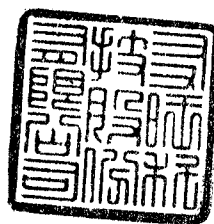


Wireless 802.11b+g Access Point

User's Guide

友旺科技股份有限公司
 友旺科技®
Wireless 802.11b+g Access Point
M/N : WAP404



FCC Certifications

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

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

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement

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

CE Mark Warning

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

All trademarks and brand names are the property of their respective proprietors.

Specifications are subject to change without prior notification.

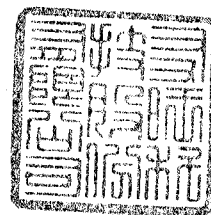
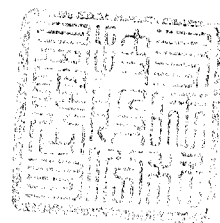


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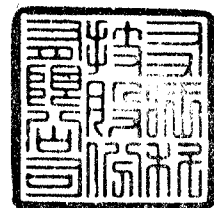
INTRODUCTION

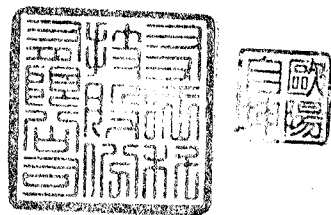
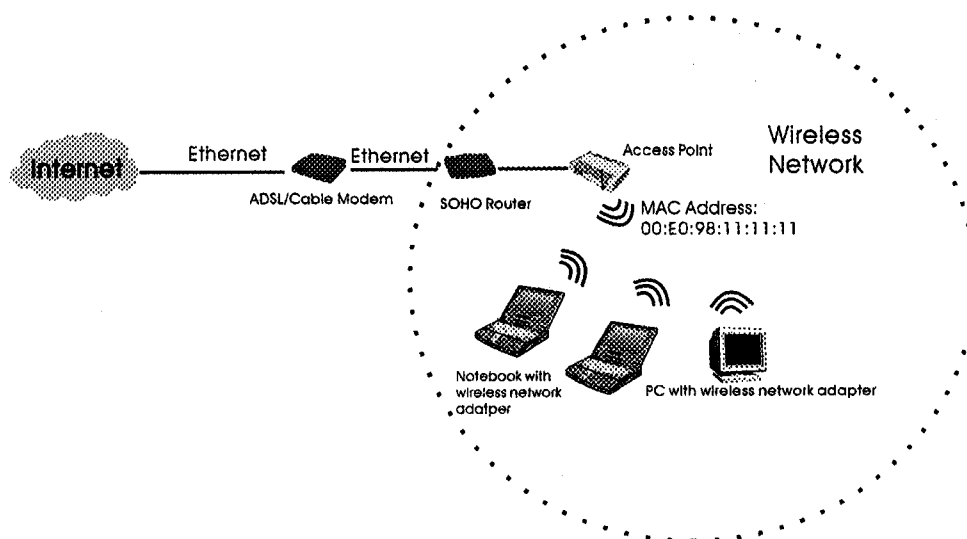
The **Wireless 802.11b+g Access Point (AP)** is an IEEE802.11g compliant access point. It not only provides a high transfer rate up to 54Mbps, which is almost five times faster than the already existing 11Mbps 802.11b products, but is also backward compatible with the Wireless b equipments.

The **AP** provides 40/128/256 bit WEP encryption, WPA and **IEEE802.1x**, which ensures a high level of security to protects users' data and privacy. The MAC Address control prevents the banned or unauthorized MAC Addresses from accessing your Wireless LAN. Your network security is therefore double assured.

Placed anywhere along with an Ethernet LAN, the **AP** allows up to 64 wireless stations within its area of coverage to access transparently to the corporate network.

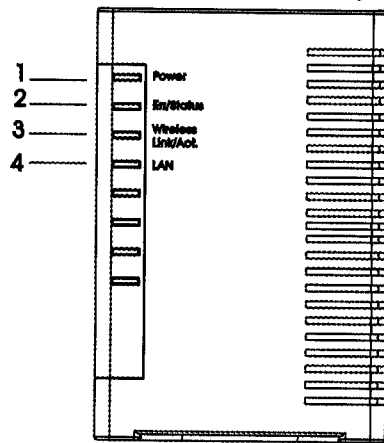
The web-based configuration utility allows users to configure via web browser. Advanced setup and firmware upgrade can be done easily.





