

# Wireless Access Point

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**AT-WA3404**



## User's Guide

PN 613-50414-00 Rev B



Simply connecting the  world

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# Electrical Safety and Emission Compliance Statement

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**Standards:** This product meets the following standards.

## FCC Warning

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 or more of the following measures:

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

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

## Federal Communications Commission (FCC) Radiation Exposure Statement

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

## CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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



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# Welcome to Allied Telesyn

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This guide contains instructions on how to install the AT-WA3404 Wireless Access Point.

## Where to Find Web-based Guides

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The Allied Telesyn web site at [www.alliedtelesyn.com](http://www.alliedtelesyn.com) provides you with an easy way to access the most recent documentation and technical information for all of our products. All web-based documents relating to this product and other Allied Telesyn products can be downloaded from the web site in PDF format.

## Document Conventions

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This guide uses the following conventions:

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### Note

Notes provide additional information.

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### Caution

Cautions indicate that performing or omitting a specific action may result in equipment damage or loss of data.

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### Warning

Warnings indicate that performing or omitting a specific action may result in bodily injury.

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## Contacting Allied Telesyn

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This section provides Allied Telesyn contact information for technical support as well as sales or corporate information.

### Online Support

You can request technical support online by accessing the Allied Telesyn Knowledge Base from the following web site at **kb.alliedtelesyn.com**. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

### E-mail and Telephone Support

For Technical Support via e-mail or telephone, refer to the "Support & Services" section of the Allied Telesyn web site at **www.alliedtelesyn.com**.

### Returning Products

Products for return or repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to Allied Telesyn without a RMA number will be returned to the sender at the sender's expense.

To obtain a RMA number, contact Allied Telesyn's Technical Support at our web site at **www.alliedtelesyn.com**

### Management Software Updates

New releases of management software for our managed products can be downloaded from one of the following web sites:

- the Allied Telesyn web site: **www.alliedtelesyn.com**
- the Allied Telesyn FTP server: **ftp.alliedtelesyn.com**.

To use the FTP server, enter 'anonymous' for the user name and your e-mail address for the password.

### For Sales or Corporate Information

You can contact Allied Telesyn for sales or corporate information at our web site at **www.alliedtelesyn.com**. To find the contact information for your country, select "Contact Us" then "Worldwide Contacts".

### Tell Us What You Think

If you have any comments or suggestions on how we might improve this or other Allied Telesyn documents, please fill out the General Enquiry Form online. This form can be accessed by selecting "Contact Us" from **www.alliedtelesyn.com**.

# Chapter 1

# Introduction

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Congratulations on purchasing the AT-WA3404 Wireless Access Point (AP). The AT-WA3404 features a 4-port 10/100M LAN Switch. This product is designed specifically for SOHO/SMB 11Mbps wireless LAN environment. The access point is easy to configure and operate even by a non-technical user. Instructions for installing and configuring this product are included in this manual. Before installing, please read this user's guide carefully so you may take full advantage of its functions.

## The Wireless Access Point Features

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### LAN Features

- DHCP Client - Enables the AT-WA3404 to act as a DHCP client to receive IP address from DHCP Server in the wired Ethernet LAN.
- Built-in Four 100Base-TX LAN Switch Ports - All four ports are capable for uplinking or connecting with any local Ethernet-ready devices. It is designed to act as a bridge between wired and wireless LAN systems.

### Wireless Features

- Standard Compliant - The AT-WA3404 complies with IEEE 802.11b standard, and it is interoperable with IEEE 802.11b-compliant equipment.
- High Speed Wireless Connection - Using a Diversity Dipole Antenna to secure a reliable 11 Mbps wireless data rate connection.
- Data Rate Auto Fall-Back - Provides 11, 5.5, 2 and 1Mbps wireless data rate shifting dynamically to guarantee availability and reliability of wireless connections.
- Roaming - Provides seamless roaming within IEEE 802.11b wireless LAN infrastructure.
- Long Distance Reach - Supports 80 meters indoor and 300 meters outdoor long operating distances under normal environment condition.

### Configuration and Management

- Easy to Setup - With a Windows-based wireless navigator utility, you can easily setup the IP Address of the AT-WA3404 and upgrade the firmware.
- Easy to Manage - You can use any WEB browser from anywhere on a wired or wireless LAN to easily configure the AT-WA3404.

### Security

- Configuring Protection - Provides password protection to prevent unauthorized user's from changing the configuration.
- Wireless LAN Security - Provide 64-bit and 128-bit wired equivalent privacy encryption to protect the wireless data transmissions.

## Package Contents

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Make sure the following items are included in your package. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.

- One AT-WA3404 Wireless Access Point
- One CD-ROM (AT-WA3404 Wireless Navigator Utility software and user's guide)
- One power adapter



## Chapter 2

# Hardware Installation

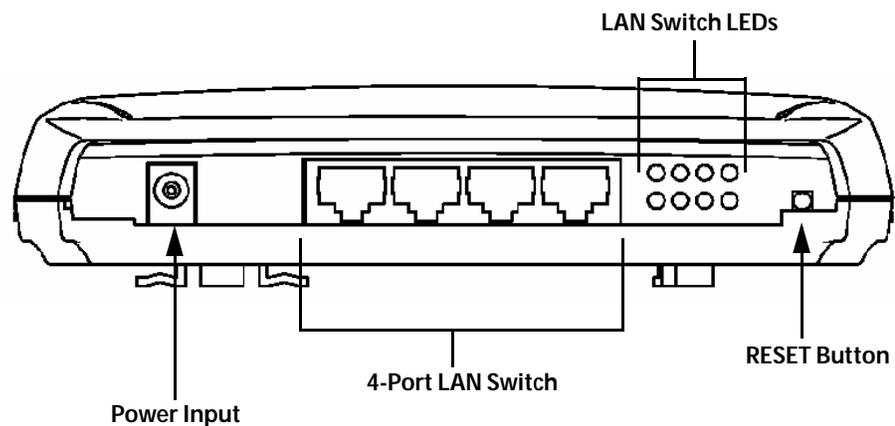
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This chapter explains how to install the AT-WA3404 Access Point to a hub or switch.

## Physical Description

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**Front Panel** The front panel features four 10/100 Mbps Ethernet ports. These LAN ports are used to uplink to a wired LAN or connect to local Ethernet-ready devices, such as PC or print server. The figure below illustrates the front panel of the AT-WA3404.



### Power Input

Only use the power adapter supplied with the AT-WA3404.

### 4-port LAN Switch

Use standard Ethernet cables with a RJ-45 connector to connect each switch port to a PC, hub, switch or broadband router/modem.

### LAN Switch LEDs

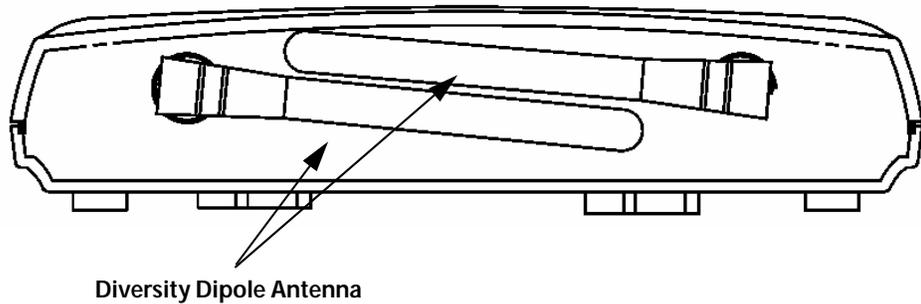
Each row has two LEDs, which shows the status of the matched switch port. The top LED indicates a Link. When a LAN connection has been established, the LED is ON. The bottom LED indicates Activity. These LED will blink while data is being passed.

### RESET Button

Pressing the RESET button will reboot the AT-WA3404. The DIAG LED on AT-WA3404 will be OFF and then begin blinking. When the DIAG LED is steady green the reset is complete.

