

Product User Manual

Wireless LAN Access Point

ASUS Model: APW11

Draft Specifications 0.1

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ASUS CONFIDENTIAL

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FCC Regulation

INTERFERENCE INFORMATION: PART 15 OF FCC RULES

Some telephone equipment generates and uses radio frequency energy, which if not properly installed, may cause interference to radio and television reception.

This unit has been tested and found comply with the limits for a Class B computing device in accordance with Part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television reception, when it's in use, the user is encouraged to try to correct the interference by one or more of the following measures:

- A. Where it can be done safely, reorient the radio or TV receiving antenna.
- B. To the extent possible, relocate the television, radio, or other receiver with respect to telephone equipment.
- C. If your telephone product runs on AC power, plug your product into an AC outlet that's not on the same circuit as the one used by the radio or television.

SAFETY INFORMATION

Your device contains a low power transmitter. When device is transmitted it sends out radio frequency (RF) signal.

CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

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Terminology

The following is a list of terminology which are used throughout this document.

1. *AP: Access Point*
2. *WLAN: Wireless LAN*
3. *STA : Station that equip with WLAN capabilities*
4. *ISP : Internet Service Provider*
5. *SSID: Service Set Identifier*
6. *PPP : Point-to-Point Protocol, which is commonly used in dial-up, leased-line, ISDN and ADSL Internet access*
7. *POTS : Plain Old Telephone Service; the commonly-used analog telephone system*
8. *V.90: ITU MODEM 56K Standard*
9. *NAT : Network Address Translation*
10. *DHCP : Dynamic Host Configuration Protocol*
11. *ICS : Internet Connection Sharing*

Reference Documents

1. ANSI/IEEE Std 802.3, 1993 Ed. Information Technology - Local and Metropolitan Area Networks - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications, Published by The Institute of Electrical and Electronic Engineers, Inc. (July 8, 1993)
2. ANSI/IEEE Std 802.11, 1999 Ed. ISO/IEC 8802-11: 1999 (ANSI/IEEE Std 802.11,, 1999 Edition), Information Technology - Telecommunications and Information Exchange between Systems - Local and Metropolitan Area Network - Specific Requirements - Part II: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, Published by The Institute of Electrical and Electronic Engineers, Inc. (1999)
3. ANSI/IEEE Std 802.11b, 1999 Ed. Wireless LAN MAC and PHY specifications: Higher speed Physical Layer (PHY) extension in the 2.4 GHz band, Published by The Institute of Electrical and Electronic Engineers, Inc. (1999)
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6. RFC-1242, "Benchmarking Terminology for Network Interconnection Devices", S. Bradner (07/02/1991)
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10. RFC 768 User Datagram Protocol. J. Postel. Aug-28-1980.
11. RFC 1350 THE TFTP PROTOCOL (REVISION 2). K. Sollins. July 1992.
12. RFC 826 Ethernet Address Resolution Protocol: Or converting network protocol addresses to 48.bit Ethernet address for transmission on Ethernet hardware. D.C. Plummer. Nov-01-1982.
13. RFC 951 Bootstrap Protocol. W.J. Croft, J. Gilmore. Sep-01-1985.
14. RFC 1493 Definitions of Managed Objects for Bridges. E. Decker, P. Langille, A. Rijsinghani, & K. McCloghrie. July 1993.
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Revision History

Revision	Issue Date	By	Description
Draft Spec 0.1	2001/10/2	Tenlong Deng	Initial draft spec

1 PRODUCT OVERVIEW

1.1 Introduction

Equip with the leading edge IEEE 802.11b Wireless LAN (WLAN) technology, the APW11 can provide the air connection to any notebook, PDA or IA that with Wi-Fi compliance WLAN. It allows 11 megabit per second (Mbps) data transmission over the air, distance in indoor environment around 30 meter and reaching 120 meter in the open space. The notebook computer with WLAN PCMCIA card can surf the cyber space even when he is walking. It also will be the most easy to set-up way for desktop computer plug a WLAN USB adaptor, just plug-and-connect, do not worry about wiring problem.

