
Wireless 802.11b MS-6809(AP11B)

User's Guide

Version 1.0
June 2003
G52-C6809X1-G22

FCC Radio Frequency Interference Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this equipment must be installed to provide a separation distance of at least eight inches (20cm) from all persons. This equipment must not be operated in conjunction with any other antenna.

CE 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.

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Revision History

Revision	Revision History	Date
V 1.0	First Release	June 2003

Important Safety Precautions

Always read and follow these basic safety precautions carefully when handling any piece of electronic component.

1. Keep this User's Manual for future reference.
2. Keep this equipment away from humidity.
3. Lay this equipment on a reliable flat surface before setting it up.
4. The openings on the enclosure are for air convection hence protects the equipment from overheating.
5. All cautions and warnings on the equipment should be noted.
6. Never pour any liquid into the opening that could damage or cause electrical shock.
7. If any of the following situations arises, get the equipment checked by a service personnel:
 - Liquid has penetrated into the equipment
 - The equipment has been exposed to moisture
 - The equipment has not work well or you can not get it work according to User's Manual
 - The equipment has dropped and damaged
 - If the equipment has obvious sign of breakage
8. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 70°C OR BELOW -30°C, IT MAY DAMAGE THE EQUIPMENT.**

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1. Introduction

1.1 What is AP11B



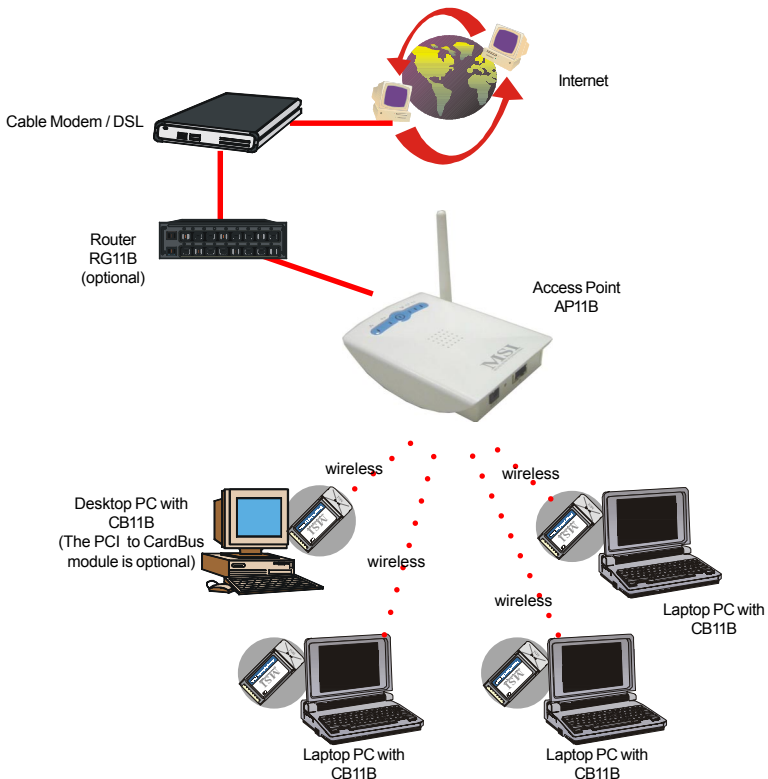
MSI AP11B wireless access point is IEEE802.11b compliant, and connects one or more wireless enabled computers to an Ethernet network or Cable/xDSL modem for high speed connection, anywhere in your home or office.

The AP11B wireless access point's high-powered antennae offer a range of operation of up to 500 feet indoor, providing seamless roaming throughout your LAN infrastructure. Advanced user authentication ensures a high level of security for wireless networking, while easy-to-use Windows-based diagnostics and statistic tools ensure that you'll always be in control. Best of all, the AP11B wireless access point features easy installation---your choice to be free-standing, wall- or ceiling-mounted.

With all these features come together in one compact, lightweight, and power-efficient unit, you have the ultimate in flexible networking---the AP11B wireless access point.

1.2 How AP11B Works

Infrastructure Networking Mode--- Infrastructure networking differs from Ad-hoc networking is that it includes an Access Point. In an Infrastructure networking, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.



1.3 Features & Benefits

➤ **11Mbps Data Rate/150-500ft Indoor Range**

The AP11B runs with data-intensive applications like multimedia and streaming video/audio --- even through walls, floors and ceilings. You get high speed networking without wires --- ideal for home office networking requirements.