### Rear Panel

The figure below illustrates the back panel of the AT-WA3404. The back panel features two Diversity Dipole Antennas.



**Table 1** Top Panel LEDs of LAN Switch

LED	No.	Color	Status	Description
DIAG	1	Green	Blinking  OFF	The AP fails in self-diagnostic mode.  Or While upgrading the firmware, it indicates the AP is doing self-programming.  The AP is in normal operating mode.
Wireless	3	Green	ON Blinking	The wireless function is ready. Sending or receiving data via wireless.  Or While upgrading firmware, it indicates the AP is doing self-programming.
Power	4	Green	ON OFF	The AP is powered ON. The AP is powered OFF.

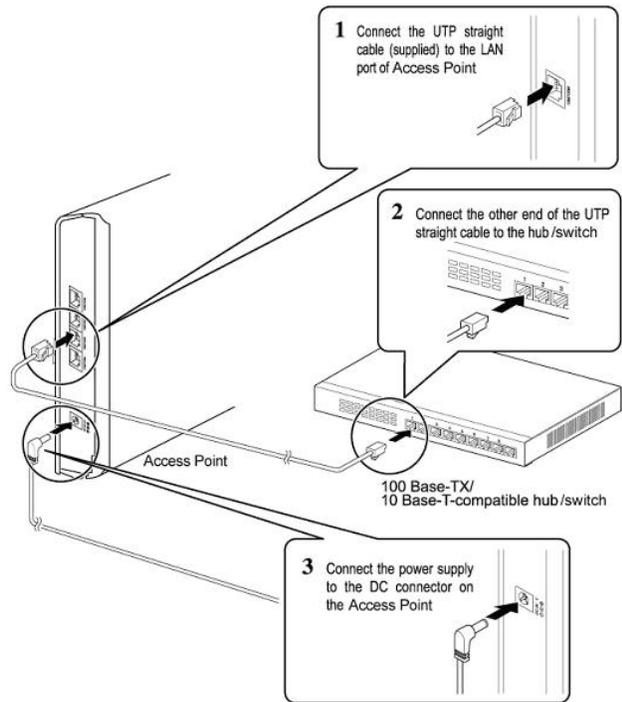
**Table 2** Front Panel LEDs

Color	Status	Description
LAN Switch LEDs (Top Row)		
Green	ON	The LAN port is linked.
	Blinking	The LAN port is sending or receiving data.
10/100 Mbps LEDs (Bottom Row)		
Green	ON	Sending or receiving at 100 Mbps.
	OFF	Sending or receiving at 10 Mbps.

## Hardware Installation

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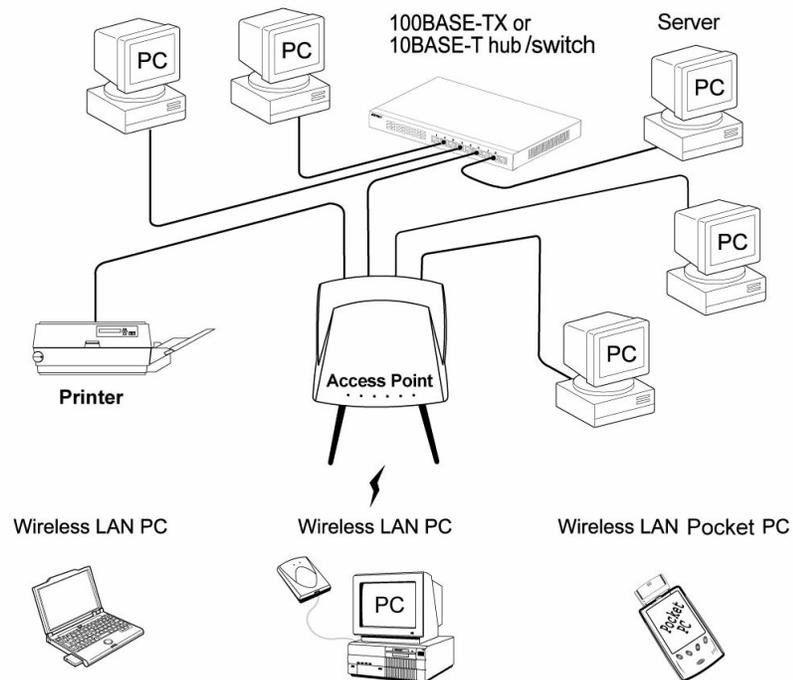
The following illustration is an example of how to install the AT-WA3404 with a hub or switch. Be sure to use the supplied power adapter.



## Connecting the AT-WA3404 to the Network

For optimal performance the center of your wireless network is the best place to install the AT-WA3404 with line of sight to all of your mobile stations. Try to place it in a position where it can best cover your wireless network and is away from any potential source of interference. Normally, the higher you place the AT-WA3404 the better the wireless signal coverage will be.

The following illustration describes how to use the AT-WA3404 when communicating between a wireless LAN and a wired LAN.





## Chapter 3

# Installing the AT-WA3404 Wireless Navigator Utility

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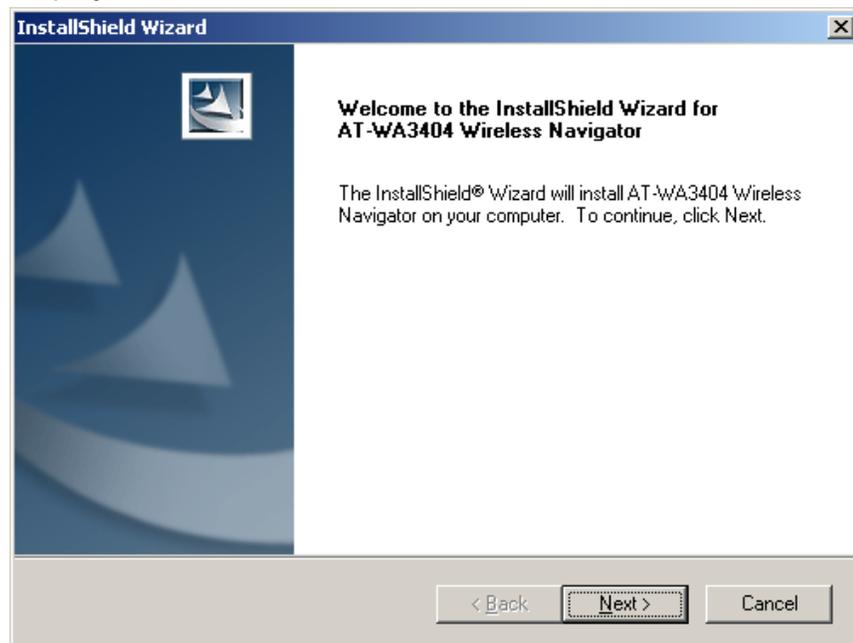
This chapter describes how to install the wireless navigator to your PC.