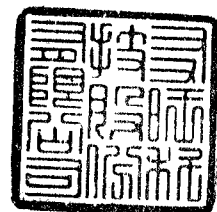
Parts Names and Functions

1. Top Panel: (LED Indicators)

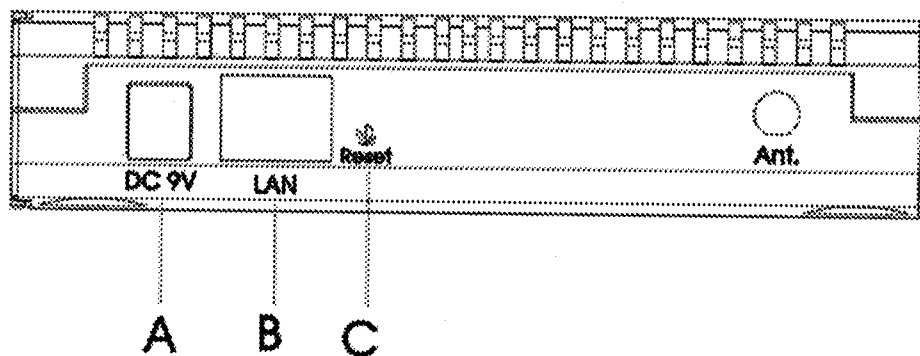


	LED Indicator	Color	Status	
			Solid	Flashing
1	Power	Green	Turns solid green when power is applied to this device.	N/A.
2	ErrStatus	Red	Turns solid red when the device is not working properly.	When power on self-test failure occurs.
3	Wireless Link/Act.	Green	Turns solid green when connected and associated to at least a client station.	Receiving/ Sending data
4	LAN	Green	Turns solid green when linked to a local network.	Receiving/ Sending data

Table 1: LED Indicators

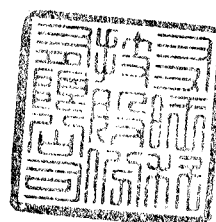


2. Rear Panel: Connection Ports



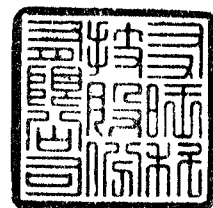
	Port/button	Functions
A	9V DC	Connects to the power adapter plug
B	LAN	Connects to Ethernet
C	(Factory) RESET	Press for 5 seconds to reboot this device and restore factory settings. Performing the Factory Reset will erase all previously entered device settings.

Table 2: Connection Ports



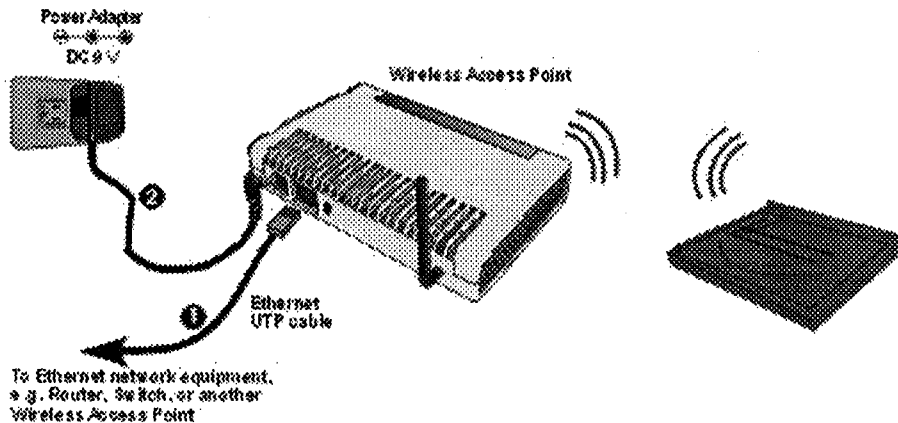
Factory Default Settings

Setting	Wireless Access Point
Device Name	Wireless AP
SSID	Default value: 802.11SSID
Channel	6
WEP	Default value: Disabled
IP Address	192.168.1.252



SETUP

Note: Before your starting hardware connection, you are advised to find an appropriate location to place the Access Point. Usually, the best place for the Access Point is at the center of your wireless network, with line of straight to all your wireless stations. Also, remember to adjust the antenna; usually the antenna is placed higher, the performance will be better.



