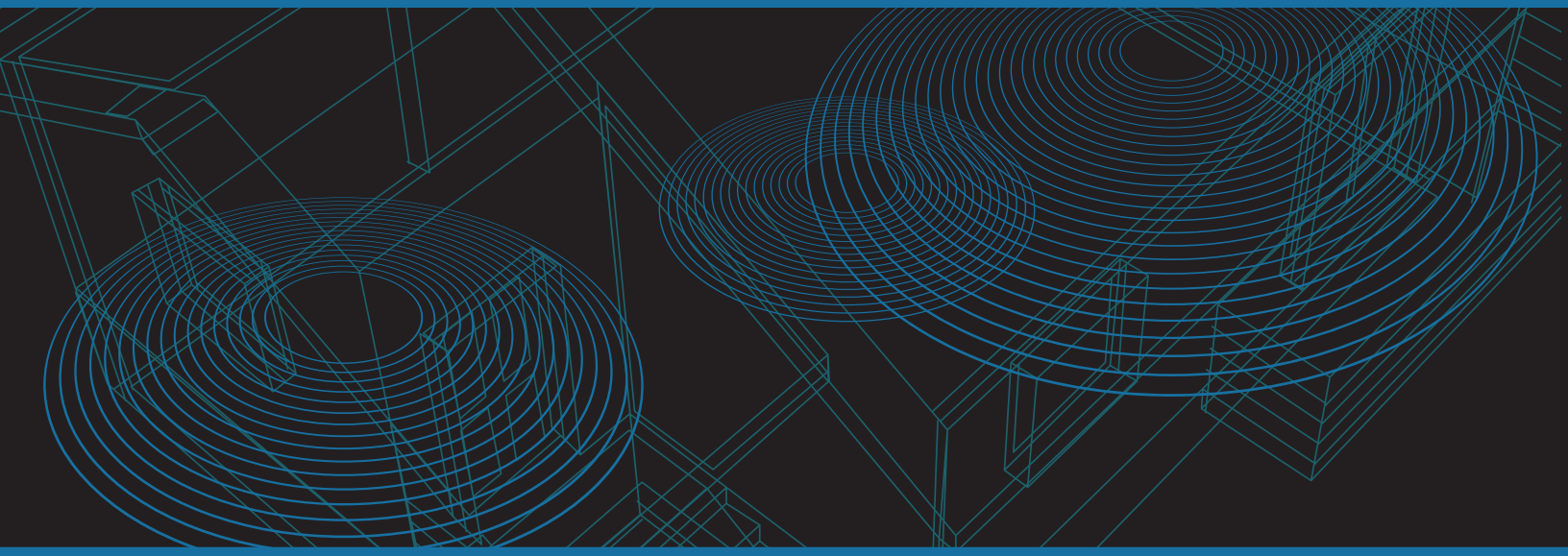
HAWKING TECHNOLOGY

Hi-Gain™ Wireless-AC Range Extender/AP

HW7ACX



website www.hawkingtech.com
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USER'S MANUAL

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Federal Communication Commission Interference Statement

FCC Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

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

FCC Caution

This equipment must be installed and operated in accordance with provided instructions and a minimum 20 cm spacing must be provided between computer mounted antenna and person's body (excluding extremities of hands, wrist and feet) during wireless modes of operation.

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Intended for Use

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

EU Countries Not intended for use

None.

CONTENTS

Chapter I: Product Information

1-1 Product Introduction

Thank you for purchasing the Hawking HW7ACX Hi-Gain™ Wireless-AC Range Extender!

Easy installation procedures allow any computer user to setup a network in very short time - within minutes, even inexperienced users. Just follow the instructions given in this user manual, you can complete the setup procedure and unleash the power of this range extender all by yourself!

Other features of the Hi-Gain™ Wireless-AC Range Extender include:

- Supports 2.4GHz and 5GHz wireless devices simultaneously.
- Provides IEEE 802.11A/B/G/N/AC wireless LAN capability
- Supports 64/128-bit WEP, WPA, and WPA2 wireless data encryption.
- Supports MAC address filtering (Only allow specific wireless device of your choice to connect to this access point).
- Five wired LAN ports (10/100M)
- Auto MDI / MDI-X function for all wired Ethernet ports.
- Support DHCP (Server/Client) for easy IP-address setup.
- Allows you to monitor the access point's status: DHCP Client Log, System Log, Security Log and Device/Connection Status.
- Easy to use Web-based GUI for network configuration and management purposes.

1-2 Safety Information

In order to keep the safety of users and your properties, please follow the following safety instructions:

1. This range extender is designed for indoor use only; DO NOT place this range extender outdoors.

2. DO NOT put this range extender near hot or humid places, like a kitchen or bathroom. Also, do not leave this range extender in the car.

3. DO NOT pull any connected cable with force; disconnect it from the range extender first.

4. If you want to place this range extender at high places or hang on the wall, please make sure the range extender is firmly secured. Falling from high places would damage the range extender and its accessories, and void the warranty.

5. Accessories of this range extender, like the antenna and power supply, are dangerous to small children under 3 years old. They may put the small parts in their nose or mouth and it could cause serious damage to them. KEEP THIS RANGE EXTENDER OUT THE REACH OF CHILDREN!

6. The range extender will become hot when being used for a long time (***This is normal and is not a malfunction).*** DO NOT put this range extender on paper, cloth, or other flammable materials.

7. There's no user-serviceable part inside the range extender. If you found that the range extender is not working properly, please contact your dealer of purchase and ask for help. DO NOT disassemble the range extender, or the warranty will be void.

8. If the range extender falls into water when it's powered, DO NOT use your hand to pick it up. Switch the electrical power off before you do anything, or contact an experienced electrical technician for help.

9. If you smell something strange or even see some smoke coming out from the range extender or power supply, remove the power supply or switch the electrical power off immediately, and call dealer of purchase for help.

1-3 System Requirements

- Computer or network device(s) with wired or wireless network interface card.
- Web browser (*Microsoft Internet Explorer 4.0 or above, Netscape Navigator 4.7 or above, Opera web browser, Mozilla Firefox web browser or Safari web browser).*
- An available AC power socket (100 – 240 V, 50/60Hz)

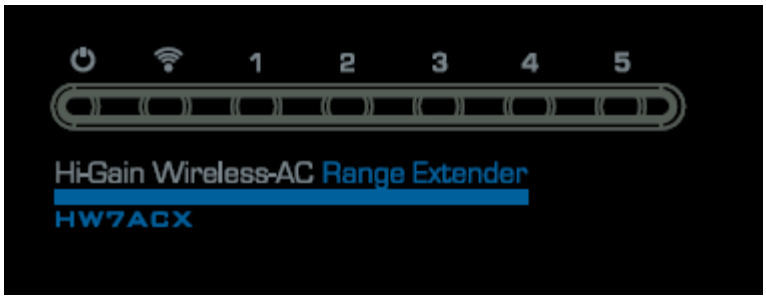
1-4 Package Contents

Before you starting to use this range extender, please check if there is anything missing in the package. Contact your place of purchase to claim missing items:

1x – HW7ACX Hi-Gain™ Dual Band Wireless N Range Extender
1x - Quick Installation Guide
1x - A/C power adapter
1x - Ethernet cord
1x - Setup CD

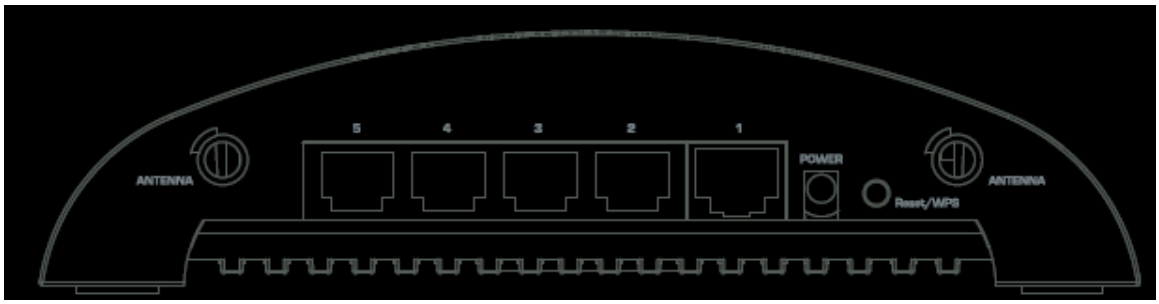
1-5 Product Overview

Top Panel



LED Name	Light Status	Description
PWR	On	Router is switched on and correctly powered.
Wireless	On	Wireless is enabled.
	Off	Wireless network is switched off.
	Flashing	Wireless LAN activity (transferring or receiving data).
Wired 1-5 10/100M	On	LAN port is linked in 10/100Mbps speed.
	Off	LAN port is not linked in 10/100Mbps speed.

Back Panel



Item Name	Description
Antenna	Two 3dBi antennas
Power (12V/0.5A)	Power connector, connects to A/C power adapter.
Network 1-5	Local Area Network (LAN) port

Reset/WPS	Reset the router to factory default settings (clear all settings) or start WPS function. Press this button and hold for 15 seconds to restore all settings to factory defaults, power off/on. Press this button for less than 5 seconds to start WPS function.

NOTE: For 2.4GHz 802.11b and 802.11g mode, the signals can be transmitted only by antenna 1 (The antenna on the right side of the rear panel).

For 2.4 GHz/5GHz 802.11n mode: The extender is operating in a 2T2R Spatial Multiplexing MIMO configuration. Two (2) antennas are for signal transmitting and two (2) antennas are for signal receiving.

Chapter II: Quick Setup and Basic Settings

2-1 Installing the HW7ACX

Complete the following instructions to build the network connection between your new wireless range extender and your computers or network devices:

1. Connect the range extender to your computer (source) through the LAN port of the range extender by Ethernet cable or connect to it wirelessly.

2. Connect the A/C power adapter to the wall socket, and then connect it to the ‘Power’ socket of the range extender.

3. Please check all LEDs on the front panel. LAN LEDs should be on if the range extender is correctly connected to the router. If it is not on, or any LED you expect is not on, please recheck the cabling, or jump to ***‘5-2 Troubleshooting’*** for possible reasons and solutions.

2-2 Connecting to the Range Extender by Web Browser

After your HW7ACX Hi-Gain™ Wireless-AC Range Extender has been connected and powered the next step is to access the Web Menu for initial configuration. To do this, your computer must be able to get an IP address automatically (use dynamic IP address setting).

Try to access: http://192.168.1.240

If the Web Menu appears you can skip the next steps and go to step 2-3.
You will need to enter the following default login and password to access the 'Quick Setup' menu:

Login: admin
Password: 1234

If it's set to use a static IP address or you are unsure, please follow the following instructions to configure your computer to use a dynamic IP address:

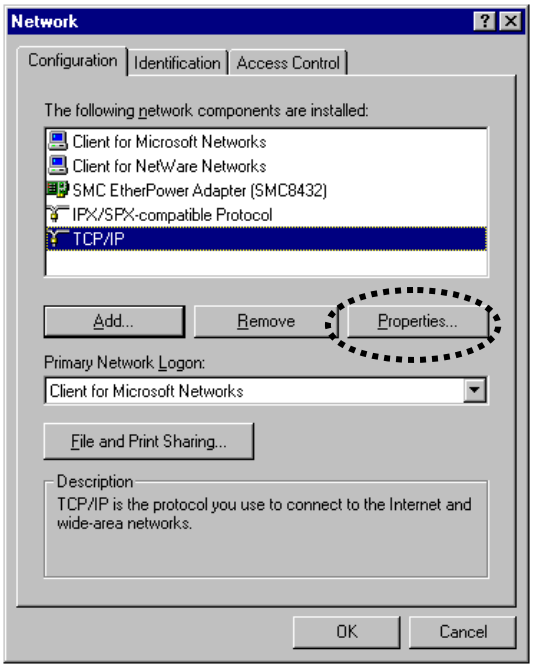
Note: Please be sure to set your network IP addresses back to default after you have finished configuration.

If the operating system of your computer is….

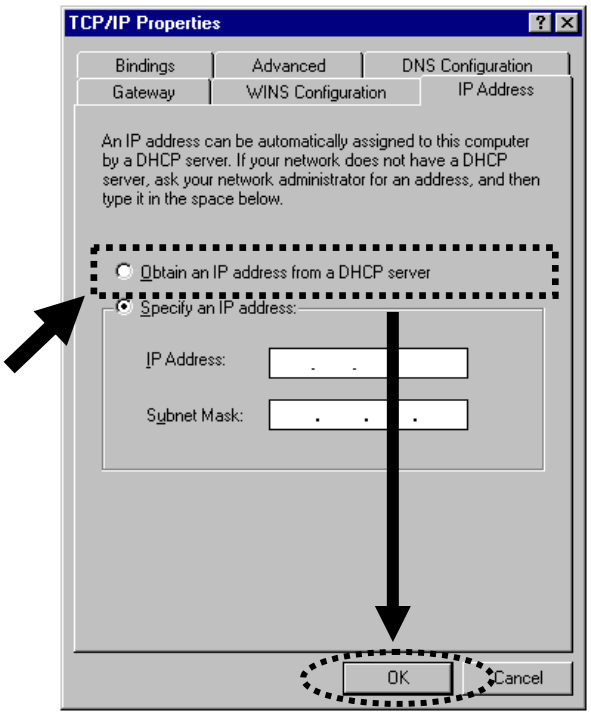
Windows 95/98/Me - please go to section 2-2-1
Windows 2000 - please go to section 2-2-2
Windows XP - please go to section 2-2-3
Windows Vista/7 - please go to section 2-2-4
Mac OS X - please go to section 2-2-5

2-2-1 Windows 95/98/Me IP Address Setup:

1. Click ‘Start’ button (it should be located at lower-left corner of your computer), then click control panel. Double-click ***Network*** icon, and ***Network*** window will appear. Select ‘TCP/IP’, then click ‘Properties’.

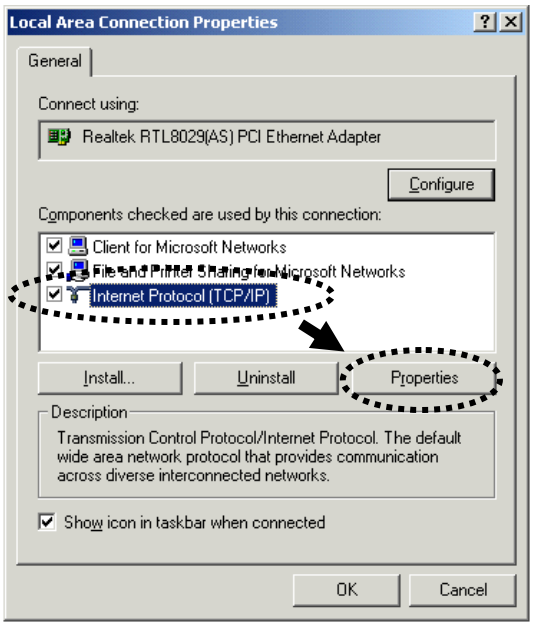


2. Select ‘Obtain an IP address from a DHCP server’ and then click ‘OK’.

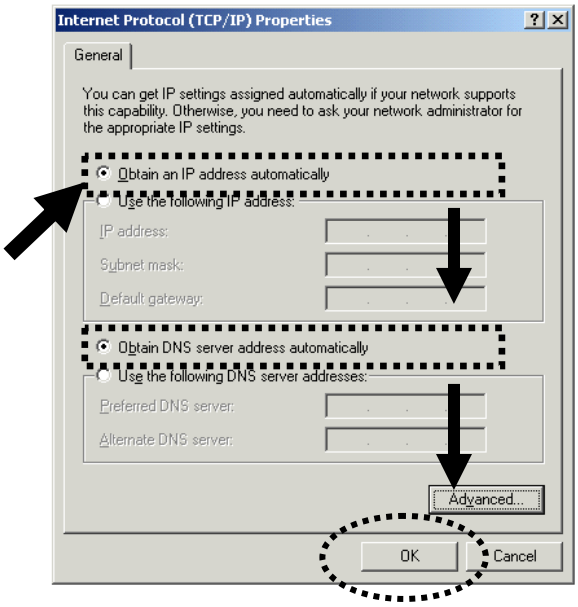


2-2-2 Windows 2000 IP Address Setup

1. Click ‘Start’ button (it should be located at lower-left corner of your computer), then click control panel. Double-click ***Network and Dial-up Connections*** icon; click ***Local Area Connection,*** and ***Local Area Connection Properties*** window will appear. Select ‘Internet Protocol (TCP/IP)’ and then click ‘Properties’