## Installing the AT-WA3404 Wireless Navigator

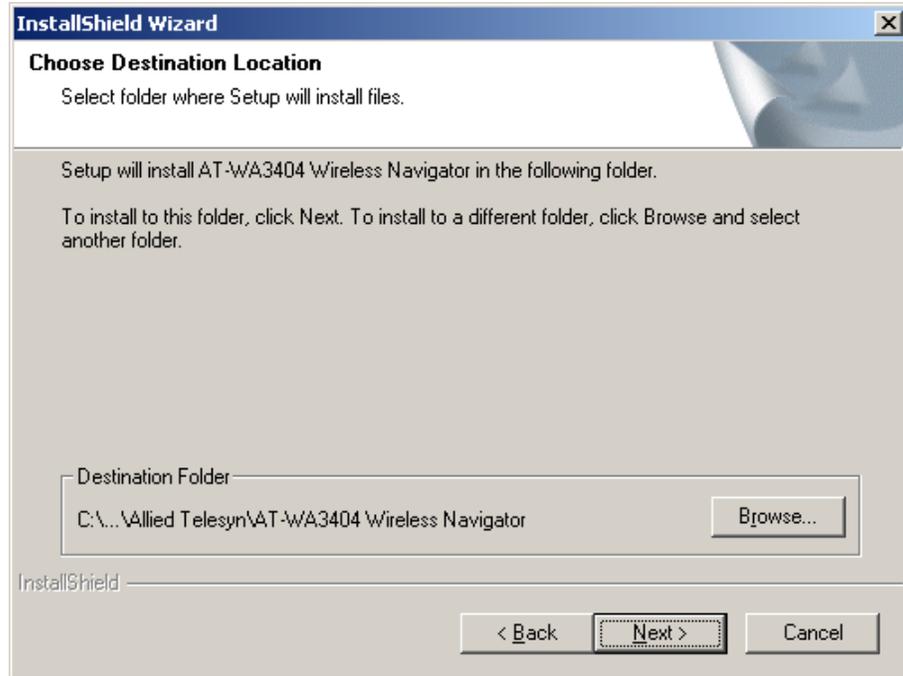
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The wireless navigator utility is provided to allow you an easy way to configure the AT-WA3404 through any Windows-based PC over a wired or wireless LAN port. To install the wireless navigator to your PC, perform the following procedures:

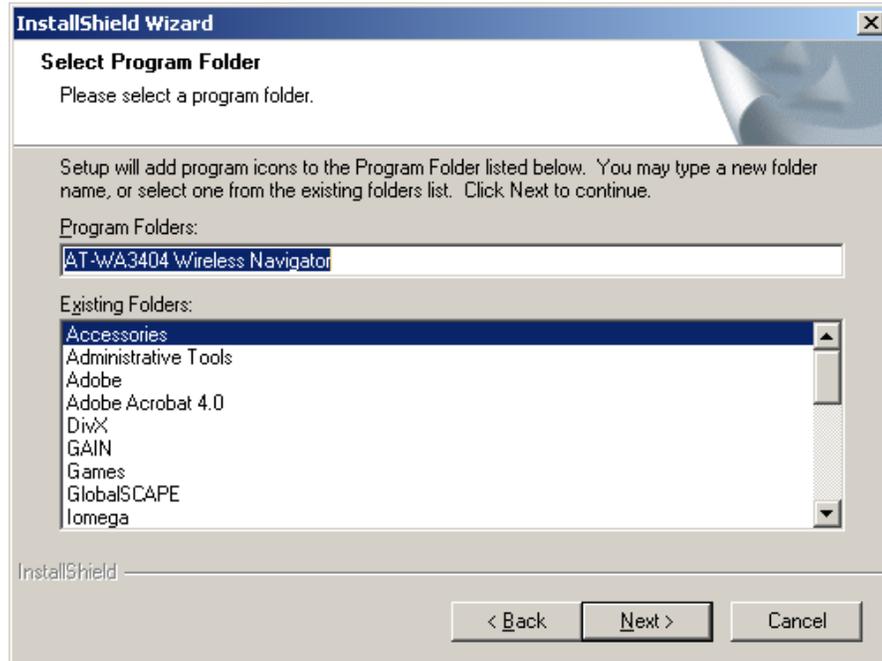
1. Insert the CD-ROM into the CD-ROM drive, then run the **SETUP.EXE** program.
2. After InstallShield Wizard is complete, the following window is displayed. Click **Next** to continue.



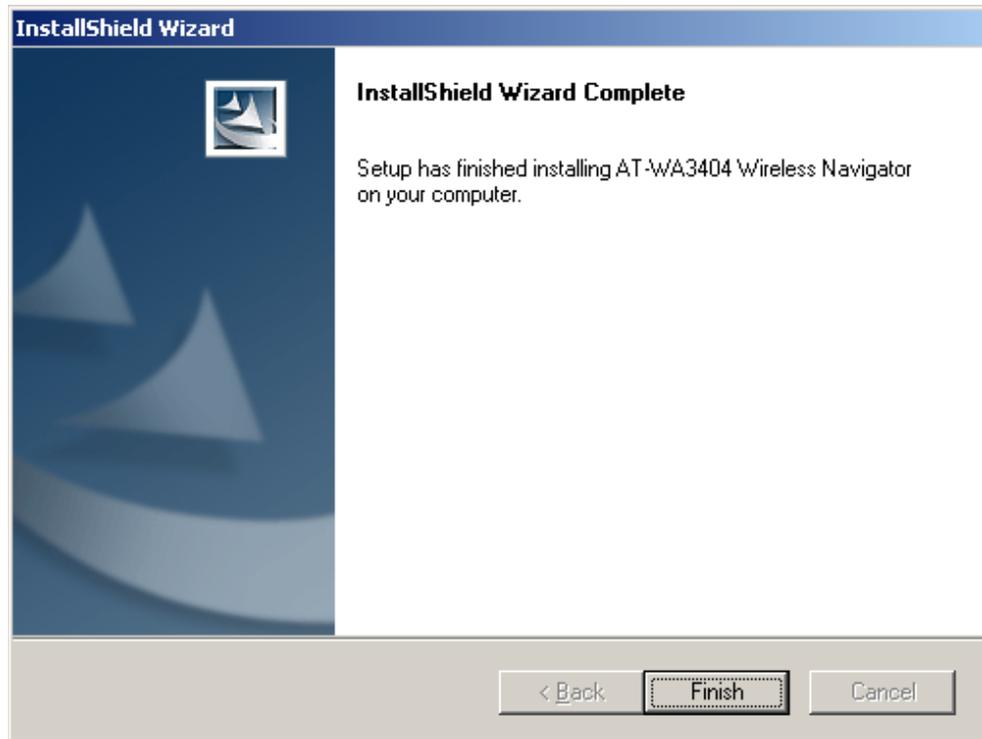
3. The screen will show the default destination chosen by the utility. If you want to install the wireless navigator utility in another location, click **Browse** and select an alternate destination. Click **Next** when you are ready to continue. The setup program will then begin to install the utility to the destination folder.



4. The screen will show you the Program Folder that the utility will use. You may type a new folder name to create a new program folder, or select one from the existing folder list, and click **Next** to continue.



5. When the wireless navigator has been installed the following window is displayed. Click **Finish** to complete installation.



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**Note**

To remove the wireless navigator utility, click **Start** from your desktop and then select **Programs, AT-WA3404 Wireless Navigator, Uninstall**, and follow the instruction.

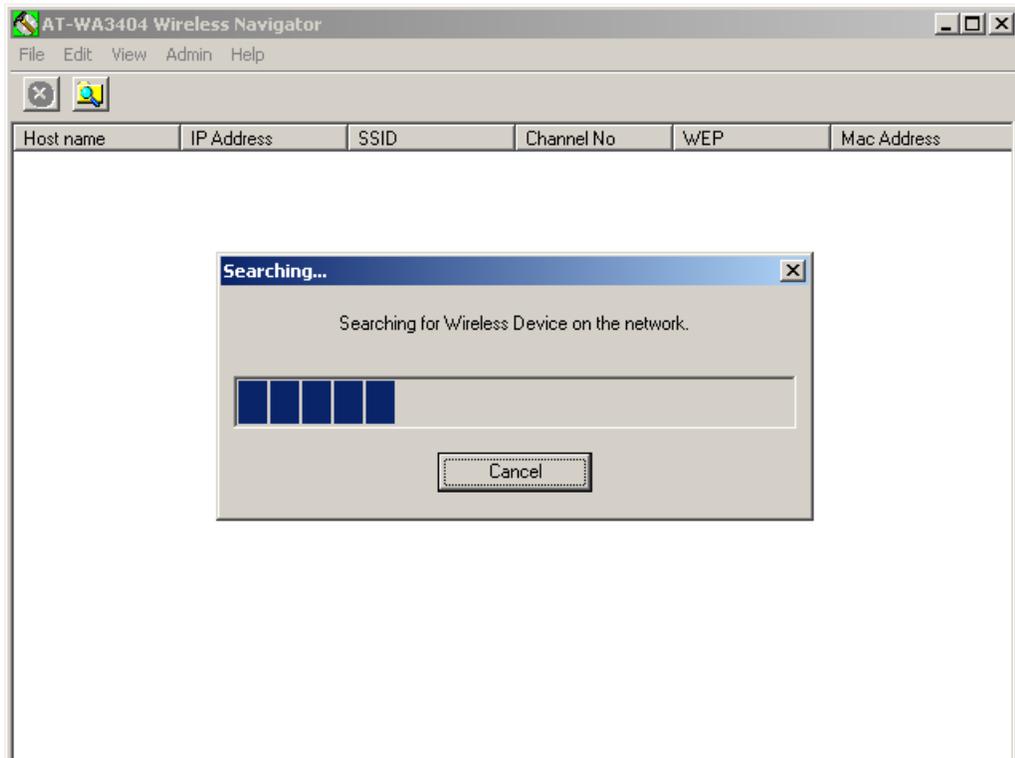
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## Startup and Login

