



AT-WR2304N

IEEE 802.11b/g/n, Small Business
Wireless Router

Installation Guide

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SAFETY NOTICE

- ✓ Do not open service or change any component.
- ✓ Only qualified technicians are allowed to service the equipment.
- ✓ Observe safety precautions to avoid electric shock
- ✓ Check voltage before connecting to the power supply.
Connecting to the wrong voltage will damage the equipment.

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ELECTRICAL SAFETY AND EMISSIONS STANDARDS

This product meets the following standards.

U.S. Federal Communications Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: 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.

Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

CONTENTS

LIMITATION OF LIABILITY AND DAMAGES	3
Preface	7
Purpose of This Guide	7
How This Guide is Organized.....	7
Document Conventions	7
Contacting Allied Telesis	8
Online Support.....	8
Email and Telephone Support	8
Warranty.....	8
Where to Find Web-based Guides	8
Returning Products	8
Sales or Corporate Information.....	8
Firmware & Software Updates.....	8
Tell Us What You Think	8
Chapter 1: Overview	9
Features.....	9
Top and Back Panels.....	9
LEDs.....	10
Chapter 2: Installation	11
Reviewing Safety Precautions.....	11
Installation Guidelines	11
Unpacking the Wireless Router	13
Antennas Installation.....	13
Using the Wireless Router on a Desktop.....	14
Connecting the Wireless Router to the LAN.....	14
Connecting the Wireless Router to the WAN.....	15
Powering On the Router.....	15
First Configuration.....	16
Warranty Registration	18
Chapter 3: Troubleshooting.....	19
Why Can I Not Access Setting Page with a Cable Connection.....	19
My Laptop Cannot Find Wi-Fi Signal.....	19
The Wireless Router Cannot Connect to the Internet Correctly	19
Resetting Factory Default Configuration.....	19
Appendix A: Technical Specifications	20
Physical Specifications.....	20
Environmental Specifications	20
Power Specifications.....	20
Safety and Electromagnetic Emissions Certifications	20
Appendix B: Radio Bands.....	21

FIGURES

Figure 1: Top and Back panels	9
Figure 2: Location of the Antenna Connectors	13
Figure 3: Connecting Antennas	14
Figure 4: Attaching the Rubber Feet.....	14
Figure 5: Attaching the LAN Cable.....	15
Figure 6: Attaching the WAN Cable.....	15
Figure 7: Connecting the Power Adapter.....	16
Figure 8: Login Dialog Box.....	16
Figure 9: Setting Page.....	17
Figure 10: Wizard	17
Figure 11: Security Level.....	18

Preface

Purpose of This Guide

This guide is intended for customers and/or network administrators who are responsible for installing and maintaining the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router.

How This Guide is Organized

This guide contains instructions on how to install AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router.

- | | |
|------------------|---|
| Chapter 1 | Overview , describes the features, LEDs and ports on the equipment. |
| Chapter 2 | Installation , describes how to install and configure the equipment. |
| Chapter 3 | Troubleshooting , describes what you should do when the device does not operate correctly. |

Document Conventions

This guide uses several conventions that you should become familiar with before you begin to install the product:



Note

A note provides additional information. Please go to the Allied Telesis website <http://www.alliedtelesis.com> for the translated safety statement in your language.



Warning

A warning indicates that performing or omitting a specific action may result in bodily injury.



Caution

A caution indicates that performing or omitting a specific action may result in equipment damage or loss of data.

Contacting Allied Telesis

This section provides Allied Telesis contact information for technical support as well as sales and corporate information.

Online Support

You can request technical support online by accessing the Allied Telesis Knowledge Base: <http://www.alliedtelesis.com/kb/>. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Email and Telephone Support

For Technical Support via email or telephone, refer to the Support & Services section of the Allied Telesis web site: <http://www.alliedtelesis.com/support/>.

Warranty

For product registration and warranty conditions please visit Allied Telesis website: <http://www.alliedtelesis.com/support/warranty/>

Where to Find Web-based Guides

The installation and user guides for all Allied Telesis products are available in portable document format (PDF) on our web site at www.alliedtelesis.com. You can view the documents online or download them onto a local workstation or server.