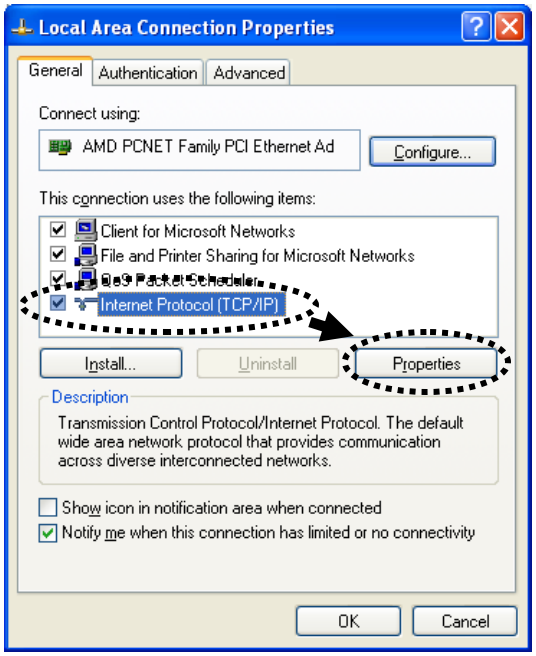


2. Select ‘Obtain an IP address automatically’ and ‘Obtain DNS server address automatically’, then click ‘OK’.

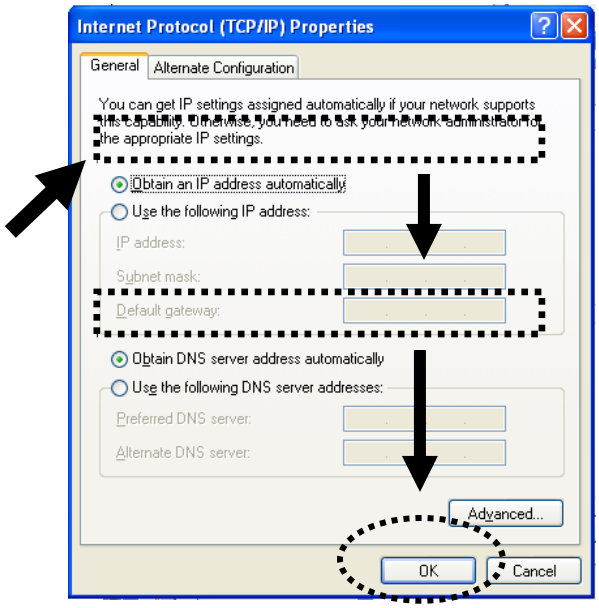


2-2-3 Windows XP IP Address Setup

1. Click ‘Start’ button (it should be located at lower-left corner of your computer), then click control panel. Double-click ***Network and Internet Connections*** icon, click ***Network Connections,*** and then double-click ***Local Area Connection, Local Area Connection Status*** window will appear, and then click ‘Properties’

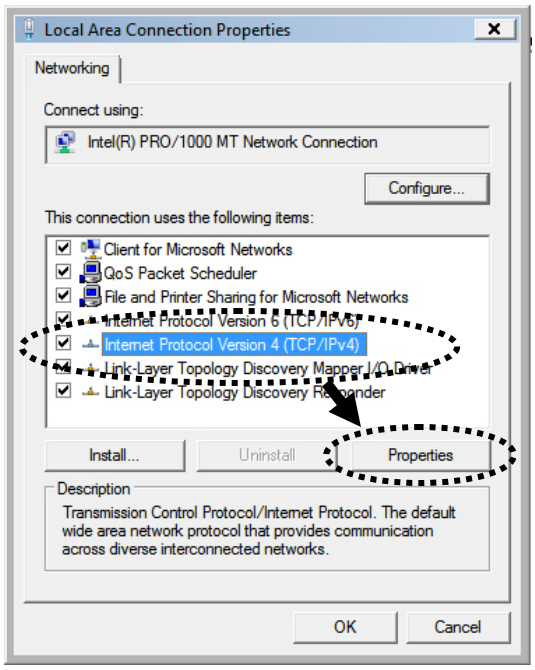


2. Select ‘Obtain an IP address automatically’ and ‘Obtain DNS server address automatically’, then click ‘OK’.

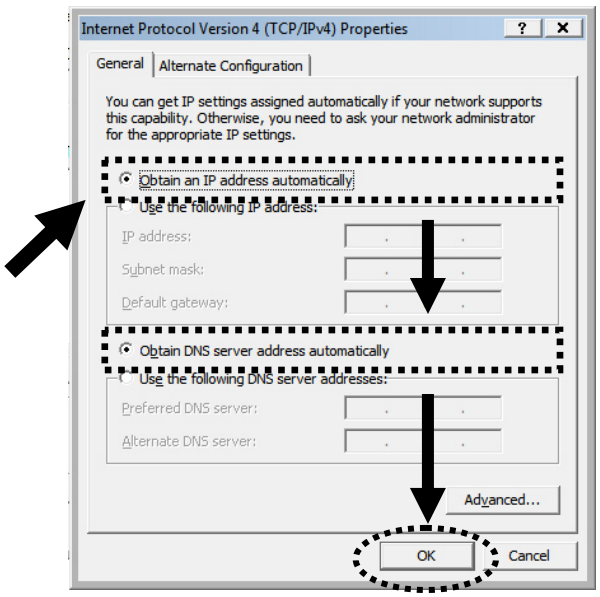

Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

2-2-4 Windows Vista/7/8 IP Address Setup

1. Click ‘Start’ button (it should be located at lower-left corner of your computer), then click control panel. Under ***Network and Internet,*** Click ***View Network Status and Tasks***, then click ***Manage Network Connections/Change Adapter Settings*** on the right hand column. Right-click ***Local Area Network, then select ‘Properties’. Local Area Connection Properties*** window will appear, select ‘Internet Protocol Version 4 (TCP / IPv4)’, and then click ‘Properties’

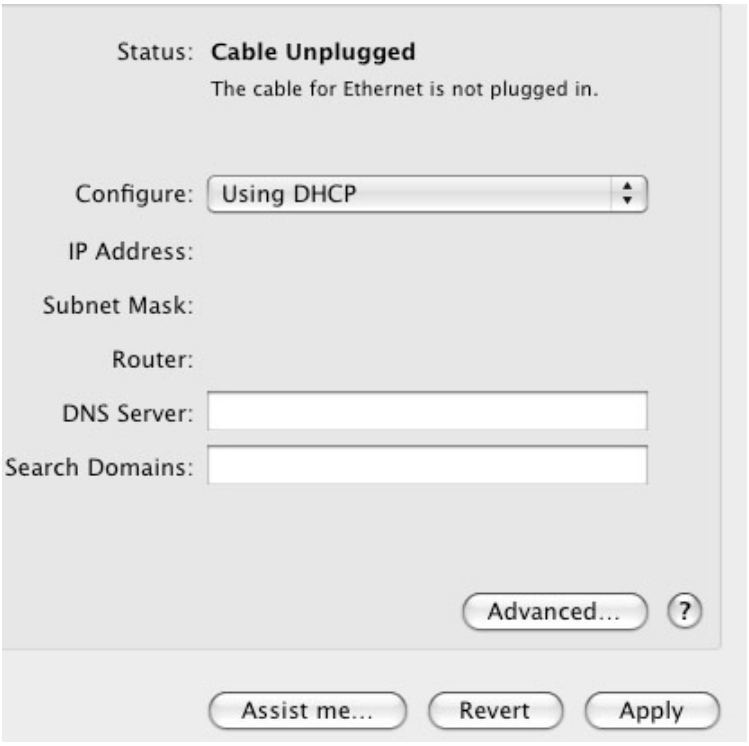


2. Select ‘Obtain an IP address automatically’ and ‘Obtain DNS server address automatically’, then click ‘OK’.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

2-2-5 Mac OS X IP Address Setup

Go to your system preferences, go to network. Select your network connection. Make sure ‘Configure’ is set to ‘Using DHCP’.



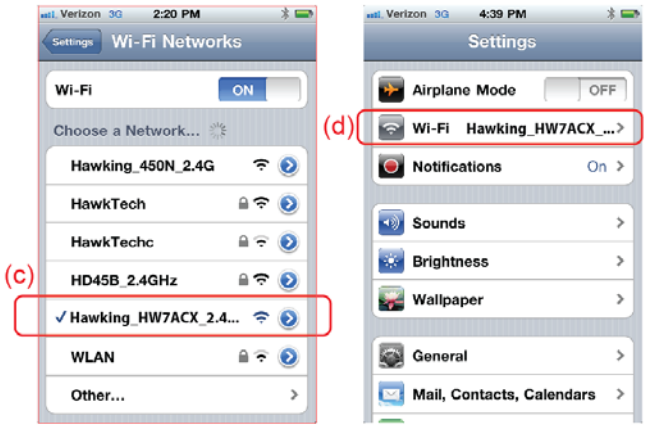
2-2-6 Tablet/Smartphone Setup

iOS (iPhone or iPad)

Go to your settings on your tablet or smart phone

First, make sure JavaScript is On: Go to Settings icon Select (a) Safari > make sure (b) JavaScript is ON.

Go back to Home Screen > Select Settings > In Wi-Fi Networks, select (c) “Hawking_HW7ACX_2.4GHz” > (d) Make sure your Wi-Fi is connected to Hawking_HW7ACX_2.4GHz

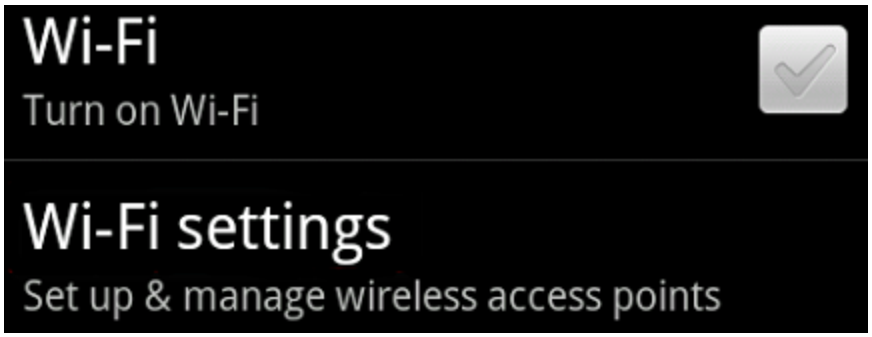


Android (Android 2.1 +)

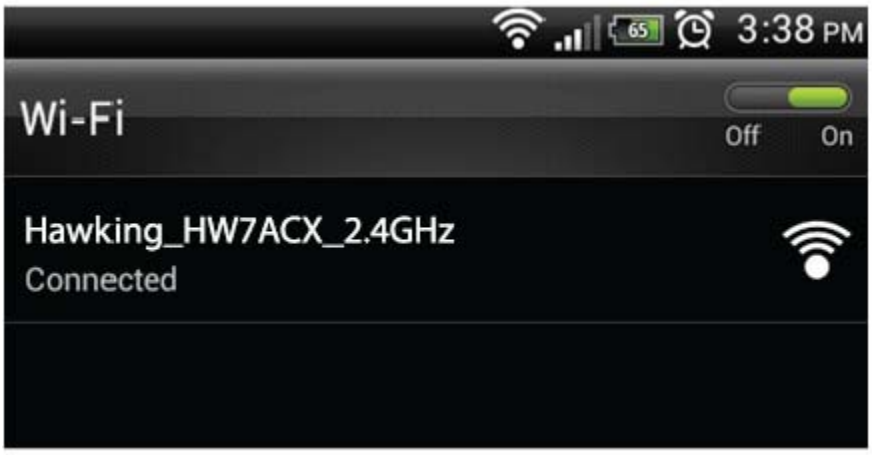
Go to Settings

Go to Wireless & Networks

Check “Turn on Wi-Fi” and then click on Wi-Fi settings

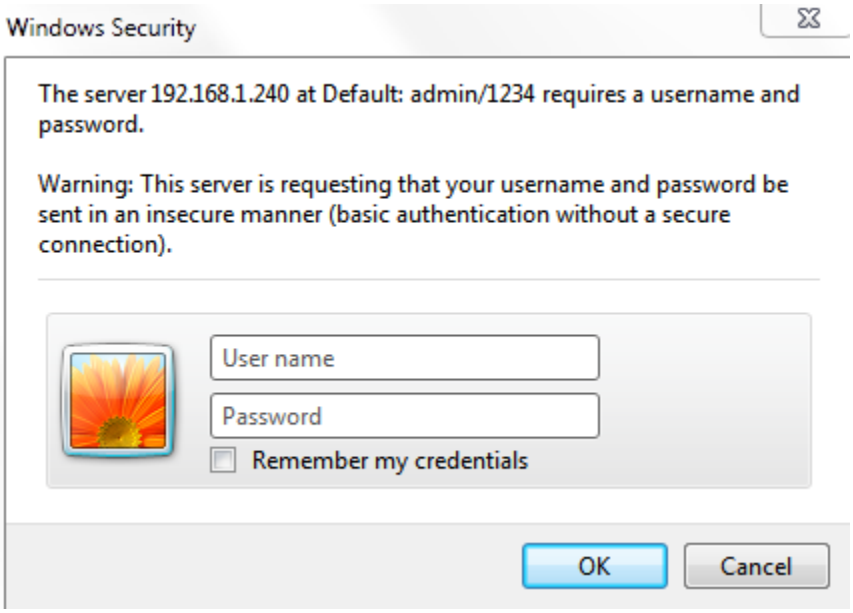


Look for Hawking_HW7ACX_2.4GHz, then select to connect

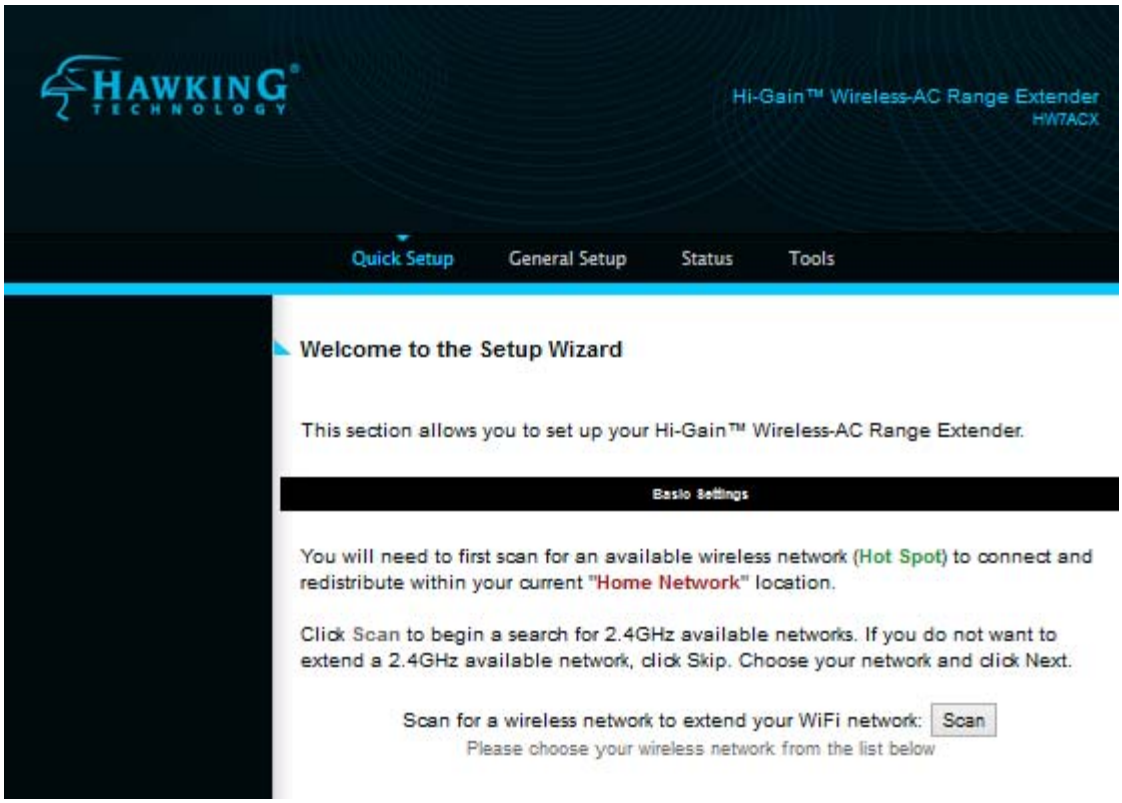


2-2-7 Connecting to Web Management Interface

All functions and settings of this range extender can be configured via web management interface. Please start your web browser, and input '192.168.1.240' in address bar, then press the 'Enter' key. The following message should be shown:



Please input user name and password in the fields respectively, default user name is 'admin', and default password is '1234', then press the 'OK' button, and you will see the web management interface of this range extender:



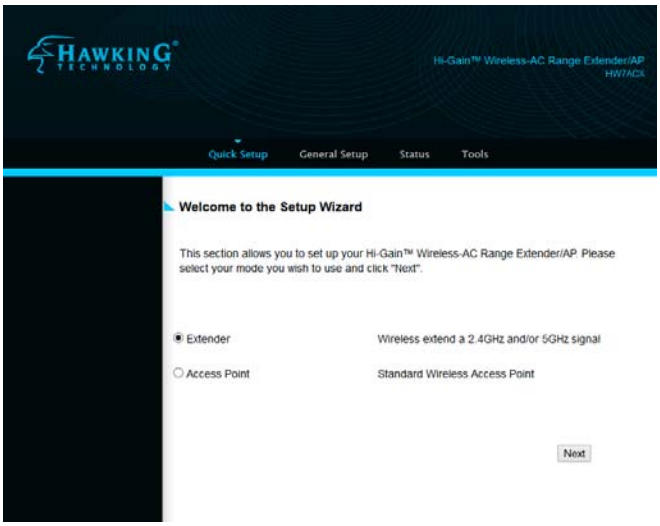
NOTE: If you can't see the web management interface, and you are being prompted to input the user name and password again, it means you didn't input the username and password correctly. Retype the user name and password again. If you're certain about the username and password you typed are correct, please go to '6-2 Troubleshooting' to perform a factory reset.

2-3 Quick Setup

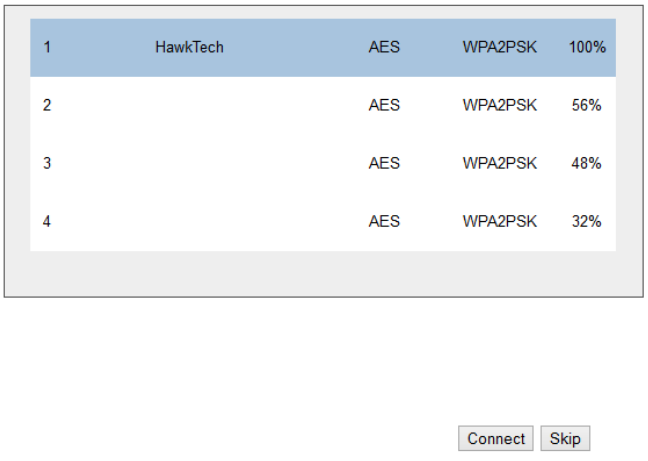
After you have connected to the range extender by web browser, the first thing you see is ‘Quick Setup’ page. It may take a few second to load because it is scanning for available networks to extend. This is where you will setup and connect to your wireless networks.

