

CISCO, Linksys

USER GUIDE

Dual-Band Wireless-N ADSL2+ Modem Router with Gigabit

Models: WAG320N



About This Guide

Icon Descriptions

While reading through the User Guide you may see various icons that call attention to specific items. Below is a description of these icons:



NOTE: This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.



WARNING: This exclamation point indicates that there is a caution or warning of potential risk of bodily injury and/or it is something that could damage your property or product.



WEB: This globe icon indicates a noteworthy website address or e-mail address.

Online Resources

Website addresses in this document are listed without **http://** in front of the address because most current web browsers do not require it. If you use an older web browser, you may have to add **http://** in front of the web address.

Resource	Website
Linksys	www.linksysbycisco.com
Linksys International	www.linksysbycisco.com/international
Glossary	www.linksysbycisco.com/glossary
Network Security	www.linksysbycisco.com/security
Web Technical Support	www.linksysbycisco.com/support

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Chapter 1: Product Overview


Thank you for choosing the Wireless ADSL2+ Modem Router. This device lets you access the Internet via a wireless connection or through one of its four switched ports. You can also use it to share resources such as computers, printers and files. A variety of security features, such as WPA2™ security, a Stateful Packet Inspection (SPI) firewall and NAT technology, help to protect your data and your privacy while online. Configuration is easy using the provided browser-based utility.


Front Panel





 **Power** (WAG120N: Green/Amber; WAG160N v2 and WAG320N: Green/Red) The Power LED is continuously lit green while the device is powered on. The LED is lit amber (WAG120N) or red (WAG160N v2 and WAG320N) if a POST (Power On Self Test) failure or device malfunction occurs.


 **Ethernet 1-4** (Green) These numbered LEDs, one for each of the numbered ports on the Modem Router's back panel, serve two purposes. If the LED is continuously lit, the Modem Router is successfully connected to a device through that port. It flashes to indicate network activity over that port.


 **NOTE:** The Ethernet 1 LED is lit amber when the WAN link is established on that port.


 **Wi-Fi Protected Setup™ Button** (WAG120N: Green/Amber; WAG160N v2 and WAG320N: Green) Press this button to have Wi-Fi Protected Setup™ search for your Wi-Fi Protected Setup™-supported wireless device. The LED is continuously lit green when a Wi-Fi Protected Setup™ connection is successfully established. The LED blinks slowly while Wi-Fi Protected Setup™ is setting up a connection, and is lit amber (WAG120N) or blinks rapidly (WAG160N v2 and WAG320N) if an error occurs. The LED is off when Wi-Fi Protected Setup™ is idle.

 **NOTE:** Wi-Fi Protected Setup™ is a feature that makes it easy to configure your wireless network and its security settings.

 **USB (WAG320N only)** (Green) The USB LED lights up when a USB device is connected to the Modem Router through the USB port.


 **Wireless** (Green) The Wireless LED lights up when the wireless feature is enabled. It flashes when the Modem Router is actively sending or receiving data over the network.


 **DSL** (Green) The DSL LED lights up whenever there is a successful DSL connection. The LED flashes green while the Modem Router is establishing the ADSL connection.


 **Internet** (Green/Red) The Internet LED lights up green and stays on when a connection is made through the Internet port. It flashes to indicate network activity over the Internet port. The LED is lit red when an authentication error occurs.


Back Panel





 **DSL** The DSL port connects to the ADSL line.


 **Ethernet 4, 3, 2, 1** The Ethernet ports (4, 3, 2, 1) connect the Modem Router to wired computers and other Ethernet network devices.

 **NOTE:** The Ethernet 1 port can also be configured as the WAN port. To do this, access the Web-based utility (refer to **“Chapter 3: Advanced Configuration” on page 4**), then select the Setup > Ethernet tab.

 **USB (WAG320N only)** The USB port connects the Modem Router to a hard drive or flash-based USB storage device.

 **Reset** There are two ways to reset the Modem Router's factory defaults. Either press and hold the Reset button for approximately five seconds, or restore the defaults from the *Administration > Factory Defaults* screen of the Modem Router's web-based utility.

 **Power** The Power port is where you will connect the power adapter.

 **On/Off Button** Press the On/Off button to turn power to the device on or off.

Placement Positions

There are two ways to physically install the device. The first way is to place the device horizontally on a surface. The second way is to mount the device on a wall.