The APW11 design as a IEEE 802.11b compliance Access Point, any Wi-Fi compliance WLAN card can connect to APW11 no matter its maker. When the SOHO office increase, the APW11 can connect to other Wi-Fi compliance Access Points to extend the roaming network. Connect to external cable modem/ADSL router, the APW11 can bridge the packets between your wireless home networking and Internet.

With the built-in SNMP MIB-2 and wireless MIB supporting, configuration can be done with a Windows SNMP manager program. The APW11 is easily to configure and download update firmware through an Ethernet port or wireless.

1.2 Product Configurations

The APW11 is a single unit with plastic enclosure. It will be package as following:

- ◆ APW11 IEEE 802.11b 11 Mbps Access Point
- ◆ USB cable
- ◆ Power adapter
- ◆ Stand
- ◆ Wall-mount kit
- ◆ Partition hook kit (optional)
- ◆ Quick installation guide
- ◆ Software driver, configuration utilities and electronic manual in a CD

1.3 Features

- **Provides step-by-step user friendly installation and configuration utilities to greatly ease your life**
 - Windows based configuration software to guarantee ease of installation and operation
 - for Win95, Win98 and Win2000
 - Firmware upgraded by end users from USB, Ethernet or wireless
 - Connect to other IEEE 802.11 compliant AP through Ethernet to extend the roaming network coverage
 - Provides authorized stations a transparent wireless access to the wired LAN through an Access Point
- **Flexible usage model**
 - Stand on the table
 - Mount on the wall
 - Hook on the office partition
 - Hidden antenna port for further external directional antenna

2. HARDWARE CONFIGURATION

The APW11's front panel consists of 3 LEDs that indicate the basic status. The rear panel consists one RJ-45 Ethernet port, a power switch, a power jack and a reset hole. The dimensions is 40mm x 138 mm x 150 mm.



2.1 LEDs

POWER LED

This LED is used to indicate the system power on/off.

WIRELESS LED

If packets are transmitting or receiving between the Ethernet and the wireless LAN through the AP, the WIRELESS LED will FLASH to indicate the traffic.

ETHERNET LED

The ETHERNET LED shall be ON if APW11 is attached to the wired LAN via the RJ-45 connector, and flash if not.

2.2 RJ-45 LAN Port

This is a standard 10/100 Mbps Ethernet RJ-45 port it allows the APW11 to be connected to the local area Ethernet interface.

2.3 Antenna Port

There are 2 internal dipole antennas equipped with the APW11, provide omni-directional wireless transmission. The IEEE 802.11 wireless LAN data transmit and receive from these 2 diversity antennas. Sliding open the side door, one external antenna port is there. User can plug the optional external directional antenna to extend the distance.

2.4 Power Jack

Connect to 5V/2A switch-type power adapter.

2.5 Power Switch

Switch On-Off system power..

2.6 Reset hole

This hidden button should be pushing 3 second continuous. The system setting will reset to factory default value..

3.SOFTWARE CONFIGURATION

3.1 Software Reference

IP Configuration

IP Address

The IP address of this device used over its Ethernet or Wireless LAN port.

IP Mask

The IP Network mask used by the IP entity when accessing devices through any of its LAN Ports (Ethernet or WLAN).

Wireless Operational Settings

Channel

The operating frequency channel. Valid numbers are as defined in ISO/IEC 8802-11:1999, 5.4.6.2.

Rate

The maximum operational rate of the device. Values low, standard, medium and high correspond to 1, 2, 5.5 and 11 Mbit/s respectively.

ESSID

The network name. The size of the network name should not be more than 32 characters long.

Fragmentation Threshold

This attribute indicates the number of bytes in an MPDU (frame), above which MPDU fragmentation will be performed.

