

# User Guide

[www.tenda.cn](http://www.tenda.cn)



Portable Wireless AP/Router

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## **Chapter 1 Product overview**

### 1.1 Production introduction

Thank you for purchasing Tenda W300M Portable Wireless AP/Router.

W300M is a portable wireless AP/Router with up to 300Mbps transmission rate. It supports five working modes: wireless AP (access point), Client+AP, WDS+AP, WISP Router and Wireless Router.

The default mode is wireless AP (access point) in this mode the device can convert wireless and wired signals. For example, in a hotel, you want to share the internet with others, there is no need to set the router, the things you need to do is to connect the router to the broadband access point and configure computers to obtain an IP address and DNS automatically.

The second mode is the Client+AP mode. In this mode the router can repeat and amplify the wireless signals while at the same time transmitting and receiving data on RJ45 port. Enable this mode to enhance the wireless signal, when you and your neighbor share the internet, you can get

the amplified and stable signal. This mode also can be used in broadband satellite receiver access.

The third mode is WDS+AP mode. In this mode, you can bridge two local area networks or two computers and meanwhile amplify and transfer the signals. This mode is used for many devices wireless bridge and repeat.

The fourth mode is WISP Router mode. In this mode, you do not need to configure the signal transmitter but only to simply configure the W300M to amplify the wireless signal and multi computers can share the internet. This mode is mainly used in hotspot access.

The fifth mode is Wireless Router mode. Use this mode to form a local network that has both broadband connections via broadband access cable and wireless access. This mode can apply to various broadband access environments, including ADSL, Cable TV Networks.

Having wireless AP and wireless Router function, W300M is equipped with a "Mode" button to switch the modes to achieve different wireless access. In addition, the device can be powered by an alternative power supply through the USB port to establish wireless networks freely.

The W300M is a solid choice for people with always-moving network needs in search of a fast, secure, easy-to-use, and feature-rich wireless network.

## 1.2 Products Features

- Comply with IEEE 802.11n、IEEE 802.11g、IEEE 802.11b、IEEE 802.3 and IEEE 802.3u standards
- Adopts IEEE 802.11n advanced technology and built in high performance antennas with 6 times wireless coverage of 54M products
- 300Mbps wireless transmission rate
- Support AP mode, Client+AP mode, WDS+AP mode, WISP mode, Wireless Router mode
- Support 64/128 bit WEP, WPA, WPA2 encryption
- WPS (PBC and PIN) enabled device
- Provides one 10/100Mbps Auto-Negotiation Ethernet port for LAN/WAN
- Support xDSL/Cable Modem, static and dynamic IP in community network
- Support remote WEB management
- Support wireless roaming technology for high-efficient

wireless connection

- Support SSID stealth mode and access control based on MAC address (up to 30 groups)
- Provide sys-log to record the status of Router
- Support auto-negotiation or manual mode for IEEE802.11b/IEEE802.11g/IEEE802.11n
- Support UPnP and DDNS
- Support LAN access control over internet connection
- Support virtual Sever and DMZ host
- Built-in firewall for hacker's attack prevention

### 1.3 Package contents

Please unpack the box and check the following items

- One W300M portable wireless AP/Router
- One power adapter
- One quick installation guide
- One CD
- One Ethernet cable
- One USB line

If any of the items do not match, are missing or damaged, please contact the store you purchased this device from for



immediate replacement.

## 1.4 LED Indicator and Port Description

### Front Panel and LED Indicator Show



LED indicators description on front panel: (From L to R)

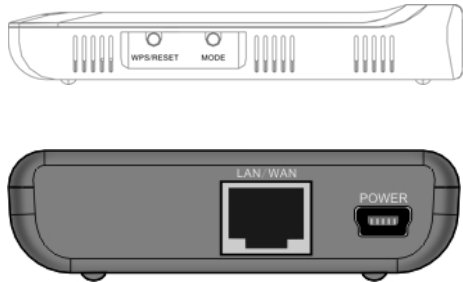
- AP: Always blue indicates the device in AP working mode.
- Client+AP: Always blue indicates the device in Client+AP working mode.
- WDS+AP: Always blue indicates the device in WDS+AP mode.

WISP Router: Always blue indicates the device in

WISP Router mode.