2-3-1 Setting up in Extender Mode

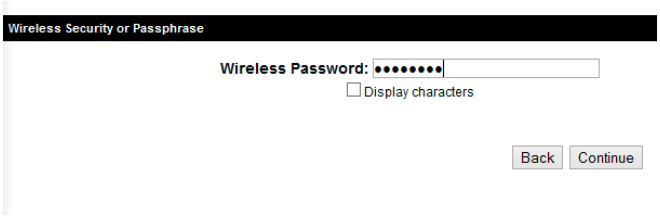
Step 1) Choose Extender Mode.



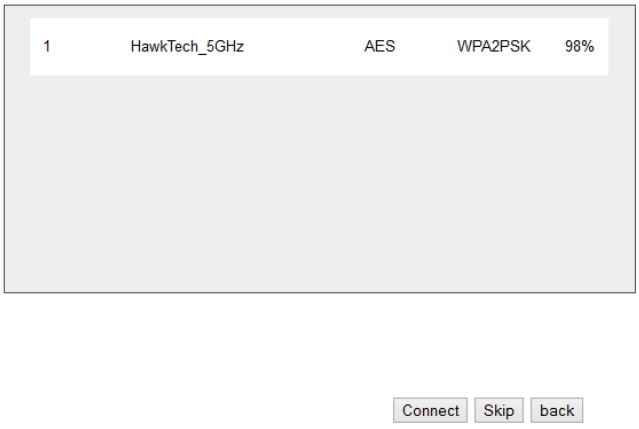
Step 2) The HW7ACX will first scan for available 2.4GHz networks. If you do not see anything, you can click scan. If you do not want to use 2.4GHz, you can click “skip” and it will bypass the 2.4GHz network.



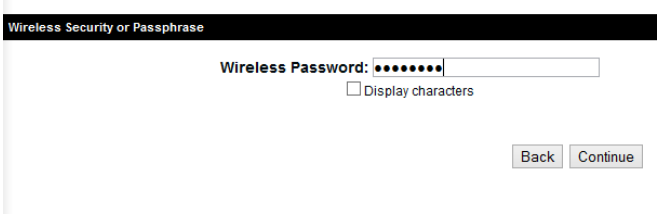
Step 3) If your 2.4GHz network has wireless security, it will prompt you to enter in your password. If you do know this password, please refer to your original WiFi network's settings or contact your network administrator.



Step 4) The HW7ACX will now scan for available 5 GHz networks. If you do not see anything, you can click scan. If you do not want to use 5GHz, you can click "skip" and it will bypass the 5GHz network.

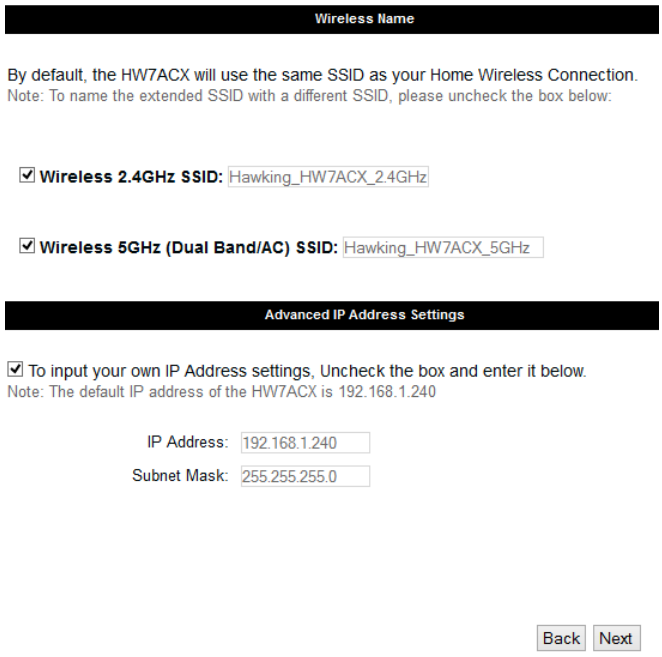


Step 4) If your 5GHz network has wireless security, it will prompt you to enter in your password. If you do know this password, please refer to your original WiFi network's settings or contact your network administrator.

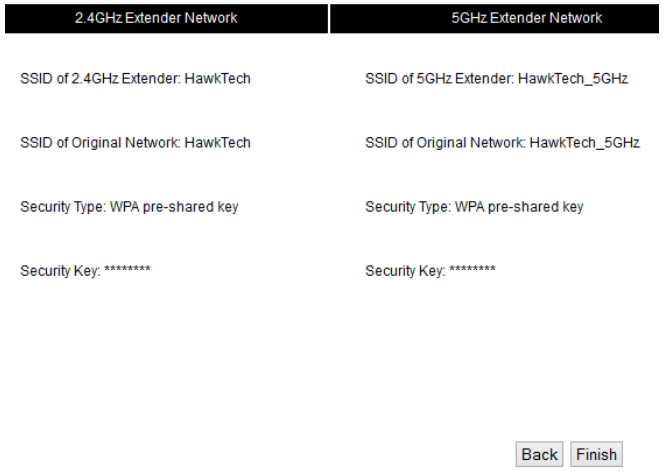


Step 5) You can name your WiFi networks and/or give your HW7ACX a unique IP address. By default, the HW7ACX will use the same wireless name as your original WiFi network. You can uncheck the box to make

changes if you wish.
If you wish to give the HW7ACX an IP address, uncheck the input box and type in your own IP and subnet mask

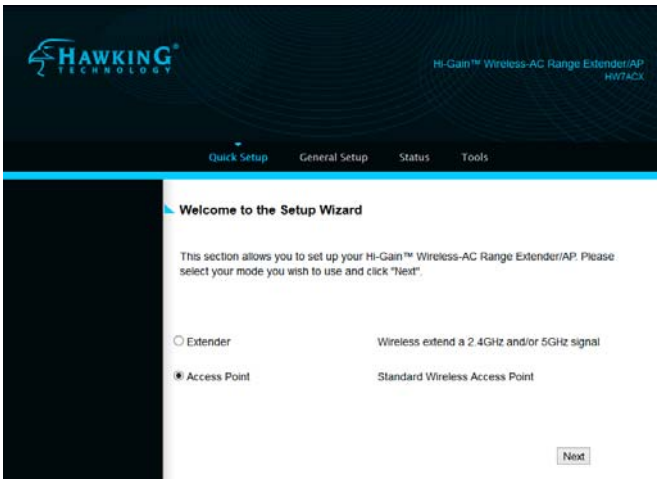


Step 6) Congratulations! You have completed the setup of the HW7ACX. Click Finish for the device to reboot.

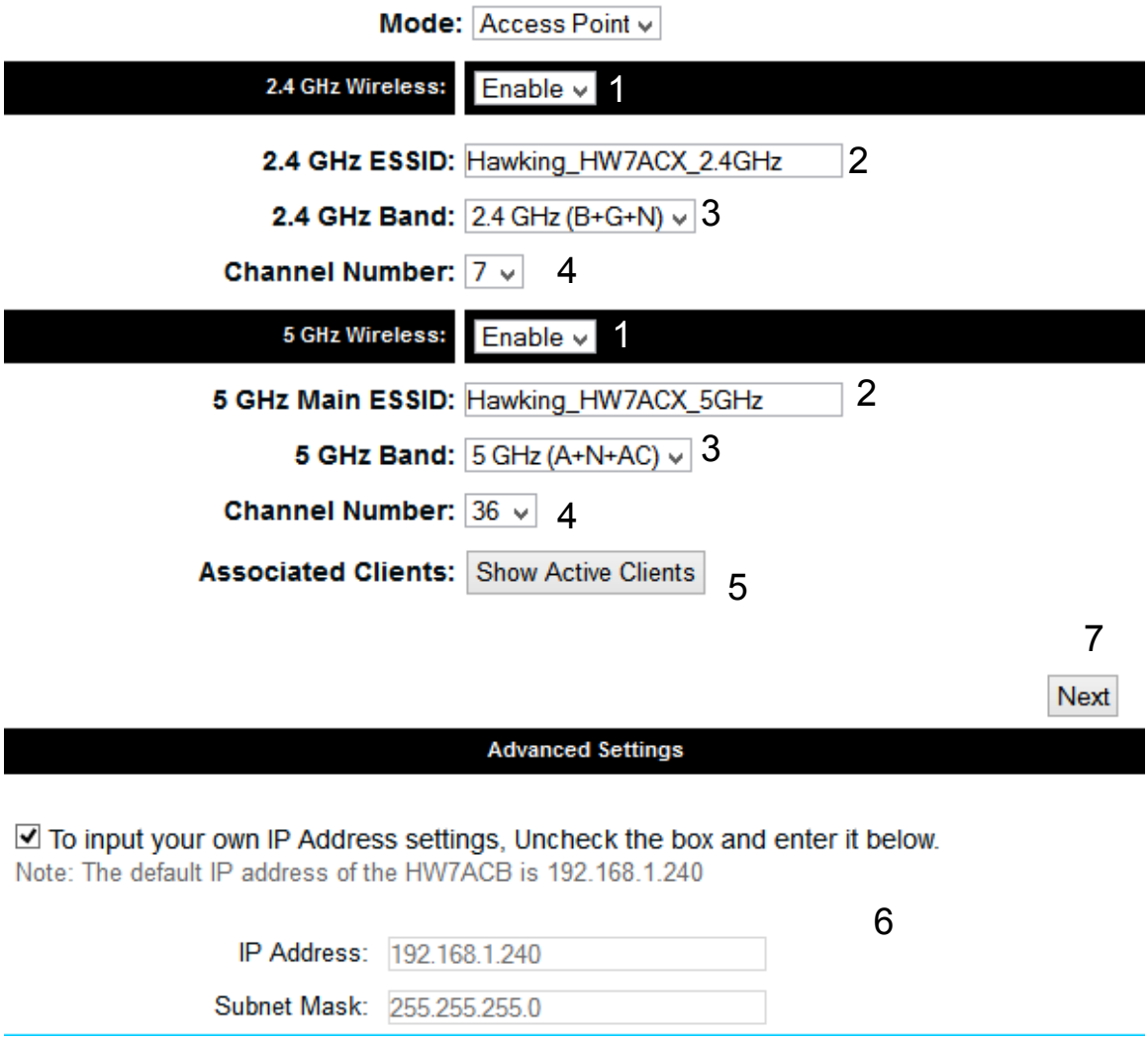


2-3-2 Setting up in Access Point Mode

Step 1) Choose Access Point Mode



Step 2) Input your wireless settings



Wireless (1):	*Shows you if the wireless is enabled/disabled*
ESSID (2):	*The HW7ACX transmits in both 2.4GHz and 5GHz WiFi frequencies. Please input the ESSID (the name used to identify this wireless access point) for each frequency here. You can input up to 32 alphanumerical characters.* ***PLEASE NOTE THAT ESSID IS CASE SENSITIVE.*** *Default SSID* *2.4GHz: Hawking_HW7ACX_2.4GHz* *5GHz: Hawking_HW7ACX_5GHz*
Band (3):	*Please select the wireless band you wish to use. By selecting different band setting, you'll be able to allow or deny the wireless client of a certain band.* ***2.4GHz Band*** *If you select 2.4GHz (B), 2.4GHz (N), or 2.4GHz (G), only wireless clients using the wireless band you select (802.11b, 802.11 Draft-N, or 802.11g) will be able to connect to this access point.* *If you select 2.4GHz (B+G), then only wireless clients using 802.11b and 802.11g band will be able to connect to this access point.* *If you want to allow 802.11b, 802.11g, and 802.11 Draft-N clients to connect to this access point, select 2.4GHz (B+G+N).* ***5GHz Band*** *5GHz (A): this mode allows 802.11a wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients).* *5GHz (N): this mode allows 802.11n wireless network client to connect this router (maximum transfer rate 300Mbps for*

802.11n clients).

5GHz (A+N): this mode allows 802.11a and 802.11n wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients, and maximum 300Mbps for 802.11n clients).

5GHz (AC): this mode allows 802.11ac wireless network client to connect this router (maximum transfer rate 433Mbps for 802.11ac clients).

5GHz (N+AC): this mode allows 802.11n and 802.11ac wireless network client to connect this router (maximum transfer rate 150Mbps for 802.11n clients, and maximum 433Mbps for 802.11ac clients).

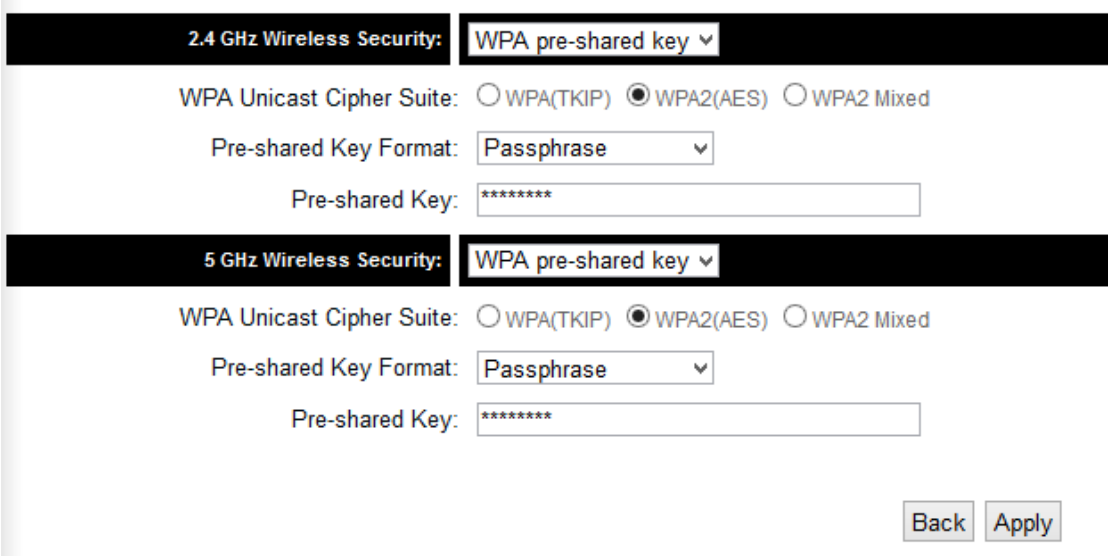
5GHz (A+N+AC): this mode allows 802.11a, 802.11n and 802.11ac wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients, maximum 150Mbps for 802.11n clients, and maximum 433Mbps for 802.11ac clients).

Channel Number (4): *Please select a channel number you wish to use. If you know a certain channel number is being used by other wireless access points nearby, please refrain from using the same channel number*

Associated Clients (5): *Click 'Show Active Clients' button and a new popup window will appear which contains the information about all wireless clients connected to this access point. You can click 'Refresh' button in popup window to keep information up-to-date.*

Adv. IP Address (6) *This section allows you to set an IP Address and subnet mask to fit your network if needed. Uncheck the box to input. Otherwise, the default IP Address is 192.168.1.240*

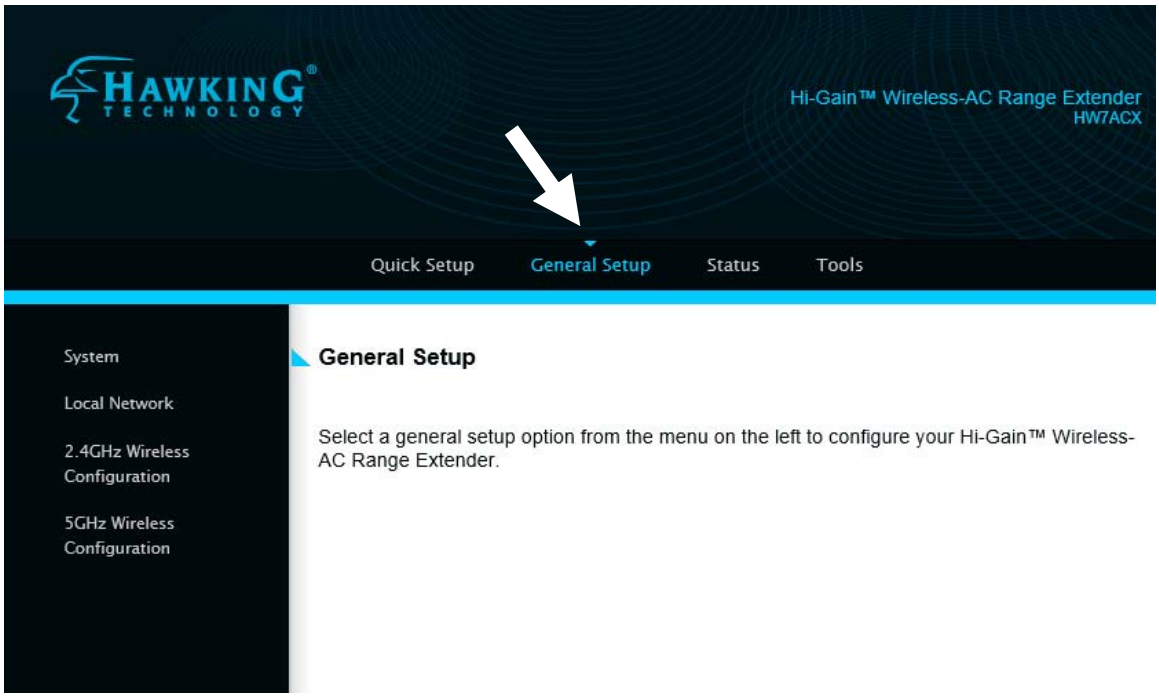
After you finish with all settings, please click ‘Next’ (7) button.



If you wish to have security, please select your level of security here. Refer to Section 3-3-3 for descriptions of security types. Click ‘Apply’ for the device to restart. Click ‘Back’ if you wish to make changes. Plug the HW7ACX into your router or network. Congratulations, you have set up the HW7ACX in Access Point!

