Wireless LAN Access Point

IEEE 802.11g

54Mbps

User's Manual

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Chapter 1 Introduction

This product is an access point for IEEE 802.11g/b 2.4GHz wireless network. You can use this access point to build up a wireless LAN.

The product supports WEP, ESSID and MAC address filter functions to consolidate the wireless network security. With ESSID authentication, 64/128/152 bit WEP encryption and MAC address filtering you can prevent unauthorized wireless stations from accessing your wireless network.

The product's dipole antenna is detachable by connecting to a RP-SMA connector. Users can install a high gain antenna to the connector for better network link quality so that you can build wireless network with more flexibility.

This product provides easy to use user interface and allows users to configuring from web browser. Also it integrates DHCP server to provide multiple wireless and wired users to get their IP address automatically. With the versatile of features, this product is the best choice for you to integrate your wireless and wired network seamlessly.

1.1 Package Contents

The Access Point includes the following items:

- One Access Point
- One Power Adapter
- One User's Manual

1.2 Features

- Complies with the IEEE 802.11g/b 2.4GHz specification.
- High data rate 54, 11, 5.5, 2 and 1Mbps network speed.
- Seamlessly integrate wireless and wired Ethernet LAN networks.
- Provides an internal 5-Port Fast Ethernet Switch for wired Ethernet connection.
- Auto rate fallback in case of obstacles or interferences.
- Provide 64/128/152-bit WEP Data Encryption function to protect the wireless data transmissions.
- Built-in DHCP server supports auto IP addresses assignment.
- Supports Web-based configuration.

1.3 Specifications

- Standards: IEEE 802.11g/b (Wireless), IEEE 802.3 (Wired)
- Data Rate: 54/11/5.5/2/1Mbps auto fallback
- Security: 64/128/152-bit WEP Data Encryption
- Frequency Band: 2.400~2.4835GHz (Industrial Scientific Medical Band)
- Radio Technology: Direct Sequence Spread Spectrum (DSSS)
- Antenna: External detachable dipole antenna (with RP-SMA connector)
- Connectors: 10/100Mbps RJ-45 x 1
- Power: 12VDC, 1A
- Transmit Power: 18dBm (Typical)
- LEDs: Power, LAN Link/Activity, Wireless Activity
- Dimension: 30(H) x 187(W) x 100(D) mm
- Temperature:

  Operating: 32~131°F (0~55°C)

Storage: -4~158°F(-20~70°C)

- Humidity: 10-90% (Noncondensing)
- Certification: FCC, CE

1.4 Physical Description

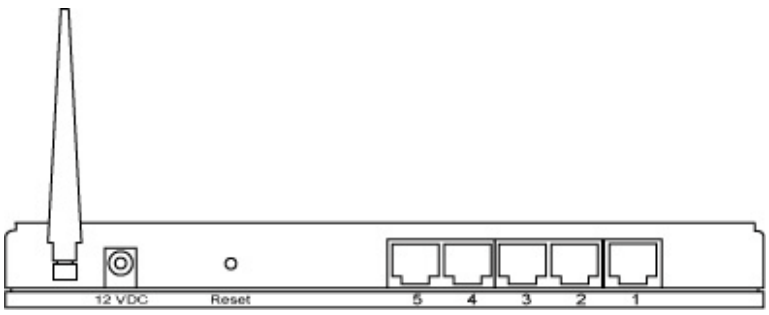
Front Panel

On the Access Point's front panel there are LED lights that inform you of the Access Point's current status. Below is an explanation of each LED.

LED	Color	Status	Description
Power	Green	Lit	Power is supplied.
		Off	No Power.
Wireless Activity	Green	Flash	Antenna is transmitting or receiving data.
		Off	Antenna is not transmitting or receiving data.
LAN Link/Activity	Green	On	A valid link is established.
		Flash	It is transmitting or receiving data.
		Off	No link is established.

Back Panel

Access Point's connection ports are located on the back panel. Below is the description of each connection port.



- Antenna Connector
  This round connection is standard Reverse SMA connector where any antennas with Reverse SMA connector can connect to the Access Point.

- DC Adapter Port
  Insert the power jack of the power adapter into this port.

- LAN Port
  The Access Point’s LAN port is where you connect to your LAN’s network devices.

- Reset
  The Reset button allows you to do one of two things.

  1) If problems occur with your Access Point, press the reset button with a pencil tip (for less than 4 seconds) and the Access Point will re-boot itself, keeping your original configurations.

  2) If problems persist or you experience extreme problems or you forgot your password, press the reset button for longer than 4 seconds and the Access Point will reset itself to the factory default settings (warning: your original configurations will be replaced with the factory default settings).

Chapter 2 Wireless LAN Access Point Connection

1. **Locate an optimum location for the Wireless LAN Access Point.**
   The best location for your Access Point is usually at the center of your wireless network, with line of sight to all of your mobile stations.

2. **Connect the Wireless LAN Access Point to your router, hub or switch.**
   Connect one end of standard UTP cable to the Access Point's LAN Port and connect the other end of the cable to a switch, a router or a hub. The Access Point will then be connected to your existed wired LAN Network.

3. **Connect the DC Power Adapter to the Wireless LAN Access Point's Power Socket.**
   Only use the power adapter supplied with the Access Point. Using a different adapter may damage the product.

The Hardware Installation is complete.

Chapter 3 Wireless LAN Access Point Configuration

3.1 Getting Started

This Access Point provides web-based configuration tool allowing you to configure from wired or wireless stations. Follow the instructions below to get started configuration.

