

Wireless LAN Device Series

Wifi N module

WPL-2N00

User's Manual

Version. 1 (2010.8.26)

Notice

FCC Warning

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user 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.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Statement

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.

FCC RF Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with

any other antenna or transmitter. Shielded interface cables must be used in order to comply with emission limits.

CE Statement

ZINWELL, hereby declares that this device is in compliance with the essential requirement and other relevant provisions of the R&TTE Directive 1999/5/EC.

This device will be sold in the following EEA countries: Austria, Italy, Belgium, Liechtenstein, Denmark, Luxembourg, Finland, Netherlands, France, Norway, Germany, Portugal, Greece, Spain, Iceland, Sweden, Ireland, United Kingdom, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Slovakia, Poland, Slovenia, Bulgaria, Romania.

Preface

This guide is for the experienced user who installs and manages the Zinwell WiFi N MODULE product hereafter referred to as the “device”. To use this guide, you should have experience working with the TCP/IP configuration and be familiar with the concepts and terminology of wireless local area networks.

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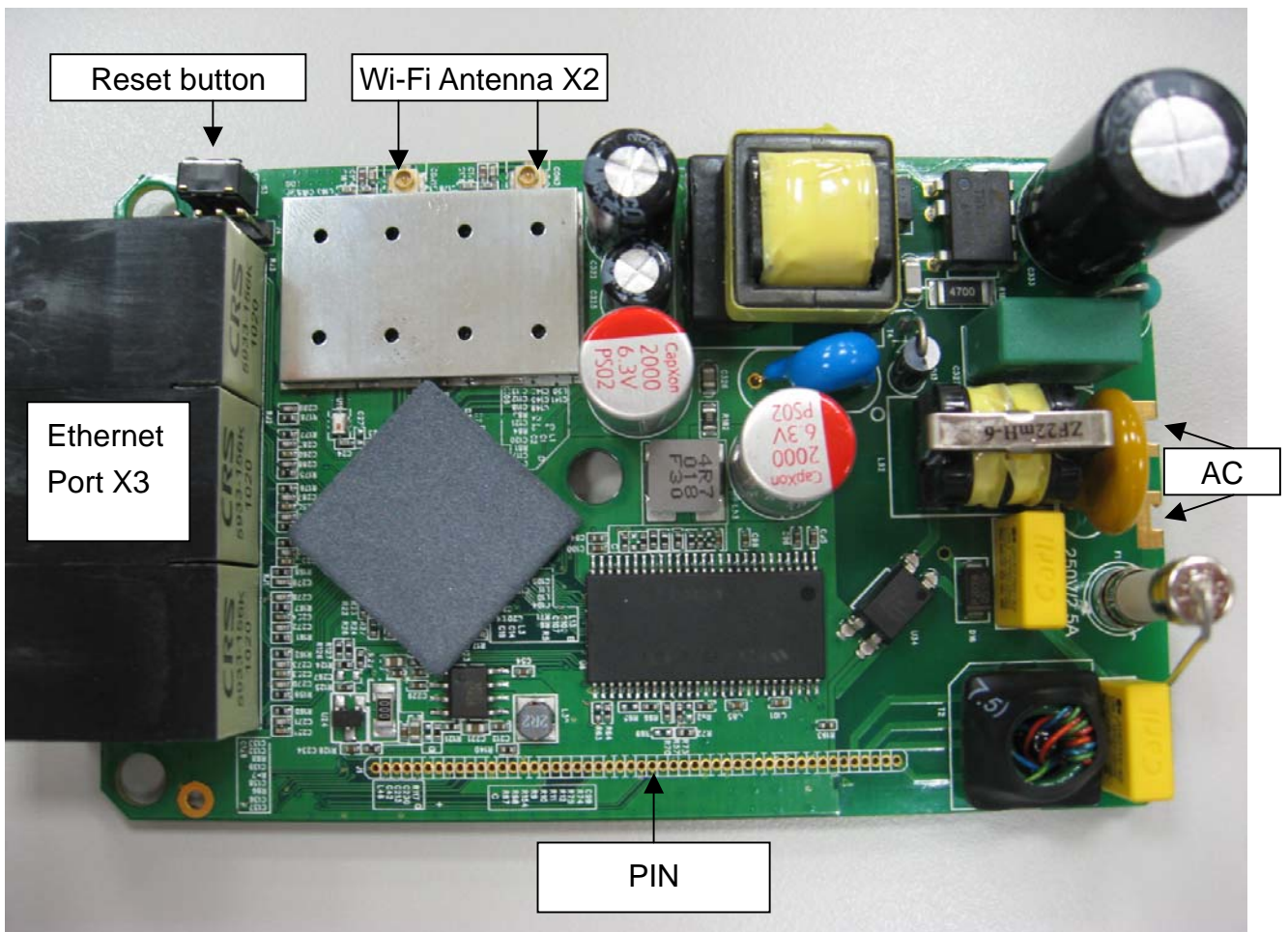
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Ch 1. WiFi N MODULE Installation

Connectors

In the front of the module:



Reset Button: Press Reset button to revert it to factory default.