1. Connect to your local area network:

Connect an Ethernet cable to the Ethernet port of this Wireless Access Point, and the other end to a hub, switch, router, or another wireless access point.

2. Power on the device:

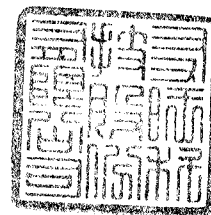
Connect the included AC power adapter to the Wireless Access Point's power port and the other end to a wall outlet.

Check the LEDs:

The Power, Wireless Link/Act. and LAN should be ON. Wireless Link/Act. and LAN will blink if the data is being transmitted or received.

3. Configure your PC:

Make sure your local PC(s) has wireless network adapter installed.



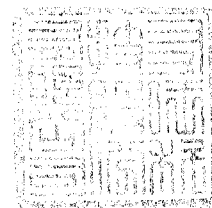
CONFIGURATION

Login

1. Start your computer. Connect an Ethernet cable between your computer and the Wireless Access Point.
2. Make sure your wired station is set to the same subnet as the Wireless Access Point, i.e. 192.168.1.10
3. Start your WEB browser. In the *Address* box, enter the following:
HTTP://192.168.1.252

Address

The configuration menu includes: **Basic Setup, Advanced Setup, IP Setting, Privacy, Manage, Download, and Statistics.** The details for the configuration menu are described as follows.

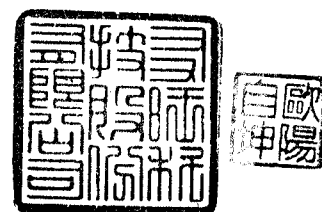


Basic Setup

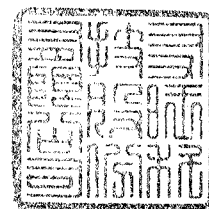
The Setup page displays basic local and WLAN settings for the AP and enables you to change the settings.



FW Version	The current version of the firmware installed in this device.
SW Version	The current version of the software installed in this device.
Wireless	
Enable/Disable AP	☒ Enable / ☐ Disable Click to enable/disable the AP.
Domain	The AP's domain determines the channel number.
MAC address/BSSID	The AP's MAC address/BSSID. BSSID displays the ID of current BSS, which uniquely identifies each BSS. It is also the MAC address of this Access Point.
SSID	SSID is the unique name shared among all points in your wireless network. It is case-sensitive and must not exceed 32 characters. It must be identical for all points in the network. Make sure that all points in the network are using the same SSID.



Channel	The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
Save	After completing the settings, Click Save to save the settings.
Cancel	Click Cancel to discard the data you have entered since last time you press Save .

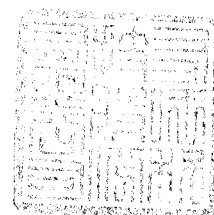


Advanced Setup

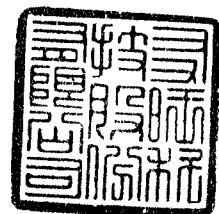
It is not recommended that settings in this page to be changed unless advanced users want to change to meet their wireless environment for optimal performance.

The screenshot shows a web-based configuration interface for a wireless network. The title is 'Advanced Setup'. Below the title is a warning message: 'It is not recommended that settings in this page to be changed unless advanced users want to change to meet their wireless environment for optimal performance.' The main area contains several configuration fields and checkboxes. The fields include 'Beacon Period' (set to 200), 'DTIM Period' (set to 2), 'RTS Threshold' (set to 4096), and 'Transmit Power Level' (set to Full). There are also checkboxes for 'WMM', 'WMM-AC', and 'WMM-PS'. The bottom of the page has three buttons: 'Save', 'Defaults', and 'Cancel'.