From Wired Station

1. Make sure your wired station is in the same subnet with the Access Point. The default IP Address and Sub Mask of the Access Point is:
   Default IP Address: 192.168.2.1
   Default Subnet: 255.255.255.0

   Configure your PC to be in the same subnet with the Access Point.
   1a) Windows 95/98/Me
   1. Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.
   2. Double-click *Network* icon. The *Network* window will appear.
   3. Check your list of *Network Components*. If TCP/IP is not installed, click the *Add* button to install it now. If TCP/IP is installed, go to **step 6**.
   4. In the *Network Component Type* dialog box, select *Protocol* and click *Add* button.
   5. In the *Select Network Protocol* dialog box, select *Microsoft and TCP/IP* and then click the *OK* button to start installing the TCP/IP protocol. You may need your Windows CD to complete the installation.
   6. After installing TCP/IP, go back to the *Network* dialog box. Select *TCP/IP* from the list of *Network Components* and then click the *Properties* button.
   7. Check each of the tabs and verify the following settings:
      - **Bindings**: Check *Client for Microsoft Networks* and *File and printer sharing for Microsoft Networks*.
      - **Gateway**: All fields are blank.
      - **DNS Configuration**: Select *Disable DNS.*
      - **WINS Configuration**: Select *Disable WINS Resolution.*

- **IP Address**: Select *Specify an IP Address.* Specify the IP Address and Subnet Mask as following example.
  - ✓ IP Address: 192.168.2.3 (any IP address within 192.168.2.2~192.168.2.254 is available, **do not setup 192.168.2.1**)
  - ✓ Subnet Mask: 255.255.255.0

8. Reboot the PC. Your PC will now have the IP Address you specified.

1b) Windows 2000

1. Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.
2. Double-click *Network and Dial-up Connections* icon. In the *Network and Dial-up Connection* window, double-click *Local Area Connection* icon. The *Local Area Connection* window will appear.
3. In the *Local Area Connection* window, click the *Properties* button.
4. Check your list of *Network Components*. You should see *Internet Protocol [TCP/IP]* on your list. Select it and click the *Properties* button.
5. In the *Internet Protocol (TCP/IP) Properties* window, select *Use the following IP address* and specify the IP Address and Subnet mask as following.
   - ✓ IP Address: 192.168.2.3 (any IP address within 192.168.2.2~192.168.2.254 is available, **do not setup 192.168.2.1**)
   - ✓ Subnet Mask: 255.255.255.0
6. Click *OK* to confirm the setting. Your PC will now have the IP Address you specified.

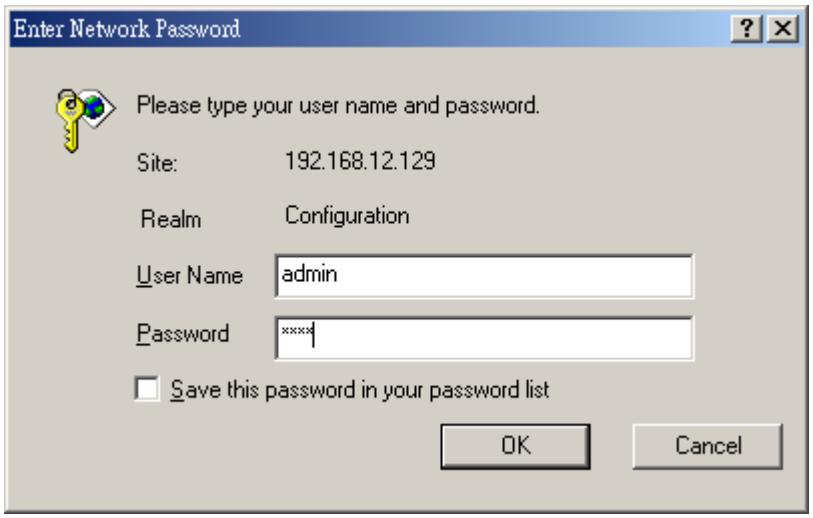
1c) Windows NT

1. Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.
2. Double-click *Network* icon. The *Network* window will appear. Select the *Protocol* tab from the *Network* window.
3. Check if the *TCP/IP Protocol* is on your list of *Network Protocols*. If *TCP/IP* is not installed, click the *Add* button to install it now. If *TCP/IP* is installed, go to **step 5**.
4. In the Select *Network Protocol* window, select the *TCP/IP Protocol* and click the *Ok* button to start installing the *TCP/IP protocol*. You may need your Windows CD to complete the installation.
5. After you install *TCP/IP*, go back to the *Network* window. Select *TCP/IP* from the list of *Network Protocols* and then click the *Properties* button.
6. Check each of the tabs and verify the following settings:

- **IP Address:** Select *Specify an IP address.* Specify the IP Address and Subnet Mask as following example.
  - ✓ IP Address: 192.168.2.3 (any IP address within 192.168.2.2~192.168.2.254 is available, **do not setup 192.168.2.1**)
  - ✓ Subnet Mask: 255.255.255.0
- **DNS:** Let all fields are blank.
- **WINS:** Let all fields are blank.
- **Routing:** Let all fields are blank.

7. Click *OK* to confirm the setting. Your PC will now have the IP Address you specified.

2. Enter **192.168.2.1** from Web Browser to get into the Access Point's configuration tool.
3. A screen will be popped up and request you to enter user name and password. The default user name and password is as follows.
   User Name: Admin
   Password: 1234
   Enter the default user name and password, then press **OK** button directly.



4. You can start configuring the Access Point.

From Wireless Station

1. Make sure your wireless station is in the same subnet with the Access Point. Please refer to the **step 1** above for configuring the IP Address and Sub Mask of the wireless station.

2. Connect to the Access Point.
   The Access Point's ESSID is "**default**" and the WEP Encryption function is disabled. Make sure your wireless station is using the same ESSID as the Access Point and associate your wireless station to the Access Point.
3. Enter **192.168.2.1** from Web Browser to get into the Access Point's configuration tool.
4. Enter the user name and password and then press **OK** button and you are available to configure the Access Point now.

3.2 Configuring the Access Point

3.2.1 Status and Information

On this screen, you can see the general information of the Access Point including Alias Name, Firmware Version, ESSID, Channel Number, Status, IP Address, MAC Address, etc.