➤ **Superior Antennae Design**

One external dipole and one internal patch antennae provide superior polarized reception and transmission for the best signal quality.

➤ **Wi-Fi Certified**

The AP11B complies with IEEE802.11b standard and Wi-Fi, allowing full interoperability with any Wi-Fi certified wireless product.

➤ **Easy Installation**

User-friendly web-based interface and step-by-step setup wizard make the AP11B fast and easy to install.

➤ **WEP Security to Ensure Privacy**

Supports 64/128-bit WEP encryption, which ensures that your network signal is secure and private.

1.4 Specifications

Data Rates	11, 5.5, 2, 1 Mbps, auto-fallback
Standard	IEEE802.11b
Range	150-500 feet (indoor), 1000-1600 feet (outdoor)
Frequency	2.4GHz
Wireless Radio Type	DSSS (Direct Sequence Spread Spectrum)
Modulation Type	CCK, BPSK, and QPSK
WEP Data Encryption Options	64/128-bit
Antenna	One External and one internal patch
Protocols Support	TCP/IP, DHCP Client, HTTP for AP configurability using HTML setup pages
Wired Interface	One Ethernet IEEE 802.3u 10/100 Base-T, RJ-45 with Auto MDI/MDI-X
User Selectable Settings	Network Mode, ESSID, Channel, Tx Rate, RTS/ CTS Threshold, Fragmentation Threshold, WEP, AES, Mac Filtering, Firmware Upgrade
LED Indicators	Power, Wireless Traffic Status, WEP, Ethernet Link
Output Power	Up to +18dBm
Sensitivity	82dBm@11Mbps 85dBm@5.5Mbps 87dBm@2Mbps 88dBm@1Mbps
Power Consumption	Transmit Mode 310mA
Power Adapter	110~120AC 220~240AC DC output: 12V DC Output current: 500mA
Optional Operation Mode	Ethernet Bridging mode (for client use)
Dimensions	124.5 x 88.5 x 24.5 mm

Weight	TBD
Operating Environment	Operating environment: 0~50°C (32~122°F) Storage environment: -30~70°C (-22~158°F) Humidity: Up to 40°C (104°F) with 85% non-condensing
Input Voltage	5VDC (includes AC adapter)
Package Contents	
Main unit	One AP11B Wireless Access Point
Documentations & Driver	Friendly User's Guide on CD-ROM; Quick Installation Guide
Peripherals & Accessories	Power Adapter & Power Cord
Certifications	
United States	FCC Part 15 Class B
Europe	CE

1.5 System requirements

After installing the AP11B, you need the followings to configure respective network settings:

- Computers with the following operating systems and with an installed Ethernet adapter
 - Windows® ME/2000/XP
 - Linux
 - MAC
- Any browser compatible with Internet Explorer 6.0 and later, or Netscape Navigator 6.0 and later

1.6 Package content

Unpack the package and check all the items carefully. If any item contained is damaged or missing, please contact your local dealer as soon as possible. Also, keep the box and packing materials in case you need to ship the unit in the future.

Your AP11B package should contain the following items:

- AP11B
- Supporting Stand
- Quick Installation Guide
- CD title including user's manual and drivers
- AC 12V/500mA Wall Power Adaptor

2. Unit Description

2.1 Front View



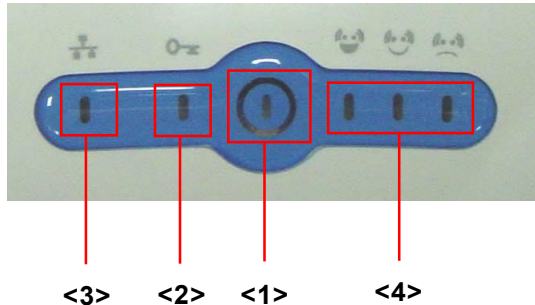
<1> LEDs

LEDs show the power and traffic utilization status.

<2> Antenna

External dipole antenna.

2.1.1 LEDs Display



<1> Power Indicator

Blue light on: power is attached.
Blue light off: power is not attached.