Returning Products

Products for return or repair must first be assigned a return materials authorization (RMA) number. A product sent to Allied Telesis without an RMA number will be returned to the sender at the sender's expense.

To obtain an RMA number, contact Allied Telesis Technical Support through our web site: <http://www.alliedtelesis.com/support/>.

Sales or Corporate Information

You can contact Allied Telesis for sales or corporate information through our web site: <http://www.alliedtelesis.com/>. To find the contact information for your country, select Contact Us -> Worldwide Contacts.

Firmware & Software Updates

New releases of firmware or software for our managed products are available from either of the following Internet sites:

- Allied Telesis web site: <http://www.alliedtelesis.com/support/software/>
- Allied Telesis FTP server: <ftp://ftp.alliedtelesis.com/>

If you prefer to download new firmware or software from the Allied Telesis FTP server from your workstation's command prompt, you will need FTP client software and you must log in to the server. Enter "anonymous" for the user name and your email address for the password.

Tell Us What You Think

If you have any comments or suggestions on how we might improve this or other Allied Telesis documents, please contact us at <http://www.alliedtelesis.com>.

Chapter I: Overview

The AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router is a wireless communications router for devices on your network. It provides continuous, high-speed access between your wireless and Ethernet devices. You administer the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router using the AT-WR2304N web interface configuration menu.

Features

The features of the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router include:

- All LAN ports have 10/100Mbps Switching HUB interface
- Security support via WPA-PSK, WPA2-PSK, WPA/WPA2-PSK, WPA-EAP, WPA2-EAP, WPA/WPA2-EAP
- VPN pass through includes PPTP, L2TP, and IPSec
- Various WAN connect types, including DHCP/Static IP/PPPoE/PPTP
- Dynamic DNS supported
- Support Router Mode and AP Mode
- Support Wireless Distribution System (WDS) and AP Repeater Mode
- Support standard Wi-Fi WPS
- Support multiple SSID (up to 4)

Top and Back Panels

A WPS button presents on the top panel. The LEDs on the top panel show the power, wireless and connection status while power, WAN, LAN and antenna connectors are on the back panel together with a reset button.

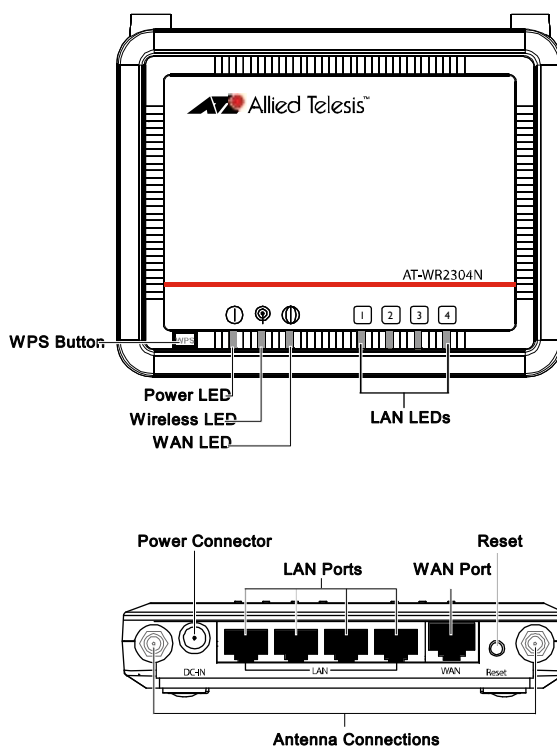


Figure I: Top and Back panels

LEDs

The Power LED on the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router is described in Table 1.

Table 1: Power LED

LED	State	Description
POWER	Off	The router is not receiving power.
	On	The router is booting or failed to update F/W.
	Blinking	The router is operating or updating F/W.

The Wireless/WPS LED is described in Table 2.