3.2.2 Wireless Setting

This Access Point supports AP, Bridge and WDS modes. “AP Mode” provides pure access point function. The simplest way to build up a wireless LAN is to use “AP Mode”. “AP Bridge Mode” provides the function to bridge more than 2 wired Ethernet networks together by wireless LAN. You can use two access points with “AP Bridge-Point to Point mode” to bridge two wired Ethernet networks together. If you want to bridge more than two wired Ethernet networks together, you have to use enough access points with “AP Bridge-Point to Multi-Point mode”. An access point with “AP Bridge-Point to Point mode” or “AP Bridge-Point to Multi-Point mode” can only be used to bridge wired Ethernet networks together. It can’t accept

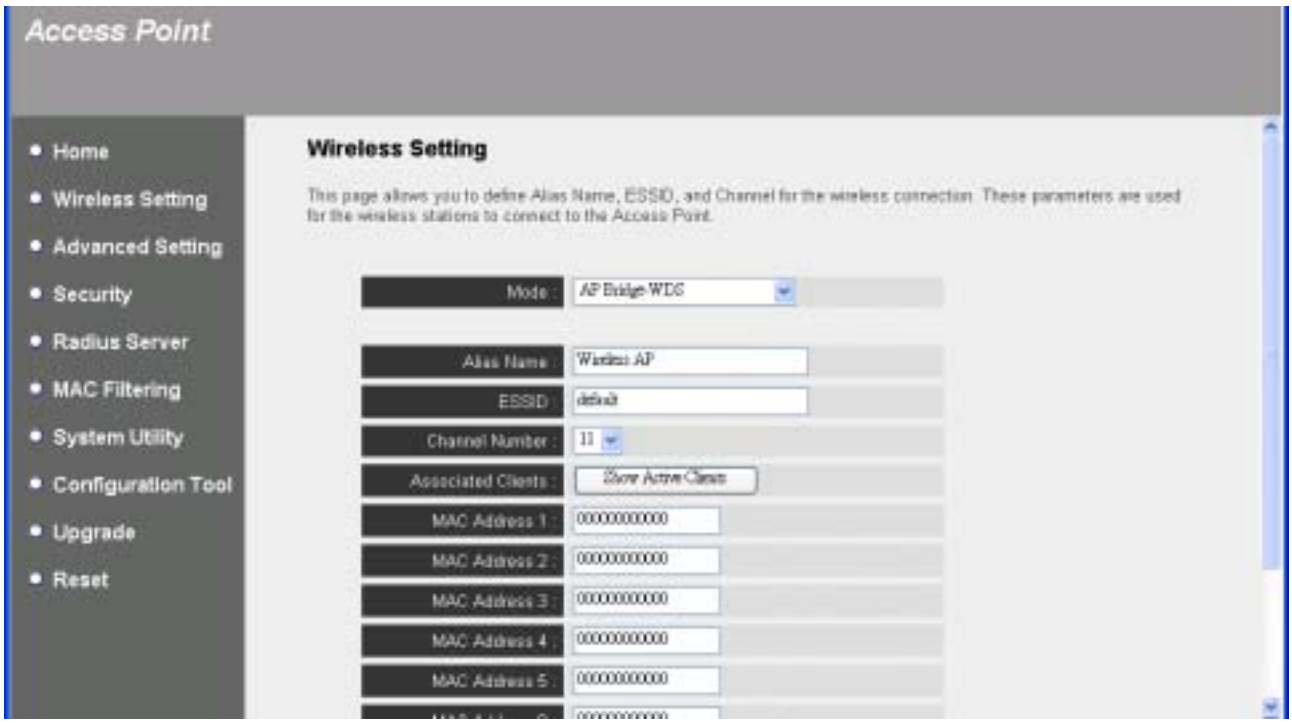
connection from other wireless station at the same time. If you want an access point to bridge wired Ethernet network and provide connection service for other wireless station at the same time, you have to set the access point to “AP Bridge-WDS mode”. Simply speaking, “AP Bridge-WDS mode” function is the combination of “AP mode” and “AP Bridge-Point to Multi-Point mode”.

AP mode setting page:

AP Bridge-Point to Point mode setting page:

AP Bridge-Point to Multi-Point mode setting page:

AP Bridge-WDS mode setting page:



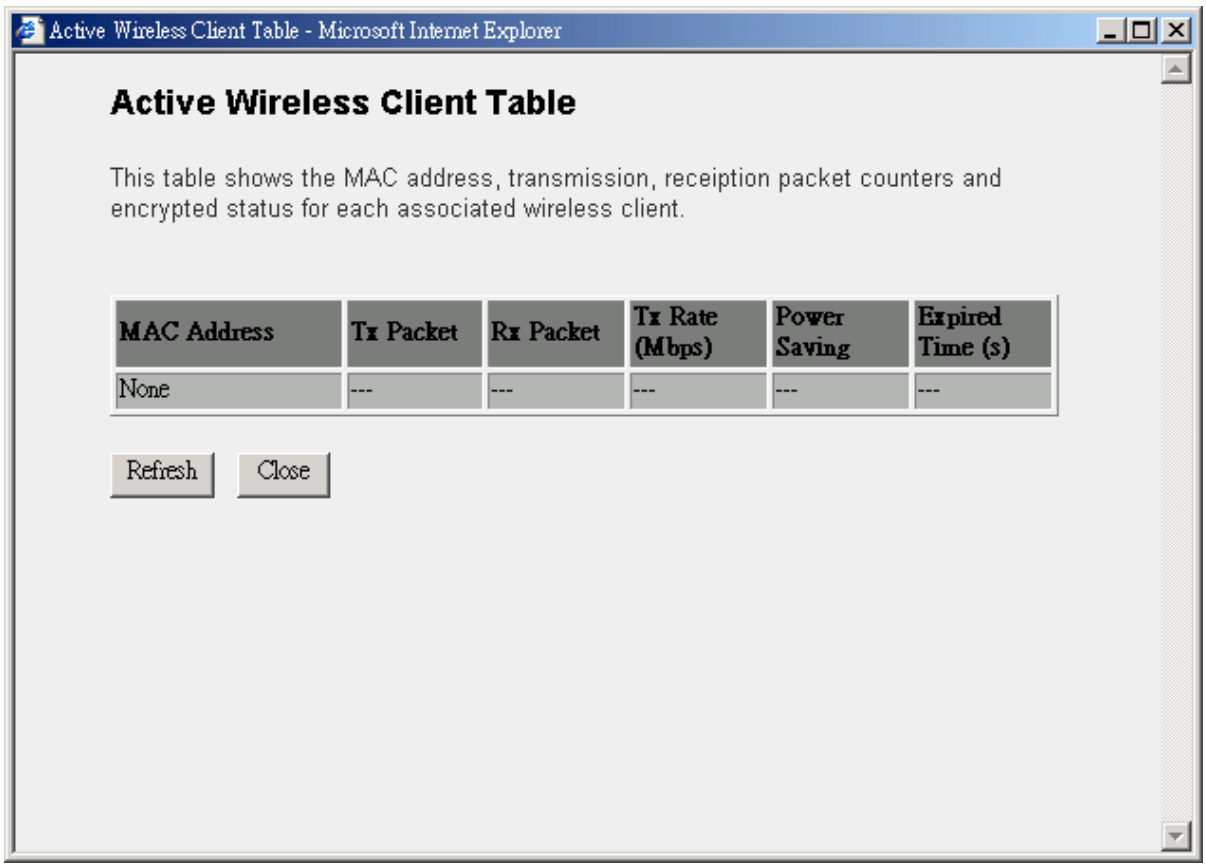
Parameter	Description
Alias Name	The alias name of this access point. You should assign Alias Name in “AP mode” and “AP Bridge-WDS mode”.
ESSID	The ESSID (up to 31 printable ASCII characters) is the unique name identified in a WLAN. The ID prevents the unintentional merging of two co-located WLANs. Please make sure that the ESSID of all stations in the same WLAN network are the same. The default ESSID is “**default**”. You should assign Alias Name in “AP mode” and “AP Bridge-WDS mode”.
Channel Number	Select the appropriate channel from the list provided to correspond with your network settings. Channels differ from country to country. Channel 1-11 (North America) Channel 1-14 (Japan) Channel 1-13 (Europe) There are 14 channels available. You should assign Alias Name in “AP mode”, “AP Bridge-Point to Point mode”, “AP Bridge-Point to Multi-Point mode” and “AP Bridge-WDS mode”.