<2> Ethernet Link Indicator

Green light on: link is ready
Green light off: no link partner*
Green light blinking: traffic through this Ethernet port

<3> Encryption Indicator

Green light on: encryption function enabled
Green light off: encryption function disabled

<4> Wireless Status Indicators

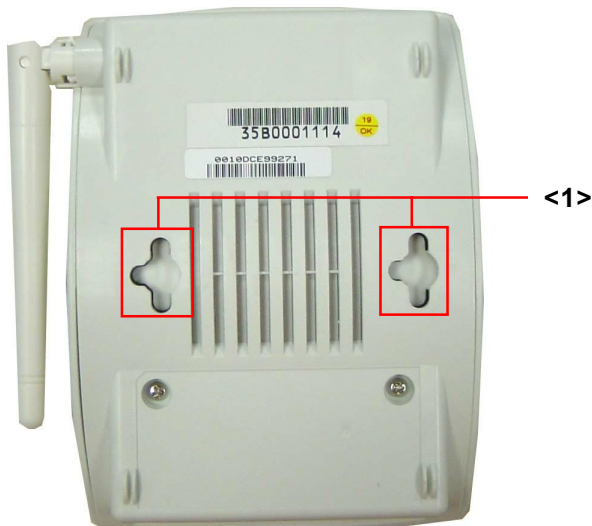
There are three indicators showing the status of wireless network.

Green light on: traffic utilization is good
Yellow light on: traffic utilization is fair
Orange light on: traffic utilization is low



***Under this condition, the AP11B will not work properly.**

2.2 Rear View



<1> Mounting Holes

The ideal mounting distance between the mounting holes is 5.5cm.

(For information on how to use the mounting holes, refer to *Free-standing & Wall-mounted Installation*)

2.3 Side View

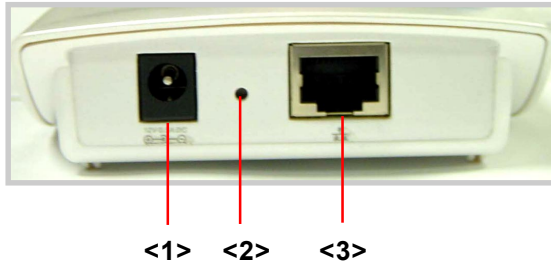


Figure 3: Side Panel

<1> Power Jack

Power jack with input voltage at 12VDC/500mA.

<2> Reset Button

Press and hold the button for more than five seconds to reload the factory default settings.

<3> RJ-45 Ethernet Jack

RJ-45 connector allows your AP11B connected to a network environment.

2.4 Installing Your AP11B

Positioning

The AP11B can be free-standing, wall- or ceiling-mounted. (Refer to *2.4.1 Free-standing Installation*, *2.4.2 Wall-mounted Installation* for details.) Before connecting the AP11B to your devices, please note that the AP11B should be placed in a location with the followings:

- **Easy accessibility:** you can conveniently connect the AP11B to the xDSL/Cable Modem through the Ethernet port.
- **Easy LEDs observation:** you may monitor the real-time networking status and take instant measures as problems arise.
- **Maximum wireless coverage:** to achieve the maximal coverage, the AP11B should be placed at a high level in position without obstacles and defiladed space. No matter how you install the AP11B--- in a wall-mounted or free-standing fashion, remember the antenna should always point *vertically upward*.

Connecting Cables

1. Plug the DC end of the power adapter into the connector of the AP11B, and the AC end to the wall outlet later.
2. For wired connection, connect the AP11B to the LAN port.

Power Up

When the DC end of the power adapter is connected the AP11B, plug the AC end of the power adapter to the wall outlet can power up the system; and, the system will perform POST (Power-On-Self-Test) to diagnose the system.

2.4.1 Free-standing Installation

Step 1 Take out the AP11B and its supporting stand.



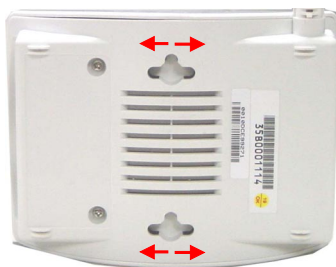
Step 2 Locate the mounting holes on the rear panel of the AP11B and align them to the hooks of the stand.



Step 3 The AP11B is hooked to the supporting stand.



Step 4 Hold and slide the AP11B to either right or left to secure the access point in place.



Step 5 The free-standing installation is completed.



2.4.2 Wall- or Ceiling-mounted Installation

Step 1 Take out the AP11B and screws.



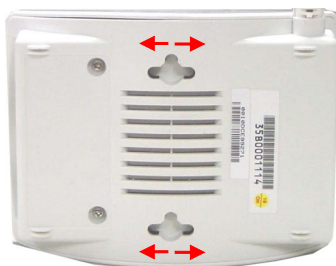
Step 2 Hammer the screws into the ceiling or the wall.