Chapter III General Setup

In this chapter, you'll know how to change the major settings of the HW7ACX. Log onto the device and click on 'General Setup'.

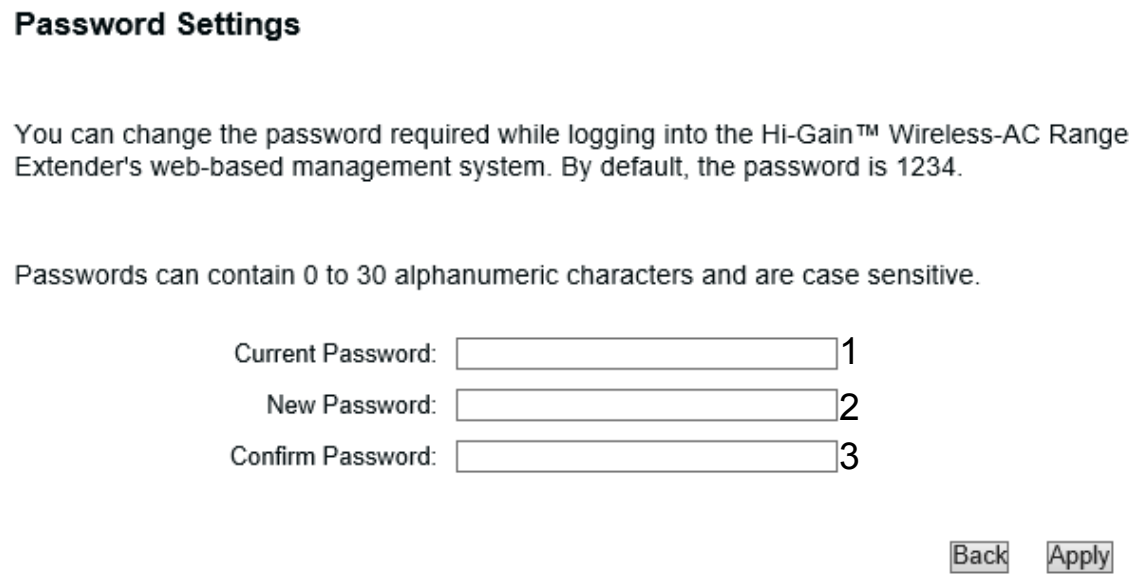


3-1 Change Management password

Default password of this access point is ‘1234’, and it’s displayed on the login prompt when accessed from the web browser. There’s a security risk if you don’t change the default password, since everyone can see it. This is very important when you have wireless function enabled.

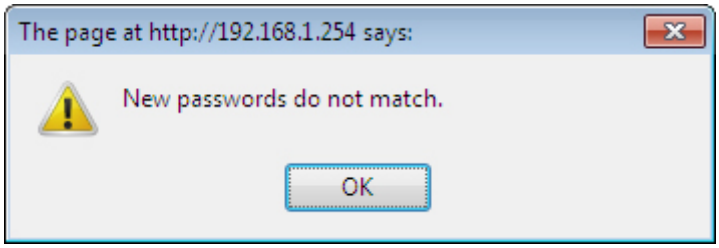
To change password, please follow the instructions:

Please click ‘General Setup’ at top of web management interface, select ‘System’ tab on the left hand column, and then click ‘Password Settings’, and the following message will be displayed on your web browser:



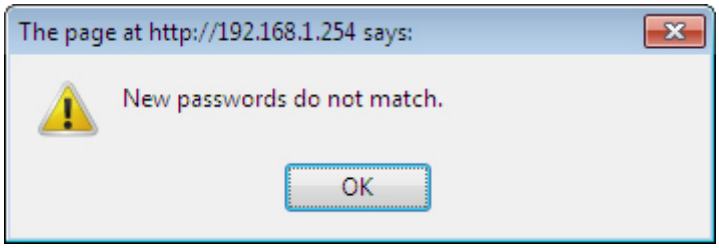
Current Password (1):	*Please input current password here.*
New Password (2):	*Please input new password here.*
Confirm Password (3):	*Please input new password here again.*

If the password you typed in ‘New Password’ (2) and ‘Confirm Password’ (3) field are not the same, you’ll see the following message:



Please retype the new password again when you see above message.

If you see the following message:



It means the content in ‘Current Password’ field is wrong, please click ‘OK’ to go back to previous menu, and try to input current password again.

If the current and new passwords are correctly entered, after you click ‘Apply’, you’ll be prompted to input your new password:

Please use new password to enter web management interface again, and you should be able to login with new password.

3-2 Wired LAN Configuration

Before all computers using wired Ethernet connection (i.e. the computers connected to this access point's LAN port) can communicate with each other and access Internet, they must have a valid IP address.

There are two ways to assign IP addresses to computers: static IP address (set the IP address for every computer manually), and dynamic IP address (IP address of computers will be assigned by access point automatically. It's recommended for most computers to use dynamic IP address, it will save a lot of time on setting IP addresses for every computer, especially when there are a lot of computers in your network; for servers and network devices which will provide services to other computers and users that come from the Internet, a static IP address should be used.

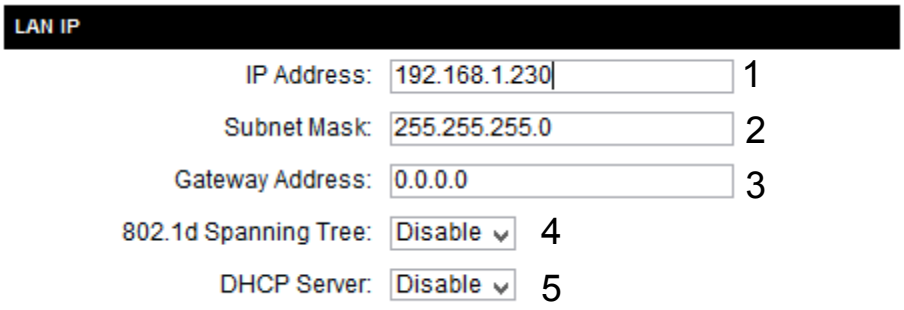
Suggestions on IP Address numbering plan:

If you have no idea on how to define an IP address plan for your network, here are some suggestions.

1. **A valid IP address has 4 fields: a.b.c.d, for most of home and company users, it's suggested to use 192.168.c.d, where c is an integer between 0 and 254, and d is an integer between 1 and 254. This router is capable to work with up to 253 clients, so you can set 'd' field of IP address of router as 1 or 254 (or any number between 1 and 254), and pick a number between 0 and 254 for field 'c'.**
2. **In most cases, you should use '255.255.255.0' as subnet mask, which allows up to 253 clients (this also meets router's capability of working with up to 253 clients).**
3. **For all servers and network devices which will provide services to other people (like Internet service, print service, and file service), they should use static IP address. Give each of them a unique number between 1 and 253, and maintain a list, so everyone can locate those servers easily.**
4. **For computers which are not dedicated to provide specific service to others, they should use dynamic IP address.**

Please click ‘General Setup’ at the top of web management interface and click ‘Local Network’ on the left hand column.
There are two setup groups here: ‘LAN IP’ and ‘DHCP Server’

3-2-1 Local Network



IP address (1): *Please input the IP address of this access point.*

Subnet Mask (2): *Please input subnet mask for this network.*

Gateway Address (3): *Please input your gateway address for the network.*

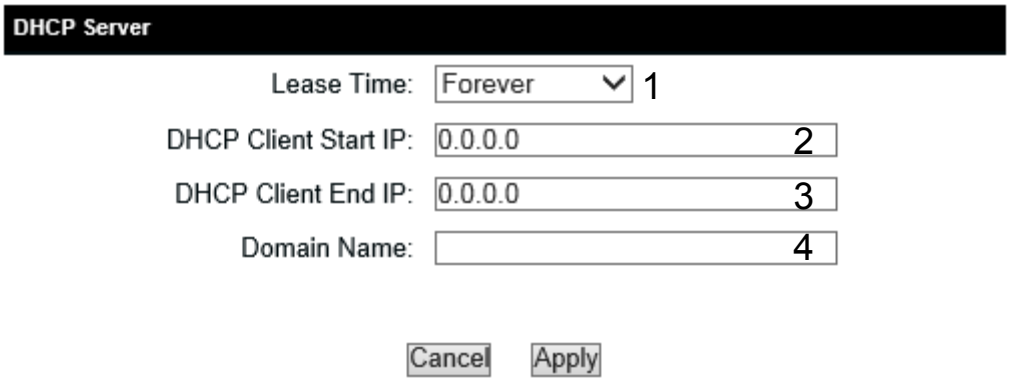
802.1d Spanning Tree (4): Spanning-Tree Protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths

DHCP Server (5): *If you want to activate DHCP server function of this access point, select ‘Enabled’, or set it to ‘Disabled’.*

Recommended Value if you don’t know what to fill:

IP Address: 192.168.1.240
Subnet Mask: 255.255.255.0
Gateway Address: (leave it blank)
802.d Spanning Tree: Disabled
DHCP Server: Disabled

3-2-2 DHCP Server:



These settings are only available when 'DHCP Server' in 'LAN IP' section is 'Enabled'.

Lease Time (1): *Please choose a lease time (the duration that every computer can keep a specific IP address) of every IP address assigned by this access point from dropdown menu.*

DHCP Client Start IP (2): Please input the start IP address of the IP range.

DHCNP Client End IP (3):Please input the end IP address of the IP range.

Domain Name (4): *If you wish, you can also optionally input the domain name for your network. This is optional.*

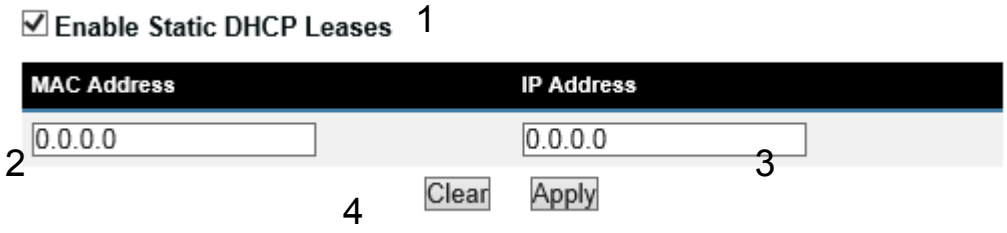
Recommended Value if you don't know what to fill:
Lease Time: Two Weeks (or 'Forever', if you have less than 20 computers)
Start IP: 192.168.1.100
End IP: 192.168.1.200
Domain Name: (leave it blank)

NOTE:
1. The number of the last field (mentioned 'd' field) of 'End IP' must be greater than 'Start IP', and can not be the same as router's IP address.
2. The former three fields of IP address of 'Start IP', 'End IP', and 'IP Address of 'LAN IP' section (mentioned 'a', 'b', and 'c' field) should be the same.
3. These settings will affect wireless clients too.

3-2-3 Static DHCP Leases Table:

This function allows you to assign a static IP address to a specific computer forever, so you don't have to set the IP address for a computer, and still enjoy the benefit of using DHCP server. Maximum 16 static IP addresses can be assigned here.

(If you set 'Lease Time' to 'forever' in 'DHCP Server' section, you can also assign an IP address to a specific computer permanently, however, you will not be able to assign a certain IP address to a specific computer, since IP addresses will be assigned in random order by this way).



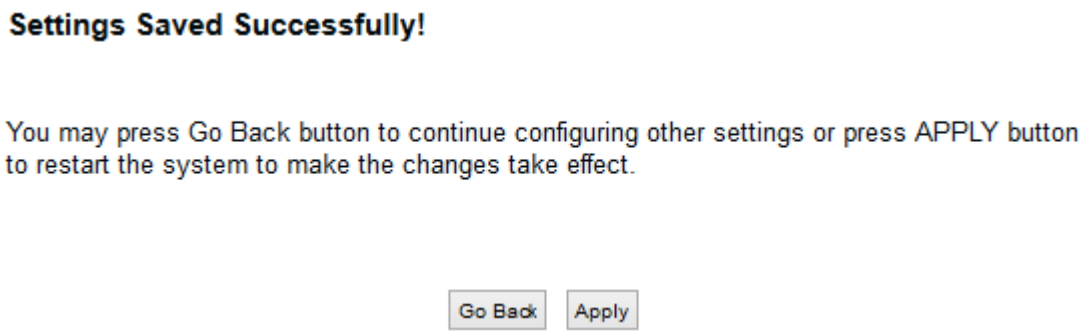
Enable Static DHCP Leases (1):	*Check this box to enable this function, otherwise uncheck it to disable this function.*
MAC Address (2):	*Input the MAC address of the computer or network device (total 12 characters, with character from 0 to 9, and from a to f, like '001122aabbcc')*
IP address (3):	*Input the IP address you want to assign to this computer or network device*
'Add' (4):	*After you inputted MAC address and IP address pair, click this button to add the pair to static DHCP leases table.*

If you want to remove all characters you just entered, click 'Clear'.

After you clicked 'Add', the MAC address and IP address mapping will be added to 'Static DHCP Leases Table' section.

If you want to delete a specific item, please check the 'Select' box of a MAC address and IP address mapping (1), then click 'Delete Selected' button (2); if you want to delete all mappings, click 'Delete All' (3).

After you finish all LAN settings, please click 'Apply' button on the bottom of this page. After you click 'Apply', the following message will be displayed on your web browser:

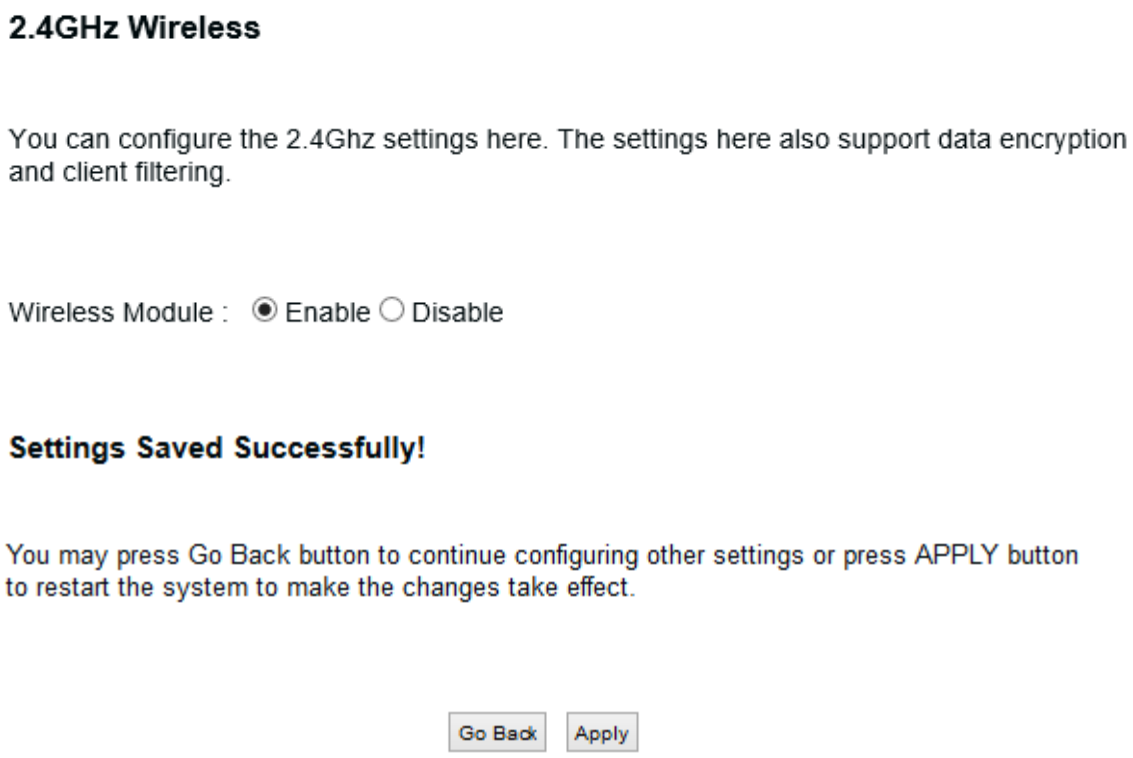


Press 'Go Back' to save the settings made and go back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

3-3 Wireless Network

If your computer, PDA, game console, or other network devices is equipped with a wireless network adapter, you can use the wireless function of this access point to let them connect to the Internet and share resources with other computers.

Please click ‘General Setup’ tab at the top of web management interface, and then click ‘2.4GHz Wireless Configuration’ or ‘5GHz Wireless Configuration’ tab on the left hand column. The following message will be displayed on your web browser:



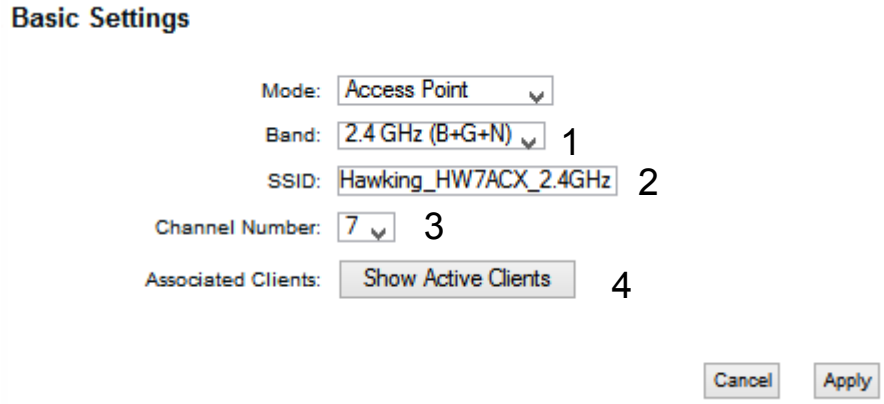
Please click ‘Go Back’ to go back to previous setup menu, or click ‘Apply’ to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access point to reboot

3-3-1 Basic Wireless Settings

Please click ‘General Setup’ menu at the top of web management interface, then click ‘2.4GHz Wireless Configuration’ or ‘5GHz Wireless Configuration’ on the left hand column. Choose ‘Basic Settings’. Next to the Mode option, please select your Mode.