MAC Address	If you want to bridge more than one wired Ethernet networks together with wireless LAN, you have to set this access point to “AP Bridge-Point to Point mode”, “AP Bridge-Point to Multi-Point mode” or “AP Bridge-WDS mode”. You have to enter the MAC addresses of other access points that join the bridging work.
Associated Clients	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.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

Active Wireless Client Table

“Active Wireless Client Table” records the status of all active wireless stations that are connecting to the access point. You can lookup the MAC Address, Number of Transmitted Packets, Number of Received Packets and Encryption Status of each active wireless client in this table.



Parameter	Description
MAC Address	MAC address of this active wireless station.
Tx Packet	The number of transmitted packets that are sent out from this active wireless station.
Rx Packet	The number of received packets that are received by this active wireless station.
TX Rate	The transmission rate in Mbps.
Power Saving	Shows if the wireless client is in Power Saving mode.
Expired Time	The time in second before dissociation. If the wireless keeps idle long than the expired time, this access point will dissociate it. The wireless client station has to associate again when it become active.
Refresh	Refresh the “Active Wireless Client Table”.

Close	Refresh the “Active Wireless Client Table”.

3.2.3 Advanced Setting

You can set advanced parameters of this access point. The parameters include Authentication Type, Fragment Threshold, RTS Threshold, Beacon Interval, DTIM Period, Transmit Rate, Broadcast ESSID, Operating Rates Mode, CTS Protection, Transmit Bust Mode. You should not change these parameters unless you know what effect the changes will have on this access point.

Parameter	Description
Authentication Type	There are two authentication types: “Open System” and “Shared Key”. When you select “Open System”, wireless stations can associate with this access point without WEP encryption. When you select “Shared Key”, you should also setup WEP key in the “Encryption” page and wireless stations should use WEP encryption in the authentication phase to associate with this access point. If you select “Both”, the wireless client can associate with this access point by using any one of these two authentication types.
Fragment Threshold	“Fragment Threshold” specifies the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will

	result in bad performace.
RTS Threshold	When the packet size is smaller the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet.
Beacon Interval	The interval of time that this access point broadcast a beacon. Beacon is used to synchronize the wireless network.
DTIM Period	Determines the interval the Access Point will send its broadcast traffic.
Transmit Rate	The “Transmit Rate” is the rate this access point uses to transmit data packets. The access point will use the highest possible selected transmission rate to transmit the data packets.
Broadcast ESSID	If you enable “Broadcast ESSID”, every wireless station located within the coverage of this access point can discover this access point easily. If you are building a public wireless network, enabling this feature is recommended. Disabling “Broadcast ESSID” can provide better security.
Operating Rates Mode	It allows to select the “Mixed Mode(11g/b)” or “11g only mode”.
CTS Protection	it is recommended to enable the protection mechanism. This mechanism can decrease the rate of data collision between 802.11b and 802.11g wireless stations. When the protection mode is enabled, the throughput of the AP will be a little lower due to many of frame traffic should be transmitted. **Auto** – Based on the status of the network and automatically disable/enable protection mode. **Always** – Always enable the protection mode. **None** – Always disable the protection mode.
Transmit Burst Mode	Transmit Burst enables the AP to deliver the better throughput in the same period and environment.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

3.2.4 Security

This Access Point provides complete wireless LAN security functions, include WEP, IEEE 802.11x, IEEE 802.11x with WEP, WPA with pre-shared key and WPA with RADIUS. With these security functions, you can prevent your wireless LAN from illegal access. Please make sure your wireless stations use the same security function.

WEP

WEP is an authentication algorithm, which protects authorized Wireless LAN users against eavesdropping. The Authentication type and WEP key of wireless stations must be the same with the Access Point. This Access Point supports 64/128/152-bit WEP Encryption function. With this function, your data will be transmitted over the wireless network securely.

Parameter	Description
Key Length	You can select the 64-bit, 128 or 152-bit key to encrypt transmitted data. Larger WEP key length will provide higher level of security, but the throughput will be lower. You also can select **Disable** to transmit data without encryption.
Key Format	You may select to select ASCII Characters (alphanumeric format) or Hexadecimal Digits (in the “A-F”, “a-f” and “0-9” range) to be the WEP Key. For example: ASCII Characters: guest Hexadecimal Digits: 12345abcde
Key 1 - Key 4	The WEP keys are used to encrypt data transmitted in the wireless network. Fill the text box by following the rules below. 64-bit WEP: input 10-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or 5-digit ASCII character as the encryption keys. 128-bit WEP: input 26-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or 13-digit ASCII characters as the encryption keys.
Default Key	Select one of the four keys to encrypt your data. Only the key you select it in the “Default key” will take effect.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

802.1x

IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this Access Point before accessing the wireless LAN. The authentication is processed by a RADIUS server. You can use an external RADIUS server or use the RADIUS server built-in with the Access Point. This mode only authenticates user by IEEE 802.1x, but it does not encryption the data during communication.