Step 3 The ideal distance between screws is 5.5cm.



- Step 4** Hold and slide the AP11B to either right or left to secure the access point in place. (Refer to Step 4 in *Free-standing installation*.)



- Step 5** The wall- or ceiling-mounted installation is completed. To have the maximum wireless coverage, point the antenna vertically downward for ceiling-mounted installation. For wall-mounted installation, point the antenna vertically upward.



3. Network Configuration

Before You Begin...

To establish your wireless network connection, you will need:

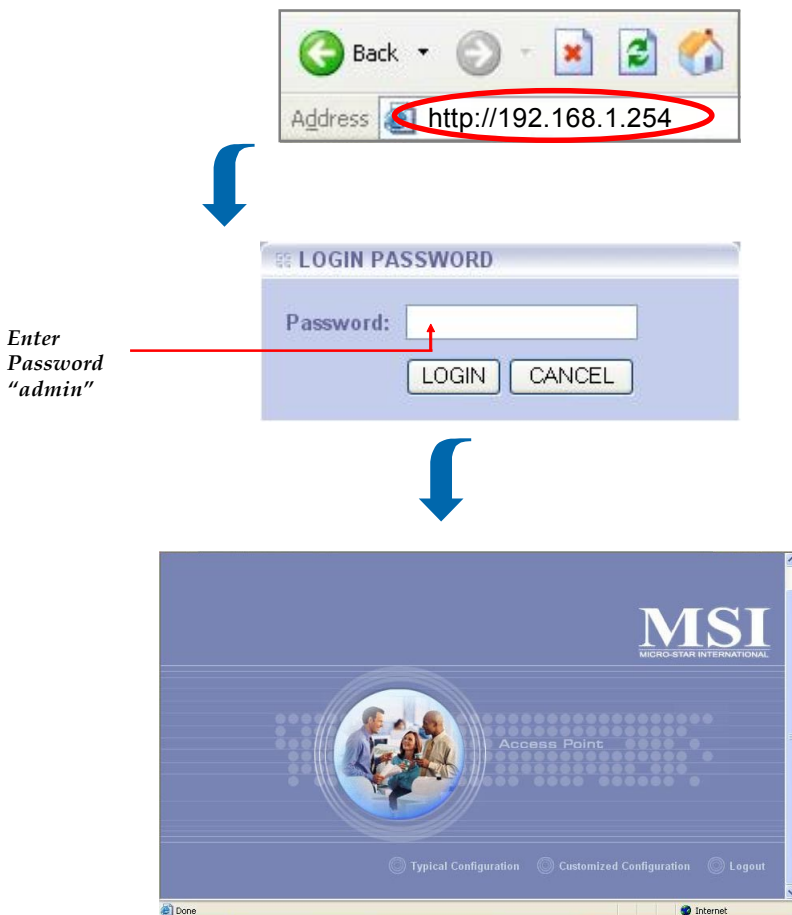
- AP11B(s)
- One or more network adapters

3.1 Default Parameters

Default Parameters	
Password	admin
IP	192.168.1.254
subnet	255.255.255.0
SSID	AP11B
Channel	7
Encryption	Off
DHCP client	Disable

3.2 Web-based Configuration

The AP11B provides you a convenient tool to customize the network settings. Whenever you want to configure the respective settings, open your web browser (eg. Internet Explorer or Netscape Navigator), then type the default IP address **192.168.1.254** in the Address bar and press [Enter].



The index window will appear as below, providing three options to select: Logout, Typical Configuration and Customized Configuration.

- **Typical Configuration** (*Section 3.2.1*) provides a step-by-step setup wizard to guide you through the basic settings. Generally, after completing the four steps in this option, your wireless gateway can connect to the ISP and your client computer can access to the Internet without any problem.
- **Customized Configuration** (*Section 3.2.2*) allows you to customize the network settings of your wireless gateway for some specific purposes, such as changing password, updating firmware, and other network settings.
- **Logout** allows you to exit the configuration utility.

3.2.1 Typical Configuration

Click Typical Configuration, and the 1-2-3 Setup Wizard will appear to guide you through the 3 steps.



The Menu Bar

During the setup wizard, whenever you click **HOME** in the menu bar will make you return to the Home window; click **Logout** to exit the Configuration Utility.