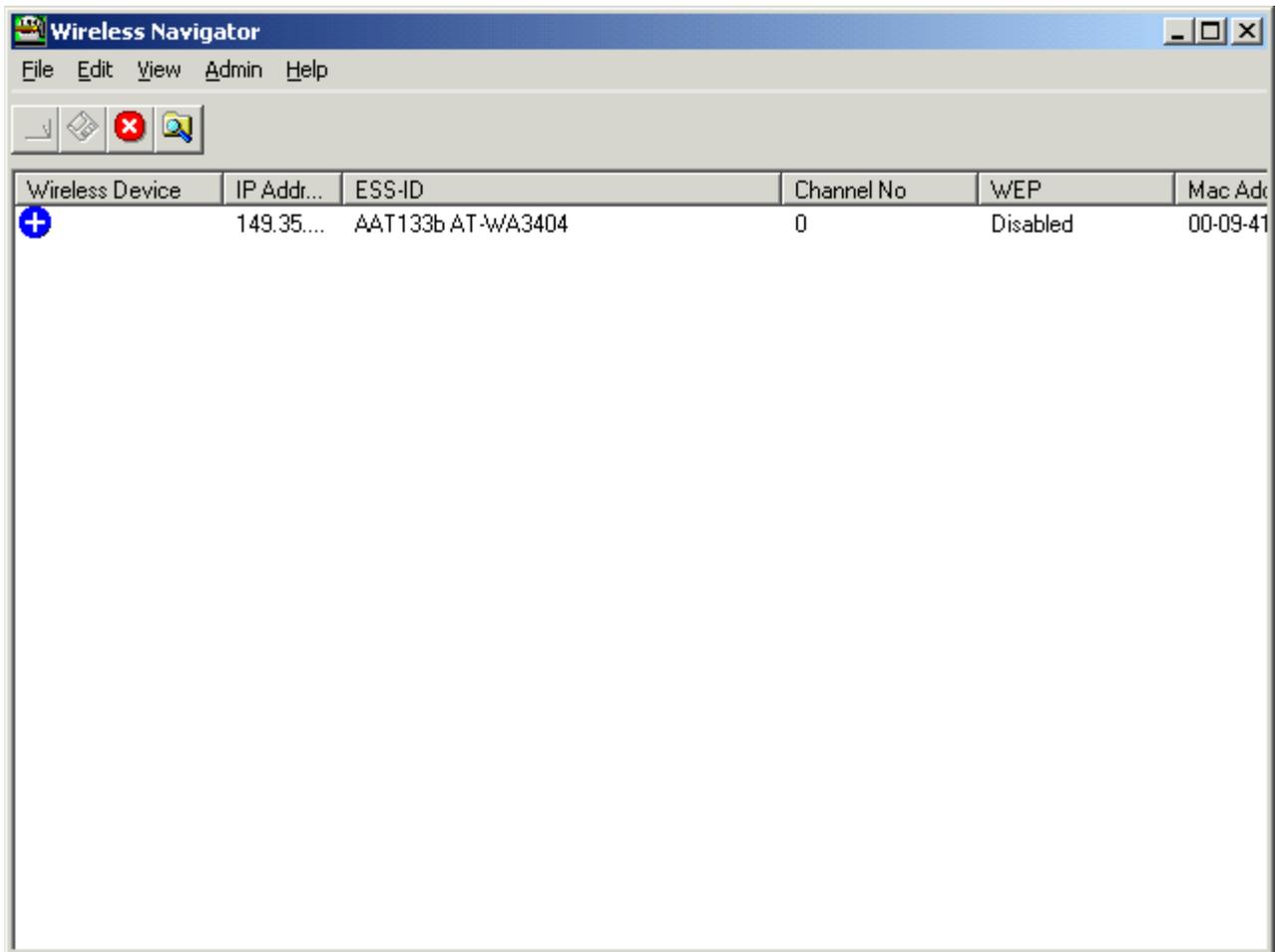
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Follow the procedures below to start the wireless navigator and find the AT-WA3404. Before you start the following procedure, be sure to connect the Ethernet cable, the power cord, and turn ON the AT-WA3404. All the wireless clients will be requested to set their SSIDs to as the access point's SSID in advance before starting the following procedures.

1. Refer to "Installing the AT-WA3404 Wireless Navigator," to start the configuration.
2. Click **Start** from the desktop, and then select **Programs, AT-WA3404 Wireless Navigator, AT-WA3404 Wireless Navigator**. Or, just double-click the **AT-WA3404 Wireless Navigator** icon on your desktop.
3. The wireless navigator starts up, and searches through the wired LAN or wireless LAN.



- The utility will show the AT-WA3404 and other wireless devices found on the same network where your PC is located.




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**Note**

If the AT-WA3404 is not shown in the list, make sure all the cables are connected.

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- Double-click on the AT-WA3404 to access the built-in web server then click **OK**. (The default setting is no user name and password.)

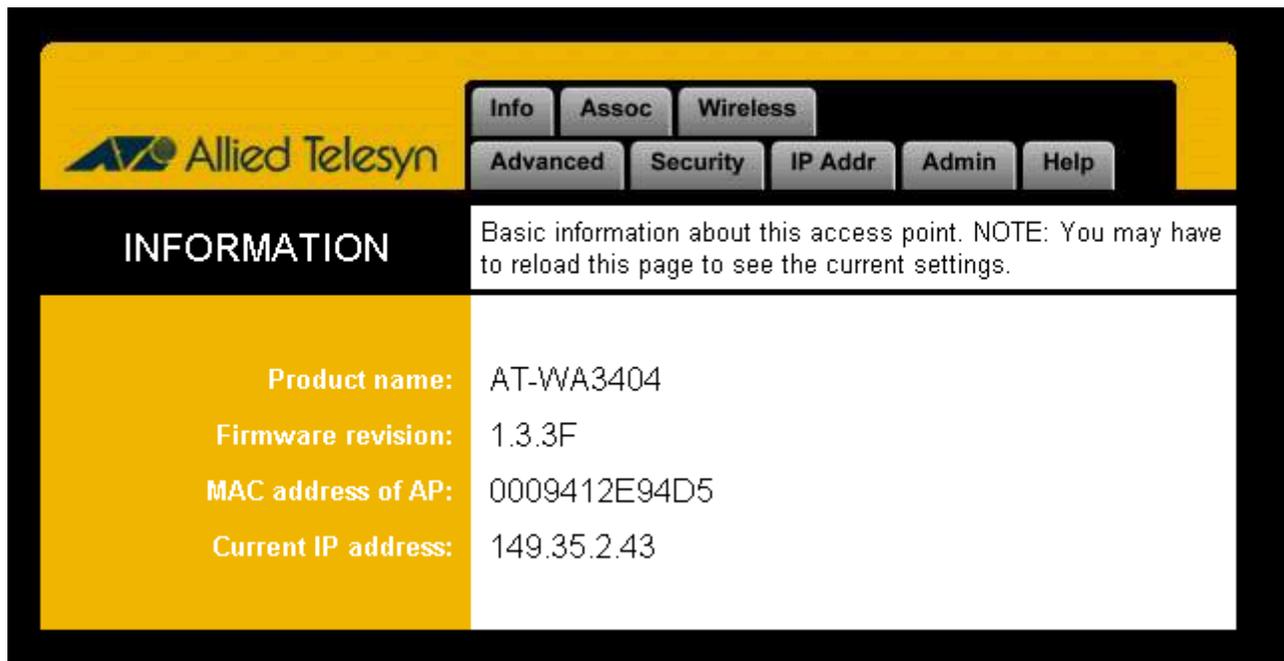
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**Note**

If you cannot access into the access point's built-in web server, make sure your PC is in the same subnet with AT-WA3404. Right-click the mouse to select the AT-WA3404 listed in the wireless navigator. The **Set IP address** option will be displayed so you can change the IP Address of the AT-WA3404 to the same Subnet Address as your PC.