The best place for the device is usually at the center of your wireless network, within range of all of your wireless devices.




Horizontal Placement

The device has four rubber feet on its bottom panel. Place the device on a level surface near an electrical outlet.

Wall-Mounting Placement

The device has two wall-mount slots on its bottom panel. The distance between the slots is 152 mm (6 inches).

Two screws are needed to mount the device.

Suggested Mounting Hardware		
		
4-5 mm	1-1,5 mm	2,5-3,0 mm

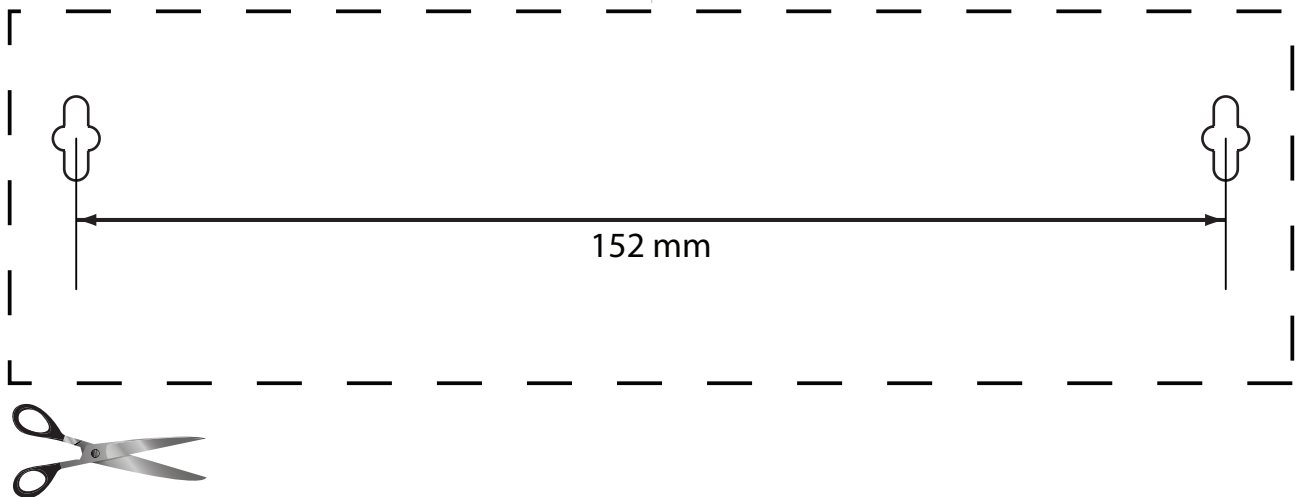
†Note: Mounting hardware illustrations are not true to scale.



NOTE: Cisco is not responsible for damages incurred by insecure wall-mounting hardware.

Follow these instructions:

1. Determine where you want to mount the device. Make sure that the wall you use is smooth, flat, dry, and sturdy. Also make sure the location is within reach of an electrical outlet.
2. Drill two holes into the wall. Make sure the holes are 152 mm (6 inches) apart.
3. Insert a screw into each hole and leave 3 mm (0,12 inches) of its head exposed.
4. Maneuver the device so the wall-mount slots line up with the two screws.
5. Place the wall-mount slots over the screws and slide the device down until the screws fit snugly into the wall-mount slots.



Wall Mounting Template

Chapter 2: Wireless Security Checklist

Wireless networks are convenient and easy to install, so homes with high-speed Internet access are adopting them at a rapid pace. Because wireless networking operates by sending information over radio waves, it can be more vulnerable to intruders than a traditional wired network. Like signals from your cellular or cordless phones, signals from your wireless network can also be intercepted. Since you cannot physically prevent someone from connecting to your wireless network, you need to take some additional steps to keep your network secure.

1. Change the default wireless network name or SSID

Wireless devices have a default wireless network name or Service Set Identifier (SSID) set by the factory. This is the name of your wireless network, and can be up to 32 characters in length. Linksys by Cisco wireless products use **linksys** as the default wireless network name. You should change the wireless network name to something unique to distinguish your wireless network from other wireless networks that may exist around you, but do not use personal information (such as your Social Security number) because this information may be available for anyone to see when browsing for wireless networks.

2. Change the default password

For wireless products such as access points, routers, and modem routers, you will be asked for a password when you want to change their settings. These devices have a default password set by the factory. The default password is **admin**. Hackers know these defaults and may try to use them to access your wireless device and change your network settings. To thwart any unauthorized changes, customize the device's password so it will be hard to guess.