- Wireless Router : Always blue indicates the device in Wireless Router mode.
- WPS: Blinking means the device is negotiating with the client in WPS mode.
- LAN/WAN: Always blue indicates the Ethernet cable is well connected and blinking indicates it is transmitting data packets.

Back and Rear panel and LED Indicators show



LED indicators description of the back and side panel:  
(From L to R)

- WPS/RESET: Wi-Fi Protection Setup button and system reset button. Press it for 1 second, the

WPS feature will be enabled and WPS indicator will be shown blinking. Press this button for 7 seconds, the settings configured in this device will be deleted and it will restore the settings to the default one.

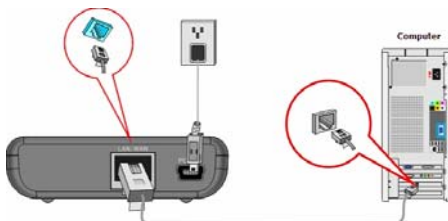
- **Power:** The port is for USB line connection. Please use the included USB line connected with the power adapter or the USB port of computer.
- **LAN/WAN:** The 100Mbps Ethernet port, in Wireless Router mode, it is a WAN access port to connect the DSL, MODEM generally. While in AP, WISP mode, Client+AP mode, WDS+AP mode, WISP Router mode, it is a LAN port to connect the PC, Router, and Ethernet Switch.

## **Chapter 2 Hardware Installation**

### **2.1 How to Install the Router**

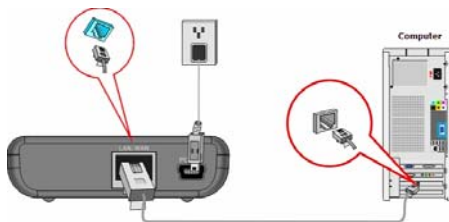
After you unpack the box, please follow the steps below to connect the device. For better wireless performance, please put the device in the middle of wireless coverage area.

1. Power Supply: Please use the included power adapter to power on the Router. (IMPORTANT: Use of a different power adapter could cause damage and void the warranty for this product.)



## 1、 Network Configuration

A、 Connect the LAN port of the Router to the computer with an Ethernet cable as below.

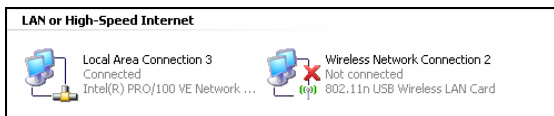


B、 If you use wireless network adapter to access the internet, the topology diagram is as below.

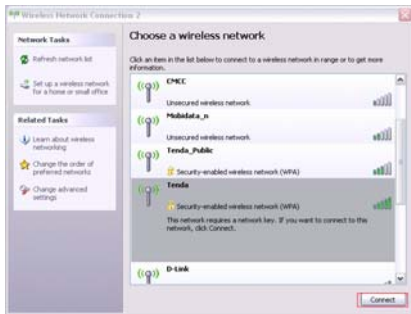


### Wireless network connection

- a、 On your computer desktop right click “My Network Places” and select “Properties”.



- b、 Right click “Wireless Network Connection” and select “View Available Wireless Network”. The entire wireless signal will be shown in the interface. Please select “Tenda”. If you don’t find it, please click “Refresh Network List”.



C、Click “Connect” button.

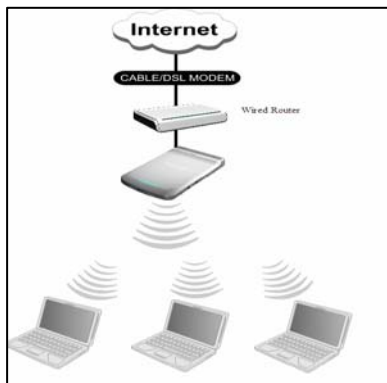
## Chapter 3 Working Modes Introduction

This device has five working modes. You can change the modes depending on the applications. This chapter will introduce every mode in details. The default mode is AP (access point) mode.