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6. The following screen is displayed. You have now entered into the built-in web server of the AT-WA3404. Refer to Chapter 4 to configuration the access point.



## Chapter 4

# Configuring the AT-WA3404

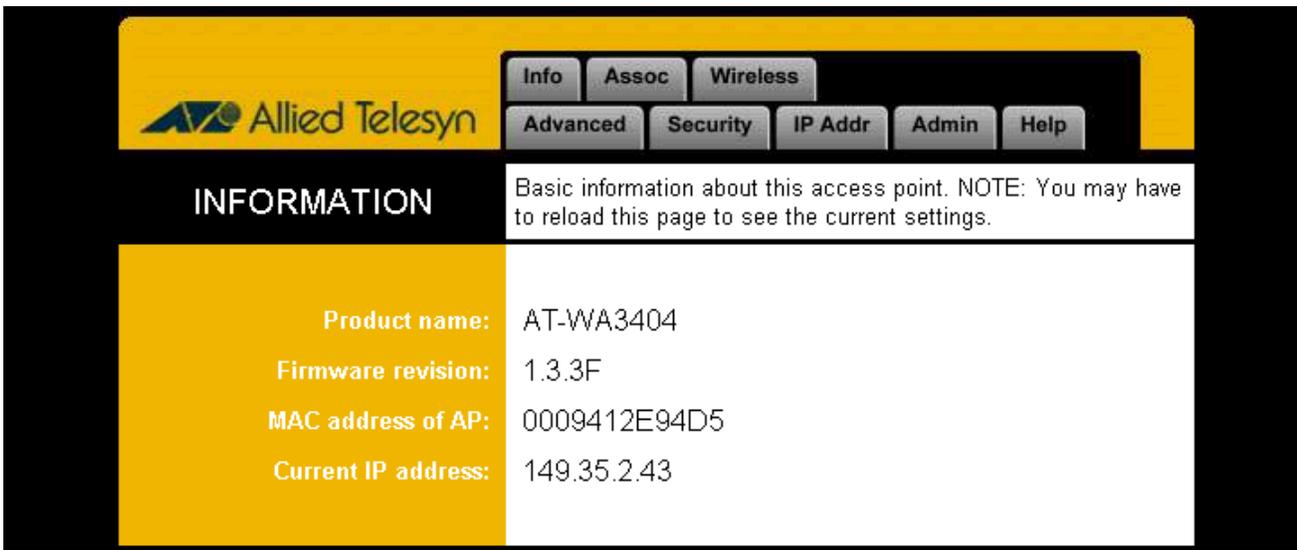
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This chapter describes the functions and features for configuring the AT-WA3404 Access Point.

## Info Tab

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The Information (Info) Tab displays the basic information of the AT-WA3404.



The screenshot shows the configuration web interface for the AT-WA3404. At the top left is the Allied Telesyn logo. A navigation bar contains several tabs: Info (selected), Assoc, Wireless, Advanced, Security, IP Addr, Admin, and Help. Below the navigation bar, the 'INFORMATION' section is active. It displays the following details:

Product name:	AT-WA3404
Firmware revision:	1.3.3F
MAC address of AP:	0009412E94D5
Current IP address:	149.35.2.43

A note above the table states: "Basic information about this access point. NOTE: You may have to reload this page to see the current settings."

**Firmware revision:**

Displays the current firmware version of the AT-WA3404.

**MAC address of AP:**

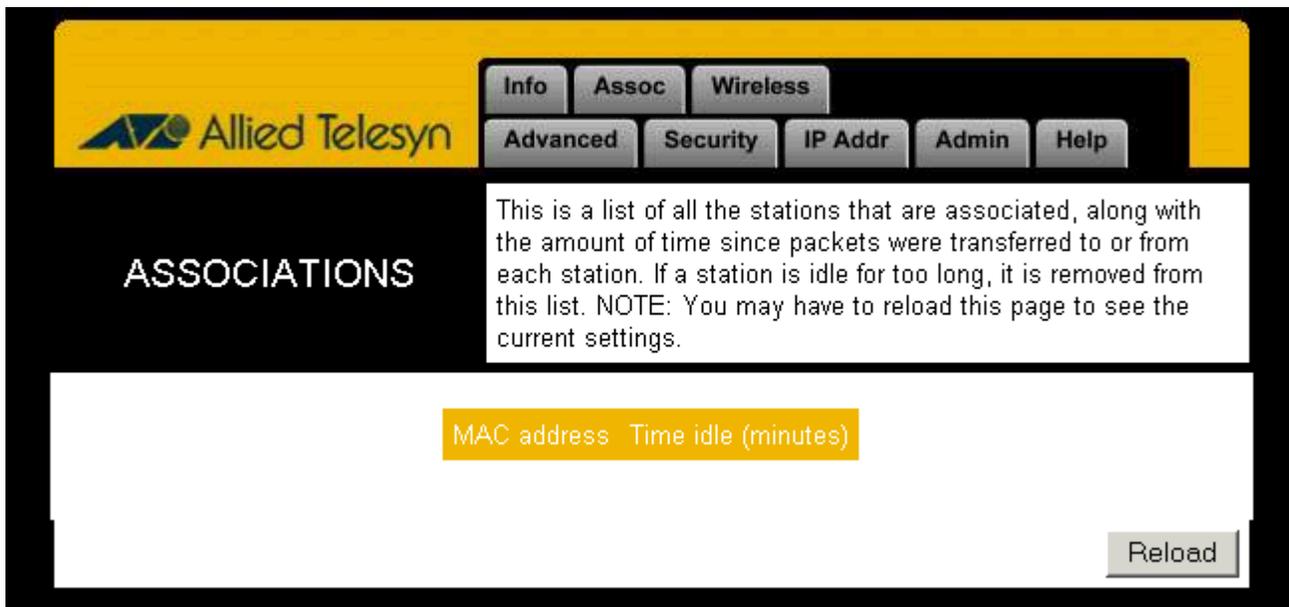
Displays the unique serial number burned into the AT-WA3404 that identifies it from other Ethernet devices.

**Current IP address:**

Displays the current IP Address of the AT-WA3404.

## Assoc Tab

The Associations (Assoc) Tab displays all the wireless clients which are currently associated with the AT-WA3404.



**Mac address:**

Displays the MAC Address of associated wireless client.

**Time idle:**

Displays the idle time of each associated wireless client.

## Wireless Tab

The Wireless Tab displays the basic wireless configuration of the AT-WA3404.

On this page you can configure the basic 802.11b access point settings. Any new settings will not take effect until the access point is rebooted. NOTE: You may have to reload this page to see the current settings.