3. Enable MAC address filtering

Linksys by Cisco routers and modem routers give you the ability to enable Media Access Control (MAC) address filtering. The MAC address is a unique series of numbers and letters assigned to every networking device. With MAC address filtering enabled, wireless network access is provided solely for wireless devices with specific MAC addresses. For example, you can specify the MAC address of each computer in your home so that only those computers can access your wireless network.

4. Enable encryption

Encryption protects data transmitted over a wireless network. Wi-Fi Protected Access™ (WPA™/WPA2™) and Wired Equivalency Privacy (WEP) offer different levels of security for wireless communication.

A network encrypted with WPA™/WPA2™ is more secure than a network encrypted with WEP, because WPA™/WPA2™ uses dynamic key encryption. To protect the information as it passes over the airwaves, you should enable the highest level of encryption supported by your network equipment.

WEP is an older encryption standard and may be the only option available on some older devices that do not support WPA™.

General Network Security Guidelines

Wireless network security is useless if the underlying network is not secure.

- Password protect all computers on the network and individually password protect sensitive files.
- Change passwords on a regular basis.
- Install anti-virus software and personal firewall software.
- Disable file sharing (peer-to-peer). Some applications may open file sharing without your consent and/or knowledge.

Additional Security Tips

- Keep wireless routers, access points, or modem routers away from exterior walls and windows.
- Turn wireless routers, access points, or modem routers off when they are not being used (at night, during vacations).
- Use strong passphrases that are at least eight characters in length. Combine letters and numbers to avoid using standard words that can be found in the dictionary.



WEB: For more information on wireless security, visit www.linksysbycisco.com/security

Chapter 3: Advanced Configuration

After you finish running the Setup Wizard on the Setup CD-ROM, the device is ready for use. To change the device's advanced settings, access the Configuration Utility via a web browser on a computer connected to the device.



NOTE FOR USERS IN NEW ZEALAND: Refer to the Note in **Setup > Basic Setup, page 5** for setup instructions specific to your country.

How to Access the Utility

Launch the web browser on your computer, and enter the device's default IP address, **192.168.1.1**, in the *Address* field. Then, press **Enter**.

A login screen appears. Use the default user name and password, **admin**, unless you changed them when you ran the Setup Wizard. (You can set a new user name and password from the Administration tab's *Management* screen.) Click **OK** to continue.



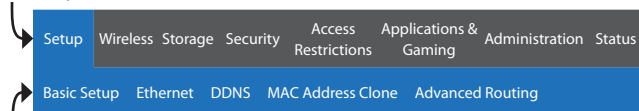
Login

If you are unable to log in, press the Reset button on the back panel for at least 5 seconds, then wait for the device to reset and try again.

Using the Utility

Immediately after login, the *Basic Setup* screen appears. Near the top of the screen is a bar with selectable tabs. Use these tabs to navigate within the Utility. The **primary tabs** indicate the Utility's main configuration categories. Each primary tab has one or more **secondary tabs** that provide access to the primary tab's configuration screens.

Primary Tabs



Secondary Tabs

Navigation Tabs

To access a screen, click the appropriate primary tab, then click the appropriate secondary tab. The screen will appear, with its primary and secondary tabs highlighted.

List of Screens in the Utility

The screens are organized hierarchically as listed below. (Some screens may not apply to all models.)

Setup Tab

- Setup > Basic Setup
- Setup > Ethernet
- Setup > DDNS
- Setup > MAC Address Clone
- Setup > Advanced Routing

Wireless Tab

- Wireless > Basic Wireless Settings
- Wireless > Wireless Security
- Wireless > Wireless MAC Filter
- Wireless > Advanced Wireless Settings

Storage Tab (WAG320N Only)

- Storage > Disk Management
- Storage > Shared Folder
- Storage > Administration
- Storage > Media Server

Security Tab

- Security > Firewall
- Security > VPN Passthrough

Access Restrictions Tab

- Access Restrictions > Internet Access Policy

Applications & Gaming Tab

- Applications & Gaming > Single Port Forwarding
- Applications & Gaming > Port Range Forwarding
- Applications & Gaming > Port Range Triggering
- Applications & Gaming > DMZ
- Applications & Gaming > QoS

Administration Tab

- Administration > Management
- Administration > Reporting
- Administration > Diagnostics
- Administration > Back Up & Restore
- Administration > Factory Defaults
- Administration > Firmware Upgrade
- Administration > Language

Status Tab

- Status > Modem Router
- Status > Local Network
- Status > Wireless Network
- Status > DSL Connection

Appendix A: Troubleshooting

Your computer cannot connect to the Internet.