Table 2: Wireless/WPS LED

LED	State	Description
Wireless/WPS	Off	Wireless LAN is off.
	On	Wireless LAN is on.
	Blinking	Network activity is occurring.
	Quick blinking	WPS is working.

The WAN LED is described in Table 3.

Table 3: WAN LED

LED	State	Description
WAN LED	Off	No link is detected.
	On	A network link to WAN has been made.
	Blinking	Network activity is occurring.

The LAN LEDs are described in Table 4.

Table 4: LAN LEDs

LED	State	Description
LAN LEDs	Off	No link is detected.
	On	A network link to LAN has been made.
	Blinking	Network activity is occurring.

Chapter 2: Installation

Reviewing Safety Precautions

Please review the following safety precautions before you begin to install the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router.



Warning

To prevent electric shock, do not remove the cover. No user-serviceable parts inside. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To avoid the possibility of electric shock, disconnect electric power to the product before connecting or disconnecting the LAN cables.



Warning

Do not work on equipment or cables during periods of lightning activity.



Warning

Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord.

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible.



Warning

Operating Temperature. This product is designed for a maximum ambient temperature of 40° degrees C.

All Countries: Install product in accordance with local and National Electrical Codes.



Caution

Do not install in direct sunlight, or a damp or dusty place.

Installation Guidelines

Allied Telesis recommends that you have an Allied Telesis-certified RF specialist conduct a site survey to determine the ideal locations for all your Allied Telesis wireless network devices. To conduct a proper site survey, you need to have proper equipment and training.

The following general practices should be followed in any installation:

- Locate routers centrally within areas requiring coverage.
- Overlap router radio coverage areas to avoid shadow areas.
- Position the router so that its LEDs are visible. The LEDs are useful for troubleshooting.
- Install wired LAN cabling within node limit and cable length limitations.
- Use an uninterruptible power supply (UPS) when AC power is not reliable.

Proper antenna placement can help improve range. For information about antenna options, contact your local Allied Telesis representative.

When determining ideal locations for the routers, be aware that you may see network performance degradation from microwave ovens, cordless telephones, and other routers. For more information, see the next sections.

Microwave Ovens

Microwave ovens operate in the same frequency band as 802.11g and 802.11b radios; therefore, if you use a microwave oven within range of your wireless network, you may notice network performance degradation. Both your microwave oven and your wireless network will continue to function, but you may want to consider relocating your microwave oven out of range of your router and wireless clients.

Cordless Telephones

IEEE 802.11bg radio may experience interference from some cordless telephones. For optimal performance, consider operating cordless telephones out of range of your routers.

Other IEEE 802.11b devices

IEEE 802.11b devices that are configured for the same frequency and that are in the same radio coverage area may interfere with each other and decrease throughput. You can reduce the chance of interference by configuring routers at least five channels apart, such as channels 1, 6, and 11.

Unpacking the Wireless Router

To unpack the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router, perform the following procedure:

1. Remove all components from the shipping package.



Note: Store the packing material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

2. Place the router on a secure, level surface.
3. Ensure that the following hardware components are included in your router package. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Package Contents

- One AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router
- Two antennas
- One AC adapter
- One RJ-45 cable
- Two rubber feet
- This installation guide

Antennas Installation

To install the antennas, perform the following procedure:

1. Remove the antennas from their package.
2. Locate the antenna connectors in the back of the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router, as shown in Figure 2.