### 3.1 AP mode

In this default mode, the device worked as a converter between the wired and wireless signal in default settings. If you already have a wired router in use, you can choose

wireless AP mode. Connect LAN port of the device to the router in use with an Ethernet cable (refer to 5-1 for detail setup). Then many wireless clients (generally the wireless network adapter) can access at the same time. For example, in a big hotel, connect the Router to the broadband access port with the Ethernet cable and you can share the internet with others. Of course, your wireless network adapter must have the same SSID, Channel with the Router. If the Router enables Wi-Fi protection, the wireless network adapter also must have the same security mode and key to access the router. Common network connection topology is as follows.

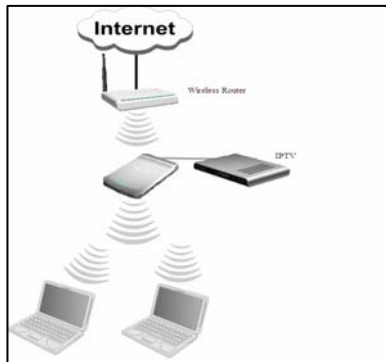


### 3.2 Client+AP Mode

In this mode, the device can receive the wireless signal, meanwhile amplify the signal and extend the wireless signal coverage. The wired device can receive the signal via the Ethernet cable. This mode is called the wireless signal universal repeater mode which can amplify the source signal to enhance the signal.

When you share the internet with your neighbor, you can choose this mode to get a stable signal. In addition, it can access to the IPTV set-top box, broadband satellite receiver and such devices. This mode is very simple avoiding the cumbersome cables. The topology is as follows.

More details please refer to 5-2.





### 3.3 WDS+AP Mode

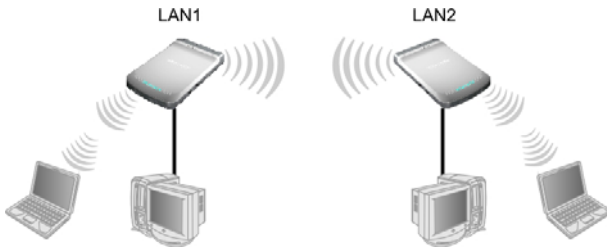
In this mode, the device can enhance the signal and extend the wireless coverage. It can bridge two local area networks or two computers and meanwhile amplify and transfer the signals. The WDS+AP mode is similar as WDS mode. Besides, many wireless clients can access when the device works as a bridge.

The topology is as follows.

A:



B:

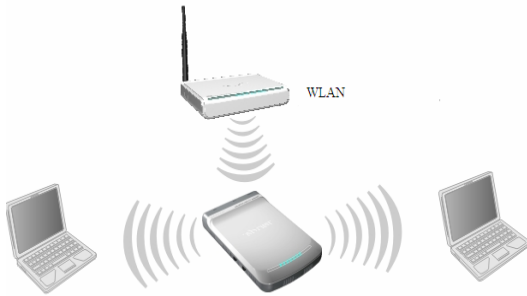


More details please refer to 5-3.

### 3.4 WISP Mode

In this mode, you do not need to configure the signal transmitter but only to simply configure the W300M to amplify the wireless signal and multi computers can share the internet. The device supports DHCP function to assign IP addresses automatically and NAT function. If you enable the WISP outside the house but the inside WISP AP signal is poor, the device can enhance the signal and improve the speed. If more than one wired computer access, you can connect the LAN port of the device to the switch and the switch to the computer.

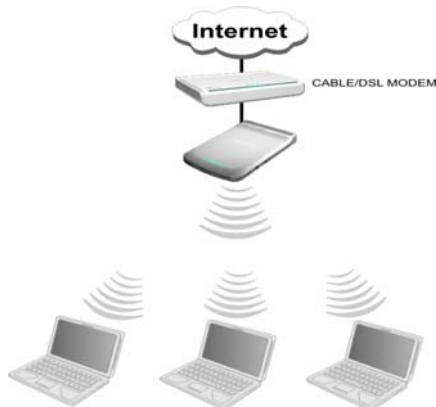
The network topology is as follows.



More details please refer to 5-4.

### 3.5 Wireless Router Mode

In this mode, the device can be worked as the router with wireless NAT function and DHCP sever. The laptops can get IP addresses automatically which assigned by the DHCP sever. When the RJ45 port connects to the broadband access, the laptops can share the internet at the same time. The topology is as follows.