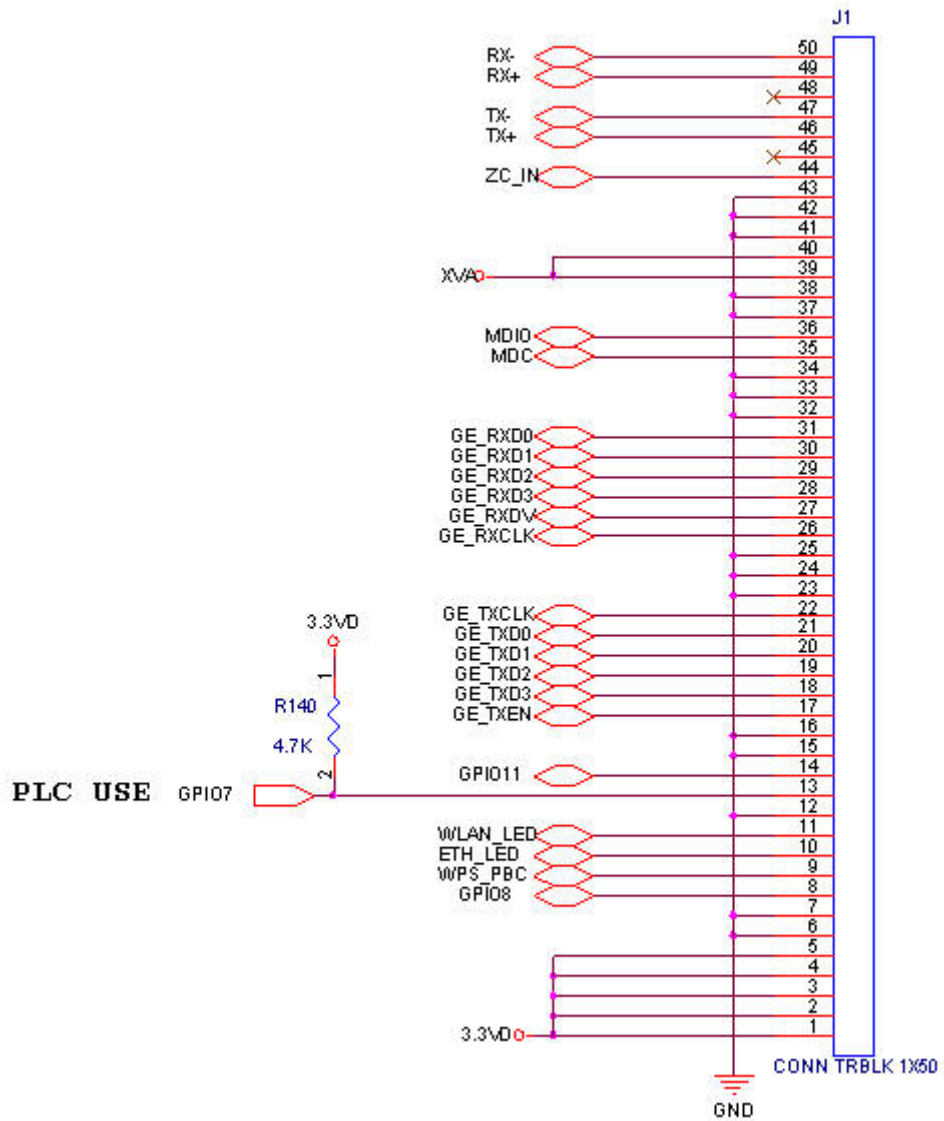
Wi-Fi Antenna X2: connect to Wi-Fi antenna.

Ethernet port X3: connect to Ethernet for LAN connection.

AC: connect AC, 250V/2.5A Max.

PIN: connect to PLC module.

PIN definition:



Ch 2. First Time Configuration

Before Start to Configure

The configuration of this device is through web-browser. To access the configuration interfaces, make sure you are using a computer connected to the same network as the device. The default IP address of the device is 192.168.2.254, and the subnet-mask is 255.255.255.0. For the first time configuration, please login with username: **root** and password: **root**.



Please note that the DHCP server inside the device is default to up and running. Do not have multiple DHCP servers in your network environment, otherwise it will cause abnormal situation.

Knowing the Network Application

The device can act as the following roles, and it supports WDS (Wireless Distribution System) function.

- Access Point
- WDS mode
- AP Client / Bridge mode

The device provides 3 different operation modes and the wireless radio of device can act as AP/Client/WDS. The operation mode is about the communication mechanism between the wired Ethernet NIC and wireless NIC. Following are the types of operation mode.

Bridge

The wireless radio of the device acts as the following roles.

AP (Access Point)

The wireless radio of device serves as communications “hub” for wireless clients and provides a connection to a wired LAN.

Client mode

This mode enables the establishment of connection with the other AP using infrastructure/Ad-hoc networking types. With bridge operation mode, you can directly connect one of the wired Ethernet port to your PC and the device becomes a wireless adapter. And with WISP operation mode, you can connect one of the wired Ethernet port to a hub/switch and all the PCs connecting with hub/switch can share the same public IP address from your ISP.

WDS (Wireless Distribution System)

This mode combines up to 8 AP to a single wireless network; the device forwards the packets to another AP with WDS function. When this mode is selected, all the wireless clients can't survey and connect to the device. The device only allows the WDS connection.

AP + WDS

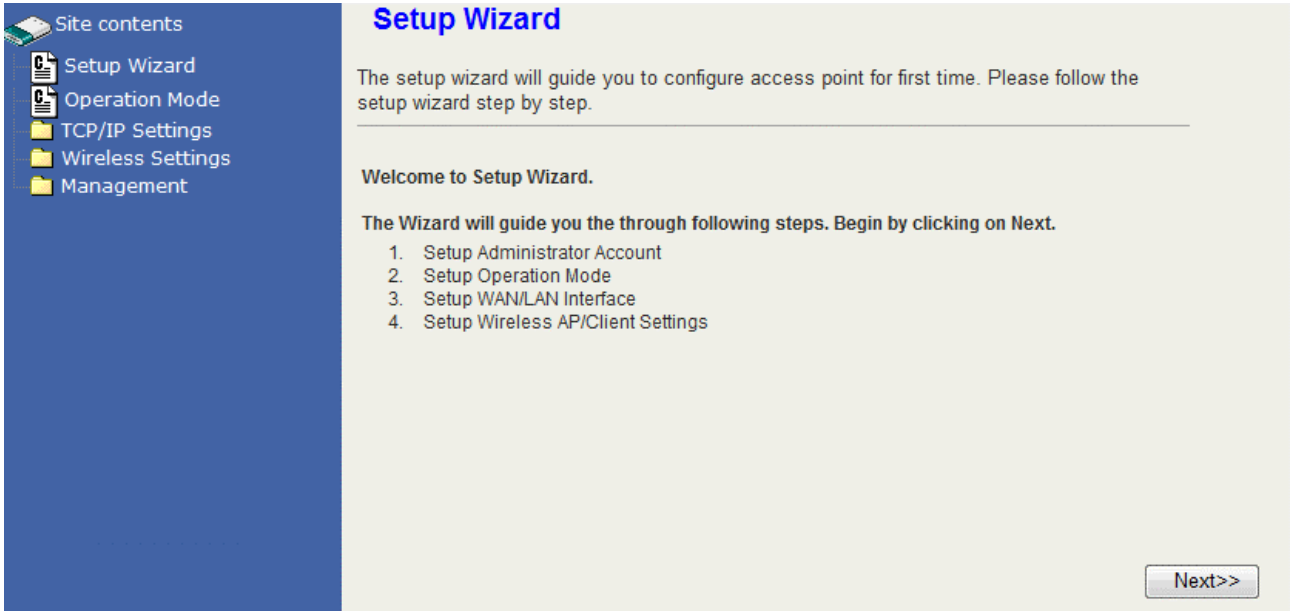
This mode combines WDS plus AP modes, and it not only allows WDS connections but also the wireless clients can survey and associate to the device.