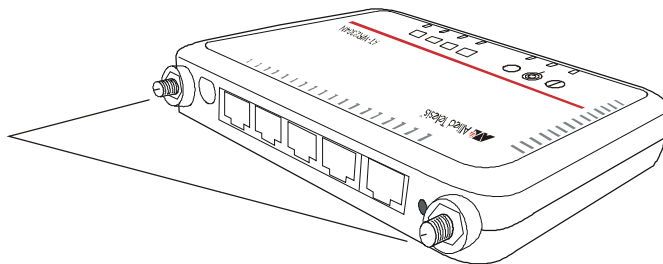


Figure 2: Location of the Antenna Connectors

3. Screw antennas to antenna connectors, as shown in Figure 3.

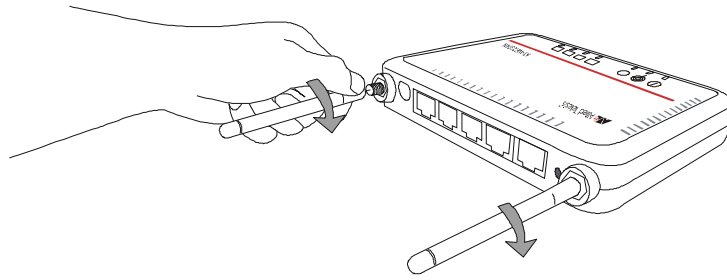


Figure 3: Connecting Antennas

You can try repositioning antennas until you get the best signal strength.

Using the Wireless Router on a Desktop

You can place the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router on a desktop or other flat surface.

To place the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router on a desktop, perform the following procedure:

1. Turn the router over so that the top is resting on a flat surface.
2. Attach the two rubber feet to the bottom of the router as shown in Figure 4.

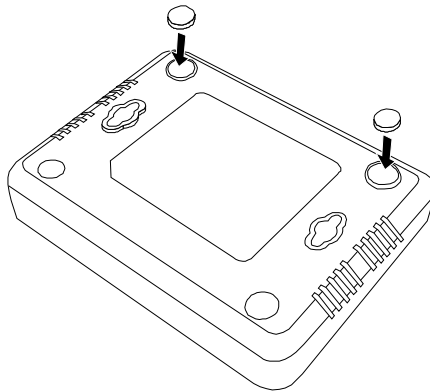


Figure 4: Attaching the Rubber Feet

3. Turn the router over and place it on a flat, secure surface such as a desk or table, leaving ample space around the unit for ventilation.

Connecting the Wireless Router to the LAN

To connect the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router to the LAN, perform the following procedure:

1. Locate the RJ-45 cable in the box.
2. Connect one end of the cable to a computer's Ethernet card. You will use this computer for the first configuration.
3. Connect the other end of the cable to one of the LAN ports on the back of the router, as shown in Figure 5.

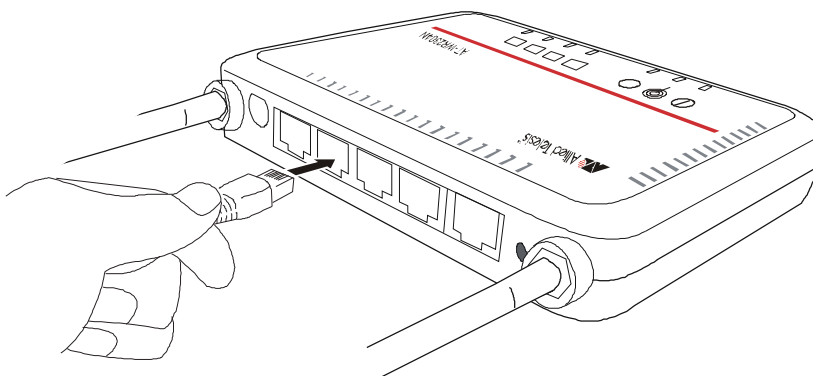


Figure 5: Attaching the LAN Cable

Connecting the Wireless Router to the WAN

To connect the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router to the WAN, perform the following procedure:

4. Locate another RJ45 cable, which usually is with modem.
5. Connect one end of the cable to a modem or an existing network.
6. Connect the other end of the cable to WAN port on the back of the router, as shown in Figure 6.