3-3-1-1 Access Point

The HW7ACX will broadcast a WiFi signal for other computers and devices to connect to. Must be plugged into the router or network after setup.



Band (1): *Please select the radio band from one of following options:*

2.4GHz

2.4 GHz (B)	2.4GHz band, only allows 802.11b wireless network clients to connect to this router (maximum transfer rate 11Mbps).
2.4 GHz (N)	2.4GHz band, only allows 802.11n wireless network clients to connect to this router (maximum transfer rate 300Mbps).
2.4 GHz (B+G)	2.4GHz band, only allows 802.11b and 802.11g wireless network clients to connect to this router (maximum transfer rate 11Mbps for 802.11b clients, and maximum 54Mbps for 802.11g clients).
2.4 GHz (G)	2.4GHz band, only allows 802.11g wireless network clients to connect to this router (maximum transfer rate 54Mbps).
2.4 GHz (B+G+N)	2.4GHz band, allows 802.11b, 802.11g, and 802.11n wireless network clients to connect to this router (maximum transfer rate 11Mbps for 802.11b clients, maximum 54Mbps for 802.11g clients, and maximum

300Mbps for 802.11n clients).

5GHz

5GHz (A):	5GHz band, this mode allows 802.11a wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients).
5GHz (N):	5GHz band, this mode allows 802.11n wireless network client to connect this router (maximum transfer rate 300Mbps for 802.11n clients).
5GHz (A+N):	5GHz band, this mode allows 802.11a and 802.11n wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients, and maximum 300Mbps for 802.11n clients). 5GHz (AC): this mode allows 802.11ac wireless network client to connect this router (maximum transfer rate 433Mbps for 802.11ac clients).
5GHz (AC):	5GHz band, this mode allows 802.11ac wireless network client to connect this router (maximum transfer rate 433Mbps for 802.11ac clients).
5GHz (N+AC):	5GHz band, this mode allows 802.11n and 802.11ac wireless network client to connect this router (maximum transfer rate 150Mbps for 802.11n clients, and maximum 433Mbps for 802.11ac clients).
5GHz (A+N+AC):	5GHz band, this mode allows 802.11a, 802.11n and 802.11ac wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients, maximum 150Mbps for 802.11n clients, and maximum 433Mbps for 802.11ac clients).

NOTE: If you don't have special reason to limit the type of allowed wireless clients, it's recommended to choose '2.4 GHz (B+G+N) and 5GHz (A+N+AC) to maximize wireless client compatibility.

ESSID (2): *This is the name of wireless access point. You can type any alphanumerical characters here, maximum 32 characters. ESSID is used to identify your own wireless access point from others when there are other wireless access points in the same area.*

Default SSID
2.4GHz: Hawking_HW7ACX_2.4GHz
5GHz: Hawking_HW7ACX_5GHz
It's recommended to change default ESSID value to the one which is meaningful to you, such as, 'myhome', 'office_room1', etc.

Channel Number (3): *Please select a channel from the dropdown list of 'Channel Number', You can choose any channel number you want to use, and almost all wireless clients can locate the channel you're using automatically without any problem. However, it's still useful to remember the channel number you use, as some wireless clients support manual channel number selecting, and this would help in certain scenarios when there are radio communication conflicts.*

TIP: You can try to change channel number to another one if you think the data transfer rate is too slow. There could be some other wireless routers using the same channel, which will disturb the radio communication between wireless client and the wireless router.

Associated Clients (4): *Click 'Show Active Clients' button, then an "Active Wireless Client Table" will pop up. You can see the status of all active wireless stations that are connecting to the access point.*

After you finish these wireless settings, please click 'Apply' button, button, and the following message will be displayed on your web browser:

Settings Saved Successfully!

You may press Go Back button to continue configuring other settings or press APPLY button to restart the system to make the changes take effect.

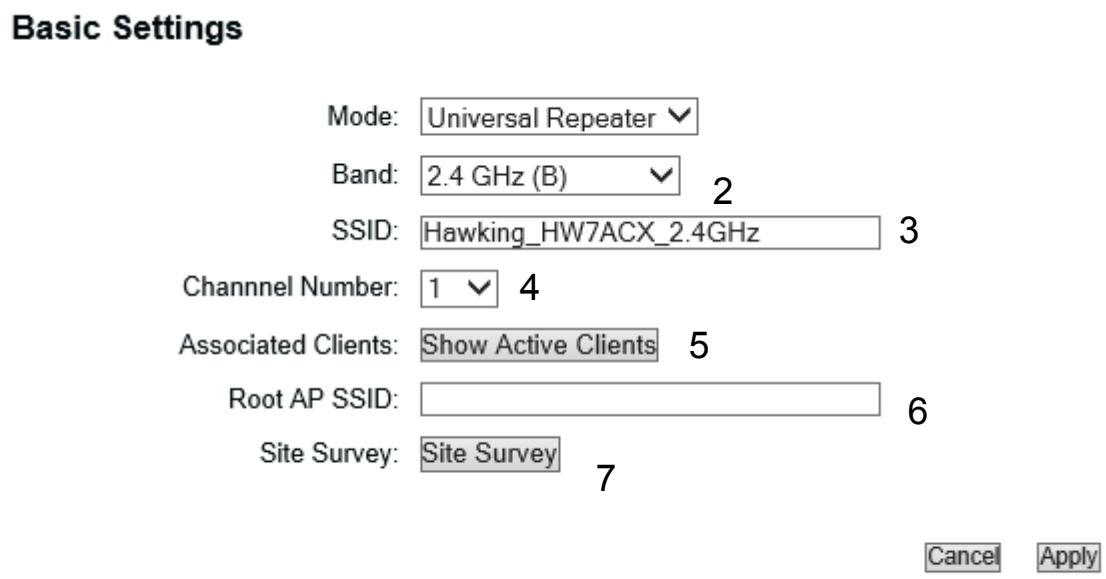
Go Back Apply

Please click ‘Go Back’ to go back to previous setup menu; to continue on access point setup, or click ‘Apply’ to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access point to reboot.

3-3-1-2 Universal Repeater

In this mode, the HW7ACXwill act as a wireless repeater; it can be a wireless bridge and access point at the same time. It can use bridge mode to connect to a Root access point and use the access point function to service all wireless stations within its coverage. In this mode, the HW7ACX will repeat the wireless signal of any existing wireless router/access point. It will act as a wireless relay and create a larger and seamless network for your wireless devices to connect to

NOTE: For Repeater Mode, this router will demodulate the received signal, checking if this signal is noise for the operating network then have the signal modulated and amplified again.



Band (2): *Select the band you want to use, all the HW7ACX's must use the same setting.*

2.4GHz

2.4 GHz (B)	2.4GHz band, only allows 802.11b wireless network clients to connect to this router

	(maximum transfer rate 11Mbps).
2.4 GHz (N)	2.4GHz band, only allows 802.11n wireless network clients to connect to this router (maximum transfer rate 300Mbps).
2.4 GHz (B+G)	2.4GHz band, only allows 802.11b and 802.11g wireless network clients to connect to this router (maximum transfer rate 11Mbps for 802.11b clients, and maximum 54Mbps for 802.11g clients).
2.4 GHz (G)	2.4GHz band, only allows 802.11g wireless network clients to connect to this router (maximum transfer rate 54Mbps).
2.4 GHz (B+G+N)	2.4GHz band, allows 802.11b, 802.11g, and 802.11n wireless network clients to connect to this router (maximum transfer rate 11Mbps for 802.11b clients, maximum 54Mbps for 802.11g clients, and maximum 300Mbps for 802.11n clients).

5GHz

5GHz (A):	5GHz band, this mode allows 802.11a wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients).
5GHz (N):	5GHz band, this mode allows 802.11n wireless network client to connect this router (maximum transfer rate 300Mbps for 802.11n clients).
5GHz (A+N):	5GHz band, this mode allows 802.11a and 802.11n wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients, and maximum 300Mbps for 802.11n clients). 5GHz (AC): this mode allows 802.11ac wireless network client to connect this router (maximum transfer rate 433Mbps for 802.11ac clients).
5GHz (AC):	5GHz band, this mode allows 802.11ac wireless network client to connect this router (maximum transfer rate 433Mbps for 802.11ac clients).
5GHz (N+AC):	5GHz band, this mode allows 802.11n and 802.11ac wireless network client to connect this router (maximum transfer rate 150Mbps for 802.11n clients, and maximum 433Mbps for 802.11ac clients).
5GHz (A+N+AC):	5GHz band, this mode allows 802.11a, 802.11n and 802.11ac wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11a clients, maximum 150Mbps for 802.11n clients, and maximum 433Mbps for 802.11ac clients).

NOTE: If you don't have special reason to limit the type of allowed wireless clients, it's recommended to choose '2.4 GHz (B+G+N) and 5GHz (A+N+AC) to maximize wireless client compatibility.

SSID (3): *This is the name of wireless router. You can type any alphanumerical characters here, maximum 32 characters. SSID is used to identify your own wireless router from others when there are other wireless routers in the same area. Default SSID is 'default', it's recommended to change default ESSID value to the one which is meaningful to you, like myhome, office_room1, etc.*

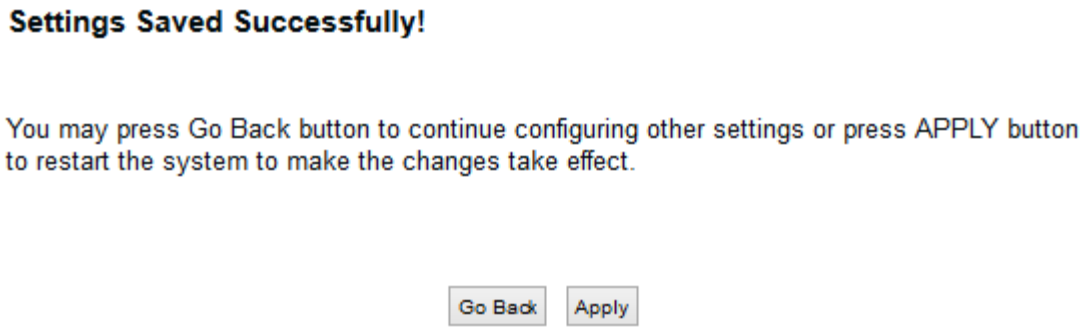
Channel Number (4): *Select the channel you want to use, all the wireless clients must use the same setting.*

Associated Clients (5): *Click 'Show Active Clients' button, then an "Active Wireless Client Table" will pop up. You can see the status of all active wireless stations that are connecting to the access point.*

Root AP SSID (6): *In 'Universal Repeater' mode, this device can act as a station to connect to a Root AP. You should assign the SSID of the Root AP here or click 'Select Site Survey' button to choose a Root AP.*

Site Survey (7): *Click 'Select Site Survey' button, then a "Wireless Site Survey Table" will pop up. It will list all available access points nearby. You can select one access point in the table and the router will join wireless LAN through this access point.*

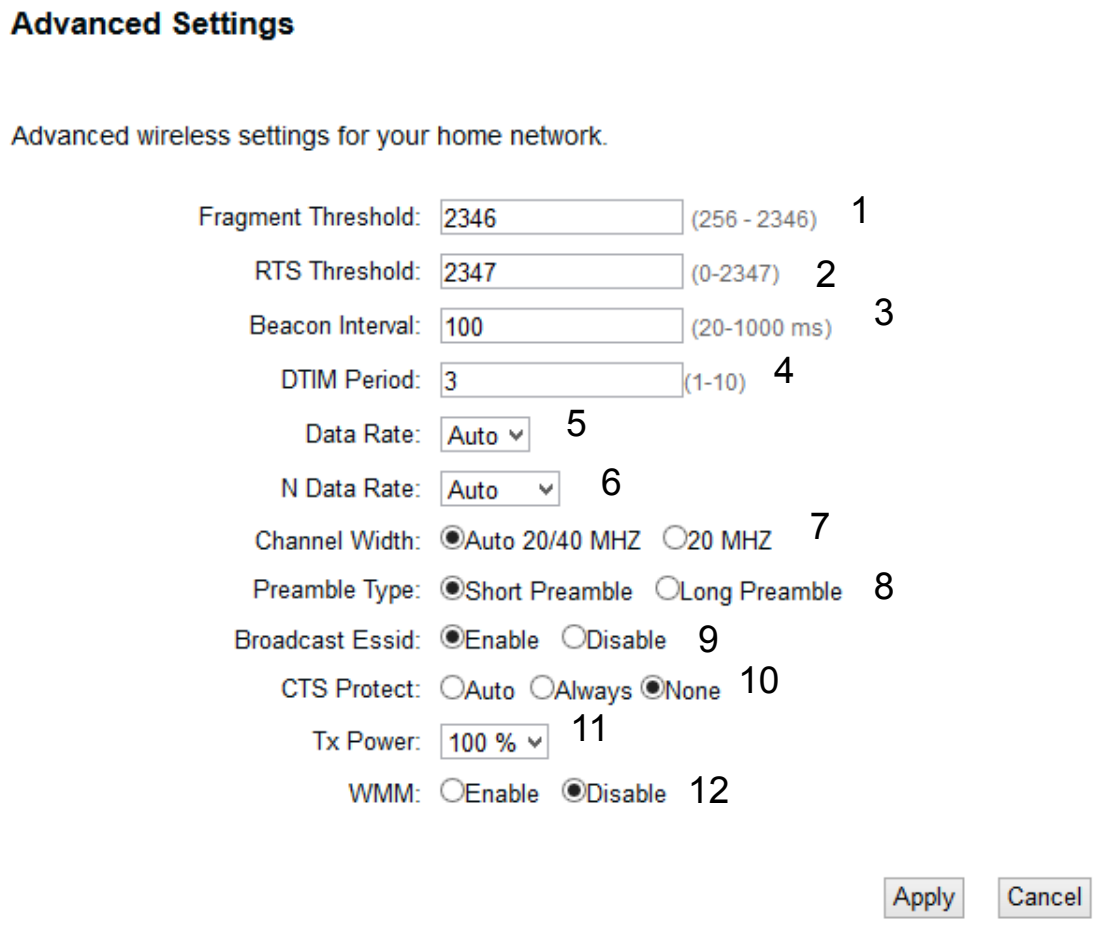
After you finish the wireless setting, please click 'Apply' button, after you click 'Apply', the following message will be displayed on your web browser:



Please click ‘Continue’ to back to previous setup menu; to continue on router setup, or click ‘Apply’ to reboot the router so the settings will take effect (Please wait for about 30 seconds while router is rebooting).

3-3-2 Advanced Wireless Settings

This access point provides some advanced control of wireless parameters, if you want to configure these settings, please click ‘General Setup’ at the top of web management interface and click ‘Wireless Configuration’ on the left hand column. Choose “Advanced Settings’.



Fragment Threshold(1): *Set the Fragment threshold of wireless radio.* ***Do not modify the default value if you do not understand the function, default value is ‘2346’.***

RTS Threshold(2): *Set the RTS threshold of wireless radio.* ***Do not modify the default value if you do not understand the function, default value is ‘2347’.***

Beacon Interval(3): *Set the beacon interval of wireless radio.* ***Do not modify the default value if you do not understand the function, default value is '100'.***

DTIM Period(4): *Set the DTIM period of wireless radio.* ***Do not modify the default value if you do not understand the function, default value is '3'.***

Data Rate(5): *Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically.* ***It is not necessary to change this value unless you know what will happen after modification.***

N Data Rate(6): *Same as above, but only for 802.11n clients.*

Channel Width(7): *Set channel width of wireless radio.* ***Do not modify the default value if you do not understand the function, default setting is 'Auto 20/40 MHz' for 2.4GHz and 'Auto 20/40/80 MHz' for 5GHz AC***

Preamble Type(8): *Set the type of preamble,* ***do not modify the default value if you do not know what it is, default setting is 'Short Preamble'.***

Broadcast ESSID(9): *Decide if the wireless access point will broadcast its own ESSID or not. You can hide the ESSID of your wireless access point (set the option to 'Disable'), so only those people who know the ESSID of your wireless access point can connect to the unit.*

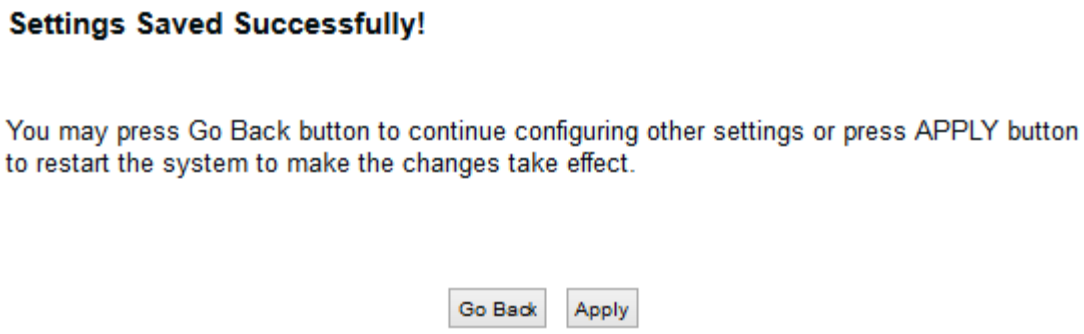
CTS Protect(10): *Enabling this setting will reduce the chance of radio signal collisions between 802.11b and 802.11g/n wireless access points. It is recommended to set this option to 'Auto' or 'Always'. However, if you set to 'None', your wireless access point should be able to function properly.*

Transmit Power(11): *You can set the output power of wireless radio. Unless you are*

using this wireless access point in a large open space, you may not have to set output power to 100%. ***This will enhance security (malicious / unauthorized users in distance will not be able to reach your wireless access point).***

WMM(12): *Wi-Fi MultiMedia (WMM) will enhance the data transfer performance of multimedia contents when they are being transferred over a wireless network.* ***If you do not understand the function, then it is safe to set this option to 'Enable', however, default value is 'Disable'.***

After you finish these wireless settings, please click 'Apply' button, button, and the following message will be displayed on your web browser:



Please click 'Go Back' to go back to previous setup menu; to continue on access point setup, or click 'Apply' to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access point to reboot.

