP has assigned.

DSL Modem DSL stands for Digital Subscriber Line. A DSL modem uses your existing phone lines to transmit data at high speeds.

Ethernet A standard for computer networks. Ethernet networks are connected by special cables and switches, and move data around 100Mbps.

IP Address IP stands for Internet Protocol. An IP address consists of a series of four numbers, separated by periods, that identify a single, unique Internet computer host. Example: 192.34.45.8.

ISP Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

ISP Gateway Address (see ISP for definition). The ISP Gateway Address is an IP address for the Internet router located at the ISP's office. This address is required only when using a cable or DSL modem.

LAN Local Area Network. A LAN is a group of computers and devices connected together in a relatively small area (such as a house or an office). Your home network is considered a LAN.

MAC Address MAC stands for Media Access Control. A MAC address is the

Glossary of Wired Networking Terms

	hardware address of a device connected to a network. A MAC address is unique (different) for every device.
NAT	Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using the NAT capability of the Belkin 4-Port Cable/DSL Gateway Router, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.
PPPoE	Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a method of secure data transmission originally created for dial-up connections; PPPoE is for Ethernet connections.
SPI	Stateful Packet Inspection. SPI is the type of corporate-grade Internet security provided by your Belkin 4-Port Cable/DSL Gateway Router. Using SPI, the gateway acts as a "firewall," protecting your network from computer hackers.
Subnet Mask	A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).
TCP/IP	Transmission Control Protocol/Internet Protocol. This is the standard protocol for data transmission over the Internet.
WAN	Wide Area Network. A network that connects computers located in geographically separate areas (i.e., different buildings, cities, countries). The Internet is a wide area network.

Troubleshooting

Problem	Solution
Wireless users (clients) do not have access to the network through the WAP.	▸ Make sure that each wireless client is configured to the same encryption setting. ▸ Make sure that each wireless client is configured to connect to the SSID of the WAP.
Cannot connect to the WAP using the Wireless Access Point Manager Utility. -OR- I forgot my password.	▸ The default password is "MiniAP". It is case-sensitive. Make sure that you are capitalizing where necessary. If you have forgotten the password, see below for performing a reset. ▸ Perform a manual reset. To do so, disconnect the power adapter. Use a thin metal object, such as a paper clip, to press and hold the button on the bottom of the AP. While keeping the button held down, reconnect the power adapter. Wait for about five seconds for the AP to restart. **Note:** Performing a reset will restore the factory default settings. All of your settings will be lost.
The range is poor.	▸ See "Selecting an Appropriate Site for your Wireless Access Point" in the "Installation" section of this manual.

Information

FCC Statement

DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY

We, Belkin Components, of 501 West Walnut Street, Compton, CA 90220, declare under our sole responsibility that the product,

F5D6130

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 (8inches) 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.
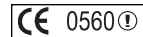
Canada- Industry Canada (IC)

The wireless radio of this device complies with RSS 139 & RSS 210 Industry Canada. This Class B digital complies with Canadian ICES-003.

Cet appareil numérique de la classe B conforme á la norme NMB-003 du Canada.

Europe-European Union Notice

Radio products with the CE 0560 or CE alert marking comply with the R&TTE Directive (1995/5/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 (IEC610000-3-2) - Power Line Harmonics
- EN 61000-3-3 (IEC610000) – Power Line Flicker
- EN 60950 (IEC60950) – Product Safety

Products that contain the radio transmitter are labeled with CE 0122 or CE alert marking and may also carry the CE logo.

Belkin Components Limited Lifetime Product Warranty

Belkin Components 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.

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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.

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