The Menu Bar

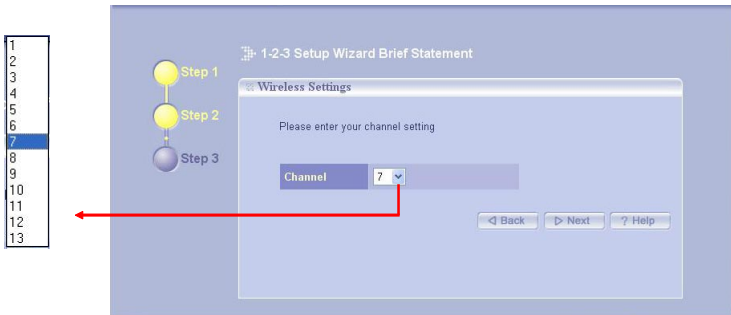
Step 1. Setting the SSID

Service Set Identifier (SSID) is the name designated for a specific wireless local area network (WLAN). The SSID's factory default settings is AP11B.

After entering your SSID, click *Next* to continue.

Step 2. Setting the Channel

7 is the default channel. All devices on the network must share the same channel. Make your choice and click *Next* to continue.



Step 3 WEP Settings



Authentication Type

Open System - communicates the key across the network

Shared Key - devices must have identical WEP settings to communicate

Both - communicate using either open system or shared key

Authentication Type	Open System
Encryption Type	Open System Shared Key Both
WEP Key	

Select your authentication type and move on to the next item.

Encryption Type

Select the level of encryption desired: 40-bit or 128-bit.

If you want to enable the encryption, for 40-bit key, enter 10 hexadecimal digits; for 128-bit key, enter 26 hexadecimal digits.



Hexadecimal digits consist of the numbers 0-9 and the letters A-F.

Authentication Type	Open System
Encryption Type	40-bit 128-bit
WEP Key	

WEPKey

Enter your 10- or 26-digit WEP Key.

Enter WEP
Key here

Authentication Type	Open System
Encryption Type	40-bit
WEP Key	

press here

When completed, click **Next** to close the 1-2-3 Setup Wizard.

3.2.2 Customized Configuration

If you want to customize your AP11B for some specific purposes, you may perform the Customized Configuration here.

Click Customized Configuration, and the main window appears as below.



Main Window of Customized Configuration

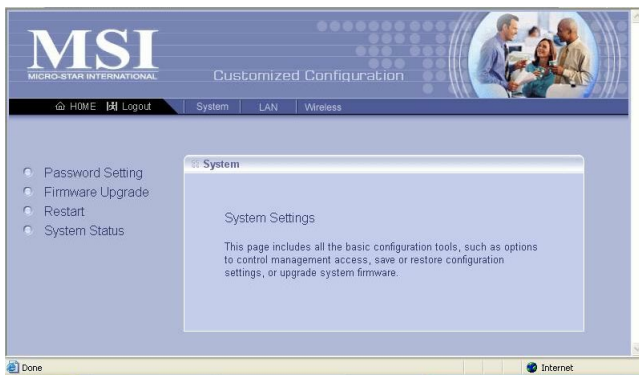
The Menu Bar

There is a menu bar in the top of the Customized Configuration window, where contains two options to exit the configuration window (**HOME** and **Logout**, as described in *p. 11*); and three options for advanced configuration: **System**, **LAN**, **Wireless**, allowing you to configure these respective settings and view the system status.



The Menu Bar

System This page includes all the basic configuration tools such as options to set up password, upgrade system firmware, view system status and restart system.



Password Setting

The default password of your access point is “*admin*”. This option allows you to use personal password to replace the old one.



Once you have changed the settings in each option, press **Apply** to save the changes, or **Cancel** to abandon. Press **Help** can bring up the help window.

A screenshot of the 'Password Setting' form within the 'System' configuration window. The form has a title 'Password Setting' and a paragraph: 'The default password of your access point is 'password', if you only allow the administrator to change the settings of the access point, please change your password and keep it in mind.' Below this, there are three input fields labeled 'Old Password', 'New Password', and 'Confirm New Password'. At the bottom right, there are three buttons: '✓ Apply', 'X Cancel', and '? Help'.