More details please refer to 5-5.

## **Chapter 4 How to login to the Router**

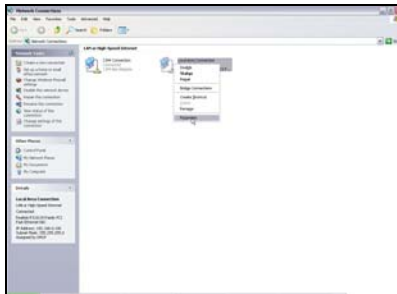
The chapter mainly presents how to enter the Router's Web interface. After you have finished the hardware installation (Please refer to chapter2.), the following steps will assist you to set the network configurations for you computer.

### 4.1 How to Set the Wired Network Configurations

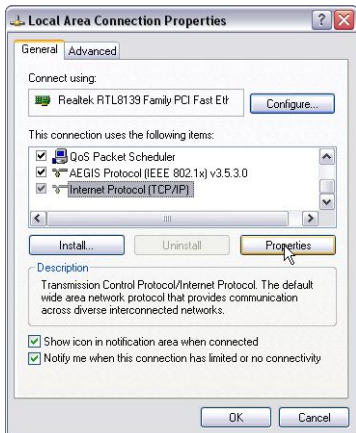
4.1.1. On your computer desktop right click "My Network Places" and select "Properties" (take Windows XP as an example).



4.1.2. Right click “Local Area Network Connection” and select “Properties”. If you enable the wireless connection, please select “Wireless Network Connection”.

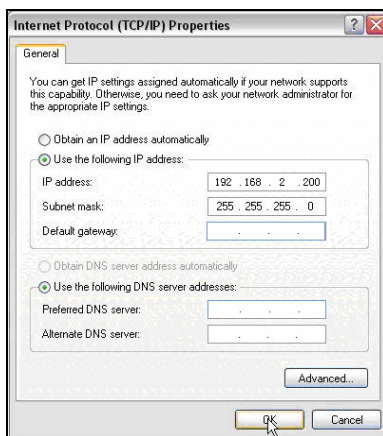


4.1.3 Select “Internet Protocol (TCP/IP)” and click “Properties”.



4.1.4 Select “Using the following IP address” and input the IP address.

IP address: 192.168.2.XXX: (XXX is a number from 2~254)

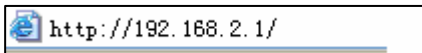


## 4.2 Login to the Web Interface

After you set you computer as 4.1, you can follow the below steps to access the Router’s web interface.

4.2.1. To access the Router’s Web-based interface, launch a web browser such as Internet Explorer and enter the Router’s default IP address, <http://192.168.2.1> Press “Enter”.





4.2.2. Input the “admin” in both User Name and Password. Click “OK”.



3. If you enter the correct user name and password, you can enter the router’s web interface.

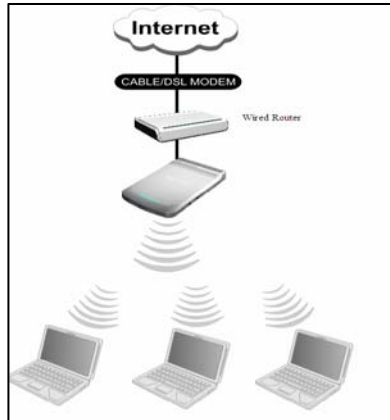


## Chapter 5 Working Modes Setup Wizard

### 5.1. AP mode

In this default mode, the device can convert the wired and wireless signal which is the center access point for few clients (generally wireless network adapter). For example, in a big hotel, connect the Router to the broadband access port with the Ethernet cable and configure your computer to obtain an IP address automatically and then you can share the internet with others. Generally, the broadband Router of the hotel has DHCP function, which can assign IP address for clients.

This section guides you how to connect wireless client to the access point, we will guide you step by step. Please connect the device as follows.



Tip: Routers in hotels support DHCP function which can assign IP addresses automatically. You only need to

configure your computer to obtain IP address and DNS server automatically to access the internet. (Setting ways refer to 4.1.)

## 5.2. Client+AP

Log on the web-based interface as chapter 4 and then configure the mode as below.