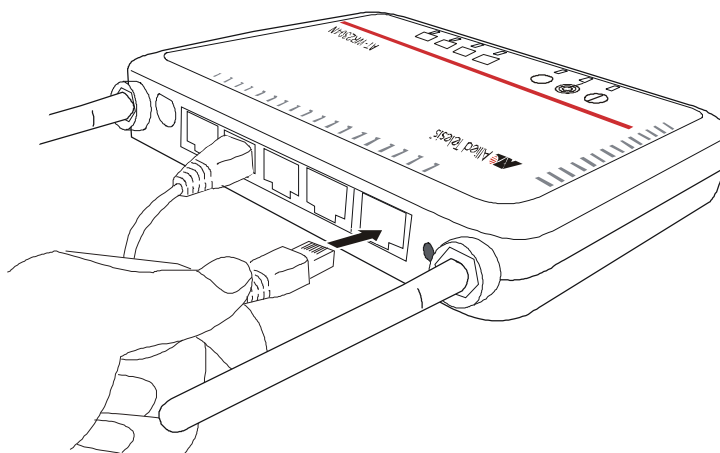


Figure 6: Attaching the WAN Cable

Powering On the Router

To power on the router, perform the following procedure:



Warning: Do not work on equipment or cables during periods of lightning activity.



Warning: Power adapter is used as a disconnection device. To de-energize equipment, disconnect the power adapter.

1. Plug the power adapter on the back panel, as shown in Figure 7, and plug the power adapter into a wall outlet.

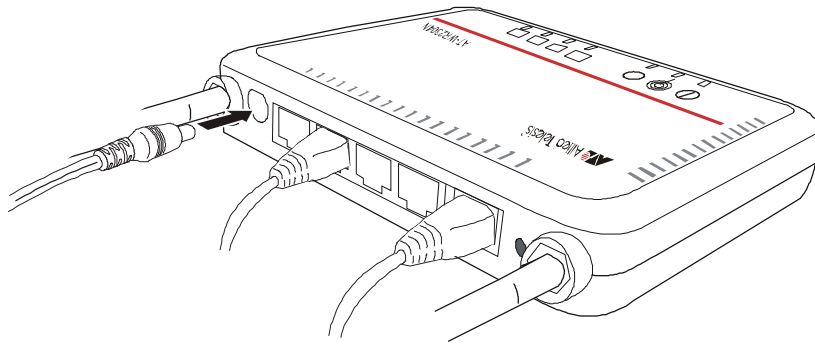


Figure 7: Connecting the Power Adapter

2. Verify that the Power LED is orange. If the LED is off, refer to Chapter 3, “Troubleshooting”.

The router is now powered on and ready for the first configuration.

First Configuration

Before using the device correctly, you must process first configuration. Please perform the following procedure:



Note: For firewall and anti-virus programs might interrupt the configuration, we suggest turning those programs off temporarily until the end of the first configuration.

1. Open a browser (e.g. Internet Explorer) and enter IP address **192.168.1.1**.
2. You are prompted for a username and password. The default user name is “**manager**” and the default password is “**friend**”, as shown in Figure 8. Then click on OK.