Beacon Period	Beacon Period is the amount of time between beacon transmissions. Before a station enters power save mode, the station needs the beacon period to know when to wake up to receive the beacon (and learn whether there are buffered frames at the access point). The default value is 200.
DTIM Period	DTIM stands for Delivery Traffic Indication Message . A DTIM is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the access point has buffered broadcast or multicast message for associated clients, it sends the next DTIM with a DTIM Period value. Access point clients hear and awaken to receive the broadcast and multicast messages. The default DTIM period is '2'.
RTS Threshold	RTS (Request To Send) is a control frame sent from the transmitting station to the receiving station requesting

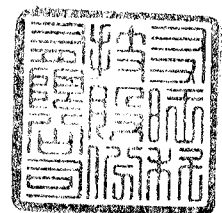


	its default setting of 4096 . Should you encounter inconsistent data flow, only minor modifications of this value are recommended.
Fragment Threshold	Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. The value can be set from 256 to 4096. The default value is 4096 .
Output Power Level	You can choose the percentage of maximum power to meet your requirement. The default is Full .
b/g Mode	You can choose one mode of the following you need. ☐ Mixed: 802.11b supported rate and 802.11g supported rate. ☐ b only: 802.11b supported rate only. ☐ b+: 802.11b supported rate and 22 Mbps PBCC rate. ☐ 11g only: 802.11g supported rate only. The default is Mixed mode.
Hidden SSID Support	Click ☐ Enabled / ☐ Disabled to hide/broadcast the SSID.
Turbo Mode	Click ☐ Enabled or ☐ Disabled to enable or disable enhancing throughput rate.
Interference Avoidance	Click ☐ Enabled or ☐ Disabled to enable or disable the Access Point's energy detection mechanism.
Video Blast Support	☐ Enabled / ☐ Disabled : enable or disable the vHCF feature. Destination IP Address : The destination IP address with preferred bandwidth. Protocol : The destination AP's protocol. Port Number : The destination AP's port number.
Save	After completing the settings, Click Save to save the settings.
Defaults	Click to restore the AP to factory default settings.



Cancel

Click **Cancel** to discard the data you have entered since last time you press **Save**.

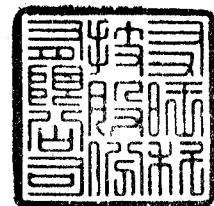


IP Setting

The IP Settings page displays the IP address for the AP.

The screenshot shows a web interface titled "Wireless LAN Access Point". It has a navigation bar with links: Home, Basic, Advanced, Security, Wireless, and Utilities. The main content area is for IP configuration. It includes a "DHCP Client" section with a "Disable" button. Below it, there are three rows of input fields for "IP Address", "Subnet Mask", and "Default Gateway". Each row has four input boxes. The "IP Address" row contains the values 192, 168, 1, and 252. The "Subnet Mask" row contains 255, 255, 255, and 0. The "Default Gateway" row contains 192, 168, 1, and 254. At the bottom left of the form area, there are "Save" and "Cancel" buttons.

IP Address	This field can be modified only when DHCP Client is disabled. If your system manager assigned you static IP settings, then you will have to enter the information provided.
Subnet Mask	Enter the information provided by your system manager.
Default Gateway	Enter the information provided by your system manager.
Save	After completing settings, Click Save to save settings.
Cancel	Click Cancel to discard the data you have entered since last time you press Save .



Privacy

The Privacy page displays WLAN security settings. You can select WEP, 802.1x, or WPA to be the privacy mode for the AP.

WEP

Privacy

Click ☒ **Enable Network Security** or ☐ **Disable Network Security** to enable/disable Privacy. If you select to disable privacy function, there will be no need to change the rest of the settings.

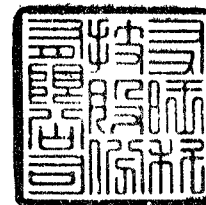
Authentication Type

Open: If the type is selected, the associated station should set the same Authentication type as AP.

Shared: If the type is selected, there must be a key to be shared between the AP and the associated station.

Both: **Open** or **Shared** will be selected automatically depending on the settings of the AP's clients.

WEP Keys



Tx Key	You can select one of the Keys for Security.
Key Value	Please set the Key Value according to the WEP Cipher you select. If 40bits is selected, 10 Hex characters are needed. If 128bits is selected, 26 Hex characters are needed. If 256bits is selected, 58 Hex characters are needed.
WEP Cipher	You can choose one from ☐ 40bits ☐ 128bits ☐ 256bits. 256bits is the highest WEP level among the three.

RADIUS

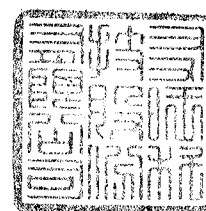
Not Required.