5.2.1 Select “Client+AP”, click “Setup Wizard” and “Next” button.



5.2.2. Configure the parameters

Client Settings

SSID:

MAC:

Channel:

Security Mode:

WPA/WPA2 Algorithms:  TKIP  AES

Pass Phrase:

Choose	SSID	MAC	Channel	Security	Signal
<input type="radio"/>	jwisi	00:21:29:b1:d9:c0	2	WPA/PSK TKIP	5
<input type="radio"/>		00:83:a0:01:01:64	1	NONE	34
<input type="radio"/>	TEND.A	00:b0:0e:30:01:98	1	NONE	20
<input type="radio"/>	Tenda_Public	00:b0:0c:03:c4:02	3	WPA/PSK-AES	55
<input type="radio"/>	NETCORE003	08:10:74:62:65:92	4	WPA/PSK-TKIP	5

- ✧ SSID: SSID (Service Set Identifier) is the unique name of the wireless network. Input the SSID of the AP you want to connect.
- ✧ MAC Address: The Router's physical MAC address as seen on your local network is unchangeable. Input the MAC address of the AP you want to connect. Sometimes, MAC address is also named BSSID. (BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.)
- ✧ Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network. The channel you select must be correspondence with the AP.
- ✧ Security Mode: The security mode you set should be

the same as the AP. More details please refer to the Wireless Security Settings chapter.

We recommend you “Scan” the access points and then select the SSID in your scanned SSID list for convenience. Click “Next” to the following interface.

### 5.2.3. Wireless Basic Setting

Wireless Basic Settings

Network Mode	11b/g/n mixed mode
SSID	Tenda
Broadcast SSID	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
BSSID	00:10:18:01:02:40
Channel	2437MHz (Channel 6)
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel Bandwidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
Guard Interval	<input checked="" type="radio"/> long <input type="radio"/> Auto
MCS	Auto
Reverse Direction Grant	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extend Channel	2417MHz (Channel 2)
Aggregation MSDU(A-MSDU)	<input checked="" type="radio"/> Disable <input type="radio"/> Enable

Back Next

- ❖ **Network Mode:** Select one mode from the following. The default is 11b/g/n mode.
  - 11b mode:** Allow the wireless client to connect with the device in 11b mode at the maximum speed of 11Mbps.
  - 11g mode:** Allow the 11g/11n-compliant client

device to connect with the AP at the maximum speed of 54Mbps.

11b/g mode: Allow the 11b/g-compliant client device to connect with the AP with auto-negotiation speed, and 11n wireless client to connect the device with 11g speed.

11b/g/n mode: Allow 11b/g/n-compliant client device to connect with the AP with auto-negotiation speed.

- ✧ SSID: SSID (Service Set Identifier) is the unique name of the wireless network. Wireless client must input the same SSID to access.
- ✧ Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network.
- ✧ Broadcast (SSID): Select “Disable” to disable the device’s SSID to be invisible by the wireless client. If you disable it, client must input the same SSID as the device to access.
- ✧ BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.

- ❖ **Extend Channel:** To increase data throughput of wireless network, the extension channel range is used in 11n mode.
- ❖ **Channel Bandwidth:** Select the channel bandwidth to improve the wireless performance. When the network has 11b/g and 11n clients, you can select the 40M; when it is an 11n network, select 20/40M to improve its throughput.

Click “Next” to save configurations.

Note: We suggest you do not change the channel in this mode, or else you can not access the device which you want to connect.

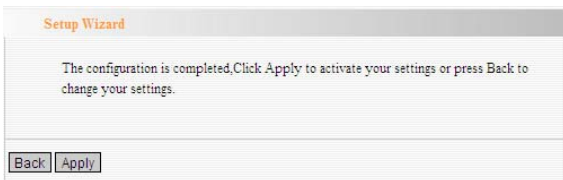
#### 5.2.4. Wireless Security Settings

The screenshot shows the 'Wireless Security Settings' page. At the top, the title is 'Wireless Security Settings'. Below it, there is a dropdown menu for 'SSID' with the value 'Tenda'. Underneath is a 'Security Mode' dropdown menu set to 'WPA-Personal'. The 'WPA Algorithms' section has three radio buttons: 'AES' (selected), 'TKIP', and 'TKIP&AES'. Below this is a 'Pass Phrase' text input field containing 'PlsChangeMe'. The 'Key Renewal Interval' is set to '3600' seconds. A red note at the bottom states: 'Note: Wireless Security Setting 802.11n standard only defines Open-None (Disable), WPA-personal-AES, WPA2-personal-AES three kinds of encryption modes, different vendors may have compatibility issues.' At the bottom left, there are 'Back' and 'Next' buttons.