Follow the instructions until your computer can connect to the Internet:

- Make sure that the Modem Router is powered on. The Power LED should be green and not flashing.
- If the Power LED is flashing, then power off all of your network devices, including the Modem Router and computers. Then power on each device in the following order:
 1. Modem Router
 2. Computer
- Check the LEDs on the device's front panel. Make sure the Power, DSL, and at least one of the numbered Ethernet LEDs are lit. If they are not, then check the cable connections. The computer should be connected to one of the Ethernet ports numbered 1-4 on the device, and the device's DSL port must be connected to the ADSL line.

When you double-click the web browser, you are prompted for a user name and password. If you want to get rid of the prompt, follow these instructions.

Launch the web browser and perform the following steps (these steps are specific to Internet Explorer but are similar for other browsers):

1. Select **Tools > Internet Options**.
2. Click the **Connections** tab.
3. Select **Never dial a connection**.
4. Click **OK**.

You are using a static IP address and cannot connect.

Refer to Windows Help and change your Internet Protocol (TCP/IP) Properties to Obtain an IP address automatically.

The computer cannot connect wirelessly to the network.

Make sure the wireless network name or SSID is the same on both the computer and the device. If you have enabled wireless security, then make sure the same security method and key are used by both the computer and the device.

You need to modify the basic settings on the deviceRouter.

Run the Setup Wizard on the Setup CD-ROM.

You need to modify the advanced settings on the device.

Open the web browser (for example, Internet Explorer or Firefox), and enter the device's IP address in the address field (the default IP address is **192.168.1.1**). When prompted, complete the *User name* and *Password* fields (the default user name and password is **admin**). Click the appropriate tab to change the settings



WEB: If your questions are not addressed here, refer to the website, www.linksysbycisco.com/support

Setup Tab

The Setup tab provides the device's basic setup functions. For detailed information on the Setup tab, refer to the Utility's online help pages.

Setup > Basic Setup

The *Basic Setup* screen allows you to change the device's general settings. The following connection types (encapsulations) are available:

- RFC 2364 PPPoA
- RFC 2516 PPPoE
- RFC 2684 Routed
- IPoA
- RFC 2684 Bridged - Dynamic IP Address
- RFC 2684 Bridged - Static IP Address
- Bridge Mode Only



NOTE FOR USERS IN NEW ZEALAND: To set up the device, follow these instructions:

1. Access the *Setup > Basic Setup* screen.
2. Select **RFC 2364 PPPoA** from the Encapsulation drop-down menu.
3. For the Virtual Circuit ID, enter **0** for the VPI and **100** for the VCI.
4. Select **VC** for Multiplexing.
5. Select **Multimode** from the DSL Modulation drop-down menu.
6. Enter your User Name and Password details from your ISP.
7. Click **Save Settings**.

Setup > Ethernet

The *Ethernet* screen allows you to configure the device's Ethernet settings. It also allows you to set up the first Ethernet port as a WAN port.

Setup > DDNS

The *DDNS* screen allows you to assign a fixed host and domain name to a network computer that has been assigned a dynamic Internet IP address. This is useful when you are hosting your own website, FTP server, or other server behind the device.

Setup > MAC Address Clone

Some service providers require you to register a MAC address in order to access the Internet. The *MAC Address Clone* screen lets you use the MAC address of a device that has already been registered with your service provider, by copying that MAC address to the device.

Setup > Advanced Routing

The *Advanced Routing* screen allows you to configure the device's advanced routing functions, such as operating mode, dynamic mode, and static routing.

Wireless Tab

The Wireless tab allows you to configure the device's wireless functions.

For detailed information on the Wireless tab, refer to the Utility's online help pages.

Wireless > Basic Wireless Settings

The *Basic Wireless Settings* screen allows you to set up a network with Wi-Fi Protected Setup™, change the radio band, select the network mode, change the wireless network name (SSID), change the wireless channel and disable the SSID broadcast.

Wireless > Wireless Security

The *Wireless Security* screen allows you to configure the security of your wireless network(s). It allows you to select from a number of security modes, such as WPA2.