The following table shows the supporting Wi-Fi role/function for each mode.

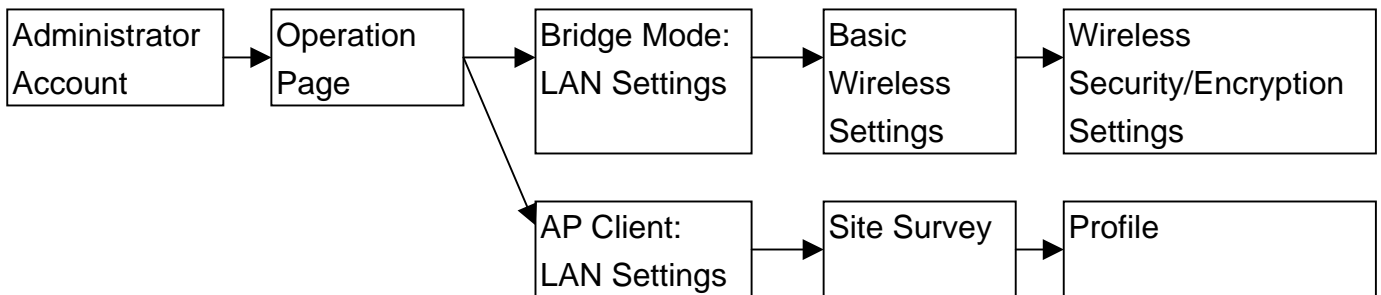
<i>Role</i>	<i>Bridge mode</i>	<i>AP Client(Bridge) Mode</i>
<i>Wi-Fi AP</i>	Yes	No
<i>WDS</i>	Yes	No
<i>Client</i>	Yes (Repeater)	Yes
<i>AP+WDS</i>	Yes	No

Ch 3. Detail Configuration

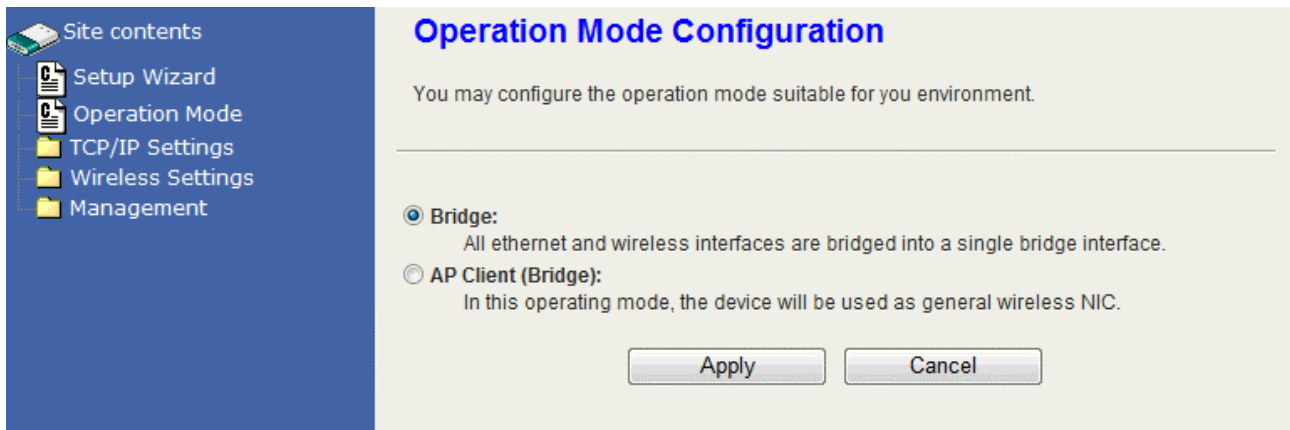
Setup Wizard



The setup Wizard can help you to setup the device with minimum setting. Open the page in the left panel and click “Next>>” button in the welcome page. In the first page, enter the new account name and password for login this web page configuration in the future. In the next page, choose the device to be Bridge mode or AP Client (Bridge) mode. Choosing each mode will have the respect setting pages like the figure below. Please refer to the pages in the next section for the explanation of each setting. In the final step of setting, click “Finish” button and the device will reboot to apply the settings.



Operation Mode



This device supports 2 modes for the IP network. Click the radio button to select one among the modes.

Bridge: This device is the Access Point with Ethernet switch mode.

AP Client (Bridge): This device simulates the function of Wireless LAN Card (Station) with Ethernet switch mode. It will connect to an Access Point for wireless connection.

TCP/IP Settings

Configuring LAN Interface

Local Area Network (LAN) Settings

You may enable/disable networking functions and configure their parameters as your wish.

LAN Setup	
IP Address	192.168.2.254
Subnet Mask	255.255.255.0
Default Gateway	
Primary DNS Server	168.95.1.1
Secondary DNS Server	168.95.192.1
MAC Address	00:05:9E:8E:29:EB
DHCP Server	Enable ▾
Start IP Address	192.168.2.1
End IP Address	192.168.2.100
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	168.95.192.1
Default Gateway	192.168.2.254
Lease Time	86400

Item	Description
IP Address	This is the IP Address for this device. You can login this IP Address via LAN/WLAN, and you can change it if you want to.
Subnet Mask	This is the subnet mask for the LAN. The default value is "255.255.255.0".
MAC Address	The MAC Address of LAN is showed in this field.
DHCP Type	You can select to enable DHCP server. When enabling the DHCP server, you must setup the information below.
Start IP Address	This is the first IP Address of the IP pool which the server assigns the IP Address from.
End IP Address	This is the last IP Address of the IP pool.