Host name:

SSID:

Channel:

Basic rates (Mbits/s):  1  2  5.5  11

Supported rates (Mbits/s):  1  2  5.5  11

Transmission rate (Mbits/s):

Preamble type:

### Access point name:

Displays the current device name of the AT-WA3404. You can change the name to meet your requirements.

### SSID:

This is used to identify the wireless LAN. To communicate with the AT-WA3404, all the wireless clients must use the same SSID as the access point. The SSID is case sensitive. The default SSID is **ATILAN**.

### Channel:

This selects the appropriate radio channel from the list provided. The permissible number of channels depends on the Regulatory Domain. (The factory default channel setting also depends on the Regulatory Domain).

### Basic rates (Mbits/s):

This is the transfer rate that is used when a client is associate with the AT-WA3404.

**Supported rates (Mbits/s):**

This is the transfer rate that a client is capable of receiving.

**Transmission rate:**

This selects the rate adapting mechanism. The default setting is **Automatic**, which allows the AT-WA3404 to automatically adjust its transfer speed for optimal performance and longest operating range.

**Preamble type:**

Select between long, short or both preambles in physical layer. Default value is **Long**.

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**Note**

You may need to re-load the page to see the changes.

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## Advanced Tab

The Advanced Tab displays the advanced wireless configurations of the AT-WA3404.

**ADVANCED**

On this page you can configure the advanced 802.11b access point settings. Any new settings will not take effect until the access point is rebooted. NOTE: You may have to reload this page to see the current settings.

Exclude long preamble:

Fragmentation threshold:  (256-2346: Only even number)

RTS threshold:  (0-2432)

Beacon period:  msec (1-4095)

DTIM interval:  number of beacons per DTIM (1-255)

Multicast PM buffering:

Reload Save Cancel

### Max associated stations:

This displays the maximum number of associated clients. In order to get a better performance, it is recommended to set **8** as the maximum number of associated clients

### Exclude long preamble:

Enables to exclude packets with long preambles in physical layer.

### Fragmentation threshold:

The threshold which a data packet will be fragmented.

### RTS threshold:

The threshold which a RTS packet will be sent before a data packet is sent.

### Beacon period:

The period in millisecond that a beacon will be sent.

### DTIM interval:

Number of beacon intervals between successive DTIM (Delivery Traffic Identification Maps).

### Multicast PM buffering:

This enables the data buffering for Power Management.

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#### Note

You may need to re-load the page to see changes.

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## Security Tab

The Security Tab displays the 802.11b security and encryption options on the AT-WA3404.

The screenshot shows the Security Tab configuration page. At the top, there is a navigation bar with tabs for Info, Assoc, Wireless, Advanced, Security, IP Addr, Admin, and Help. The Security tab is selected. Below the navigation bar, the page title is "SECURITY". A note states: "On this page you can set the 802.11b security and encryption options, and also enable MAC address filtering. Any new settings will not take effect until the access point is rebooted. NOTE: You may have to reload this page to see the current settings."

The configuration options are as follows:

- Hide SSID in beacons:**
- Stations can not use "unspecified" SSID:**
- WEP configuration:**
  - For 64 bit keys you must enter 10 hex digits into the key fields, for 128 bit keys you must enter 26 hex digits. If you leave the key field blank this means a key of all zeros.
  - WEP enabled:**  64 bit key
  - PassPhrase:**
  - WEP key 1:**
  - WEP key 2:**
  - WEP key 3:**
  - WEP key 4:**
  - WEP key to use:** 1
  - Deny unencrypted data:**
  - Authentication:**  Open  Shared key  Both
- MAC address filtering:**
  - Enable filtering:**
  - Entries:** 1-32
  - Add an address:**
  - Addresses to allow:**

At the bottom right, there are buttons for Reload, Save, and Cancel.

**Hide SSID in beacon:**

This option hides the SSID in beacon, so that the AT-WA3404 will not be found by a passive scan from a wireless navigator.

**Stations cannot use "unspecified" SSID:**

Enables the AT-WA3404 not to associate with any station whose SSID is set as **Any**.

**WEP configuration:**

This displays the Wired Equivalent Privacy security configurations.

**WEP enabled:**

Enables the Wired Equivalent Privacy security function.

**WEP key length:**

Selects 64-bit or 128-bit WEP encryption. Make sure the setting in the AT-WA3404 will be the same as in the wireless clients, otherwise the communication will not work.

**WEP key:**

For 64-bit WEP encryption, a key of 10 hexadecimal characters in length must be filled in. For 128-bit WEP encryption, a key of 26 hexadecimal characters in length must be filled in. Make sure that the key in the AT-WA3404 will be the same as in the wireless clients, otherwise the communication will not work.

**WEP key to use:**

Select between one of four key sets to be used for encryption. To connect to a Wi-Fi compliant wireless device, WEB key 1 must be selected.

**Deny unencrypted data:**

Check this box so that any unencrypted data frames will be denied.

**Authentication:**

Selects the mechanism of shared key, open system or both authentication algorithm.

**MAC address filtering:**

Displays the MAC Address filtering mechanism.

**Enable filtering:**

Enables filtering of every wireless device's MAC Address which intends to associate with the AT-WA3404.

**Add an address:**

Adds a wireless device's MAC Address to the filter list.

**Addresses to allow:**

Adds the wireless device's MAC addresses who are allowed to associated with the AT-WA3404.

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**Note**

**How to get the MAC address:**

If your PC is running in Windows environment, enter the DOS Box, and enter the command **ipconfig /all** to get the Physical Address (MAC Address) of your PC. If you are using another operating systems, contact your system administrator for instructions.

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**Note**

You may need to re-load the page to see changes.

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## IP Addr Tab

The IP Address (IP ADDR) Tab displays the current IP settings.

The screenshot shows the IP configuration interface. At the top, there's a navigation bar with tabs: Info, Assoc, Wireless, Advanced, Security, IP Addr (selected), Admin, and Help. Below the navigation bar is a yellow sidebar with the text 'IP ADDR'. The main content area has a white background and contains a descriptive paragraph: 'On this page you can configure the IP address used by the Web and TFTP servers running on this access point. For "static" mode, the IP address setting are given below. For "DHCP" mode, these settings may be overridden by a DHCP server on your network. Any new IP settings will not take effect until the access point is rebooted. NOTE: You may have to re-load this page to see the current settings.' Below the text are four configuration fields: 'IP Address Mode' with radio buttons for 'Static' (selected) and 'DHCP'; 'IP Address' with a text input field containing '192.168.1.230'; 'IP Subnet' with a dropdown menu showing '255.255.255.0'; and 'IP Gateway' with a text input field containing '0.0.0.0'. At the bottom right, there are three buttons: 'Reload', 'Save', and 'Cancel'.

### IP Address Mode:

Select between **Static** or **DHCP** mode. For **Static** mode, the IP Address settings are given by user. For **DHCP** mode, these settings will be overridden by a DHCP server on your network.

### IP Address:

This is the static IP Address you want to assign to the AT-WA3404. The default value is **192.168.1.230**.