Parameter	Description
Use internal MD5 RADIUS Server	You can select to use the internal RADIUS server to process the authentication job. The internal RADIUS server uses MD5 authentication method.
RADIUS Server IP address	The IP address of external RADIUS server.
RADIUS Server Port	The service port of the external RADIUS server.
RADIUS Server Password	The password used by external RADIUS server.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

802.1x WEP static key

IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this Access Point before accessing the wireless LAN. The authentication is processed by a RADIUS server. You can use an external RADIUS server or use the RADIUS server built-in with the Access Point. This mode also uses WEP to encrypt the data during communication.

Parameter	Description
Key Length	You can select the 64-bit or 128-bit key to encrypt transmitted data. Larger WEP key length will provide higher level of security, but the throughput will be lower. You also can select **Disable** to transmit data without encryption.
Key Format	You may select to select ASCII Characters (alphanumeric format) or Hexadecimal Digits (in the “A-F”, “a-f” and “0-9” range) to be the WEP Key. For example:

	ASCII Characters: guest Hexadecimal Digits: 12345abcde
Key 1 - Key 4	The WEP keys are used to encrypt data transmitted in the wireless network. Fill the text box by following the rules below. 64-bit WEP: input 10-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or 5-digit ASCII character as the encryption keys. 128-bit WEP: input 26-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or 13-digit ASCII characters as the encryption keys.
Default Key	Select one of the four keys to encrypt your data. Only the key you select it in the “Default key” will take effect.
Use internal MD5 RADIUS Server	You can select to use the internal RADIUS server to process the authentication job. The internal RADIUS server uses MD5 authentication method.
RADIUS Server IP address	The IP address of external RADIUS server.
RADIUS Server Port	The service port of the external RADIUS server.
RADIUS Server Password	The password used by external RADIUS server.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

WPA pre-shared key

Wi-Fi Protected Access (WPA) is an advanced security standard. You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. It uses TKIP to change the encryption key frequently. This can improve security very much.

Note: This Access Point does not provide AES encryption method.

Parameter	Description
TKIP	TKIP can change the encryption key frequently to enhance the wireless LAN security.
Key Format	You may select to select ASCII Characters (alphanumeric format) or Hexadecimal Digits (in the “A-F”, “a-f” and “0-9” range) to be the Pre-shared Key. For example: ASCII Characters: iamguest Hexadecimal Digits: 12345abcde
Pre-shared Key	The Pre-shared key is used to authenticate and encrypt data transmitted in the wireless network. Fill the text box by following the rules below. Hex WEP: input 64-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or at least 8 character pass phrase as the pre-shared keys.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

WPA RAIUS

Wi-Fi Protected Access (WPA) is an advanced security standard. You can use an external RADIUS server to authenticate wireless stations and provide the session key

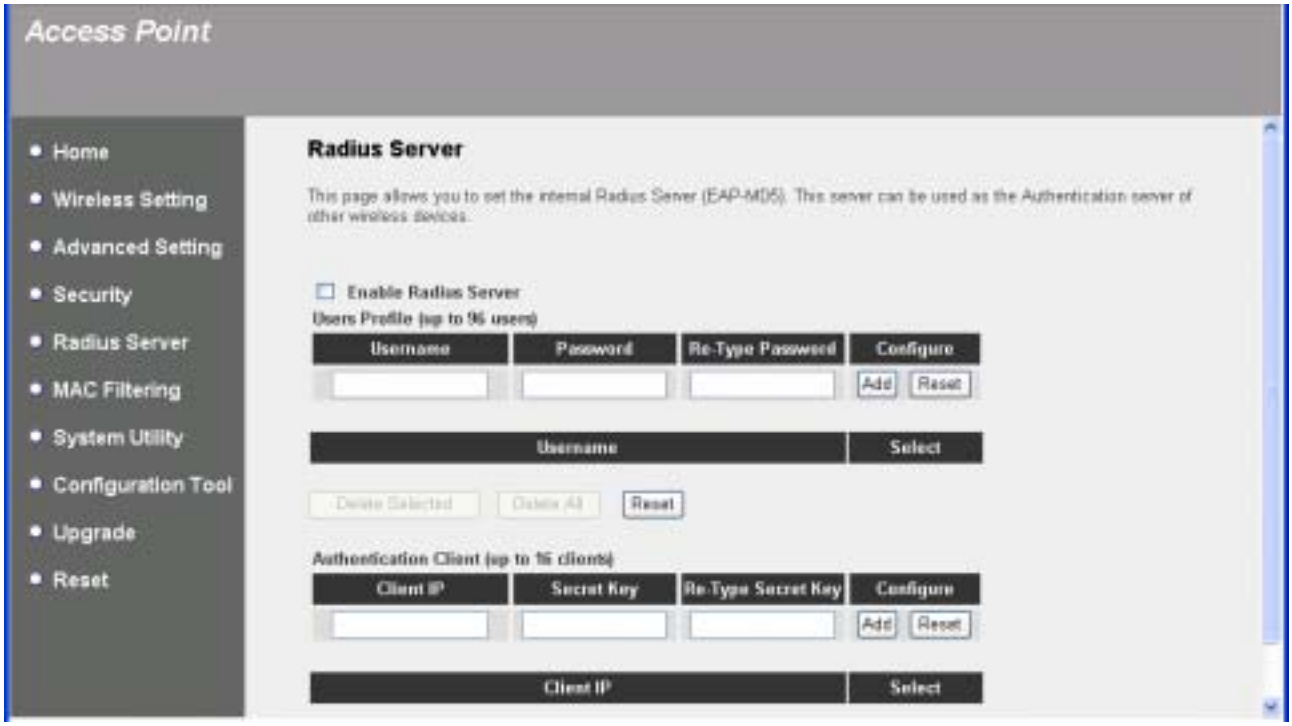
to encrypt data during communication. It uses TKIP to change the encryption key frequently. This can improve security very much.
Note: This Access Point does not provide AES encryption method.
Note: WPA can not use the internal RADIUS server for authentication.

Parameter	Description
TKIP	TKIP can change the encryption key frequently to enhance the wireless LAN security.
RADIUS Server IP address	The IP address of external RADIUS server.
RADIUS Server Port	The service port of the external RADIUS server.
RADIUS Server Password	The password used by external RADIUS server.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

3.2.5 Radius Server

This Access Point provides an internal RADIUS server to authenticate wireless station users. You have to add user accounts to the RADIUS server. The wireless station user has to use one of these accounts to login to the Access Point before access the wireless LAN. You also have to add secret key to the RADIUS server. RADIUS server client has to use one of these secret keys to login the RADIUS server before asking the RADIUS server to authenticate the uses for it.