RTS Threshold

This attribute indicates the number of bytes in an MPDU (frame), above which an RTS/CTS handshake will be performed. Setting this attribute to be larger than the maximum frame size, will prevent the RTS/CTS handshake for frames transmitted by this station.

Preamble Type

The modulated preamble type.

Authentication Type

This attribute indicates the authentication algorithm used during the authentication sequence. The value of this attribute is one of the following:

- 1 - Open System,
- 2 - Shared Key
- 3 - Both Type

SSID Broadcasting

When the SSID Broadcasting option is disabled, the SSID of the Access Point does not appear in the Beacons. Furthermore, when this option is disabled, Probe Response packets are sent only as reply to Probe Request packets not using the NULL SSID.

Operational Modes

Access Point

Access Point Client (Option to define the Preferred BSSID)

SiteSurvey (for the Access Point Client mode)

Wireless Bridge

Point-to-Point (Need to specify the Remote MAC address)

Point-to-MultiPoint

Wireless Privacy Options

Default Keys

Indicate the use of the first, second, third or fourth Default WEP Key.

WEP (Enable/Disable)

This attribute, when true, indicates that the 802.11 standard encryption mechanism (WEP) is active.

Commands

Reset Device

By setting this attribute enable(1), a reset command to the system is issued.

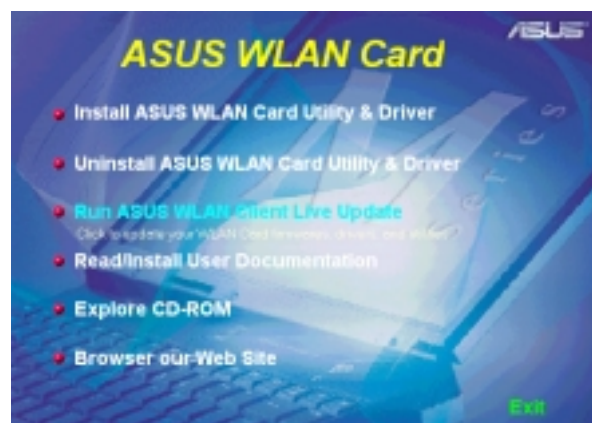
Restore Defaults

Setting this attribute to enable(1), will cause the system to load the factory default values of all the operational parameters.

3.2 Live Update

The ASUS Live Update is a utility that allows you to update your WLAN Access Point's firmware and the manager software. The use of this utility assumes that you are properly connected to Internet through an Internet Service Provider (ISP).

1. Insert the CD installation disc into your CD-ROM drive or double-click the CD drive icon in My Computer to bring up the autorun screen or run **Setup.exe** in the root directory of your CD-ROM drive.



When the **Main menu** appears, click Run **ASUS Live Update**.

2. Select an update method form the drop-down list box.
 - *Update Firmware/Driver from the Internet* lets you update PC Card's firmware or driver from the Internet. The updating (running the flash utility or the installation program) will be done automatically.
 - *Update Firmware/Driver from the Disk* lets you specify the update firmware or driver file form the disk. Then the updating (running the flash utility or the installation program) will be done automatically.
 - *Download Firmware/Driver from the Internet* lets you download the firmware or driver to a folder in your computer.
3. After you have selected your preferred update method is update or download form the Internet, you need to set proxy server. When you set done, click **Next**.
 - *Proxy Setup* – If checked, Live Update connects to the proxy server using the information specified in the **Address** and **Port** text boxes. Consult your network administrator for specific address and port settings for your proxy server.
4. Follow any on-screen instructions or prompts to complete setup.

If you already have the latest revision of your AP's firmware files or software files, Live Update reports that no update is necessary.

When Live Update starts the firmware upgrade, a warning message that incorrect upgrade program will cause your PC Card unfunctional appears. You can cancel the update process at this point. A message displays advising users that the update process has started. Please do not turn the PC off until the upgrade has completed. The upgrade will take approximately 30 seconds. A subsequent message states whether the update was successful.