Subnet mask	This is the subnet mask of this domain. The default value is "255.255.255.0".
Primary DNS Server	This is the primary DNS server for the LAN PCs.
Secondary DNS Server	This is the second DNS server for the LAN PCs.
Default Gateway	This is the default gateway for the LAN PCs.
Lease Time	This is the DHCP lease time. When it is short, the IP release/renew of the LAN will be faster but the network congestion will be more.
Statically Assigned	You can manually assign the IP Address to the certain PCs. Enter the MAC Address and IP Address in the table.
802.1d Spanning Tree:	Enable this function to prevent the broadcast storm in the LAN.
LLTD	Enable this function to support LLTD (Link Layer Topology Discovery) for Windows Vista. It shows the status of connection in the Windows Vista.

- Site contents
- Setup Wizard
- Operation Mode
- TCP/IP Settings
 - LAN
 - DHCP Clients**
- Wireless Settings
- Management

DHCP Client List

You could monitor DHCP clients here.

MAC Address	IP Address	Expires in
00:13:A9:F2:AF:53	192.168.2.1	23:38:26

Wireless Settings

AP mode

Basic

Basic Settings	
Item	Description
Radio On/Off	Click the "RADIO OFF" button to turn off the radio. Click it again to turn on the radio.

Network Mode	The available options are “11b/g mixed mode”, “11b only”, “11g only” and “11b/g/n mixed mode”. We recommend selecting the default value “11b/g/n mixed mode”.
Network Name (SSID)	The SSID, which is also called ESSID is a unique identifier that wireless networking devices use in order to establish and maintain wireless connectivity. Multiple access point/bridges on a network or sub-network can use the same SSID. SSIDs are case sensitive and can contain up to 32 alphanumeric characters.
Multiple SSID 1-3	This device supports multiple SSID. Input the multiple SSID 1, 2, 3 in the field to enable the function. With the field of Network Name (SSID), the device supports maximum 4 SSIDs.
Broadcast Network Name (SSID)	Disable this function to hide SSID. With hidden SSID, the AP can't be scanned and the wireless client must input SSID manually to associate this AP.
AP Isolation	The device supports isolation function. If you are building a public Wireless Network, enable this function can provide better security. The device will block packets between wireless clients (relay). All the wireless clients connected to the device can't see each other.
MBSSID AP Isolation	The device supports multi-SSID. You can decide whether the clients associated to different SSID on the device can see each other. Enable the option to block it. The Default value is “Disable”.
BSSID	The BSSID is displayed in this field.
Frequency (Channel)	Click the drop down box to select the radio channel. Select the unused channel to prevent the radio overlapping. If you are not sure which channel is used, select “AutoSelect” to let the device to detect and select the available channel.

Wireless Distribution System (WDS)	
Item	Description
WDS Mode	This device supports “WDS Mode only” and “AP+WDS Mode”. When selecting WDS mode only, this device provides WDS connection only and doesn't provide radio to the WLAN stations (clients). To provide both AP and WDS connections, select “AP + WDS Mode”.
AP MAC Address	This device supports 4 WDS devices. Enter the MAC Address in the field to connect.

HT Physical Mode	
Item	Description
Operating Mode	Default: Mixed (Mixed, Green Field). Mixed mode: In this mode the device transmits the packets with preamble compatible legacy (802.11g), so they can be decoded by legacy devices. The device receives and decodes both Mixed Mode packets and legacy packets. Green Field mode: the device transmits HT packets without legacy compatible part. But the device receives and decodes both Green Field and legacy packets.
Channel Bandwidth	This option only works when selecting Band mode in 802.11b/g/n Mixed mode. Click the radio button to choose between 20 MHz or 20/40MHz. This option affects the Phy data rate of radio. Please refer to the table below
Guard Interval	The 11n device inserts the Guard Interval into the signal. You can choose the interval between “Long” and “Auto”. This option affects the Phy data rate of radio. Please refer to the table below.
MCS	It is Modulation Coding Scheme. The available options are “Auto, 0, 1, ..., 32”. It changes the modulation of this device and effect the maximum Phy data rate. We recommend “Auto” setting. For the details, please refer to the table below.
Extension Channel	The “20/40” bandwidth mode uses 5 channels. For example, selecting channel 7 and you can select 3 or 11 for extension channel. Choose the unused channel for the extension channel.
Aggregation MSDU (A-MSDU)	The multiple HT packets can be transmitted with single ACK reply packet. Enable it to apply this function and reduce the network congestion.
Auto Block ACK	It is another aggregation technique which prevents sending ACK in the communication to increase the throughput. If this option is enabled, the device will activate this function when transmitting massive data.
Decline BA Request	Enable this option to decline the Block ACK request addressed by the other devices.

The table below shows the relationship among Phy data rate, Bandwidth and Guard Interval.

Data Rate Mbps MCS	Bandwidth = 20MHz		Bandwidth = 40MHz	
	Short Guard Interval	Long Guard Interval	Short Guard Interval	Long Guard Interval
0 (1S)	7.2	6.5	15	13.5

1	14.4	13	30	27
2	21.7	19.5	45	40.5
3	28.9	26	60	54
4	43.3	39	90	81
5	57.8	52	120	108
6	65	58.5	135	121.5
7	72.2	65	150	135
8 (2S)	14.4	13	30	27
9	28.9	26	60	54
10	43.3	39	90	81
11	57.8	52	120	108
12	86.7	78	180	162
13	115.6	104	240	216
14	130	117	270	243
15	144.4	130	300	270
32	Not Supported	Not Supported	6.7	6

MCS: Modulation Coding Scheme

MCS=0~7 (1S, One Tx Stream)

MCS=8~15 (2S, Two Tx Stream)