Parameter	Description
Enable Radius Server	Select to enable the RADIUS server.
User Profile table	This table records the accounts of users you want to allow to access your wireless network. An account includes the “User name” and “Password”. A wireless LAN user has to enter correct “Username” and “Password” before he/she is allowed to access the wireless LAN.
Add an user account	Fill in the “Username”, “Password” and “Re-Type Password” of the new account to be added and then click “Add”. Then this new account will be added into the account table below. If you find any typo before adding it

	and want to retype again. Just click “Reset” and “Username”, “Password” and “Re-Type Password” fields will be cleared.
Remove user account from the table	If you want to remove some account from the table, select the accounts you want to remove in the table and then click “Delete Selected”. If you want remove all user accounts from the table, just click “Delete All” button.
Reset	Click “Reset” will clear your current selections.
Authentication Client table	This table records the clients of the RADIUS server that need to authenticate wireless LAN users. Authentication client information includes the “Client IP” and “Secret Key”. An authentication client has to use the “Secret Key” to login to the RADIUS server before it can start to authenticate wireless LAN users. An authentication client can be an access point.
Add an authentication client	Fill in the “Client IP”, “Secret Key” and “Re-Type Secret Key” of the new authentication client to be added and then click “Add”. Then this new authentication will be added into the authentication client table below. If you find any typo before adding it and want to retype again. Just click “Reset” and “Client IP”, “Secret Key” and “Re-Type Secret” fields will be cleared.
Remove authentication client from the table	If you want to remove some authentication client from the table, select the authentication clients you want to remove in the table and then click “Delete Selected”. If you want remove all user authentication clients from the table, just click “Delete All” button.
Reset	Click “Reset” will clear your current selections.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

Parameter	Description
Enable Radius Server	Select to enable the RADIUS server.
User Profile table	This table records the accounts of users you want to allow to access your wireless network. An account includes the “User name” and “Password”. A wireless LAN user has to enter correct “Username” and “Password” before he/she is allowed to access the wireless LAN.
Add an user account	Fill in the “Username”, “Password” and “Re-Type Password” of the new account to be added and then click “Add”. Then this new account will be added into the account table below. If you find any typo before adding it and want to retype again. Just click “Reset” and “Username”, “Password” and “Re-Type Password” fields will be cleared.
Remove user account from the table	If you want to remove some account from the table, select the accounts you want to remove in the table and then click “Delete Selected”. If you want remove all user accounts from the table, just click “Delete All” button.
Reset	Click “Reset” will clear your current selections.
Authentication Client table	This table records the clients of the RADIUS server that need to authenticate wireless LAN users. Authentication client information includes the “Client IP” and “Secret Key”. An authentication client has to use the “Secret Key” to login to the RADIUS server before it can start to authenticate wireless LAN users. An authentication client can be an access point.
Add an authentication client	Fill in the “Client IP”, “Secret Key” and “Re-Type Secret Key” of the new authentication client to be added and then click “Add”. Then this new authentication will be added into the authentication client table below. If you find any typo before adding it and want to retype again. Just click “Reset” and “Client IP”, “Secret Key” and “Re-Type Secret” fields will be cleared.

Remove authentication client from the table	If you want to remove some authentication client from the table, select the authentication clients you want to remove in the table and then click “Delete Selected”. If you want remove all user authentication clients from the table, just click “Delete All” button.
Reset	Click “Reset” will clear your current selections.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

3.2.6 MAC Address Filtering

This Access Point provides MAC Address Filtering, which prevents the unauthorized MAC Addresses from accessing your wireless network.

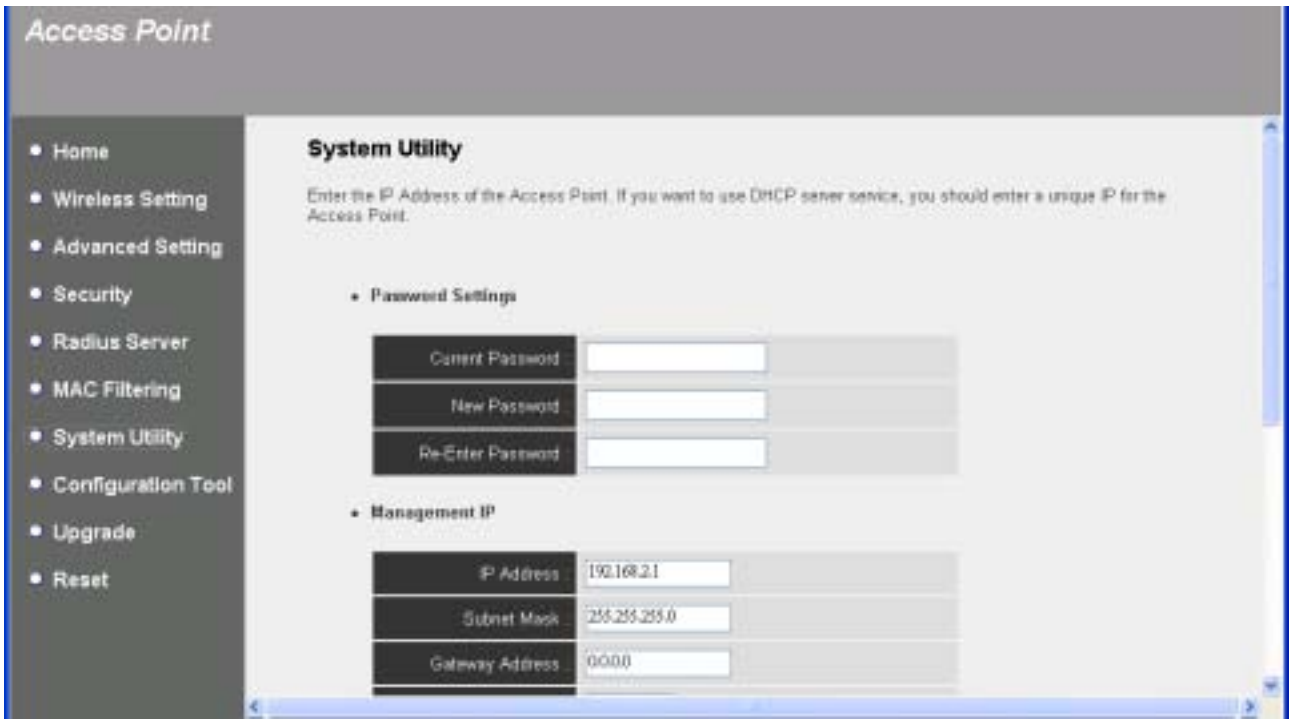
Parameter	Description
Filtering	Enable or disable the MAC Address Filtering function.
MAC Address Filtering Table	This table records the MAC addresses of wireless stations you want to allow to access your network. The “Comment” field is the description of the wireless station associated with the “MAC Address” and is helpful for you to recognize the wireless station.
Add MAC address into the table	In the bottom “New” area, fill in the “MAC Address” and “Comment” of the wireless station to be added and then click “Add”. Then this wireless station will be added into the “MAC Address Filtering Table” above. If you find any typo before adding it and want to retype again. Just click “Clear” and both “MAC Address” and “Comment” fields will be cleared.
Remove MAC address from the table	If you want to remove some MAC address from the “MAC Address Filtering Table”, select the MAC addresses you want to remove in the