Wireless > Wireless MAC Filter

The *Wireless MAC Filter* screen allows you to control (block or allow) Internet access by individual devices on your wireless network by specifying their MAC addresses.

Wireless > Advanced Wireless Settings

The *Advanced Wireless Settings* screen allows you to configure the device's advanced wireless functions.

Storage Tab (WAG320N Only)

The Storage tab allows you to configure the settings for an optional external USB storage device, such as a flash drive or hard disk drive.

For detailed information on the Storage tab, refer to the Utility's online help pages.

Storage > Disk Management

The *Disk Management* screen displays information on an attached USB storage device, and allows you to perform basic management functions on the device. It also provides information on the attached USB disk, allows for a blank disk to be formatted, and enables safe removal of the attached disk.

Storage > Shared Folder

The *Shared Folder* screen allows you to manage the shared folders on an external USB storage device. A shared folder

is a directory on the device that a user can access through the network.

Storage > Administration

The *Administration* screen allows you to configure basic storage settings and manage the device's users.

Storage > Media Server

The *Media Server* screen allows you to configure the device's built-in media server, and to select the folders to scan for content.

Security Tab

The Security tab allows you to enhance the security of your network.

For detailed information on the Security tab, refer to the Utility's online help pages.

Security > Firewall

The *Firewall* screen allows you to configure a firewall that can filter out various types of unwanted traffic on the device's local network.

Security > VPN Passthrough

The *VPN Passthrough* screen allows you to configure the device's VPN passthrough feature. This feature lets VPN tunnels using the IPSec, L2TP, or PPTP protocols to pass through the device's firewall.

Access Restrictions Tab

The Access Restrictions tab allows you to configure the Internet access restrictions for each device in your network.

For detailed information on the Access Restrictions tab, refer to the Utility's online help pages.

Access Restrictions > Internet Access Policy

The *Internet Access Policy* screen allows you to define policies that are used to block or allow specific kinds of Internet usage and traffic, such as Internet access, designated applications, websites, and inbound traffic during specific days and times, and for a specified list of devices in your network.

Applications & Gaming Tab

The Applications & Gaming tab allows you to configure functions such as port forwarding and quality of service that may be necessary for special applications such as hosting web servers, ftp servers, and e-mail servers on your network, or other specialized internet applications such as videoconferencing or online gaming.

For detailed information on the Applications & Gaming tab, refer to the Utility's online help pages.

Applications & Gaming > Single Port Forwarding

The *Single Port Forwarding* screen allows you to set up port forwarding for a single port. You should assign static IP addresses to the destination computers before you use this feature.

Applications & Gaming > Port Range Forwarding

The *Port Range Forwarding* screen allows you to set up port forwarding for a range of ports. You should assign static IP addresses to the destination computers before you use this feature.

Applications & Gaming > Port Range Triggering

The *Port Range Triggering* screen allows you to set up port triggering. When port triggering is configured, the device watches for specified port numbers in outgoing data. When a match is found, the device records the sending computer's IP address so that when the requested data returns, it can be sent to the proper computer.

Applications & Gaming > DMZ

The *DMZ* screen allows you to expose one network user to the Internet for use of a special-purpose service such as Internet gaming or video conferencing. DMZ hosting forwards all the ports at the same time to one computer. You should assign static IP addresses to the destination computers before you use this feature.

Applications & Gaming > QoS

The *QoS* screen allows you to specify priorities for different types of traffic. Lower priority traffic will be slowed down to allow greater throughput or less delay for high priority traffic.

Administration Tab

The Administration tab allows you to configure the device's administrative functions.

For detailed information on the Administration tab, refer to the Utility's online help pages.

Administration > Management

The *Management* screen allows you to manage specific functions for access and security.



NOTE ON CISCO WEB ASSISTANT OPTION (not on all models): If you see an “error code 404” message (indicating that you entered an invalid web address), the Cisco Web Assistant will appear and automatically run a search based on the keywords in the web address. This feature can be enabled or disabled from this screen.



NOTE ON TREND MICRO OPTION (not on all models): Trend Micro ProtectLink Gateway is a hosted security service that stops spam and filters URLs to prevent unwanted content from passing through your router. The Email Protection is the hosted messaging security solution provided by Trend Micro InterScan Messaging Hosted Security (IMHS). This feature can be enabled or disabled from this screen.