It is suggested that you choose WPA-personal for “Security Mode” and AES for “WPA Algorithms.” Input 8 ~ 63 numbers, letters, and symbols for pass phrase. Click “Next” to save the configuration. More details please refer to the following chapter.

Click “Apply” to save the configurations and the router will be rebooted automatically.



Note: Make sure the device have the same Channel, Security mode and Extend channel as the access point.

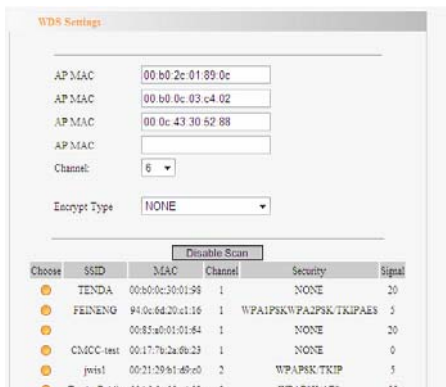
### 5.3. WDS+AP Mode Setup Wizard

Log on the web-based interface as chapter 4 and then configure the mode as below.

5.3.1. Select “WDS+AP”, click “Setup Wizard” and “Next” button.



### 5.3.2. Configure the parameters.



- ✧ AP MAC Address: Input the MAC address of the terminal wireless device. Wireless MAC address also can be named as BSSID. The terminal wireless device can be an AP with WDS function or a wireless router.
- ✧ Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network. The channel you set

must be the same as the terminal device.

- ✧ **Encrypt Type:** The encrypt type security mode you set should be the same as the terminal device. More details please refer to the Wireless Security Settings chapter.

We recommend you “Scan” the access points and then select the SSID in your scanned SSID list for convenience.

Click “Next” to the following interface.

### 5.3.3. Wireless Basic Setting

Wireless Basic Settings

Network Mode	11b/g/n mixed mode
SSID	Tenda
Broadcast SSID	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
BSSID	00:10:18:01:02:40
Channel	2437MHz (Channel 6)
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel Bandwidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20.40
Guard Interval	<input type="radio"/> long <input checked="" type="radio"/> Auto
MCS	Auto
Reverse Direction Grant	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extend Channel	2417MHz (Channel 2)
Aggregation MSDU(A-MSDU)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

Back Next

- ✧ **Network Mode:** Select one mode from the following. The default is 11b/g/n mode.

**11b mode:** Allow the wireless client to connect with the device in 11b mode at the maximum speed of 11Mbps.

11g mode: Allow the 11g/11n-compliant client device to connect with the AP at the maximum speed of 54Mbps.

11b/g mode: Allow the 11b/g-compliant client device to connect with the AP with auto-negotiation speed, and 11n wireless client to connect the device with 11g speed.

11b/g/n mode: Allow 11b/g/n-compliant client device to connect with the AP with auto-negotiation speed.

- ✧ SSID: SSID (Service Set Identifier) is the unique name of the wireless network. Wireless client must input the same SSID as the device to access.
- ✧ Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network.
- ✧ Broadcast (SSID): Select “Disable” to disable the device’s SSID to be invisible by the wireless client. If you disable it, client must input the same SSID as the device to access.
- ✧ BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address

of wireless access point.

- ✧ **Extend Channel:** To increase data throughput of wireless network, the extension channel range is used in 11n mode.
- ✧ **Channel Bandwidth:** Select the channel bandwidth to improve the wireless performance. When the network has 11b/g and 11n clients, you can select the 40M; when it is an 11n network, select 20/40M to improve its throughput.

Click “Next” to save configurations.

Note: We suggest you do not change the channel in this mode, or else you can not access the device which you want to connect.

For wireless network encryption, please refer to 7.2.