Save	After completing the settings, Click Save to save the settings.
Cancel	Click Cancel to discard the data you have entered since last time you press Save .

The screenshot shows a configuration window with the following sections:

- General:** Includes checkboxes for "Enable Network Security" and "Enable Remote Access".
- Security:** Contains a "Key" field with a value of "1234567890" and a "Key Length" dropdown set to "3600".
- WEP:** Features a "WEP Key" section with four rows of keys (1-4) and a "WEP Cipher" section with radio buttons for "40 bits", "128 bits", and "256 bits".
- RADIUS:** Includes fields for "Server IP Address" (192.168.1.1), "Port" (1812), and "Secret" (RADIUS-SECRET).

At the bottom of the window are "Save" and "Cancel" buttons.



802.1x**Group Key Interval**

Please enter the value to decide how long it should change the Group Keys. The default is 3600 seconds.

WEP Keys

Not Required.

RADIUS**Server IP Address**

Enter the RADIUS Server's IP Address provided by your ISP.

Port

Enter the RADIUS Server's port number provided by your ISP. The default is 1812.

Secret

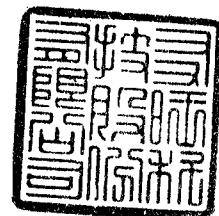
Enter the secret phrase that the AP shares with the RADIUS Server.

Save

After completing the settings, Click **Save** to save the settings.

Cancel

Click **Cancel** to discard the data you have entered since last time you press **Save**.



WPA

802.1x

WPA stations authenticate with RADIUS Server over 802.1x.

Enter a period of time in **Group Key Interval** field to decide how long to change group keys.

PSK Hex

WPA stations share the pre-shared key (PSK) with AP, you have to enter 64 characters for the key. Enter a period of time in **Group Key Interval** field to decide the interval to change group keys.

PSK Passphrase

WPA stations share the pre-shared key (PSK) with AP, 8-63 characters are needed for the key. Enter a period of time in **Group Key Interval** field to decide how long to change group keys.

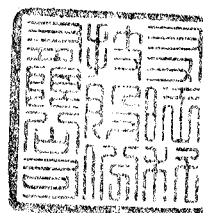
WEP Keys

Not Required.

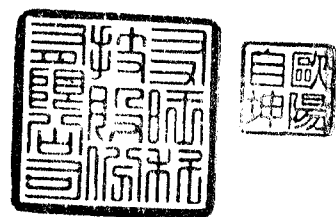
RADIUS

Server IP Address

Enter the RADIUS Server's IP Address provided by your ISP.

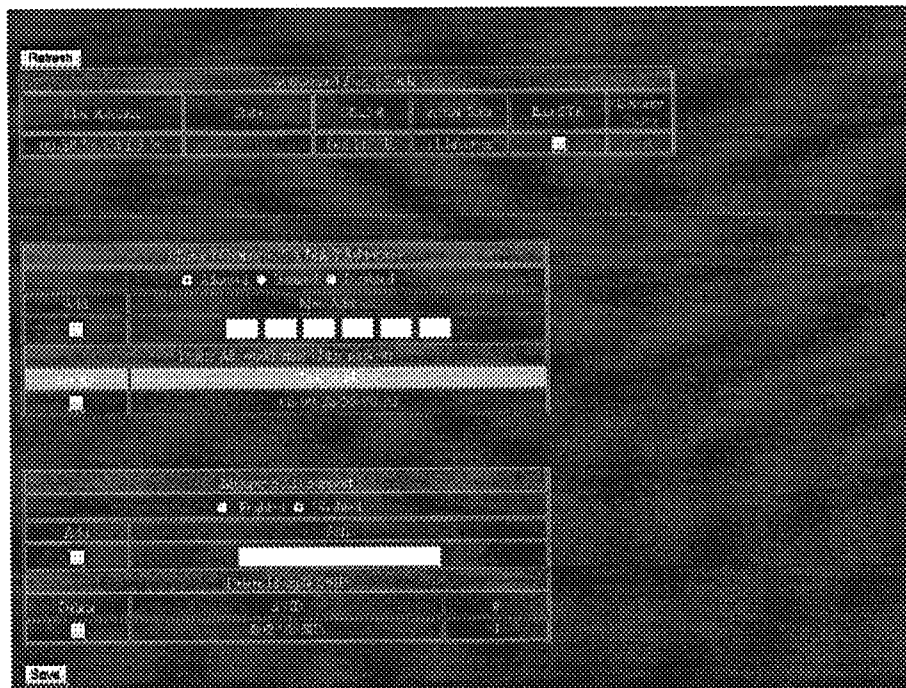


Port	Enter the RADIUS Server's port number provided by your ISP. The default is 1812.
Secret	Enter the secret phrase shared between the AP and the RADIUS Server.
Save	After completing the settings, Click Save to save the settings.
Cancel	Click Cancel to discard the data you have entered since last time you press Save .