MCS 32: BPSK

Advanced

Advanced Wireless	
Item	Description
BG Protection Mode	Default: Auto. You can select the other options including On and Off. The B/G protection technology is CTS-To-Self. It will try to reserve the throughput for 11g clients from 11b clients connecting to the device as AP mode.
Beacon Interval	Beacons are the packets sending by Access point to synchronize the wireless network. The beacon interval is the time interval between beacons sending by this unit in AP or AP+WDS mode. The default and recommended beacon interval is 100 milliseconds.
Data Beacon Rate (DTIM)	This is the Delivery Traffic Indication Map. It is used to alert the clients that multicast and broadcast packets buffered at

	the AP will be transmitted immediately after the transmission of this beacon frame. You can change the value from 1 to 255. The AP will check the buffered data according to this value. For example, selecting “1” means to check the buffered data at every beacon.
Fragment Threshold	The fragmentation threshold determines the size at which packets are fragmented (sent as several pieces instead of as one block). Use a low setting in areas where communication is poor or where there is a great deal of radio interference. This function will help you to improve the network performance.
RTS Threshold	The RTS threshold determines the packet size at which the radio issues a request to send (RTS) before sending the packet. A low RTS Threshold setting can be useful in areas where many client devices are associating with the device, or in areas where the clients are far apart and can detect only the device and not each other. You can enter a setting ranging from 0 to 2347 bytes.
TX Power	<div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;"> TX Power <input style="width: 50px;" type="text" value="100"/> (range 1 - 100, default 100) </div> The default TX power is 100%. In case of shortening the distance and the coverage of the wireless network, input a smaller value to reduce the radio transmission power. For example, input 80 to apply 80% Tx power.
Short Preamble	Default: Disable. It is a performance parameter for 802.11 b/g mode and not supported by some of very early stage of 802.11b station cards. If there is no such kind of stations associated to this AP, you can enable this function.
Short Slot	For a WLAN network with 802.11g/n devices, the time slot can be set short to increase the throughput. Disable this option for the backward compatibility with 802.11b device.
Tx Burst	The device will try to send a serial of packages with single ACK reply from the clients. Enable this function to apply it.

Wi-Fi Multimedia	
Item	Description
WMM Capable	Choose “Enable” to enable WMM function.
WMM Parameter	Click the button to edit the WMM parameter.

Multicast-to-Unicast Converter	
Item	Description
Multicast-to-Unicast	Enable/Disable to enable this function. Multicast Ethernet package will be converted to Unicast package. If disable this function, the Multicast package will be forwarded in Broadcast method which takes more bandwidth in the

	network.
--	----------

Security

Wireless Security/Encryption Settings

Select SSID	
Item	Description
SSID choice	Choose the ESSID to configure the security setting.

Wireless Security/Encryption Settings	
Item	Description
Security Mode	Disable, OPEN, SHARED, WEPAUTO, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA/WPA2 PSK, WPA/WPA2, 802.1X.

The available options are showed according to the numbers of the BSSID in the Basic Setting. Each SSID can setup different encryption type. For example, set up 4 BSSID and 4 sets of security shows on this page:

- Security Mode: Choose one as the wireless authentication among the following types: Open, Shared, WEP Auto, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA/WPA2-PSK, WPA/WPA2, and 802.1 X.
- Encryption Type: Select one for the encryption type. The options vary depending on the Authentication mode. The corresponding options shows below.

Authentication	Encryption type	Key option
Open/Shared/WEP Auto	WEP	Default Key ID, Key content of Key 1/2/3/4
WPA/WPA2-PSK (Pre-Shared Key)	TKIP, AES, TKIP/AES	Pass Phrase (8-32 bytes), Key Renewal Interval
WPA/WPA2 Enterprise	TKIP, AES, TKIP/AES	Radius Server Network/Address/Port/Key/Session timeout

WEP Encryption Setting

Wired Equivalent Privacy (WEP) is implemented in this device to prevent unauthorized access to your wireless network. The WEP setting must be as same as

each client in your wireless network.

- Authentication Type: Open, Shared and Auto. When choose “Open” or “Shared”, all of the clients must select the same authentication to associate this AP. If select “WEP Auto”, the clients don’t have to use the same “Open” or “Shared” authentication. They can choose any one to authenticate.
- Default Key ID: Select whether the Key ID as the default Key.
- Key 1/2/3/4: Select “ASCII” or “Hex” and then type the key in the text field.
 - 64-bit WEP Encryption : 64-bit WEP keys are as same as the encryption method of 40-bit WEP. When input 10 hexadecimal digits (0-9, a-f or A-F) or 5 ACSII chars as the key, it is using 64-bit WEP encryption.
 - 128-bit WEP Encryption : 128-bit WEP keys are as same as the encryption method of 104-bit WEP. When input 26 hexadecimal digits (0-9, a-f or A-F) or 10 ACSII chars, it is using 128-bit WEP encryption.

WPA Authentication Mode

This device supports six WPA modes including WPA-PSK (Pre-Shared Key), WPA, WPA2-PSK, WPA2 and additional WPA/WPA2 PSK and WPA/WPA2 mixed mode. For individual and residential user, it is recommended to select WPA-PSK or WPA2-PSK to encrypt the link without additional RADIUS server. This mode requires only an access point and client station that supports WPA-PSK. For WPA/WPA2, authentication is achieved via WPA RADIUS Server. You need a RADIUS or other authentication server on the network.

- **WPA/WPA2-PSK:**

- Pass Phrase:

- Option: Pass Phrase (8-32bytes). This mode requires only an access point and client station that supports WPA-PSK. The WPA-PSK settings include Key Format, Length and Value. They must be as same as each wireless client in your wireless network. When Key format is Passphrase, the key value should have 8-63 ACSII chars.

- Key Renewal Interval:

- The WPA Algorithm will regroup the key for a period. The default value is 3600 seconds and you can adjust the time interval.

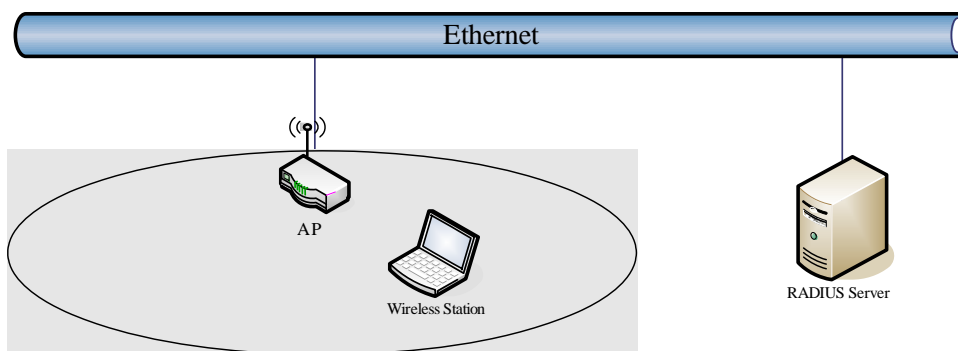
- **WPA/WPA2:**

When selecting WPA/WPA2, you have to add user accounts and the target device to the RADIUS Server. In the device, you need to specify the Server Network, Server address, Server Port and Server Key of the target RADIUS server.