After configuration complete, the AP works as a wireless signal repeater. You can connect the device to computer, satellite receiver and IPTV set-top box and you need to set them to obtain IP address automatically to access the source wireless device (source wireless router). Detailed settings refer to the Appendix I.

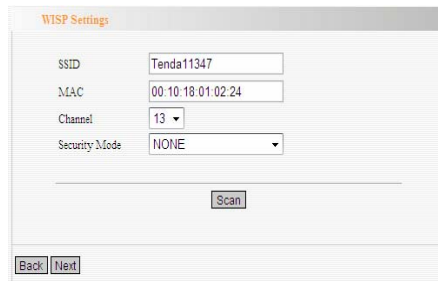
## 5.4 WISP Mode

Log on the web-based interface as chapter 4 and then configure the mode as below.

5.4.1. Select “WISP”, click “Setup Wizard” and “Next” button.



5.4.2. Configure the parameters

The screenshot shows the "WISP Settings" configuration page. It has a title bar "WISP Settings" in orange. Below the title bar, there are four configuration fields: SSID (text input field with "Tenda11347"), MAC (text input field with "00:10:18:01:02:24"), Channel (dropdown menu with "13" selected), and Security Mode (dropdown menu with "NONE" selected). Below these fields is a "Scan" button. At the bottom of the page, there are "Back" and "Next" buttons.

- ✧ **SSID:** SSID (Service Set Identifier) is the unique name of the wireless network. Input the SSID of the aimed AP.

- ✧ **MAC Address:** The Router's physical MAC address as seen on your local network is unchangeable. Input the MAC address of the AP you want to choose. Sometimes, MAC address is also named BSSID. (BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.)
- ✧ **Channel:** Specify the effective channel (from 1 to 13\Auto) of the wireless network. The channel you select must be correspondence with the AP provided by your ISP.
- ✧ **Security Mode:** The security mode you set should be the same as the AP. More details please refer to the Wireless Security Settings chapter.

We recommend you "Scan" the access points and then select the SSID in your scanned SSID list for convenience.

Click "Next" to the following interface.

### 5.4.3. Wireless Basic Setting

Wireless Basic Settings

Network Mode	11b/g/n mixed mode
SSID	Tenda
BroadcastSSID	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
BSSID	00:10:18:01:02:40
Channel	2472MHz (Channel 13)
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel Bandwidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20.40
Guard Interval	<input type="radio"/> long <input checked="" type="radio"/> Auto
MCS	Auto
Reverse Direction Grant	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extend Channel	2452MHz (Channel 9)
Aggregation MSDU(A-MSDU)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

Back Next

❖ Network Mode: Select one mode from the following.

The default is 11b/g/n mode.

11b mode: Allow the wireless client to connect with the device in 11b mode at the maximum speed of 11Mbps.

11g mode: Allow the 11g/11n-compliant client device to connect with the AP at the maximum speed of 54Mbps.

11b/g mode: Allow the 11b/g-compliant client device to connect with the AP with auto-negotiation speed, and 11n wireless client to connect the device with 11g speed.

11b/g/n mode: Allow 11b/g/n-compliant client device



to connect with the AP with auto-negotiation speed.

- ✧ SSID: SSID (Service Set Identifier) is the unique name of the wireless network. Wireless client must input the same SSID as the device to access.
- ✧ Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network.
- ✧ Broadcast (SSID): Select “Disable” to disable the device’s SSID to be invisible by the wireless client. If you disable it, client must input the same SSID as the device to access.
- ✧ BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.
- ✧ Extend Channel: To increase data throughput of wireless network, the extension channel range is used in 11n mode.
- ✧ Channel Bandwidth: Select the channel bandwidth to improve the wireless performance. When the network has 11b/g and 11n clients, you can select the 40M; when it is an 11n network, select 20/40M to improve its throughput.

Click “Next” to save configurations.

Note: We suggest you do not change the channel in this mode, or else you can not access the device which you want to connect.

For wireless network encryption, please refer to 7.2.

Set the computer to “Obtain IP address automatically” to access the internet. More details refer to Appendix I.

## 5.5 Wireless Router Mode

In this mode, the device can connect to the DSL modem, Cable modem such broadband devices or the broadband cable directly.

Note: In this mode, the LAN/WAN port is worked as the WAN port. After it takes effect, only the computers with wireless network adapter can access the web-based interface of the router.