3-3-3 Security Settings

It is important to set your wireless security settings properly! If you do not configure a wireless security setting, unauthorized users can use your network and/or obtain valuable data without your consent.

To set wireless security settings, please click 'General Setup' tab at the top of web management interface, then click 'Wireless Configuration' on the left hand column. Choose 'Security Settings'.

Please select an encryption method from the 'Encryption' dropdown menu, there are four options:

Disable	**-Please go to section 3-4-3-1**
WEP	**-Please go to section 3-4-3-2**
WPA	**-Please go to section 3-4-3-3**
WPA Radius	**-Please go to section 3-4-3-4**

3-3-3-1 Disable wireless security

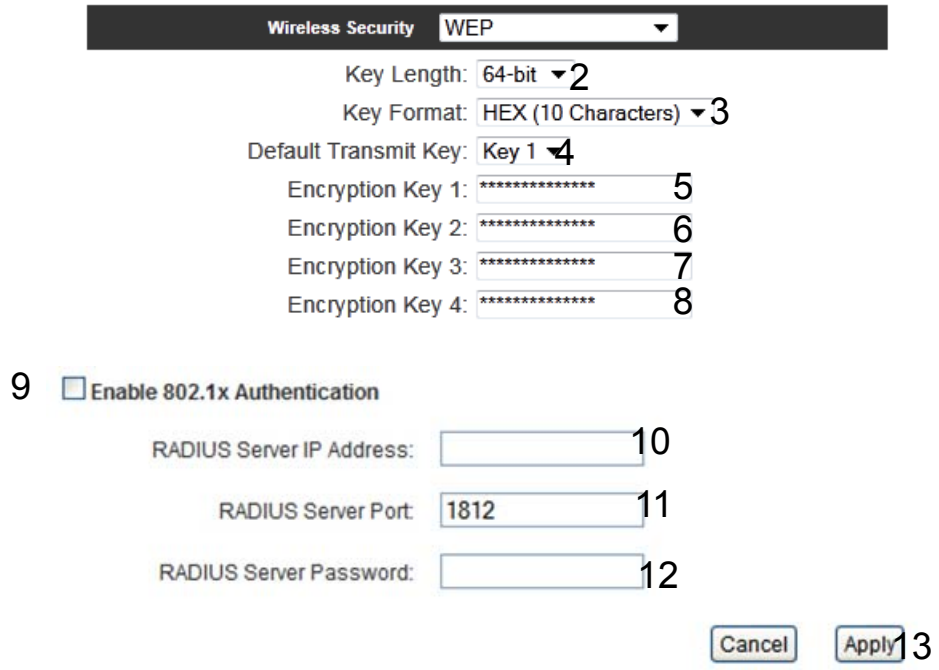
When you select this mode, data encryption is disabled, and every wireless device in proximity will be able to connect your wireless access point if no other security measure is enabled (like MAC address access control - see section 3-4-4, or disable SSID broadcast).

Use this option only when you want to allow any user to use your wireless access point, and you are not concerned about unauthorized access to your files and/or transfers over your network.

3-3-3-2 WEP - Wired Equivalent Privacy

When you select this mode, the wireless access point will use WEP encryption, and the

following setup menu will be shown on your web browser:



Key Length (2): *There are two types of WEP key length: 64-bit and 128-bit. Using '128-bit' is safer than '64-bit', but will reduce some data transfer performance.*

Key Format (3): *There are two types of key format: ASCII and Hex. When you select a key format, the number of characters of key will be displayed. For example, if you select '64-bit' as key length, and 'Hex' as key format, you'll see the message at the right of 'Key Format' is 'Hex (10 characters), which means the length of WEP key is 10 characters.*

Default Tx Key (4): *You can set up to four sets of WEP key, and you can decide which key is being used by default here.* ***If you don't know which one you should use, select 'Key 1'.***

Encryption Key 1 to 4 (5-8): *Input WEP key characters here, the number of characters must be the same as the number displayed at 'Key Format' field. You can use any alphanumerical characters (0-9, a-z, and A-Z) if you select 'ASCII' key format, and if you select*

	'Hex' as key format, you can use characters 0-9, a-f, and A-F. You must enter at least one encryption key here, and if you entered multiple WEP keys, they should not be same with each other.
Enable 802.1x Authentication (9):	*IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this wireless access point before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates user by IEEE 802.1x, but it does not encryption the data during communication. If there is a RADIUS server in you environment, please enable this function. Check this box and another sub-menu will appear:*
RADIUS Server IP address (10):	*Please input the IP address of RADIUS server here.*
RADIUS Server Port (11):	*Please input the port number of RADIUS server here.*
RADIUS Server Password (12):	*Please input the password here.*

TIPS: Examples of WEP key

ASCII (5 characters): pilot phone 23561 2Hyux #@xmL

ASCII (13 characters): digitalFAMILY 82Jh26xHy3m&n

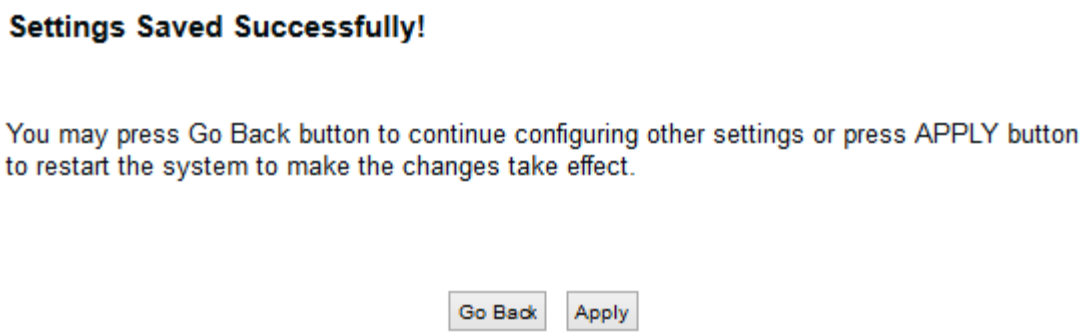
Hex (10 characters): 287d2aa732 1152dabc85

Hex (26 characters): 9284bcda8427c9e036f7abcd84

To improve security level, do not use words that can be found in a dictionary or are easy to remember! Wireless clients will automatically remember the WEP key, so you only have to input the WEP key on wireless client once, and it is suggested that to use a complex WEP key to improve security level. Once you have chosen a password, write it down and keep it in a secure place.

After you finish WEP setting, please click 'Apply' (13) button and the following message

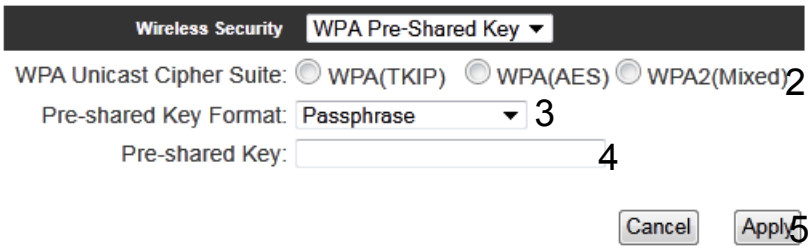
will be displayed on your web browser:



Please click 'Go Back' to go back to previous setup menu, or click 'Apply' to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access point to reboot.

3-3-3-3 Wi-Fi Protected Access (WPA):

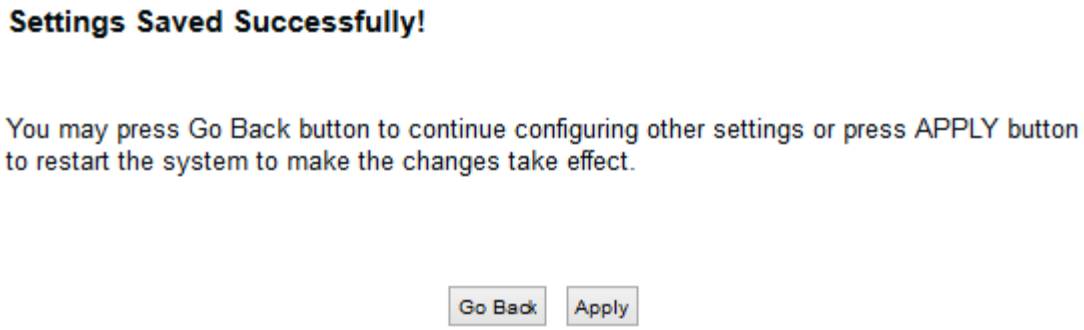
When you select this mode, the wireless access point will use WPA encryption, and the following setup menu will be shown on your web browser:



WPA Unicast Cipher Suite (2):	*Please select a type of WPA cipher suite. Available options are: WPA (TKIP), WPA2 (AES), and WPA2 Mixed. You can select one of them, but you have to make sure your wireless client support the cipher you selected.*
Pre-shared Key Format (3):	*Select the type of pre-shared key, you can select Passphrase (8 or more alphanumerical characters, up to 63), or Hex (64 characters of 0-9, and a-f).*

Pre-shared Key (4):	*Please input the WPA passphrase here.* ***It's not recommended to use a word that can be found in a dictionary due to security reason.***

After you finish WPA Pre-shared key setting, please click 'Apply' button (5) and the following message will be displayed on your web browser:

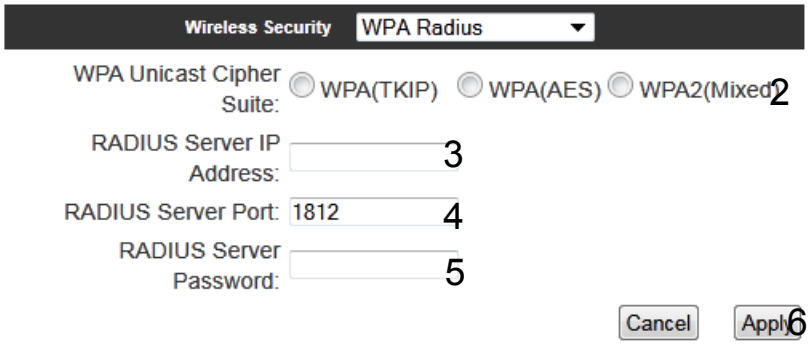


Please click 'Go Back' to go back to previous setup menu, or click 'Apply' to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access point to reboot.

NOTE: Some wireless clients (especially those manufactured before year 2003) only support WEP or WPA (TKIP) cipher. A driver upgrade would be needed for those clients to use WPA and WPA2 encryption.

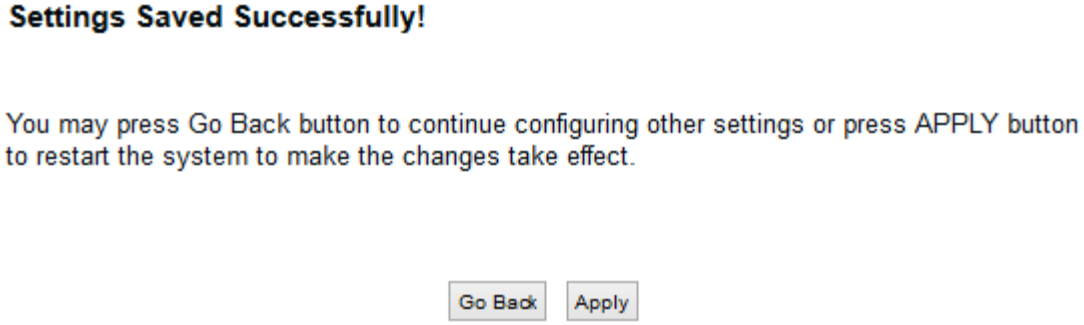
3-3-3-4 WPA RADIUS:

If you have a RADIUS server, this access point can work with it and provide safer wireless authentication.



WPA Unicast Cipher Suite:	*Please select a type of WPA cipher suite. Available options are: WPA (TKIP), WPA2 (AES), and WPA2 Mixed. You can select one of them, but you have to make sure your wireless client support the cipher you selected.*
RADIUS Server IP address (3):	*Please input the IP address of your Radius authentication server here.*
RADIUS Server Port (4):	*Please input the port number of your Radius authentication server here.* ***Default setting is 1812.***
RADIUS Server Password (5):	*Please input the password of your Radius authentication server here.*

After you finish with all settings, please click 'Apply' (6) button and the following message will be displayed on your web browser:



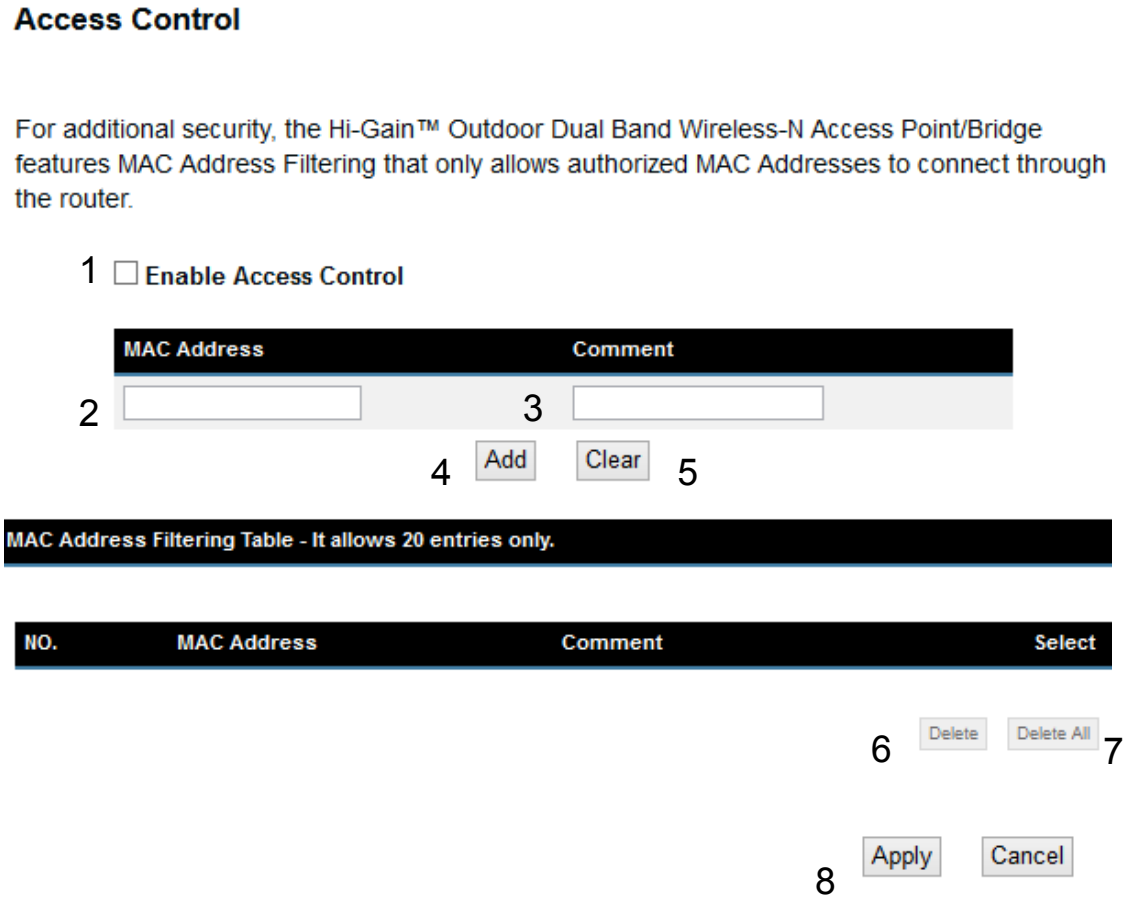
Please click 'Go Back' to go back to previous setup menu, or click 'Apply' to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access

point to reboot.

3-3-4 Wireless Access Control

This function will help you prevent unauthorized users from connecting to your wireless access point; only those wireless devices who have a MAC address you assigned can gain access to your wireless access point. Use this function with other security measures described in previous section, to create a safer wireless environment.

You can add up to 20 MAC addresses by using this function. Please click ‘General Setup’ at the top of web management interface and click ‘Wireless Configuration’ on the left hand column. Select ‘Access Control’.



All allowed MAC addresses will be displayed in ‘MAC Address Filtering Table.

Enable Wireless Access Control (1): *To enforce MAC address filtering, you have to check ‘Enable Wireless Access Control’. When this item is unchecked, wireless access point will not enforce MAC address filtering of*

wireless clients.