- WPA Algorithms: TKIP, AES, TKIP/AES. Select the encryption type.

When selecting TKIP/AES, the client can use whether TKIP or AES for the authentication.

- Pre-Authentication Support option: This option only appears when selecting WPA2 or WPA/WPA2 as the authentication mode. Enable it to use this function.
- **Radius Server setting:**
 - IP Address: Input the IP Address of the Radius server.
 - Port: Input the port of the Radius server. The default port is 1812.
 - Shared Secret: Input the Authentication Key.
 - Session Timeout: Input the maximum idle time for this connection.



Access Policy

For each SSID, the Access Policy can be selected and setup. The policy includes “Reject” and “Allow”. The Reject policy rejects the station according to the MAC table in the policy configuration, and let the other stations to connect. The allow policy performs reversely.

Add a station MAC: Key in station MAC Address in the text field. The valid format of the MAC Address is “00:11:22:33:44:55”. The station MAC Address can be found on the label or configure utility of the WLAN card. For deleting one record in the table, click the “Del” button of the record. The maximum number of record on the table is 32.

Access Policy	
Policy	Reject ▾
Del 00:11:33:44:55:66	Del 88:99:00:22:aa:bb
Add a station Mac:	<input type="text"/>

WPS

This function helps to establish the Wi-Fi security. For AP mode, it can be setup one WPS method including PIN (Personal Identification Number) and PBC (Push Button Certification).

To begin the WPS progress, the WLAN security must be setup first. Please setup one among WPAPSK, WPA2PSK, WPA/WPA2PSK and then apply WPS setting.

PIN: query the PIN code in the utility of WLAN client, and then enter it in the PIN field. The Wi-Fi link between the WLAN client and the device should be encrypted.

PBC: Select PBC, and then you can begin the PBC process. Press the PBC button in the front panel can also trigger this process. Press or click the PBC button on the WLAN client to finish the communication. You can press the PBC button on the WLAN client first and then click the PBC button on this device to establish the encryption.

The options and the information fields are showed below.

WPS Config	
Item	Description
WMM Capable	Select to enable this function.

WPS Summary	
Item	Description
WPS Current Status	It shows the current status of the WPS process.
WPS Configured	It indicated whether the WPS is configured.
WPS SSID	It is the first SSID of the device.
WPS Auth Mode	It indicates the authenticate mode of this device. It can be configured in the wireless security page.
WPS Encryp Type	It indicates the encryption method of this device. Like WPS authentication mode, it can be configured in the wireless security page.
AP PIN	It shows the current PIN number of this device.
Reset OOB button	Press this button to reset the WPS of this device. The AP PIN number will be changed.

WPS Progress	
Item	Description

WPS mode	Choose to use PIN (Personal Identification Number) or PBC (Push Button Certification).
PIN	Input the 8-digit PIN of client.

Wi-Fi Protected Setup

You could setup security easily by choosing PIN or PBC method to do Wi-Fi Protected Setup. WPS will only be available to WPAPSK, WPA2PSK, and WPAWPA2PSK encryption.

WPS Config

WPS	Enable ▾
-----	----------

WPS Summary

WPS Current Status	Start WSC Process
WPS Configured	Yes
WPS SSID	PLC + WiFi
WPS Auth Mode	WPA2-PSK
WPS Encryp Type	AES
AP PIN	93169400

WPS Progress

WPS mode	<input checked="" type="radio"/> PIN <input type="radio"/> PBC
PIN	<input style="width: 80px;" type="text"/>

Site Survey

In this page, you can scan the AP signals in the air. You can setup the device to use a clear channel according to the channel list, or connect to one of them to enable the "Repeater" function.

Site Survey

This page shows all APs in your environment. In bridge mode, the AP can be a wireless LAN repeater to extend the WLAN coverage range.

Attention: The current channel will be changed into the same value as the AP you selected.

	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type	Central Channel
<input checked="" type="radio"/>	hot	00:05:9E:8B:8D:84	0%	1	WEP	-----	11b/g/n	1

Connect

Rescan

Repeater Mode

This device can connect to the remote AP and forward its signal to the other wireless client/station. Enable this function and input the necessary setting to connect the remote AP, or connect it in the site survey page to apply this function.

Repeater Mode

You could configure Repeater Mode here. Enable Repeater mode can let radio act as AP and client simultaneously but remember the channel must be as same as the connected AP. Repeater mode will only available in AP mode only. If you enable WDS, the Repeater will be disabled automatically.

Repeater Parameters		
Enable	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
SSID	hot	
MAC Address (Optional)	00:05:9E:8B:8D:84	
Security Mode	Shared	
Encryption Type	WEP	
WEP Default Key	Key 1	
WEP Keys	WEP Key 1	••••• ASCII
	WEP Key 2	ASCII
	WEP Key 3	ASCII
	WEP Key 4	ASCII

Station List

MAC Address	Aid	PSM	MimoPS	MCS	BW	SGI	STBC
00:1B:77:96:4F:51	1	0	0	4	20M	0	0

In the Station list, the information of associated clients is displayed.

Client mode

Profile

In the first page, you can see the profile list to show the information including Profile name, SSID, Channel, Authentication, Encryption and Network Type. Use four buttons to manage the profile list. The “Add” button is to add a new profile. The “Delete” button is to delete the selected profile. The “Edit” button is to edit the selected profile. The “Activate” button is to enable the selected button, so this device will associate to the AP according to the profile.

System Configuration	
Item	Description
Profile Name	Enter your profile name.
SSID	Enter the SSID of the AP or Ad Hoc network.
Network Type	Choose one between “802.11Ad Hoc” and Infrastructure.
Channel	This option shows only for the Ad Hoc network. Select one for it.
11B Preamble Type	In the Ad Hoc network, choose “Long” for the compatibility of the some old 802.11b station cards, or “Auto” for setup this option automatically.
Power Saving Mode	For the Infrastructure network, this device can be setup to CAM (Constantly Awake Mode) or Power Saving Mode.
RTS Threshold	Check the box to setup the RTS Threshold. The default value is 2347 and the available range is from 0 to 2432.
Fragment Threshold	Check the box to setup the Fragment Threshold. The

	default value is 2346 and the available range is from 256 to 2432.
--	--

Security Policy	
Item	Description
Security Mode	Please choose the encryption method. The available options are OPEN, SHARED, WPA-Personal and WPA2-Personal.