Administration > Reporting

The *Reporting* screen allows you to configure system event logging and to configure sending of e-mail alerts when a Denial of Service attack is detected.

Administration > Diagnostics

The *Diagnostics* screen allows you to perform a ping test to check the status of your Internet connection.

Administration > Back Up & Restore

The *Back Up & Restore* screen allows you to back up and restore the configuration settings of your device.

Administration > Factory Defaults

The *Factory Defaults* screen allows you to restore the factory defaults of the device. All savings you have saved will be lost



NOTE: Restoring the factory defaults causes all settings you have previously saved to be lost.

Administration > Firmware Upgrade

The *Firmware Upgrade* screen allows you to upgrade the device's firmware.

Administration > Language

The *Language* screen allows you to select an available language for the utility.

Status Tab

The Status tab allows you to display status information.

For detailed information on the Status tab, refer to the Utility's online help pages.

Status > Modem Router

The *Modem Router* screen displays information about the device and its current settings. The on-screen information will vary depending on the Internet Connection Type you use.

Status > Local Network

The *Local Network* screen displays the status of your Local Area Network.

Status > Wireless Network

The *Wireless Network* screen displays some basic information about the wireless network of the device.

Status > DSL Connection

The *DSL Connection* screen displays the status of your DSL connection.

Appendix B: Specifications

WAG120N

Standards	WLAN: 802.11n draft 2.0, 802.11g, 802.11b Ethernet: 802.3, 802.3u ADSL: T1.413i2, G.992.1 (G.DMT), G.992.2 (G.Lite), G.992.3 (ADSL2), G.992.5 (ADSL2+) for Annex A, B, M, L, U-R2 for Annex B
Ports	DSL, Ethernet (1-4), Power
Buttons	On/Off, Reset, Wi-Fi Protected Setup™
LEDs	Power, Ethernet (1-4), Security, Wireless, DSL, Internet
Cabling Type	CAT5, RJ-11 (for Annex A), RJ-45 (for Annex B)
Antennas	2 Internal
Modulations	802.11b: CCK/QPSK, BPSK 802.11g: OFDM/BPSK, QPSK, 16-QAM, 64-QAM 802.11n: OFDM/BPSK, QPSK, 16-QAM, 64-QAM
Transmit Power	802.11b: 17,0 ± 1,0 dBm 802.11g: 15,0 ± 1,0 dBm 802.11n: 13,0 ± 1,5 dBm
Receive Sensitivity	-80 dBm (typical) @ 11 Mbps -70 dBm (typical) @ 54 Mbps -61 dBm (typical) @ 130 Mbps -61 dBm (typical) @ 270 Mbps
Antenna Gain	1,8 dBi
Security Features	WPA2™/WPA™ Personal and Enterprise; 128, 64 bits WEP; MAC Address Filtering; SPI Firewall
OS Requirements (to run the Setup CD)	Windows XP, Vista, or Vista 64-bit edition with latest updates (for Network Magic and Setup Wizard); Mac OS X 10.4 or higher (for Setup Wizard)

Environmental

Dimensions	202 x 34 x 160 mm (8,0" x 1,3" x 6,3")
Weight	362 g (12,8 oz)
Power	12VDC, 1A
Certification	FCC, CE, Telepermit, K.21, UL, CB, Wi-Fi (802.11b/g), WPA™, WPA2™, WMM, Wi-Fi Protected Setup™

Operating Temp.	0 to 40°C (32 to 104°F)
Storage Temp.	-20 to 70°C (-4 to 158°F)
Operating Humidity	10 to 85% Noncondensing
Storage Humidity	5 to 90% Noncondensing