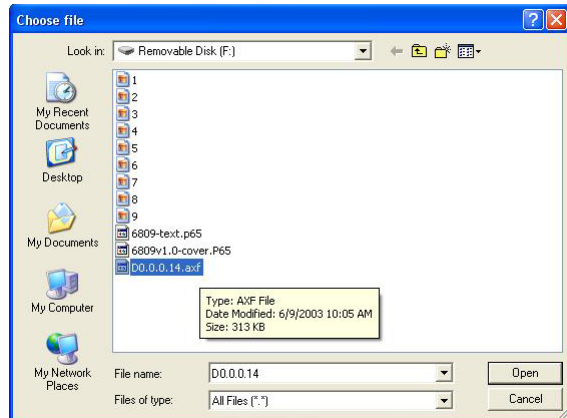
Firmware Upgrade

Once you obtained a new version of firmware (eg. download from the MSI website), you can update the firmware of your AP11B.

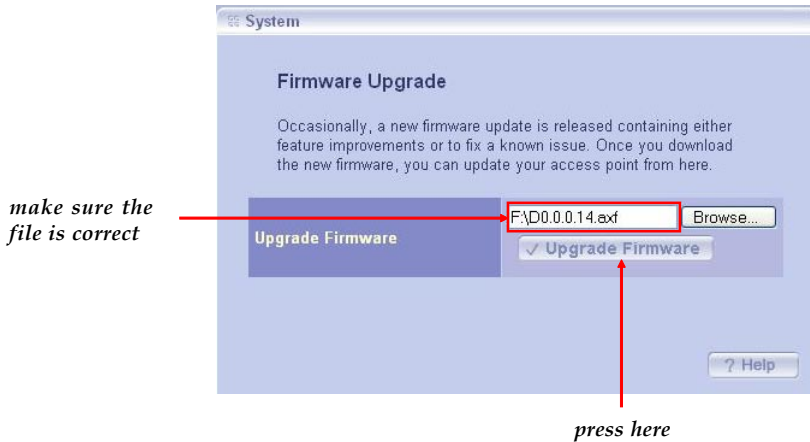


How to upgrade the firmware:

1. Obtain the latest version of the firmware and save it to the designated location of your system.
2. Browse to the designated location and open the file.



3. Make sure the file is correct. Press **Upgrade Firmware** to continue.



4. Click **OK** to continue with upgrading.



5. To check if the upgrading process is successfully completed, click **System Status** to view the the firmware version.



Select this



General Information	
Firmware Version	D0.0.0.14

Restart

You may restart your wireless gateway manually without unplugging the power cable. Please NOTE that selecting “Restart” will not lose your current configuration.



System Status

This option contains detail information of your AP11B, including general information and respective network settings.



LAN LAN is short for Local Area Network. This is considered your internal network. In the LAN setting page, you can configure the IP setting.

The diagram illustrates the process of configuring LAN settings. It starts with a window titled 'LAN' containing a 'LAN Settings' section. A blue arrow points from this window to a second window titled 'LAN' with an 'IP Setting' section. The 'IP Setting' window includes a description of DHCP settings and a table for configuring the IP address, subnet mask, and default gateway.

LAN Settings

In the LAN Settings page, you can configure the IP address of your access point.

IP Setting

The default settings of your IP address are retrieved from your DHCP server. If you don't have a DHCP server in your local network, please deselect "Enable DHCP client" and set up the correct IP address for your access point. If you are not sure whether you have a DHCP server available, please contact the network administrator or your service provider for more details.

DHCP Client	☐ Enable ☒ Disable			
IP Address	192	168	1	254
Subnet Mask	255	255	255	0
Default Gateway	0	0	0	0

✓ Apply ✕ Cancel ? Help

DHCP Client---default Disable

If you enable a DHCP capable router/gateway, you will not need to assign a static IP address.

IP Address---default 192.168.1.254

The IP address of the LAN interface.

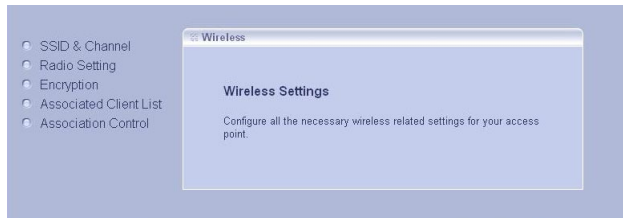
Subnet Mask---default 255.255.255.0

The subnet mask of the LAN interface.