Figure 8: Login Dialog Box

3. Click on “Wizard” on the left side, as shown in Figure 9.

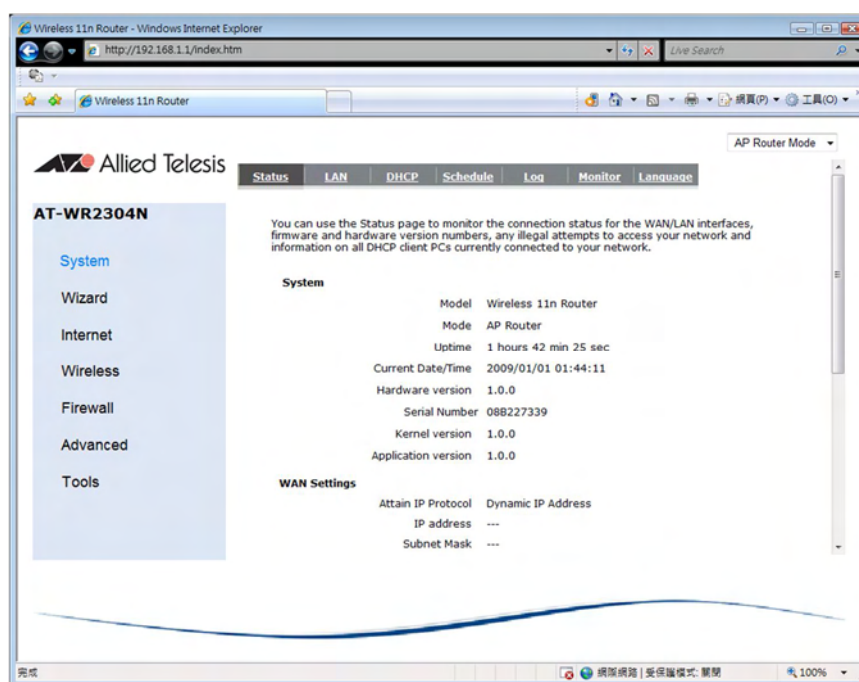


Figure 9: Setting Page

4. The step-to-step wizard will guide you to process the first configuration. As shown in Figure 10., please choose the Operation Mode you want to use and then click on “Next”.

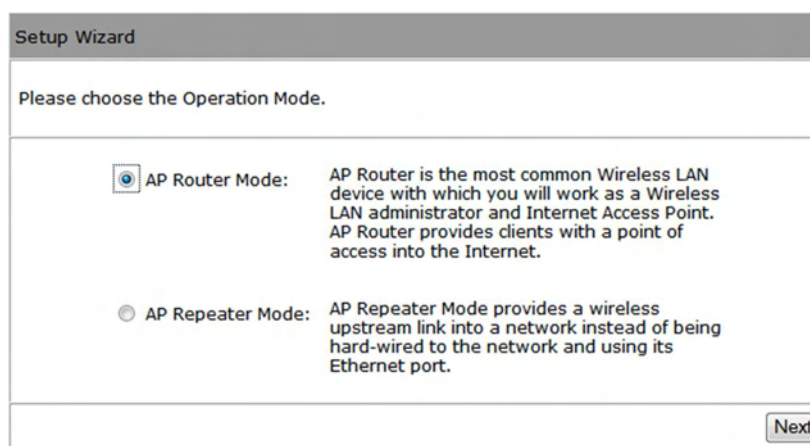
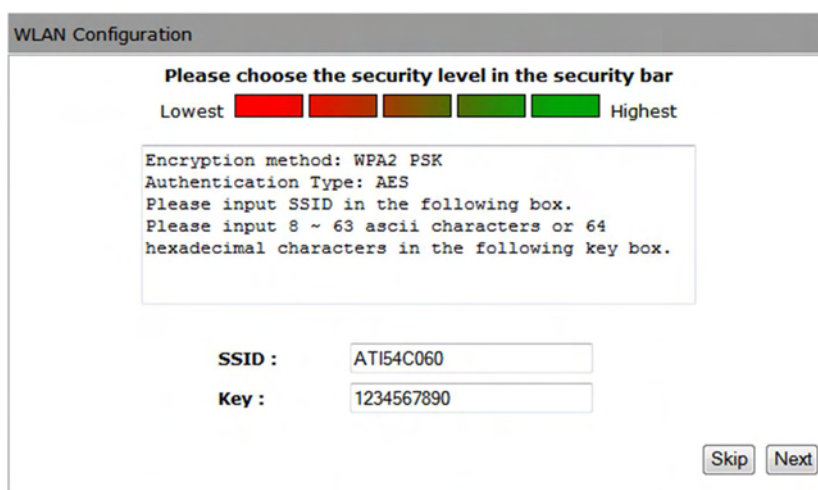


Figure 10: Wizard

5. Depends on the Internet type you chose, you might be prompted for more information which is provided by you ISP.
6. To choose a security level for your Wi-Fi connection, click on the bar above, as shown in Figure 11. AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router will offer a SSID and a key, which are necessary when you perform a wireless connection. Then click on “Next”.