Manage

The management page displays information about stations that are currently associated with the AP.

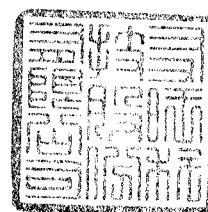


Refresh

Click **Refresh** to update the Associated Station Table.

Associated Station Table

Mac Address	The Mac address of the station associated with the AP.
State	Current state between the associated station and the AP.
SSID	The SSID for the associated station.
Active Rate	Current data transmitting/receiving rate.
Ban STA (wireless)	Press the button to remove the Mac Address from the table if



station)	Banned is selected in Allowed/Banned STA MAC Address. Press the button to add the Mac Address to the table if Allowed is selected in Allowed/Banned STA MAC Address. If Allowed/Banned STA MAC Address is disabled, there will be no effect when pressing the button.
Security Status	The station's security Status.

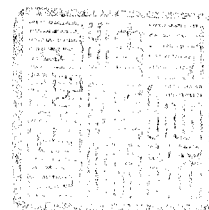
Allowed/Banned STA MAC Address

☐ Allowed ☐ Banned ☐ Disable	☐ Allowed: only the stations shown in the table can associate with the AP. ☐ Banned: stations shown in the table won't be able to associate with the AP. ☐ Disable: The function is disabled.
Add/Mac Address	Enter a Mac address in the Mac Address field and click Add to add the address. Click Save on the bottom left corner so that the change can take effect.
Delete Allowed/Banned Mac Address	Click Delete to remove the address from the Mac Address field.

Multiple SSID Support

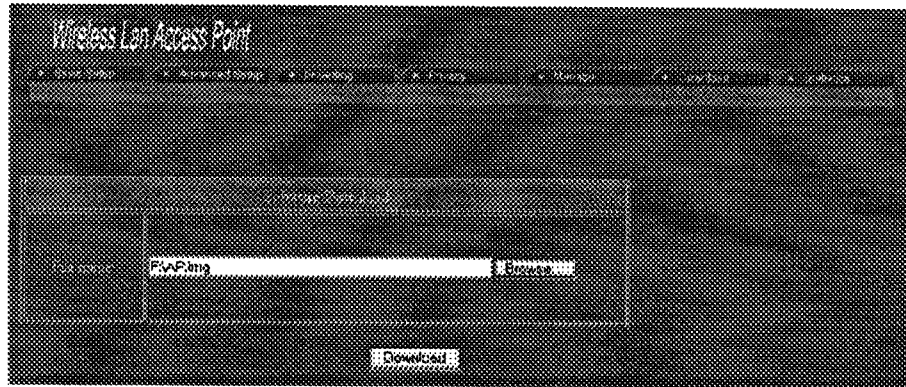
- When the table is enabled, you cannot change privacy settings.
- SSID strings can be added or removed at any time.

☐ Enabled ☐ Disabled	Click to enable or disable Multiple SSID Support.
Add SSID	Click Add to add the SSID entered in SSID field. The SSID can be up to 32 characters. You have to click Save to make it work.
Delete SSID	Click Delete to remove added SSID(s) in the table.

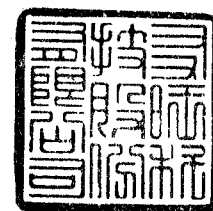


Download

You can download the latest firmware (from your distributor) and upgrade the Wireless Point.



Browse...	Enter the new firmware's path and file name (i.e. C:\FIRMWARE\AP.img). Or, click the Browse... button, find and open the firmware file.
Download	Click Download to start downloading the file.