### IP Subnet:

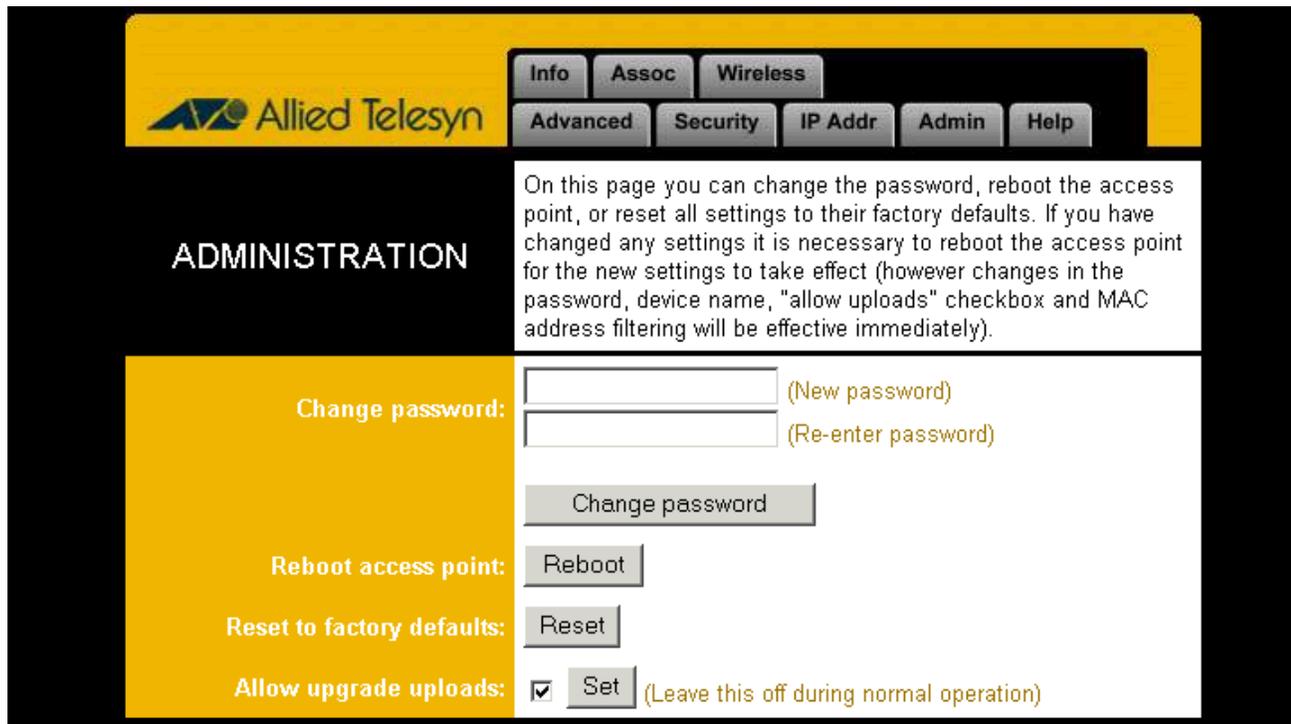
This is the subnet mask you want to assign for the AT-WA3404. The default value is **255.255.255.0**.

### IP Gateway:

This is the gateway you want to assign for the AT-WA3404.

## Admin Tab

The Administration (Admin) Tab allows to change the device's system configurations.



### Change password:

The default is no password.

### Reboot access point:

When any setting have been changed, the AT-WA3404 must be rebooted so that the change can be confirmed.

### Reset to factory defaults:

This option will erase all the current settings and return the settings back to the factory defaults.

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#### Note

There could be several PC's over a wired or wireless LAN installed with the wireless navigator utility and managing the AT-WA3404 simultaneously. Hence, it is recommended that after installation is complete that you change the password.

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### Allow upgrade uploads:

When left un-checked, firmware upgrades will not be allowed on this access point.

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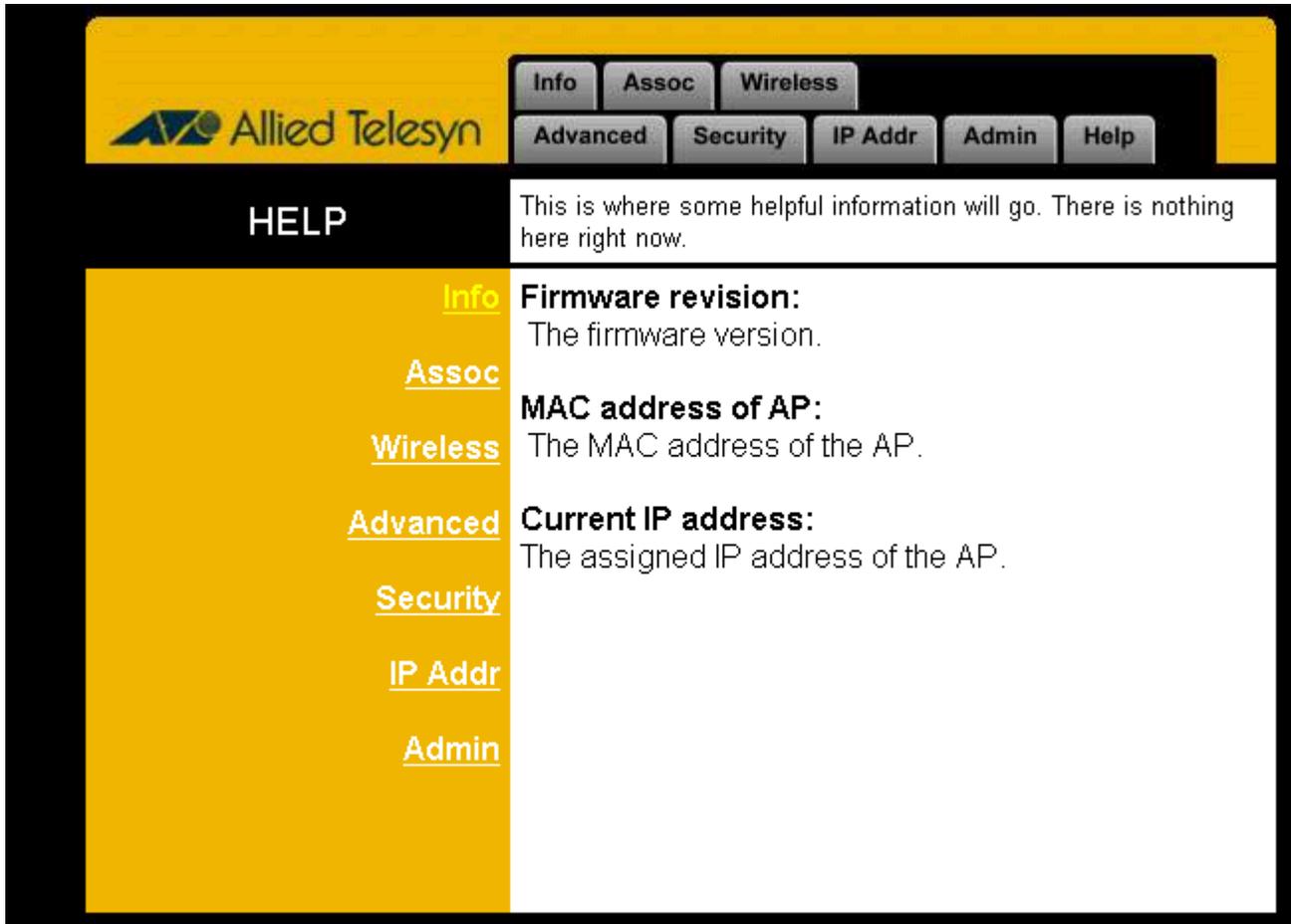
#### Note

You may need to re-load the page to see the changes.

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## Help Tab

The Help Tab displays a brief explanation of each tab shown in the previous sections. You can select the hyperlinks on the right side to guide you to the appropriate tab.



The screenshot shows the Allied Telesyn web interface. At the top left is the Allied Telesyn logo. To the right is a navigation bar with tabs: Info, Assoc, Wireless, Advanced, Security, IP Addr, Admin, and Help. The Help tab is selected. Below the navigation bar, the word "HELP" is displayed in a large font. To the right of "HELP" is a message: "This is where some helpful information will go. There is nothing here right now." Below this message is a list of links: [Info](#) (highlighted), [Assoc](#), [Wireless](#), [Advanced](#), [Security](#), [IP Addr](#), and [Admin](#). The main content area contains three sections:

- Firmware revision:** The firmware version.
- MAC address of AP:** The MAC address of the AP.
- Current IP address:** The assigned IP address of the AP.