Default Gateway---optional

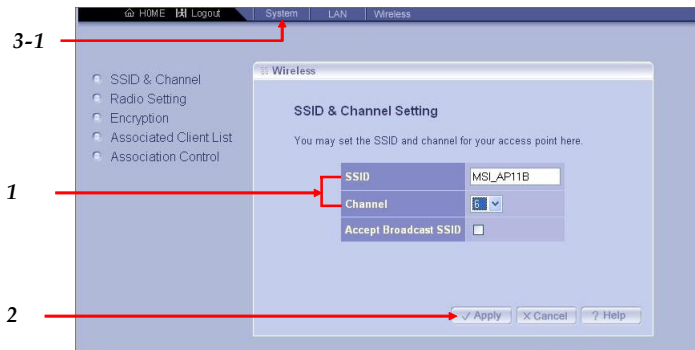
The IP address of the router/gateway on your network.

Wireless In the section, you can configure all wireless related settings for your AP11B.



SSID & Channel

This option is used to set the SSID (Network Name) and channel for your AP11B.



How to change the SSID and Channel:

1. Enter you new SSID and Channel selection.
2. Press **Apply** to reset your SSID and Channel.
3. To check if the system has reset the SSID and Channel, first click **System** and then select **System Status** to view the Wireless Settings.



3-2

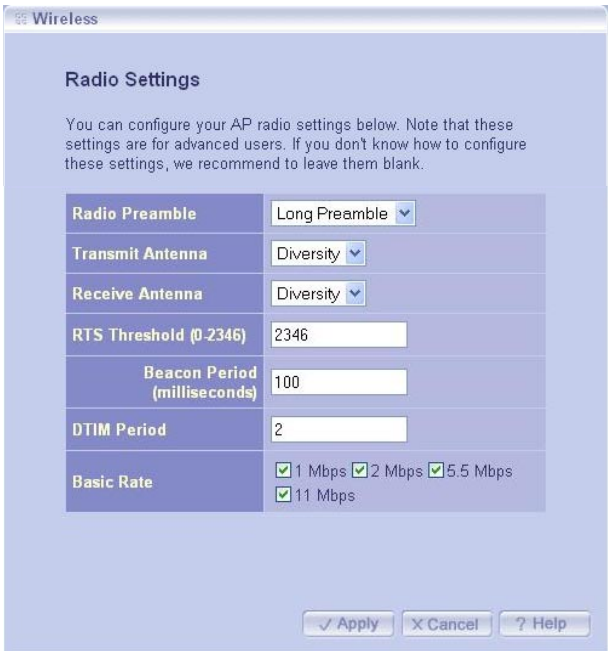


Wireless Settings	
SSID	MSL_AP11B
Channel	6
Accept Authentication Type	Open System
Encryption	None
Number of Associated Clients	0
Maximum Link Speed	11 Mbps

Radio Setting

This option allows you to configure the operation parameters of the AP11B radio settings*.

** These settings are for advanced users or MIS staff only. If you do not know how to set these parameters, it is recommended to use the default value.*



The screenshot shows a window titled "Wireless" with a sub-header "Radio Settings". Below the sub-header is a text box stating: "You can configure your AP radio settings below. Note that these settings are for advanced users. If you don't know how to configure these settings, we recommend to leave them blank." Below this text is a table of settings:

Radio Preamble	Long Preamble ▾
Transmit Antenna	Diversity ▾
Receive Antenna	Diversity ▾
RTS Threshold (0-2346)	2346
Beacon Period (milliseconds)	100
DTIM Period	2
Basic Rate	☒ 1 Mbps ☒ 2 Mbps ☒ 5.5 Mbps ☒ 11 Mbps

At the bottom right of the window are three buttons: "✓ Apply", "X Cancel", and "? Help".

Encryption

This option allows you to configure the settings of data encryption. WEP key must be set before the data encryption is enforced.



The image shows a 'Wireless' configuration window with an 'Encryption' tab. It contains instructions and several configuration fields.

Encryption

Configure your data encryptions below. The WEP key(s) must be set before data encryption is enforced. Enter 10 hexadecimal digits for a 40 bit key, 26 hexadecimal digits for a 128 bit key.

Data Encryption	Not Required ▾
Authentication Type	Open System ▾
Encryption Type	40-bits ▾
☒ WEP Key 1	
☐ WEP Key 2	
☐ WEP Key 3	
☐ WEP Key 4	

At the bottom right are three buttons: , , and .

Associated Client List

This option is to display information of stations that are currently associating to your access point.