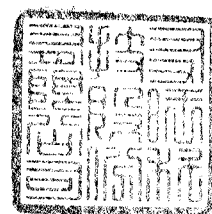
Statistics

The Statistics table shows the packets sent/received over the wireless and ethernet LAN connection respectively.

Click **Refresh** to update the data.

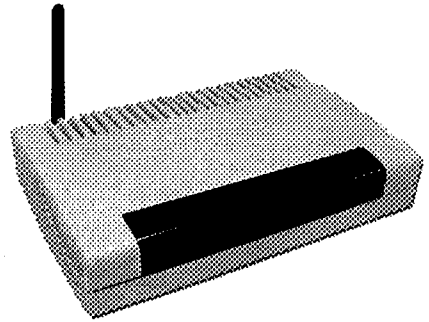


Type	Interface	Packets	Bytes
Wireless	WLAN	10	1024
	WLAN	20	2048
	WLAN	30	3072
	WLAN	40	4096
Ethernet	ETH0	100	10240
	ETH0	200	20480
	ETH0	300	30720
	ETH0	400	40960



Wireless 802.11b+g Access Point

The **WAP404** is an IEEE802.11g compliant Access Point, which provides superior performance and interoperability within a mixed mode network (802.11b, b+, mixed, 802.11g, and g+). The **WAP404** is backwards compliant with all 802.11b and 802.11b+ wireless equipments, making it a seamless integrator for the most popular wireless networks. The **WAP404** enables any organization to quickly set-up a new local area network with the versatility and mobility of wireless technology that provides a high-speed transfer rate up to 54Mbps.



Besides the 64/128/256bit **WEP** encryption, the **WAP404** provides highly secure 802.1x-based WLAN security with auto key management, using an efficient encryption key rotation scheme. For small and medium businesses, the **WAP404** offers Radius-based access control, featuring enterprise-class solutions. Plus, the included web-based management delivers the flexibility and freedom of anytime, anywhere remote management.

Features

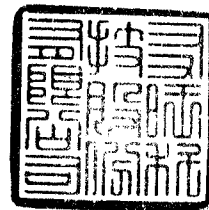
- ◆ High speed for wireless LAN connection up to 54 Mbps
- ◆ Supports web browser-based configuration utility
- ◆ Provides 64/128/256bit WEP Encryption
- ◆ Provides MAC Address Filtering
- ◆ Provides IEEE 802.1x, enhancing WLAN security
- ◆ AP Visibility Modes
- ◆ Multiple transmit power levels

友旺科技股份有限公司



Wireless 802.11b+g Access Point

M/N : WAP404



Specification

Standards	IEEE 802.11g IEEE 802.11b IEEE 802.11 IEEE 802.3u 100Base-TX Fast Ethernet ANSI/IEEE 802.3 N-way Auto-Negotiation
Channels & Frequency	- USA, Canada (FCC): 11 channels (2.412GHz~2.462GHz) - Europe (CE): 13 channels (2.412GHz~2.472GHz)
Modulation Technique	802.11g: Orthogonal Frequency Division Multiplexing (OFDM) 802.11b: Direct Sequence Spread Spectrum (PBCC, CCK, DQPSK, DBPSK)
Operation Mode	b only, b+, g only, g+ Dynamic handling of PBCC/CCK mixed network interoperability in b+ mode 802.11b/g-to-802.3 packet translation
Security	64/128/256bit WEP encryption 64-entry MAC Address black/white list 64-entry associated stations list 802.1x WPA (Wi-Fi Protected Access)
Transmission Rate	802.11b/b+/g transmission rate (1, 2, 5.5, 6, 9, 11, 12, 18, 22, 24, 36, 48, 54 Mbps) using Barker, CCK, OFDM and Ti's PBCC modulation Ti's 802.11g+ enhanced mode 802.11g ERP protection
Antenna	One external , one internal antennas
Button	One Factory Reset button
LED Indicators	Power On: Power on StateErr On: System Error Wireless Link Act On: Link / Off: Not Link / Blinking: Active LAN Link/Act On: Link / Off: Not Link / Blinking: Active
LAN/WAN Host Interface	One 10/100Mbps RJ 45 WAN port
Management	Web-Based configuration and management
Power	9.0VDC, 1A
Physical Dimension	130 x 90 x 30(mm) (Width x Depth x Height)
Weight	150g
Safety & Emission	FCC CE DGT