## Chapter 5

# Upgrading the Firmware

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1. Click **Start, Programs, AT-WA3404 Wireless Navigator**, and then **AT-WA3404 Wireless Navigator**. Or just double-click the **AT-WA3404 Wireless Navigator** icon on your desktop.
2. The wireless navigator utility starts up.
3. The computer starts searching for the access point and it is shown in the list. Choose the access point that you would like to upgrade the firmware then use Right-click the mouse to enter the **Upgrade FW** option.
4. The download will begin. Enter the new firmware file name and location or select **Browse** to find the file in your system.
5. After entering the file information, click **OK** to continue.
6. The downloading begins.
7. After downloading has finished, the access point will reset automatically. The DIAG LED will be OFF and then it will begin to blink. When the DIAG LED is steady green, the firmware upgrade has been successfully completed.



## Chapter 6

# FAQ and Troubleshooting

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This chapter provides solutions to problems usually encountered during installation and operation of the AT-WA3404 Wireless Access Point. Refer to the following questions to solve problems you may have. If you cannot find an answer here, please contact Allied Telesyn for further assistance.

**Q: My PC cannot locate the Wireless Access Point. How do I troubleshoot the problem?**

A: Do the following:

- Check that your PC has TCP/IP protocol installed.
- Check that the IP Addresses of your PC and wireless access point are both on the same IP network. If not, use the wireless navigator utility to set up access point's IP Address or change your PC's IP Address.
- Check that your wireless LAN card is set to Infrastructure correctly.
- Check that the SSID of your wireless card is the same as access points.
- Check if that the WEP is Enabled. If it is, make sure that the wireless card in your PC and the wireless access point both have the same setting for WEP. For example, the key tables must match.
- Check if radio interference is causing a problem; see if connection is possible when close to the wireless access point. Remember that the connection range can be as short as 100 feet in poor environment.

**Q: The Wireless connection speed is very slow. How do I improve the speed?**

A: The wireless system will connect at the highest possible speed, depending on the distance and the environment condition. To obtain the highest possible connection speed, you have to try to adjust the access points location and orientation. If you find the interference is the problem, changing to another channel may show an improvement.

**Q: Can I run an application from a remote computer over the wireless network?**

A: This will depend on whether or not the application is designed to be used over a network. Refer to the application's user guide to determine if it supports operation over a network.

**Q: Can I play computer games with other members of a wireless network?**

A: Yes, as long as the game supports multiple players over a LAN (Local Area Network). Refer to the game's user guide for more information.

**Q: What is the IEEE 802.11b standard?**

A: The IEEE 802.11b Wireless LAN standards subcommittee, which is formulating a standard for the industry. The objective is to enable wireless LAN hardware from different manufacturers to communicate.

**Q: What is Ad-hoc?**

A: An Ad-hoc wireless LAN is a group of computers, each with a WLAN adapter, connected as an independent wireless LAN. Ad-hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

**Q: What is Infrastructure?**

A: An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to central database or wireless application for mobile workers.

**Q: What is Roaming?**

A: Roaming is the ability of a portable computer user to communicate continuously while moving freely through-out an area greater than that covered by a single Wireless Network Access Point. Before using the roaming function, the workstation must make sure that it is in the same SSID with the Wireless Access Point of dedicated coverage area.

**Q: What is Spread Spectrum?**

A: Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not turned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

**Q: What is WEP?**

A: WEP is Wired Equivalent Privacy, a data privacy mechanism based on a 64-bit or 128-bit as described in the IEEE 802.11 standard.



# Appendix A

## Product Specifications

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This chapter describes the specifications of the product and the LAN port connector.

### Wireless LAN Interface

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Standards:	IEEE 802.11/11b Compliant
Antenna:	Built-in Diversity Dipole Antenna
Frequency Range:	2.4 ~ 2.4835GHz (Industrial Scientific Medical Band) DSSS - Direct Sequence Spread Spectrum
Data Transmission Rate:	11Mbps / 5.5Mbps / 2Mbps / 1Mbps Auto Fall-Back
Access Mode:	Infrastructure mode
Data Security:	Provides both 64-bit & 128-bit WEP Encryption
Output Power:	15 ~ 16.5 dBm
Receiving Sensitivity:	-82dBm Min.
Roaming:	IEEE 802.11 Compliant
Channels:	11 Channels (US, Canada) 13 Channels (Europe)
Coverage Area:	Indoors: up to 50M (165 ft.) at 11Mbps up to 80M (265 ft.) at 5.5 Mbps or lower Outdoors: up to 150M (500 ft.) at 11 Mbps up to 300M (1000 ft.) at 5.5 Mbps or lower (Depending on environmental conditions)

## Wired LAN Interface

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Standards:	IEEE 802.3u 100Base-TX Compliant IEEE 802.3 10Base-T Compliant
Data Transmission Rate:	10Mbps / 100Mbps Auto-sensing
Transmission Mode:	Half-duplex / Full-duplex Auto-negotiation for both 10Mbps and 100Mbps
Media Supported:	Category 3,4,5 for 10Base-T Category 5 for 100Base-TX
Operating Environment:	Operating Temperature: 0 °C to 50 °C Storage Temperature: -25 °C to 70 °C Humidity 10% to 90% non-condensing

# Appendix B

# Glossary

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This section defines and explains the terms used in this guide that are necessary to configure the network.

## **Wireless Channel**

If there are more than one Wireless LAN network with different ESS-ID on the same floor, and they are communicating with each other, the baud rate may be slowed due to the same radio frequency being used. If this happens, you can still communicate regardless of other LAN networks by using different frequencies (wireless channels).

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### **Note**

If the communications are using the wireless LAN, be sure to set all the units to the same wireless channel.

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## **DHCP Server**

When configuring the network TCP/IP, be sure to set the IP Address in each PC and other devices. When there is a DHCP server on the network, you can assign IP Addresses automatically to the PC's and the access point on the network. For the Windows NT server and dial-up router, or other DHCP server function, refer to the Windows 2000, Windows NT, or dial-up router manual, or consult the manufacturer.

## **ESS-ID**

This ID is used to prevent cross-communication during communication between the Access Point and PCs within the wireless LAN. The Wireless LAN PCs that have the same ESS-ID as the access point can communicate with the access point. The ESS-ID is case sensitive. You can enter a maximum of 32 alphanumeric characters and the underline "\_".

## **LAN (Local Area Network)**

A LAN is a network in a comparatively small area, such as campus or within a single building. The LAN baud rate varies from 10 Mbps to 100 Mbps.

### **MAC Address (Media Access Control Address)**

The MAC Address is a physical address specific to each network card. The MAC Address is configured from a total of six bytes as follows: A vendor code comprising the lead three bytes and a 3-byte user code. The vendor code is managed and assigned by IEEE. The user code is managed using a unique (unduplicated) number from the network card manufacturer. That is, the MAC Address is assigned as a physical address unique through-out the world. In an Ethernet LAN, the MAC Address is used as a base to create a frame for sending and receiving data.

### **TCP/IP (Transmission Control Protocol/Internet Protocol)**

TCP/IP is a protocol equivalent to the network and transport levels of the OSI reference model and it is defined using RFC. Consequently, different terminals can communicate with each other using TCP/IP.

- ❑ Normally, TCP/IP includes the application protocols TELNET and FTP.
- ❑ TCP/IP is the standard internet protocol.

### **WEP (Encryption)**

By setting an encryption key in the access point, you can prevent wireless packets from being decrypted externally.

### **Firmware**

Firmware is the name given to the software (programs) built into hardware such as the router, modem, and terminal adapter. This software is built into the hardware, so it can be said to be in-between hardware and software.

### **Protocol**

Protocols are the procedures and regulations for sending and receiving data between the network terminals. For example, if two computers are communicating, you can send the correct information according to the regulations by formatting all required information. The protocol such as which terminal sends first, what type of message, what type of message the receiving terminal should send in reply, the data format, and responses to communications errors, are some examples.

### **Roaming Function**

Using the roaming function and moving from one room to another room you can switch the access point automatically. With the roaming function, you can easily move from the office to the conference room while still maintaining access to the network.