WEP/WPA PSK	
Item	Description
WEP Key Length	Choose to use 64bit or 128bit length of key.
WEP Key Entry Method	Select the key type. The available options are ASCII Text or Hexadecimal.
WEP Keys	For WEP key, please input the key1-4. The key text and the length must match the above settings.
Default Key	Select the default Tx WEP key.
WPA Algorithms	Choose the algorithm between TKIP and AES.
Pass Phrase	Input the key for WPA-PSK/WPA2-PSK. The length is from 8 to 63 characters.

Link Status

The status of the radio shows in this field.

Station Link Status

The Status page shows the settings and current operation status of the Station.

Link Status		
Status	WLAN Teststation <--> 00-00-00-47-52-87	
Extra Info	Link is Up	
Channel	2 <--> 2417000 KHz ; Central Channel: 2	
Link Speed	Tx(Mbps) 9.0	Rx(Mbps) 1.0
Throughput	Tx(Kbps) 0.0	Rx(Kbps) 1.0
Link Quality	Normal 45%	
Signal Strength 1	Weak 1%	<input type="checkbox"/> dBm format
Signal Strength 2	Weak 3%	
Signal Strength 3	Weak 2%	
Noise Level	Low 50%	
HT		
BW	20	
GI	long	
STBC	none	
MCS	1	
SNR0	9	
SNR1	4999952	

Site Survey

Station Site Survey

Site survey page shows information of APs nearby. You may choose one of these APs connecting or adding it to profile.

	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type
<input type="radio"/>	ZPD1	00-05-9E-8A-D0-95	70%	1	WEP	Unknown	Infrastructure
<input type="radio"/>	ZINTECH-QA	00-00-00-04-78-74	39%	1	WEP	Unknown	Infrastructure
<input type="radio"/>	ZINTECH-1F	00-05-9E-8C-F2-53	20%	1	WEP	Unknown	Infrastructure
<input type="radio"/>	hot	00-05-9E-86-63-D1	100%	1	WEP	Unknown	Infrastructure
<input type="radio"/>	WLAN_G_TEST999	00-05-9E-8D-50-48	5%	5	TKIP	WPA-PSK	Infrastructure
<input type="radio"/>	zintech-3f	02-15-00-02-CA-66	5%	11	WEP	Unknown	Ad Hoc
<input type="radio"/>	ZW-N5100	00-E0-4C-86-51-D1	0%	11	Not Use	OPEN	Infrastructure
<input type="radio"/>	ZINTECH-2F	00-05-9E-81-45-71	0%	1	WEP	Unknown	Infrastructure
<input type="radio"/>	default	00-13-46-C1-9B-6C	5%	6	Not Use	OPEN	Infrastructure
<input type="radio"/>	WLAN Teststation	00-00-00-47-52-87	0%	2	Not Use	OPEN	Infrastructure
<input type="radio"/>	N5900-apcli-mega	00-0C-43-28-60-06	0%	3	WEP	Unknown	Infrastructure

Advance Configuration	
Item	Description
Connect button	Check the radio button in front of the ESSID and click “Connect” button to connect.
Rescan	Click this button to refresh the list.
Add Profile	Check the radio button and click this button to add the ESSID to the profile.

Statistics

Station Statistics

The Status page shows the settings and current operation status of the Station.

Transmit Statistics	
Frames Transmitted Successfully	1446
Frames Transmitted Successfully Without Retry	0
Frames Transmitted Successfully After Retry(s)	1446
Frames Fail To Receive ACK After All Retries	78
RTS Frames Successfully Receive CTS	0
RTS Frames Fail To Receive CTS	0
Receive Statistics	
Frames Received Successfully	3712
Frames Received With CRC Error	11982
Frames Dropped Due To Out-of-Resource	0
Duplicate Frames Received	155

Advanced

Advance Configuration	
Item	Description
Wireless Mode (Infrastructure)	Choose the WLAN type. The available options are “802.11B/G/N mixed mode”, “802.11B Only”, “802.11G Only”, “802.11N Only”, “802.11GN mixed mode”, and “802.11 B/G/N mixed mode”.
Tx Burst	This is the range of the source IP Address.

HT Physical Mode	
Item	Description
HT (High throughput)	MM (Mixed Mode) or GF (Green Field).

	<p>Mixed mode: In this mode the device transmits the packets with preamble compatible legacy (802.11g), so they can be decoded by legacy devices. The device receives and decodes both Mixed Mode packets and legacy packets.</p> <p>Green Field mode: the device transmits HT packets without legacy compatible part. But the device receives and decodes both Green Field and legacy packets.</p>
BW (Bandwidth)	Choose “20” for the standard bandwidth or “Auto” to use the 40MHz bandwidth automatically.
GI (Guard Interval)	Choose “Long” to use long guard interval or “Auto” to setup the GI automatically.
MCS (Modulation Coding Scheme)	Choose MCS. Please refer to the section of Access Point.

QoS

QoS Configuration	
Item	Description
WMM	Check the box to enable WMM function. It depends on the associated AP, if it supports WMM and you can enable this function on this device.
WMM Power Saving	Check the box to enable WMM function. It depends on the associated AP, if it supports WMM and you can enable this function on this device. When enabled, the options below can be configured.
PS Mode	The options are “AC_BE”, “AC_BK”, “AC_VI” and “AC_VO”. Please select the respective options according to the AP.

11n Configurations

11n Configuration	
Item	Description
MPDU Aggregation	Check the box to enable this function. Click on “Manual” radio button to setup the MPDU or “Auto” to setup automatically.
MPDU density	Select the MPDU density.
Aggregation MSDU (A-MSDU)	The multiple HT packets can be transmitted with single ACK reply packet. Enable it to apply this function and reduce the network congestion.

WPS



The WPS AP lists in the top of the page. The bottom panel shows the status of WPS. Please refer to the section of Access Point mode for the operation.

11n Configuration	
Item	Description
Refresh button	Click this button to refresh the WPS AP list.
Mode	This device only supports Enrollee in WLAN client mode.
PIN	This is the PIN code for PIN communication. Click "Renew PIN" to generate a new PIN code.
PIN Start	Click this button to start PIN process.
PBC Start	Click this button to start PBC communication.
Cancel	Click this button to cancel the establishing WPS link.
Renew PIN	Click this button to discard current PIN and generate a new PIN code.