MAC Address (2): *Input the MAC address of your wireless devices here, dash (-) or colon (:) are not required. (i.e. If the MAC address label of your wireless device indicates 'aa-bb-cc-dd-ee-ff' or 'aa:bb:cc:dd:ee:ff', just input 'aabbccddeeff'.*

Comment (3): *You can input any text here as the comment of this MAC address, like 'ROOM 2A Computer' or anything. You can input up to 16 alphanumerical characters here. This is optional and you can leave it blank, however, it's recommended to use this field to write a comment for every MAC addresses as a memory aid.*

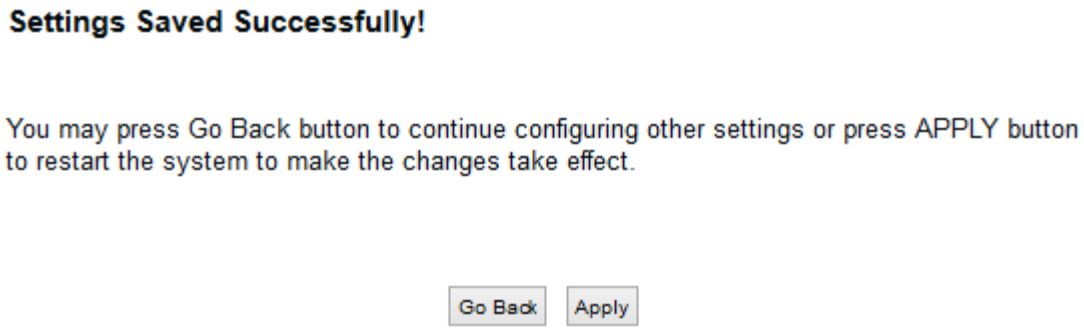
Add (4): *Click 'Apply' button to add the MAC address and associated comment to the MAC address filtering table.*

Clear (5): *Click 'Clear' to remove the value you inputted in MAC address and comment field.*

Delete Selected (6): *If you want to delete a specific MAC address entry, check the 'select' box of the MAC address you want to delete, then click 'Delete Selected' button. (You can select more than one MAC addresses).*

Delete All (7): *If you want to delete all MAC addresses listed here, please click 'Delete All' button.*

After you finish with all settings, please click 'Apply' (8) button and the following message will be displayed on your web browser:



Please click ‘Go Back’ to go back to previous setup menu, or click ‘Apply’ to reboot the access point so the settings will take effect. Please wait 30-60 seconds for the access point to reboot.

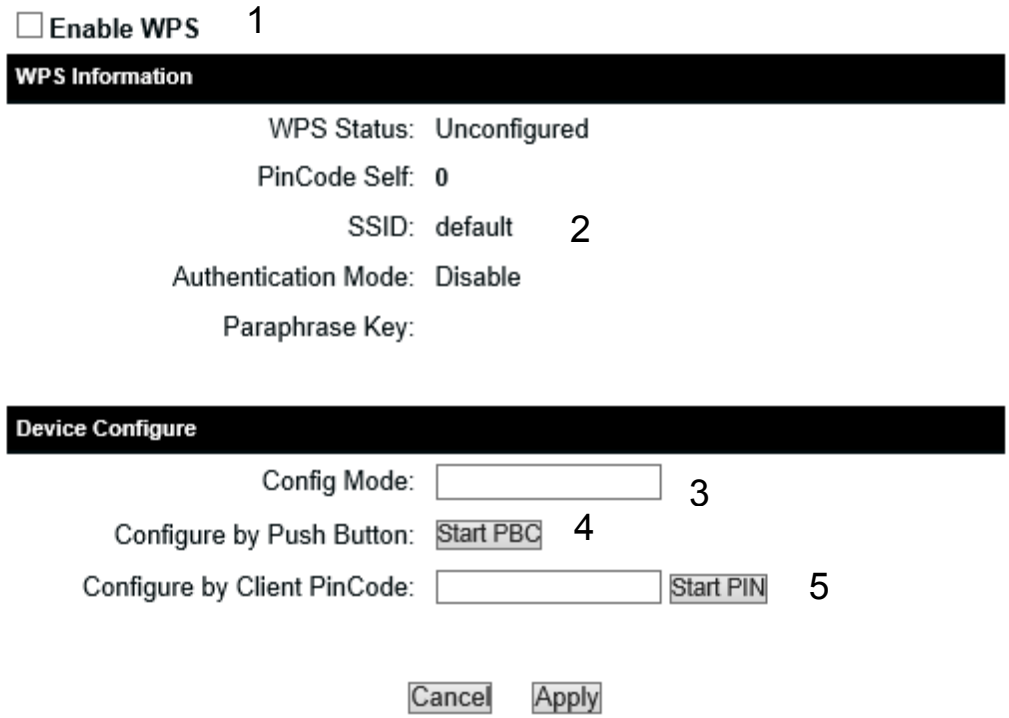
3-3-5 Wi-Fi Protected Setup (WPS)

Wi-Fi Protected Setup (WPS) is the simplest way to build connection between wireless network clients and this wireless access point. You don't have to select an encryption mode and input a long encryption passphrase every time when you need to set up a wireless client, you only have to press a button on the wireless client and this wireless access point, and the WPS will automatically configure for you.

This wireless access point supports two types of WPS: Push-Button Configuration (PBC), and PIN code. If you want to use PBC, you have to push a specific button on the wireless client to start WPS mode, and switch this wireless access point to WPS mode too. You can push Reset/WPS button of this wireless access point, or click 'Start PBC' button in the web configuration interface to do this; if you want to use PIN code, you have to know the PIN code of wireless client and switch it to WPS mode, then provide the PIN code of the wireless client you wish to connect to this wireless access point. The detailed instructions are listed follow:
Please click 'General Setup' at the top of web management interface and click 'Wireless Configuration' on the left hand column. Select 'WPS'

Wi-Fi Protected Setup (WPS)

This section allows you to change the setting for Wi-Fi Protected Setup (WPS). Wi-Fi Protected Setup can help your wireless client automatically connect to the Hi-Gain™ Wireless-AC Range Extender.



Enable WPS (1) — *Check this box to enable WPS function, uncheck it to disable WPS.*

WPS Information (2) — *WPS Status: If the wireless security (encryption) function of this wireless access point is properly set, you'll see 'Configured' message here. If wireless security function has not been set, you'll see 'Not configured'.*

Self PIN code: This is the WPS PIN code of this wireless access point. This code is useful when you need to build wireless connection by WPS with other WPS-enabled wireless devices.

SSID: The SSID of this wireless access point will be displayed here.

	Authentication Mode: The wireless security authentication mode of this wireless access point will be displayed here. If you do not enable security function of the wireless access point before WPS is activated, the access point will auto set the security to WPA (AES) and generate a set passphrase key for WPS connection. *Passphrase Key: The wireless security key of the access point will be displayed here.*
Config Mode (3)	*There are 'Registrar' and 'Enrollee' modes for the WPS connection. When 'Registrar' is enabled, the wireless clients will follow the access point's wireless settings for WPS connection. When 'Enrolle' mode is enabled, the access point will follow the wireless settings of wireless client for WPS connection.*
Configure by Push Button (4)	*Click 'Start PBC' to start Push-Button style WPS setup procedure. This wireless access point will wait for WPS requests from wireless clients for 2 minutes. The 'WLAN' LED light on the wireless access point will be steady for 2 minutes when this wireless access point is waiting for incoming WPS request.*
Configure by client PinCode (5)	*Please input the PIN code of the wireless client you wish to connect, and click 'Start PIN' button. The 'WLAN' LED light on the wireless access point will be steady when this wireless access point is waiting for incoming WPS request.*

3-3-6 Security Tips for Wireless Network

Here are some quick tips to help you improve the security level of your wireless network:

1. Never use simple words for your password, such as “password” or “1234567890”.

2. A complicated (combination of numbers, alphabets, and even symbols) WEP key and WPA passphrase is more secure than simple and short words. Remember that the wireless client is capable of keeping the key or passphrase for you, so you only have to input the complicated key or passphrase once. Once you have chosen a password, write it down and keep it in a secure place.

3. You can hide the ESSID of this access point by setting the ‘Broadcast ESSID’ option to ‘Disable’. Your wireless access point will not be found by other people in proximity if they are using the Access Point scanning function of their wireless client, and this can reduce unauthorized access.

4. Use ‘Access Control’ function, described in section 3-3-4, to allow authorized users access to the wireless access point using their specific MAC address.

Chapter IV Status and Tools

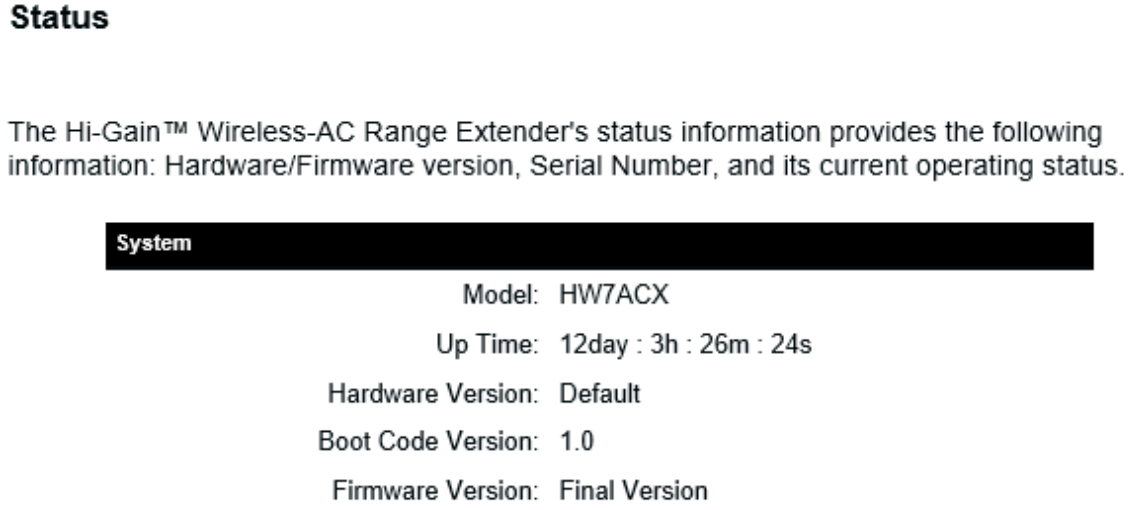
4-1 System Status

The functions described here will provide you with system related information. To enter system status menu, please either click ‘Status’ link located at top of web management interface.

4-1-1 System information and firmware version

You can use this function to know the system information and firmware version of this access point.

Please click ‘Status’ tab at the top of web management interface.

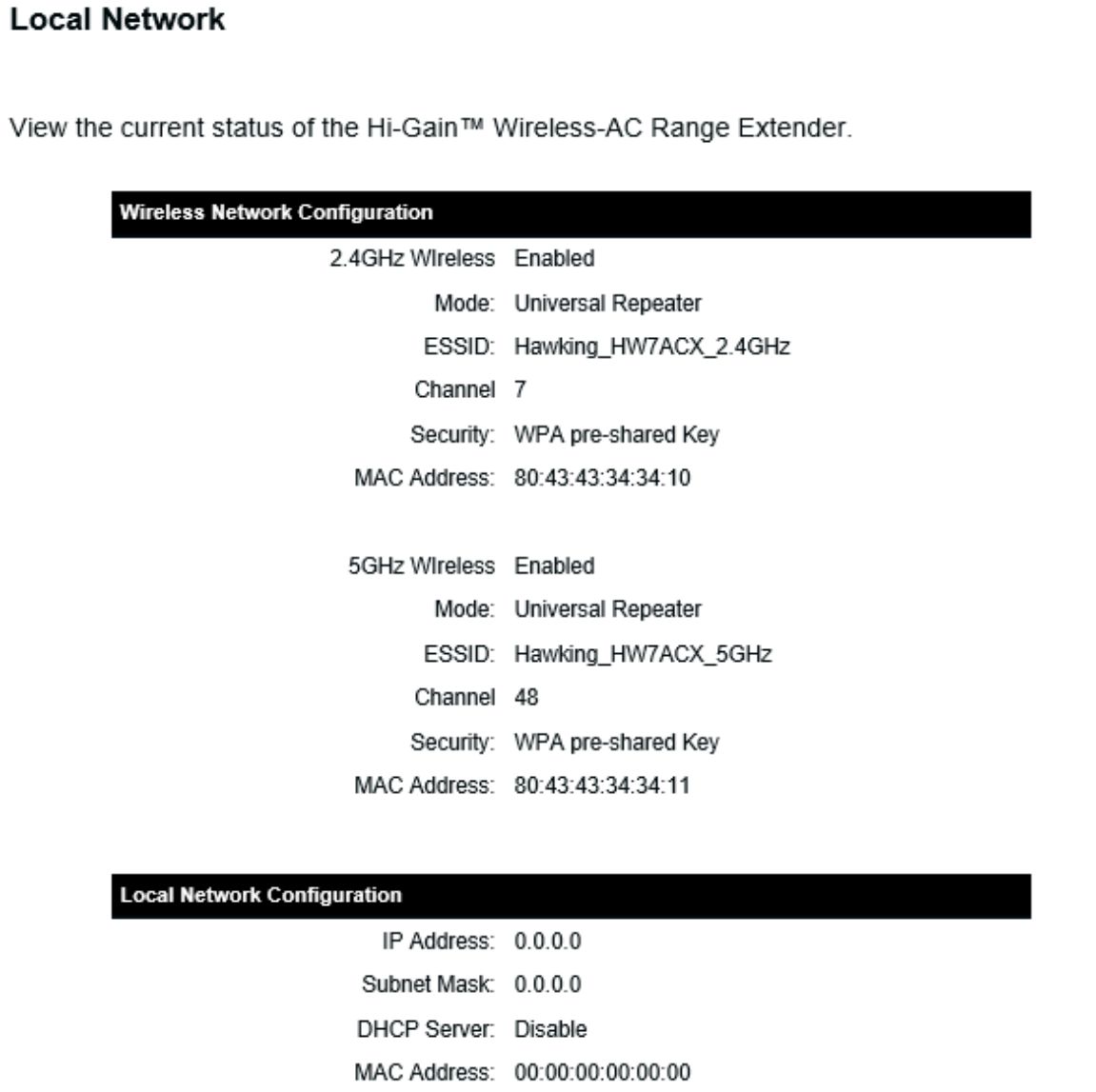


NOTE: Information displayed here may vary.

4-1-2 Local Network

You can use this function to know the status of your access point.

Please click ‘Status’ menu at the top of web management interface, and then click ‘Local Network’ on the left hand column.

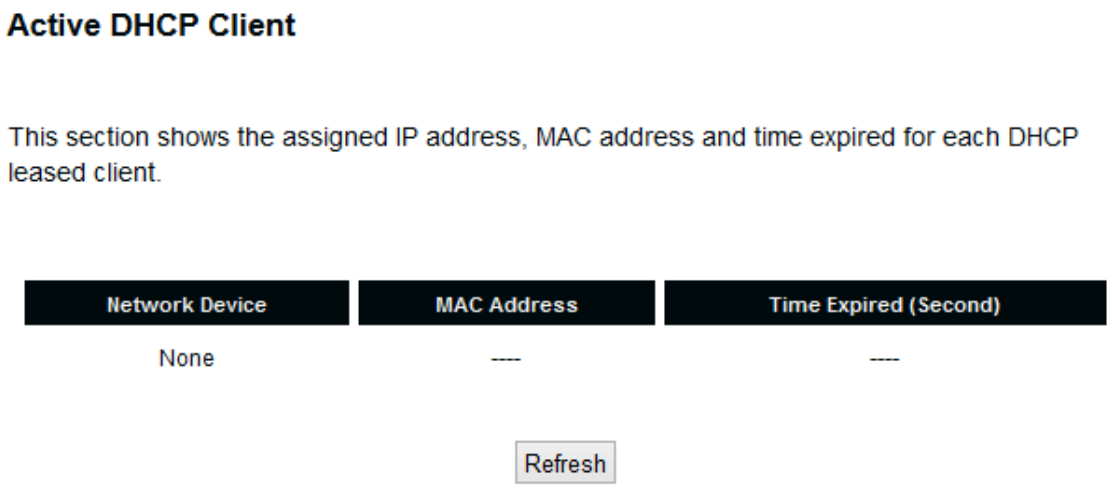


NOTE: Information displayed here may vary.

4-1-3 Active DHCP client list

If you're using the DHCP server function of this access point, you can use this function to check all active DHCP leases issued by this access point.

Please click 'Status' menu at the top of web management interface, and then click 'Active DHCP Client' on the left hand column.

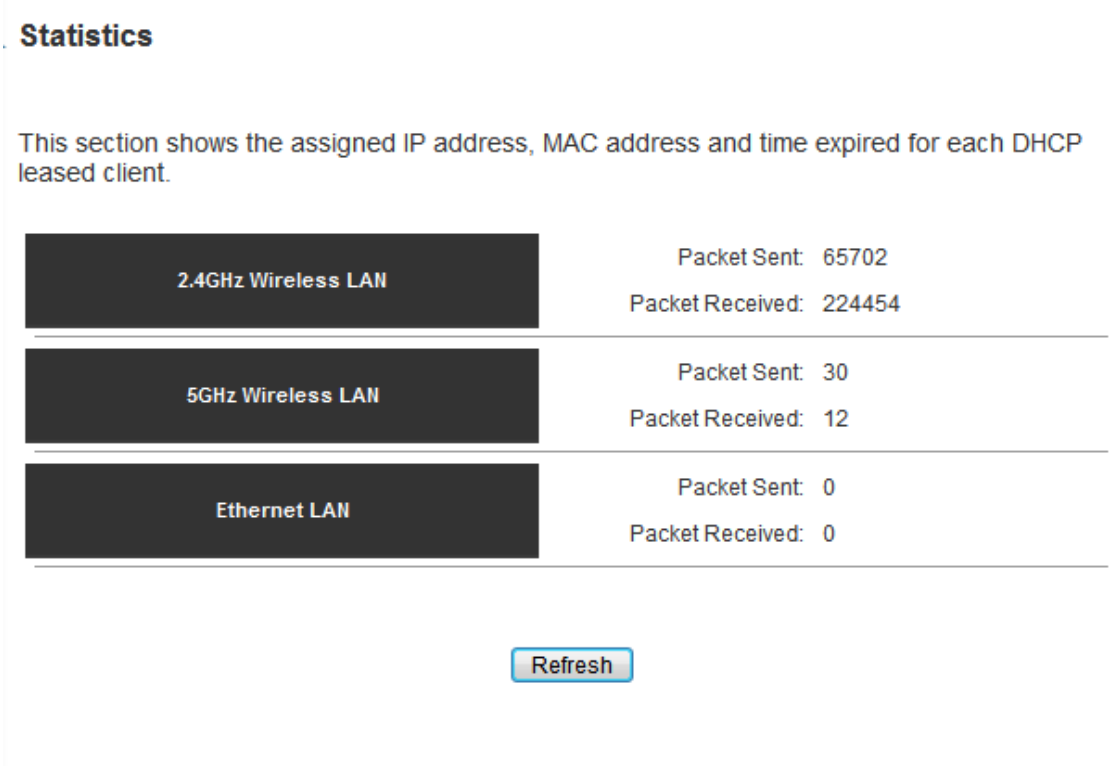


All information about active DHCP leases issued by this access point will be displayed here. You can click 'Refresh' button to display latest information.