4.PRODUCT SPECIFICATIONS

4.1 Main Specifications

Ethernet	Support	Both Ethernet and 802.3 with Max. Bit Rate 10/100 Mbps
	Connector	RJ45 for 100BaseT
Wireless	Freq. Band	2400-2497 MHz
	Antenna	2 Internal Diversity Dipole Antennas, One RF connector for optional external antenna
	Spreading	Direct Sequence Spread Spectrum
	Modulation	CCK (11/5.5 Mbps), DQPSK (2 Mbps) , DBPSK (1Mbps)
	Data rate	11Mbps, 5.5Mbps, 2Mbps, 1Mbps
	Security	40 bit WEP
	Number of channels	USA and Canada - 11 European - 13 France - 4 Japan - 13 (optional 14)
	Output Power	20 dBm
DC Power Adapter		AC Input: 100V~240V(50~60HZ) DC Output: 5V with max. 1.5 A current
Visible		Power, Wireless, Ethernet (3 LEDs, colors are all GREEN)
Environment		● Operating Temperature: 0 ~ 50 °C with 1 meter/sec airflow ● Storage Temperature: -20 ~ 70 °C ● Operating Humidity: 0 ~ 95% (Non-condensing) ● Storage Humidity: 0 ~ 95%
Dimensions		40 mm(L) * 138 mm(W) * 150 mm (H)
Regulation Certification		● EMI: FCC Part 15 Class B; VCCI Class B; ETSI 300 328; CISPR 22 Class B ● CE Mark ● FCC Part 68 ● UL1950, CSA22.2, EN60950
MTBF		More than 10,000 hrs/failure
Warranty		1 year

4.2 System Requirement

Any personal computer system equips with IEEE 802.11 Wi-Fi compliant WLAN capability can connect to APW11 over the air. If the computers want to manage the APW11 which should equip with ASUS's Wireless LAN card and meets the following requirements :

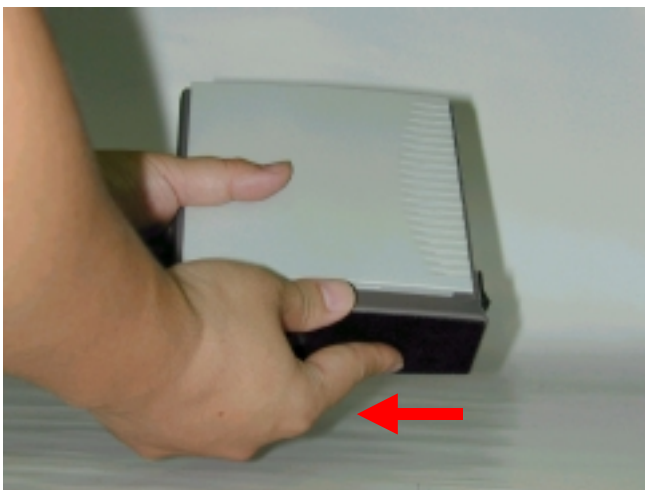
- Pentium 133MHz or up (Pentium 166 or above is recommended), Pentium II, Pentium III, or compatible CPU's support
- Windows 98, 98 SE (Second Edition), ME, or Windows 2000

Assemble The AC400 Access Point

1. Mounted the Access Point body and stand



2. Sliding to tight the stand



- 3.