The image shows a 'WLAN Configuration' window. At the top, it says 'Please choose the security level in the security bar'. Below this is a bar with five colored segments: red, orange, yellow, green, and dark green. The red segment is selected. The bar is labeled 'Lowest' on the left and 'Highest' on the right. Below the bar, there is a text box containing the following information: 'Encryption method: WPA2 PSK', 'Authentication Type: AES', 'Please input SSID in the following box.', 'Please input 8 ~ 63 ascii characters or 64 hexadecimal characters in the following key box.' Below this text box, there are two input fields. The first is labeled 'SSID :' and contains the text 'AT154C060'. The second is labeled 'Key :' and contains the text '1234567890'. At the bottom right of the window, there are two buttons: 'Skip' and 'Next'.

Figure 11: Security Level

7. When the message “Setup successfully” shows up, click on “Reboot” to apply the settings.

Warranty Registration

After installing your router, please visit <http://www.alliedtelesis.com/support/warranty/> to register your product and check warranty conditions.

Chapter 3: Troubleshooting

Why Can I Not Access Setting Page with a Cable Connection

- Rechecking your physical connections. Make sure that power cable and RJ-45 cables are inserted tightly and LED lights up correctly. If LED does not light up properly, try to swap RJ-45 cables.
- If your client has a valid IP address, you can use “ping” to verify network connectivity. Run a command window from the client’s PC’s start menu and ping your router’s LAN IP address (such as 192.168.1.1). If pinging your router repeatedly timeout, you should try one of the following:
 - ☞ Check your PC’s Network Connections in Control Panel.
 - ☞ Reset the router and configure again.

My Laptop Cannot Find Wi-Fi Signal

- Checking router’s Wireless LED lights up correctly. If LED does not light up properly, try to configure the router via setting page.
- Verify the client’s wireless adapter is installed and working properly. On a Windows client, check your wireless connection from the Network Connections panels and make sure that its status is “Enabled”. If the adapter is not listed, please check if the adapter is plug-in well and installed the driver. If the adapter is listed but can not enable the connection, please check the Properties panel to make sure no resource conflicts.

The Wireless Router Cannot Connect to the Internet Correctly

If the AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router cannot connect to the Internet correctly, check the following:

- Make sure that your ISP provides service to you.
- Rechecking your physical connections. Make sure that a RJ-45 cable connects WAN port on the router and modem firmly.
- Make sure that the router has a correct setting corresponds to your Internet type. If not, configure the router again via setting page.

Resetting Factory Default Configuration

If you are experiencing problems with the AT-WR2304N and have tried all other troubleshooting measures, use the Reset Configuration function. This will restore factory defaults and clear all settings, including settings such as wireless settings.

Hold in the Reset button until the Power LED turns on to restore the factory default settings.

Appendix A: Technical Specifications

Physical Specifications

Dimensions: 176.34 mm x 103.62 mm x 23.20 mm (W x D x H)

(6.94 in. x 4.07 in. x .91 in.)

Weight: 250 g (8.81 oz.)

Environmental Specifications

Operating Temperature: 0 to 45°C

Storage Temperature: -10 to 70°C

Operating Humidity: 90% or less (non-condensing)

Storage Humidity: 95% or less (non-condensing)

Operating Altitude Range: 3,000 m

Power Specifications

Input Supply Voltage: 1 A DC adapter

Power Consumption: 6.6 W (max.)

Safety and Electromagnetic Emissions Certifications

Compliance Mark: FCC (compliant to FCC Part 15 Class B; FCC Part 15B and 15C)
RCM (compliant to AS/NZS / CISPR 22 Class B)

Appendix B: Radio Bands

Allied Telesis's AT-WR2304N IEEE 802.11b/g/n, Small Business Wireless Router is capable of operating in the 2.4GHz (IEEE 802.11b/g/n).

IEEE 802.11n standard provides a major improvement in the speed at which data can be transferred over a wireless network. The amount of data being passed over most networks is increasing with many more large files, including photos, video clips (and videos), etc. being transferred.

IEEE 802.11n standard uses Multiple Input Multiple Output (MIMO) exploiting multipath propagation; that increases the data rate by using a technique known as spatial division multiplexing. The data is split into a number of spatial streams and these are transmitted through separate antennas to corresponding antennas at the receiver. Increasing the spatial streams you get a greater utilization of the available bandwidth.