	table and then click “Delete Selected”. If you want remove all MAC addresses from the table, just click “Delete All” button.
Reset	Click “Reset” will clear your current selections.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

3.2.7 System Utility

From here, you can define the Access Point’s IP Address and Login Password and enable the Access Point to be a DHCP Server.



Parameter	Description
Current Password	Enter the current password (up to 15-digit alphanumeric string) of the Access Point. The default password for the Access Point is **1234**. Note that the password is case-sensitive.
New Password	Enter the password (up to 15-digit alphanumeric string) you want to login to the Access Point. Note that the password is case-sensitive.
Re-Enter Password	Reconfirm the password (up to 15-digit alphanumeric string) you want to login to the Access Point. Note that the password is case-sensitive.
IP Address	Designate the Access Point's IP Address. This IP Address should be unique in your network. The default IP Address is **192.168.2.1**.
Subnet Mask	Specify a Subnet Mask for your LAN segment. The Subnet Mask of the Access Point is fixed and the value is **255.255.255.0**.
DHCP Server	Enable or disable the DHCP Server.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

3.2.7.1 DHCP Server Setting

DHCP Server will automatically give your LAN client an IP address. If the DHCP is not enabled then you'll have to manually set your LAN client's IP address.

Parameter	Description
Default Gateway IP	Specify the gateway IP in your network. This IP address should be different from the Management IP.
Domain Name Server IP	This is the ISP's DNS server IP address that they gave you; or you can specify your own preferred DNS server IP address.
Start IP/End IP	You can designate a particular IP address range for your DHCP server to issue IP addresses to your LAN Clients. By default the IP range is from: Start IP **192.168.2.100** to End IP **192.168.2.200**.
Domain Name	You can specify the Domain Name for your Access Point.
Lease Time	The DHCP Server when enabled will temporarily give your LAN client an IP address. In the Lease Time setting you can specify the time period that the DHCP Server lends an IP address to your LAN clients. The DHCP Server will change your LAN client's IP address when this time threshold period is reached.

Click **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the Access Point.

3.2.8 Configuration Tool

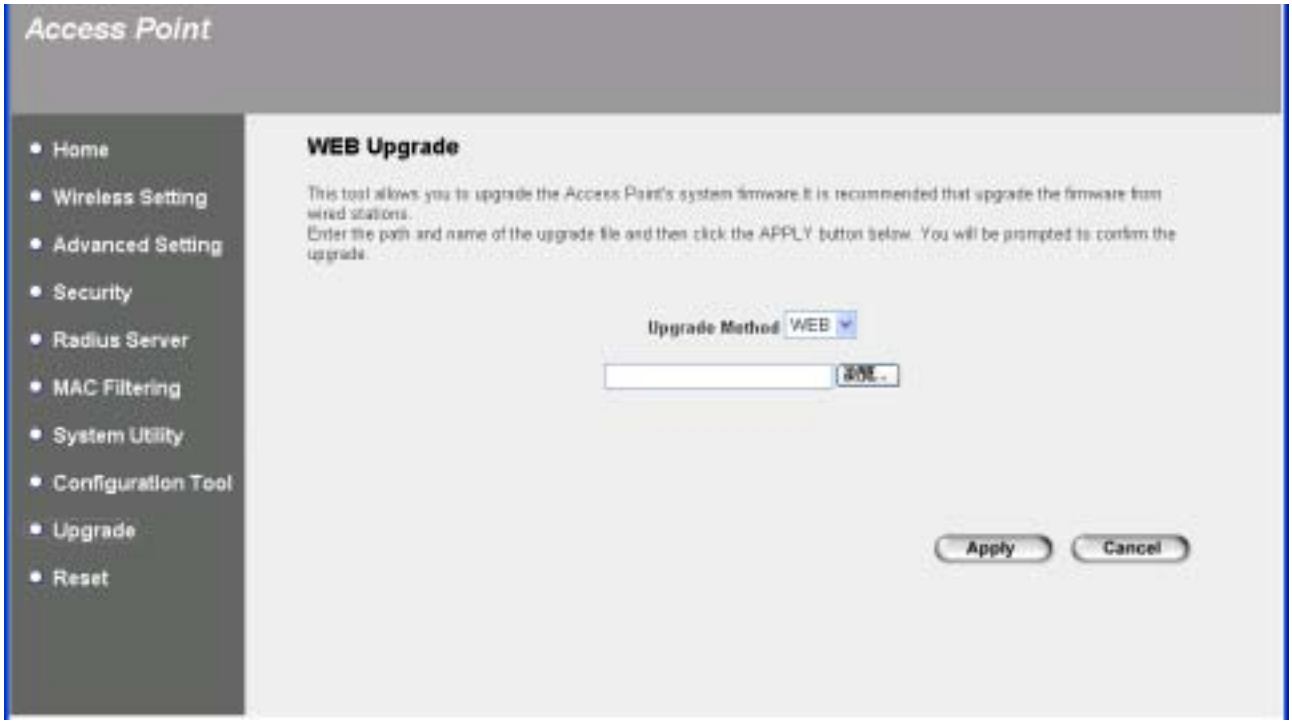
The Configuration Tools screen allows you to save (**Backup**) the Access Point's current configuration setting. Saving the configuration settings provides an added

protection and convenience should problems occur with the Access Point and you have to reset to factory default. When you save the configuration setting (Backup) you can re-load the saved configuration into the Access Point through the **Restore** selection. If extreme problems occur you can use the **Restore to Factory Default** selection, this will set all configurations to its original default settings (e.g. when you first purchased the Access Point).