WAG160N v2

Standards	WLAN: 802.11n draft 2.0, 802.11g, 802.11b Ethernet: 802.3, 802.3u ADSL: T1.413i2, G.992.1 (G.DMT), G.992.2 (G.Lite), G.992.3 (ADSL2), G.992.5 (ADSL2+) for Annex A, B, M, L, U-R2 for Annex B
Ports	Power, DSL, Ethernet (1-4)
Buttons	On/Off, Reset, Wi-Fi Protected Setup™
LEDs	Power, Ethernet (1-4), Ethernet WAN, Security, Wireless, DSL, Internet
Cabling Type	CAT5, RJ-11 (for Annex A), RJ-45 (for Annex B)
Antennas	2 Internal
Modulations	802.11b: CCK/QPSK, BPSK 802.11g: OFDM/BPSK, QPSK, 16-QAM, 64-QAM 802.11n: OFDM/BPSK, QPSK, 16-QAM, 64-QAM
Transmit Power	802.11b: 17,0 ± 1,0 dBm 802.11g: 15,0 ± 1,0 dBm 802.11n: 13,0 ± 1,5 dBm
Receive Sensitivity	-80 dBm (typical) @ 11 Mbps -72 dBm (typical) @ 54 Mbps -66 dBm (typical) @ 130 Mbps -63 dBm (typical) @ 270 Mbps
Antenna Gain	2 dBi
Security Features	WPA2™/WPA™ Personal and Enterprise; 128, 64 bits WEP; MAC Address Filtering; SPI Firewall
OS Requirements (to run the Setup CD)	Windows XP, Vista, or Vista 64-bit edition with latest updates (for Network Magic and Setup Wizard); Mac OS X 10.4 or higher (for Setup Wizard)

Environmental

Dimensions	202 x 34 x 160 mm (8,0" x 1,3" x 6,3")
Weight	362 g (12,8 oz)
Power	12VDC, 1A
Certification	FCC, CE, Wi-Fi®, A-Tick, Telepermit, WPA™, WPA2™

Operating Temp. 0 to 40°C (32 to 104°F)
 Storage Temp. -20 to 70°C (-4 to 158°F)
 Operating Humidity 10 to 85% Noncondensing
 Storage Humidity 5 to 90% Noncondensing

WAG320N

Standards WLAN: 802.11n draft 2.0, 802.11g, 802.11b, 802.11a
 Ethernet: 802.3, 802.3u, 802.3ab
 ADSL: T1.413i2, G.992.1 (G.DMT), G.992.2 (G.Lite), G.992.3 (ADSL2), G.992.5 (ADSL2+) for Annex A, M, L,
 Ports Power, DSL, Ethernet (1-4), USB
 Buttons On/Off, Reset, Wi-Fi Protected Setup™
 LEDs Power, Ethernet (1-4), Ethernet WAN, Security, USB, Wireless, DSL, Internet
 Cabling Type CAT5, RJ-11 (for Annex A)
 Antennas 3 Internal
 Modulations 802.11a: OFDM/BPSK, QPSK, 16-QAM, 64-QAM
 802.11b: CCK/QPSK, BPSK
 802.11g: OFDM/BPSK, QPSK, 16-QAM, 64-QAM
 802.11n: OFDM/BPSK, QPSK, 16-QAM, 64-QAM

Transmit Power

Mode	Frequency Range	Output Power (dBm)	Output Power (mW)
802.11b	2412 - 2462	17.19	52.3600
802.11g	2412 - 2462	16.64	46.1318
802.11n Standard-20 MHz	2412 - 2462	17.89	61.5177
802.11n Standard-40 MHz	2422 - 2452	16.41	43.7522

Mode	Frequency Range (MHz)	Output Power (dBm)	Output Power (mw)
IEEE 802.11a	5180 - 5220	13.68	23.3346
draft 802.11n Standard-20 MHz	5180 - 5220	14.97	31.4051
draft 802.11n Standard-40 MHz	5190	10.38	10.9144

Receive Sensitivity -80 dBm (typical) @ 11 Mbps
 -72 dBm (typical) @ 54 Mbps
 -66 dBm (typical) @ 130 Mbps
 -63 dBm (typical) @ 270 Mbps

Antenna Gain 2.4 GHz:
 Gain: 4.5 dBi

5 GHz:
 Gain: 4.6 dBi

Security Features WPA2™/WPA™ Personal and Enterprise; 128, 64 bits WEP; MAC Address Filtering; SPI Firewall

OS Requirements Windows XP, Vista, or Vista 64-bit edition with latest updates (for Setup CD) Network Magic and Setup Wizard; Mac OS X 10.4 or higher (for Setup Wizard)

Environmental

Dimensions 202 x 34 x 160 mm (8,0" x 1,3" x 6,3")
 Weight 362 g (12,8 oz)
 Power 12VDC, 1,25A
 Certification FCC, CE, Wi-Fi®, A-Tick, Telepermit, WPA™, WPA2™
 Operating Temp. 0 to 40°C (32 to 104°F)
 Storage Temp. -20 to 70°C (-4 to 158°F)
 Operating Humidity 10 to 85% Noncondensing
 Storage Humidity 5 to 90% Noncondensing