Management

Status

System Info

Item	Description
Model	It shows the model name of the device.
Firmware Version	It shows the version of firmware on this device.
System Time	It indicates the time on this device. If the NTP client is enabled, the time will sync with the NTP server.
Operation Mode	It shows the operation mode of this device.

Local Network

Item	Description
Local IP Address	This is the IP Address of the LAN interface.
Local Netmask	This is the Netmask for the LAN.
MAC Address	This is the MAC Address of the LAN interface.

Wireless Information

AP mode

Item	Description
Mode	This is the wireless mode for the device such as AP, client mode.
Band	It shows the current radio mode such as “B+G+N”, “B+G”, “B only” and “G only”.
SSID	It shows the SSID of this device.
Channel	It shows the current channel of the radio.
Encryption	It indicates the encryption type for the radio.
Bssid	It is the current BSSID of the radio. In this device, it is also the MAC Address of the WLAN interface.
Associated Clients	The number of associated WLAN clients show in this field.
Driver Vision	This is the driver version.

Client mode

Item	Description
Mode	This is the wireless mode for the device such as AP, client mode.
Status	This is the WLAN status.
Extra Info	Reserved for the future expansion.
Channel	It indicates the current Wi-Fi channel.
Link speed	It shows the Phy data rate of transmit and receive.
Link Quality	It indicates the link quality of current link.
MAC Address	This is the MAC Address of the radio.
Driver Vision	This is the driver version.

Statistic

Memory

Item	Description
Memory total	This is the total memory size for this device.
Memory left	The available memory size shows in this field.

LAN

The information below shows the transmit status.

LAN Rx packets, LAN Rx bytes, LAN Tx packets, LAN Tx bytes.

All interfaces

The information likes “Rx Packet”, “Rx Byte”, “Tx Packet” and “Tx Byte” shows the status of all interface including “eth2, lo, ra0, ra1, ra2, ra3, wds0, wds1, wds2, wds3, eth2.1, eth2.2, br0”

System Management

Administrator Settings

Enter the account for login the web interface.

Account: enter the name for login. The default name is “root”.

Password: enter the password for login. The default password is “root”.

NTP Settings

Current Time: The current time on the device shows in this field. Click “Sync” button to sync the time with NTP server.

Time Zone: Select local time zone.

NTP Server: Input the NTP server address. If you are not sure about the local NTP server address, you can input pool.ntp.org.

NTP synchronization (hours): This is the time interval of NTP synchronization. The range is 1-300 hours. It is the necessary field for NTP setting and please input it to apply.

Reboot System

Click the button to reboot the device.

Upgrade Firmware

This page provides the firmware upgrade function. Click the browse button to browse the file and click “open” button to select the file. The upgrade process takes about 1 minute

and do not power off the device during this period.

Save/Reload Settings

In this page, you can export the setting, import the setting or load the factory default.

Export Settings:

To export the settings, click “Export” button to open or save the configuration. In the pop up window, click “Open” to open the configuration. You can read the configuration in the next page. Click “Save” to save the configuration file. The file extension is “.dat”.

Import Settings:

To import the settings, click “Browse” to browse the file, and then click “Import” to import the setting file.

Load Factory Defaults:

Click “Load Default” button to reset the device to factory default. All users’ settings will be cleared.

System Command

The linux command can be input in this field. It is recommended to not to use this function unless the experts.

System Log

The system log shows in this window. For technical support, you may need to copy and save the log to text file and send it to the technical service. Click “Refresh” button to refresh the page or “Clear” button to clear the log.

Channel Number

The following table is the available frequencies (in MHz) for the 2.4 GHz radio:

Channel No.	Frequency	Country Domain
1	2412	Americas, EMEA, Japan, and China
2	2417	Americas, EMEA, Japan, and China
3	2422	Americas, EMEA, Japan, Israel, and China
4	2427	Americas, EMEA, Japan, Israel, and China
5	2432	Americas, EMEA, Japan, Israel, and China
6	2437	Americas, EMEA, Japan, Israel, and China
7	2442	Americas, EMEA, Japan, Israel, and China
8	2447	Americas, EMEA, Japan, Israel, and China
9	2452	Americas, EMEA, Japan, Israel, and China
10	2457	Americas, EMEA, Japan, and China
11	2462	Americas, EMEA, Japan, and China
12	2467	EMEA and Japan
13	2472	EMEA and Japan
14	2484	Japan only

*: EMEA (Europe, the Middle East and Africa).

The available channel is set by the factory according to the region of distribution and can't be changed by user. For example, the available channel of the American model is from ch1 to ch11.

Specification

Frequency Range	2.4~2.4835GHz
802.11b TX power	17dBm ± 1dB@11Mbps
802.11g TX power	14dBm ± 1dB@54Mbps
802.11n TX power	14dBm ± 1dB@300Mbps
802.11b RX sensitivity	-89dBm ± 2dB@11Mbps
802.11g RX sensitivity	-74dBm ± 2dB@54Mbps
802.11n RX sensitivity	-66dBm ± 2dB@300Mbps
Data Rate	802.11b: 11, 5.5, 2, 1Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6Mbps 802.11n (20MHz): MCS0~15, Up to 144.4Mbps 802.11n (40MHz): MCS0~15, MCS 32, Up to 300Mbps
Standards	WLAN: IEEE 802.11 b/g, IEEE 802.11n LAN: IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.1d
Operation Mode	Wireless Access Point mode, Multi-SSID AP, WDS, Bridge
Security	Password Protection, MAC filtering, Hidden SSID Broadcasting, 64/128-bit WEP Encryption, WPS Push button and PIN code, WPA for 802.1x and WPA-PSK, WPA2 / IEEE 802.11i
Antenna type	2T2R 2dBi WiFi N MODULE : antenna port x2
Operating Environment	Temperature 0~60° C Humidity 10~90%(non-condensing)
Power Consumption	250Vac, 2.5A
Dimension	170 x 64 x 28 mm
Software Feature	WLAN: b/g protection, AP Isolation, Tx Burst, Tx Short Preamble, Packet Aggregation, HT Operation mode, HT Guard Interval, MAC ACL, Site survey, WMM LAN: 802.1d Spanning Tree, DHCP server Management: NTP Client, System log, Upload config file, Firmware upgrade, password management.