4-1-4 Statistics

You can use this function to check the statistics of wireless, LAN, and WAN interface of this access point.

Please click ‘Status’ menu at the top of web management interface, and then click ‘Statistics’ on the left hand column.



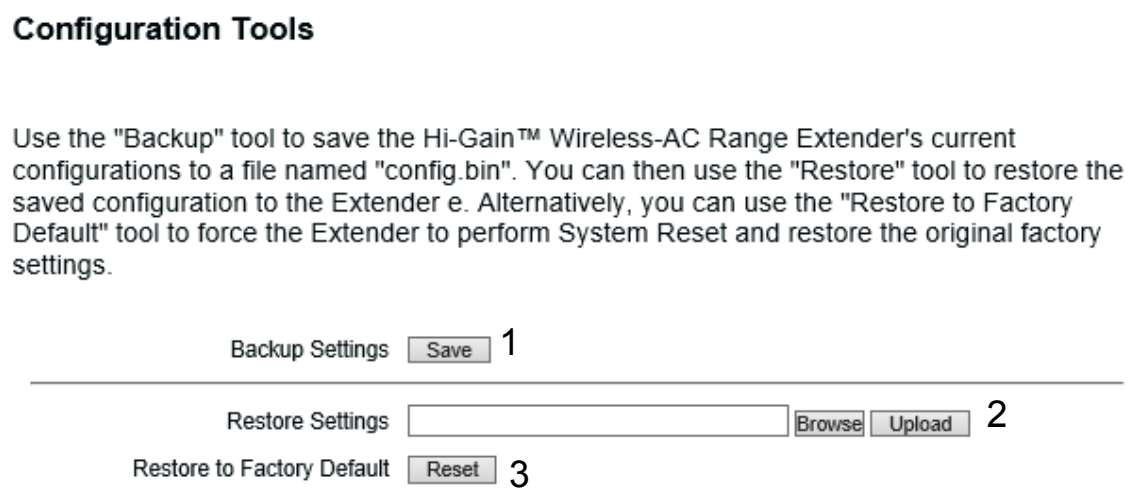
You can click ‘Refresh’ button to display latest information.

4-2 Configuration Tools

You can back up all configurations of this access point to a file, so you can make several copied of access point configuration for security reason.

To backup or restore access point configuration, please follow the instructions:

Please click ‘Tools’ menu at the top of web management interface, and then click ‘Configuration Tools’ on the left hand column.



Backup Settings (1):	*Press ‘Save...’ button, and you’ll be prompted to download the configuration as a file, default filename is ‘default.bin’, you can please save it as another filename for different versions, and keep it in a safe place.*
Restore Settings (2):	*Press ‘Browse…’ to pick a previously-saved configuration file from your computer, and then click ‘Upload’ to transfer the configuration file to access point. After the configuration is uploaded, the access point’s configuration will be replaced by the file you just uploaded.*
Restore to	*Click this button to remove all settings you made, and*

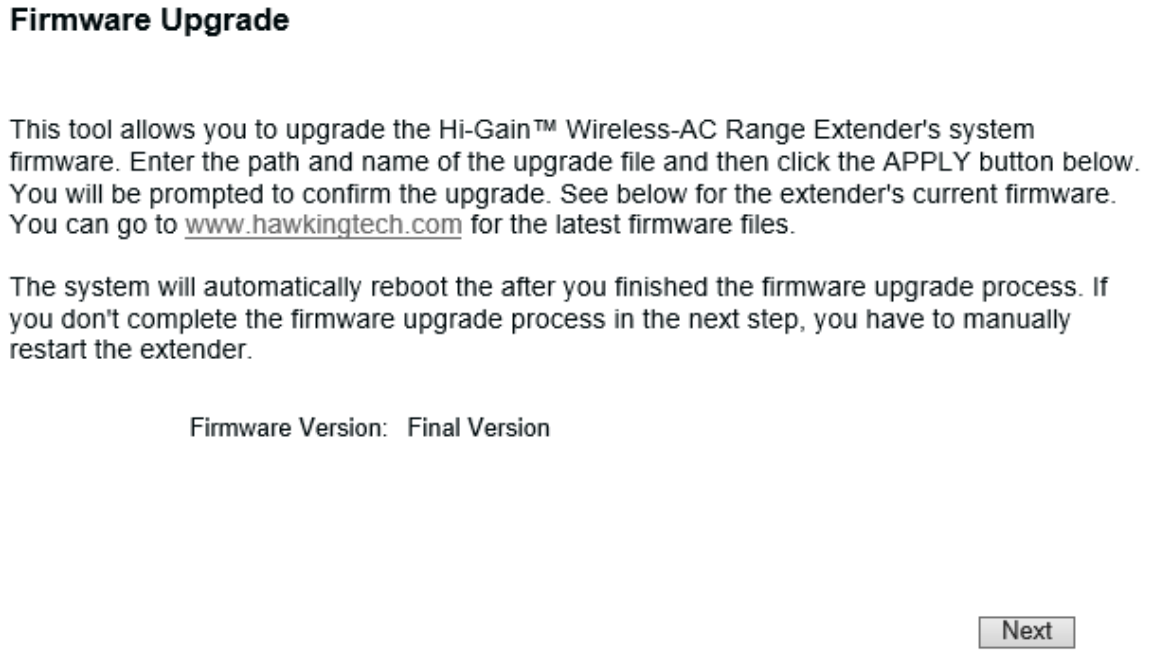
Factory Default (3): *restore the configuration of this access point back to factory default settings.*

4-3 Firmware Upgrade

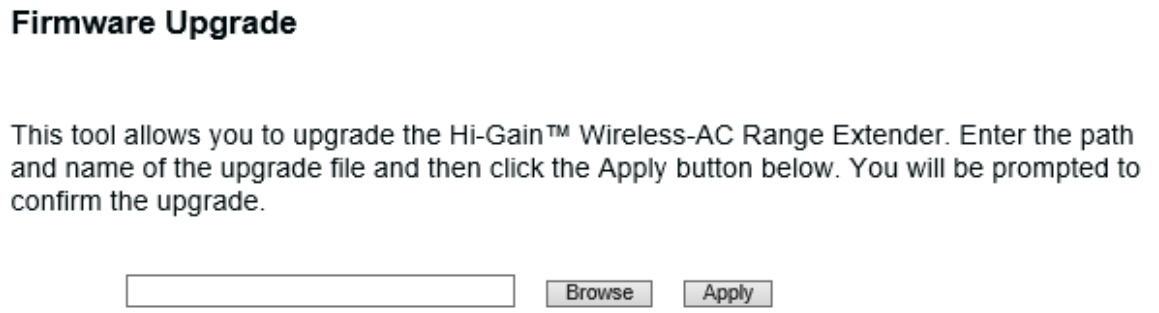
The system software used by this access point is known as ‘firmware’, just like any applications on your computer, when you replace the old application with a new one; your computer will be equipped with new function. You can also use this firmware upgrade function to add new functions to your access point, even fix the bugs of this access point.

To upgrade firmware, please follow the instructions:

Please click ‘Tools’ menu at the top of web management interface, and then click ‘Firmware Upgrade’ on the left hand column.



Click ‘Next’ button if you wish to upgrade your firmware.



Click ‘Browse’ button, and you’ll be prompted to provide the filename of the firmware upgrade file. Please download the latest firmware file from the Hawking Technologies website at www.hawkingtech.com, and use it to upgrade your access point.

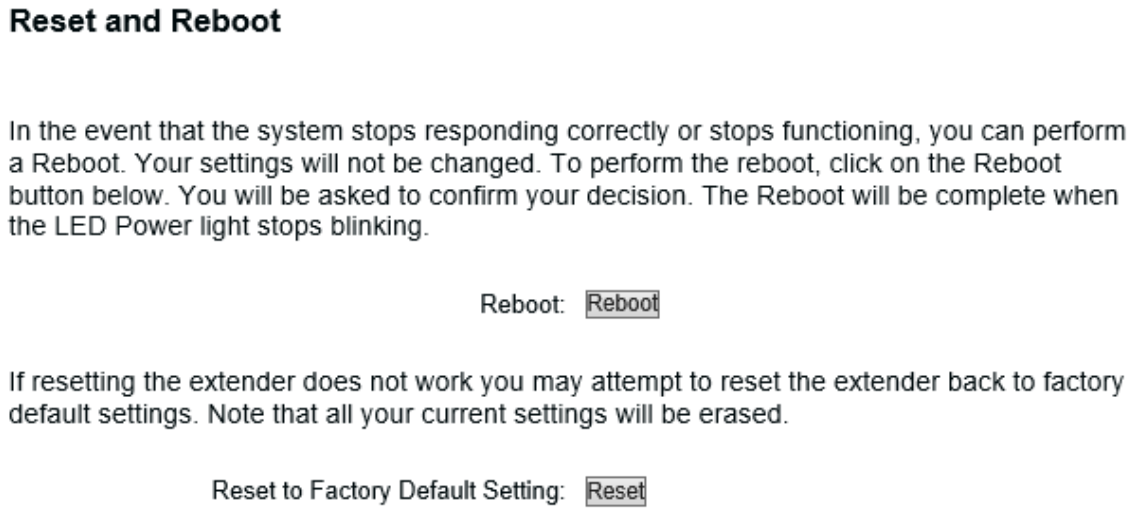
After a firmware upgrade file is selected, click ‘Apply’ button, and the access point will start firmware upgrade procedure automatically. The procedure may take several minutes, please be patient.

NOTE: Never interrupt the upgrade procedure by closing the web browser or physically disconnect your computer from router. If the firmware you uploaded is corrupt, the firmware upgrade will fail, and you may have to return this router to the dealer of purchase to ask for help. Warranty is void if you interrupt the upgrade procedure.

4-4 System Reset

If you think your network performance is bad or you find the behavior of the access point is strange, you can perform a access point reset. Sometimes it will solve the problem.

Please click ‘Tools’ menu at the top of web management interface, and then click ‘Reset’ on the left hand column.



Please click ‘Reboot’ to reset your access point, and it will be available again after a few minutes, please be patient.
Please click ‘Reset’ to reset to factory default, and it will be available again after a few minutes, please be patient.

Chapter V: Appendix

5-1 Hardware Specification

CPU: REALTEK RTL8881AQ
RF: REALTEK RTL8192ER
Flash: 4MB
DDR2 RAM: 32MB
LAN Ports: 10/100M Port x 5
Antenna: External Dipole Antenna x 2 (2.4G x 1, 2.4G/5G x 1)
Power: DC 12V/0.5A Switching Power Adapter
Dimension: 30(H) x 127(W) x 105(D) mm
Temperature: Operating: 0~40C
Storage: -20~60C
Humidity: Operating: 10~90% (Non-Condensing)
Storage: Max.95% (NonCondensing)
Certification: CE/FCC

5-2 Troubleshooting

If you found the range extender is working improperly or stops responding to you, don't panic! Before you contact your dealer of purchase for help, please read this troubleshooting first. Some problems can be solved by yourself within very short time!

Scenario	Solution
Range extender disconnects after a period of time.	a. Check the wireless channel on your router. Make sure it is set to a static channel. Some routers use an AUTO channel function in which the channel changes itself periodically. If so, our range extender cannot update these changes and that may explain your disconnects.
Range extender is not responding to me when I want to access it by web browser	b. Please check the connection of power cord and network cable of this range extender. All cords and cables should be correctly and firmly inserted to the range extender. c. If all LEDs on this range extender are out, please check the status of A/C power adapter, and make sure it's correctly powered. d. You must use the same IP address section which range extender uses. e. Are you using MAC or IP address filter? Try to connect the range extender by another computer and see if it works; if not, please perform a hard reset (pressing 'reset' button for 15 seconds, power off/on). f. Set your computer to obtain an IP address automatically (DHCP), and see if your computer can get an IP address. g. If you did a firmware upgrade and this happens, contact your dealer of purchase for

	help. h. If all above solutions don't work, contact Hawking Technologies for help.
Can't get connected to wireless range extender	a. If encryption is enabled, please re-check WEP or WPA passphrase settings on your wireless client. b. Try to move closer to wireless range extender. c. Unplug the power plug of range extender, and plug it back again after 10 seconds. d. If all LEDs on this range extender are out, please check the status of A/C power adapter, and make sure it's correctly powered.
I can't locate my range extender by my wireless client	a. 'Broadcast ESSID' set to off? b. Is Antenna properly installed and secured? c. Are you too far from your range extender? Try to get closer. d. Please remember that you have to input ESSID on your wireless client manually, if ESSID broadcast is disabled.
File download is very slow or breaks frequently	a. Try to reset the range extender and see if it's better after that. b. Try to know what computers do on your local network. If someone's transferring big files, other people will think Internet is really slow. c. Change the wireless channel on your router and reconfigure our device to match this. Sometimes interference can cause slowness.
I can't log onto web management interface: password is wrong	a. Make sure you're connecting to the correct IP address of the range extender! b. Password is case-sensitive. Make sure the 'Caps Lock' light is not illuminated. c. If you really forget the password, do a hard

	reset.
Range extender is very hot	a. If you smell something wrong or see the smoke coming out from range extender or A/C power adapter, please disconnect the range extender and A/C power adapter from utility power (make sure it's safe before you're doing this!), and call Hawking Technologies for help.

5-3 Glossary

Default Gateway (Range extender): Every non-range extender IP device needs to configure a default gateway's IP address. When the device sends out an IP packet, if the destination is not on the same network, the device has to send the packet to its default gateway, which will then send it out towards the destination.

DHCP: Dynamic Host Configuration Protocol. This protocol automatically gives every computer on your home network an IP address.

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

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

Ethernet: A standard for computer networks. Ethernet networks are connected by special cables and hubs, and move data around at up to 10/100 million bits per second (Mbps).

Idle Timeout: Idle Timeout is designed so that after there is no traffic to the Internet for a pre-configured amount of time, the connection will automatically be disconnected.

IP Address and Network (Subnet) Mask: IP stands for Internet Protocol. An IP address consists of a series of four numbers separated by periods, that identifies a single, unique Internet computer host in an IP network. Example: 192.168.2.1. It consists of 2 portions: the IP network address, and the host identifier.

The IP address is a 32-bit binary pattern, which can be represented as four cascaded decimal numbers separated by ".": aaa.aaa.aaa.aaa, where each "aaa" can be anything from 000 to 255, or as four cascaded binary numbers separated by ".": bbbbbbbb.bbbbbbbb.bbbbbbbb.bbbbbbbb, where each "b" can either be 0 or 1.
A network mask is also a 32-bit binary pattern, and consists of consecutive leading
1's followed by consecutive trailing 0's, such as 11111111.11111111.11111111.00000000. Therefore sometimes a network mask can also be described simply as "x" number of leading 1's.
When both are represented side by side in their binary forms, all bits in the IP address that correspond to 1's in the network mask become part of the IP network address, and the remaining bits correspond to the host ID.

For example, if the IP address for a device is, in its binary form, 11011001.10110000.10010000.00000111, and if its network mask is, 11111111.11111111.11110000.00000000
It means the device's network address is 11011001.10110000.10010000.00000000, and its host ID is, 00000000.00000000.00000000.00000111. This is a convenient and efficient method for range extenders to route IP packets to their destination.

ISP Gateway Address: (see ISP for definition). The ISP Gateway Address is an IP address for the Internet range extender located at the ISP's office.

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

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

MAC Address: MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network. The MAC address

is a unique identifier for a device with an Ethernet interface. It is comprised of two parts: 3 bytes of data that corresponds to the Manufacturer ID (unique for each manufacturer), plus 3 bytes that are often used as the product's serial number.

NAT: Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using the broadband range extender's NAT capability, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Port: Network Clients (LAN PC) uses port numbers to distinguish one network application/protocol over another. Below is a list of common applications and protocol/port numbers:

Application	Protocol	Port Number
Telnet	TCP	23
FTP	TCP	21
SMTP	TCP	25
POP3	TCP	110
H.323	TCP	1720
SNMP	UCP	161
SNMP Trap	UDP	162
HTTP	TCP	80
PPTP	TCP	1723
PC Anywhere	TCP	5631
PC Anywhere	UDP	5632

PPPoE: Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a secure data transmission method originally created for dial-up connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communications

protocol for transmitting information over Ethernet between different manufacturers

Protocol: A protocol is a set of rules for interaction agreed upon between multiple parties so that when they interface with each other based on such a protocol, the interpretation of their behavior is well defined and can be made objectively, without confusion or misunderstanding.

Range extender: A range extender is an intelligent network device that forwards packets between different networks based on network layer address information such as IP addresses.

Subnet Mask: A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers (e.g. 255.255.255.0) configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

TCP/IP, UDP: Transmission Control Protocol/Internet Protocol (TCP/IP) and Unreliable Datagram Protocol (UDP). TCP/IP is the standard protocol for data transmission over the Internet. Both TCP and UDP are transport layer protocol. TCP performs proper error detection and error recovery, and thus is reliable. UDP on the other hand is not reliable. They both run on top of the IP (Internet Protocol), a network layer protocol.

Universal Repeater: Another name for range extender.

WAN: Wide Area Network. A network that connects computers located in geographically separate areas (e.g. different buildings, cities, countries). The Internet is a wide area network.

Web-based management Graphical User Interface (GUI): Many devices support a graphical user interface that is based on the web browser. This means the user can use the familiar Netscape or Microsoft Internet Explorer to Control/configure or monitor the device being managed.