4. Plug the power line



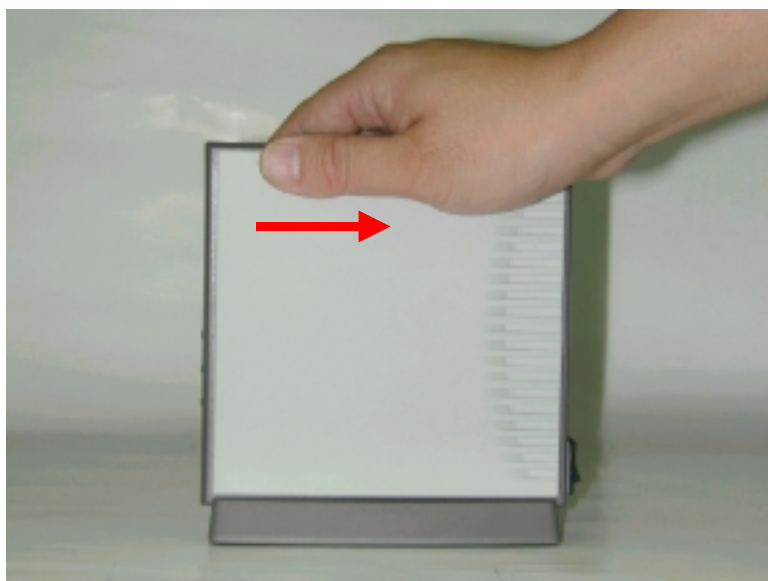
5. Plug the Ethernet line



6. Turn on the power switch

Install external antenna

1. Sliding the side panel



2. Insert the external antenna to RF connector

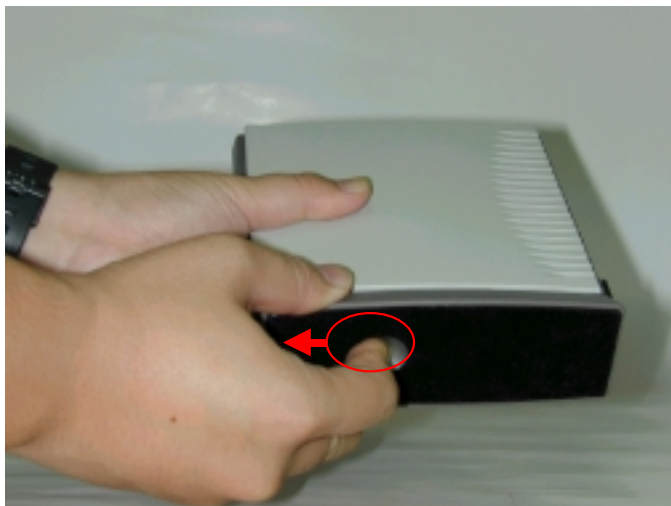


Wall mounting

1. Push stand's under button



2. Hold the button and slide open the stand



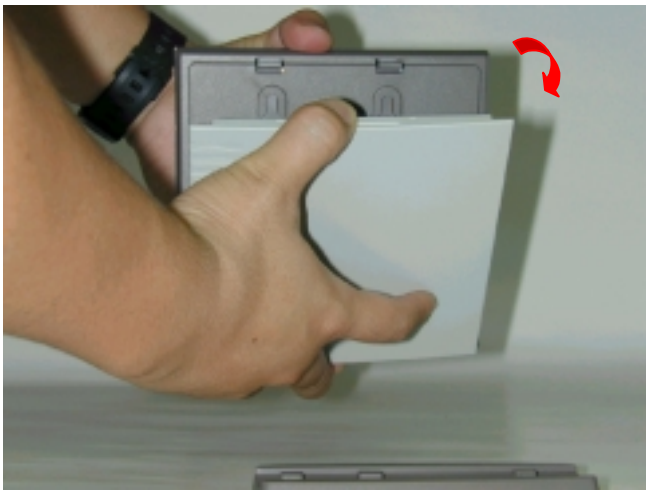
3. Unreleased the stand



4. Pull the side panel upper side



5. Open the side panel



6. Mount the AP to wall mounting kit



Recover the side panel

1. First place the side panel's upper edge to the body's upper edge



2. Hold upper edge and push lower edge to close the side panel



3. Take the stand and aim the hole in the bottom



4.