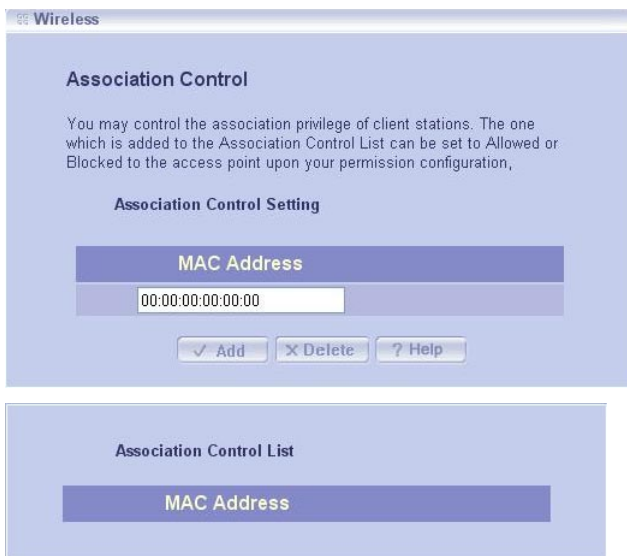


The screenshot shows a web interface titled "Wireless" with a sub-header "Associated Client List". Below the header is a descriptive text: "This page is to display information of stations that are currently associating to your access point." A table with three columns is displayed: "NO", "MAC Address", and "State". The table contains one row with the values "1", "00:01:24:B0:04:08", and "Associated". At the bottom right, there are two buttons: "Refresh" and "? Help".

NO	MAC Address	State
1	00:01:24:B0:04:08	Associated

Association Control

This option allows you to control the association privilege of client stations. The one which is added to the Association control List can be set to Allowed or Blocked to the access point upon your permission configuration.



The screenshot shows a web interface titled "Wireless" with a sub-header "Association Control". Below the header is a descriptive text: "You may control the association privilege of client stations. The one which is added to the Association Control List can be set to Allowed or Blocked to the access point upon your permission configuration,". Under the heading "Association Control Setting", there is a form with a label "MAC Address" and a text input field containing "00:00:00:00:00:00". Below the input field are three buttons: "Add", "Delete", and "? Help". At the bottom, there is a section titled "Association Control List" with a label "MAC Address" and an empty text input field.

4. Technical Support

Micro-Star International provides free technical support. If a problem arises with your system and no solution can be obtained from this user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- Visit the MSI website for FAQ, technical guide, driver and software updates, and other information: ***<http://www.msi.com.tw/>***
- Contact our technical staff at: ***support@msi.com.tw***

5. Troubleshooting

Connection

LEDs do not glow.

Connection Failed.

Cannot access the web-based configuration.

Cannot get an illegal IP address.

Link quality is always poor.

Cannot see other clients

Some clients cannot connect to AP11B

Configuration

Password is not working.

Setup page is not displayed properly.

Settings lost.

Cannot access the Internet

WEP key lost

6. Glossary

Client Privileges

Your home network Gateway can block certain services to computers on your network, using the Client Privileges page in Setup. For example, you can block Internet access to your child's computer during times when you are not able to supervise his/her computer use.

DHCP

Dynamic Host Configuration Protocol. This protocol automatically configures the TCP/IP settings of every computer on your home network.

DNS Server Address

DNS stands for Domain Name System, which allows Internet host computers to have a domain name and one or more IP addresses (such as 192.168.0.10). A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that when a domain name is requested, the user is sent to the proper IP address. The DNS server address used by the computers on your home network is the location of the DNS server your ISP has assigned.

DSL Modem

DSL stands for Digital Subscriber Line. The 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 million bits per second (Mbps).

IP Address

IP stands for *Internet Protocol*. An IP address consists of a series of four numbers separated by periods, that identifies an single, unique Internet computer host. Example: 192.34.45.8.

ISP Gateway Address

The ISP Gateway Address is an IP address for the Internet router located at the ISP's office. This address is required only when using a cable or DSL modem. See ISP for definition.

ISP

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

NAT

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

PPPoE

Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a method of secure data transmission originally created for dial-up connections; PPPoE is for Ethernet connections.

SPI

Stateful Packet Inspection. SPI is the type of corporate-grade Internet security provided by your Home-Connect home network gateway. Using SPI, the gateway acts as a "firewall," protecting your network from computer hackers.

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 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 assigned by InterNIC).

TCP/IP

Transmission Control Protocol/Internet Protocol. This is the standard protocol for data transmission over the Internet.

WEP

WEP stands for Wired Equivalent Privacy. It is based on the IEEE 802.11 standard and uses the RC4 encryption algorithm. Enabling WEP allows you to increase security by encrypting data being transferred over your wireless network

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