Parameter	Description
Configuration Tools	Use the "**Backup**" tool to save the Access Point's current configuration to a file named "config.bin" on your PC. You can then use the "**Restore**" tool to upload and restore the saved configuration to the Access Point. Alternatively, you can use the "**Restore to Factory Default**" tool to force the Access Point to perform a power reset and restore the original factory settings.

3.2.9 Firmware Upgrade

This page allows you to upgrade the Access Point's firmware.

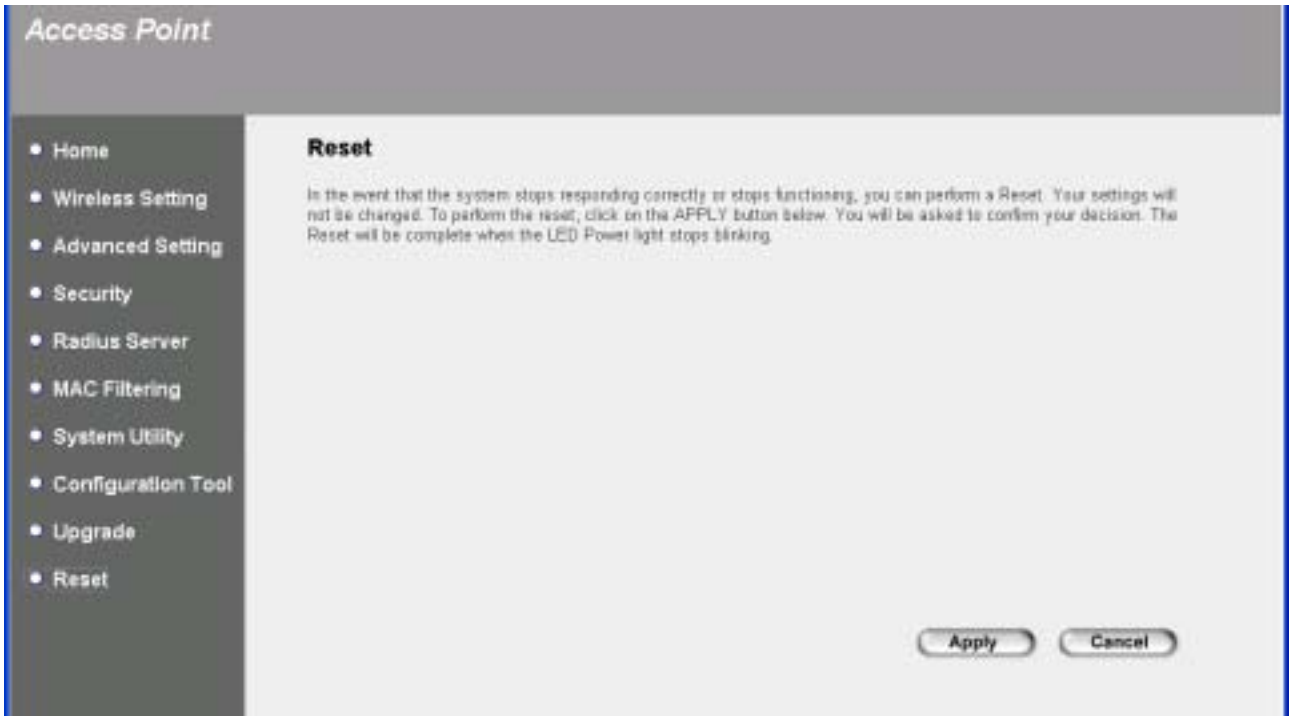


Parameter	Description
Firmware Upgrade	This tool allows you to upgrade the Access Point's system firmware. To upgrade the firmware of your Access Point, you need to download the firmware file to your local hard disk, and enter that file name and path in the appropriate field on this page. You can also use the **Browse** button to find the firmware file on your PC. Please reset the Access Point when the upgrade process is complete.

Once you've selected the new firmware file, click **Apply** button at the bottom of the screen to start the upgrade process. (You may have to wait a few minutes for the upgrade to complete). Once the upgrade is complete you can start using the Access Point.

3.2.10 Reset

You can reset the Access Point's system should any problem exist. The reset function essentially Re-boots your Access Point's system.



Parameter	Description
Reset	In the event that the system stops responding correctly or in some way stops functioning, you can perform a reset. **Your settings will not be changed**. To perform the reset, click on the **Apply** button. You will be asked to confirm your decision. Once the reset process is complete you may start using the Access Point again.

4. Troubleshooting

This chapter provides solutions to problems usually encountered during the installation and operation of the Access Point.

1. How to manually find your PC's IP and MAC Address?

1) In Windows, open the Command Prompt program
2) Type **Ipconfig /all** and **Enter**
   - Your PC's IP address is the one entitled **IP address**
   - Your PC's MAC Address is the one entitled **Physical Address**

2. What is BSS ID?

A group of wireless stations and an Access Point compose a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSSID.

3. What is ESSID?

An Infrastructure configuration could also support roaming capability for mobile workers. More than one BSS can be configured as an Extended Service Set (ESS). Users within an ESS could roam freely between BSSs while maintaining a continuous connection to the wireless network stations and the Wireless LAN Access Points.

4. Can data be intercepted while transmitting through the air?

WLAN features two-fold protection in security. On the hardware side, as with Direct Sequence Spread Spectrum technology, it has the inherent scrambling security feature. On the software side, the WLAN series offers the encryption function (WEP) to enhance security and access control.

5. What is WEP?

WEP stands for Wired Equivalent Privacy, a data privacy mechanism based on a 64(40)-bit shared key algorithm.

6. What is a MAC Address?

The Media Access Control (MAC) address is a unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level. For all practical purposes, this number is usually permanent. Unlike IP addresses, which can change every time a computer logs on to the network, the MAC address of a device stays the same, making it a valuable identifier for the network.