Log on the web-based interface as chapter 4 and then configure the mode as below.

5.5.1. Select “Wireless Router”, click “Setup Wizard” and “Next” button.



### 5.5.2. Configure the parameters.

This device supports three kinds of access ways (ADSL virtual dial-up, dynamic IP, static IP); please select the ways according to the actual situation. If you are not sure, you can consult local Internet service providers to get the relevant parameters.

#### ➤ Dynamic IP (DHCP)

The default access method is Dynamic IP. If your ISP provides you the Dynamic IP, you can choose Dynamic IP access way. Every time you access the internet, you will get different IP. Differ from the other two ways; you don't need to input the parameters. Click "Next" button directly.

Connection Method

- Dynamic IP (via DHCP)
- Static IP
- ADSL Virtual Dial-up (via PPPoE)
- L2TP
- PPTP

Back Next

➤ Static IP

If your ISP provides you the Static IP, please select Static IP access way. You should input the IP address, Subnet Mask, Gateway, DNS sever and the secondary DNS sever provided by your ISP, then click “Next”.

Connection Method

- Dynamic IP (via DHCP)
- Static IP
- ADSL Virtual Dial-up (via PPPoE)
- L2TP
- PPTP

---

IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.254
Primary DNS	210.21.196.6
Secondary DNS	0.0.0.0

Back Next

➤ ADSL Virtual Dial-up (via PPPoE)

If your ISP provides you the ADSL Virtual Dial-up

(via PPPoE), please select ADSL Virtual Dial-up (via PPPoE) access way. Enter the Account and Password provided by your ISP, and click “Next”. If you are not clear, please consult your ISP.

If the Account is pppoe\_user and Password is pppoe\_passwd, you need to enter the information as the diagram below. Please enter the Account and Password provided by your ISP.



Connection Method

- Dynamic IP (via DHCP)
- Static IP
- ADSL Virtual Dial-up (via PPPoE)
- L2TP
- PPTP

User Name: pppoe\_user

Password: pppoe\_passwd

Back Next

You can view the status by click “Status Information” after the device rebooted. If there shows IP address of WAN port, you can access to the internet. For further settings please refer to the following chapters.

### 5.5.3 Wireless Basic Setting

Wireless Basic Setting

Network Mode	11b/g/n mixed mode
SSID	Tenda
Broadcast SSID	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
BSSID	00:10:18:01:02:40
Channel	2437MHz (Channel 6)
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel Bandwidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
Guard Interval	<input type="radio"/> long <input checked="" type="radio"/> Auto
MCS	Auto
Reverse Direction Grant	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extend Channel	2417MHz (Channel 2)
Aggregation MSDU(A-MSDU)	<input checked="" type="radio"/> Disable <input type="radio"/> Enable

Back Next

✧ Network Mode: Select one mode from the following.  
The default is 11b/g/n mode.

11b mode: Allow the wireless client to connect with the device in 11b mode at the maximum speed of 11Mbps.

11g mode: Allow the 11g/11n-compliant client device to connect with the AP at the maximum speed of 54Mbps.

11b/g mode: Allow the 11b/g-compliant client device to connect with the AP with auto-negotiation speed, and 11n wireless client to connect the device with 11g speed.

11b/g/n mode: Allow 11b/g/n-compliant client device

to connect with the AP with auto-negotiation speed.

- ✧ SSID: SSID (Service Set Identifier) is the unique name of the wireless network. Wireless client must input the same SSID to access.
- ✧ Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network.
- ✧ Broadcast (SSID): Select “Disable” to disable the device’s SSID to be invisible by the wireless client. If you disable it, client must input the same SSID as the device to access.
- ✧ BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.
- ✧ Extend Channel: To increase data throughput of wireless network, the extension channel range is used in 11n mode.
- ✧ Channel Bandwidth: Select the channel bandwidth to improve the wireless performance. When the network has 11b/g and 11n clients, you can select the 40M; when it is an 11n network, select 20/40M to improve its throughput.

Click “Next” to save configurations.

Note: Generally, you only need to change the wireless SSID, wireless channel; if you are not very sure of other parameters, you can not configure them to avoid affecting wireless performance.

#### 5.5.4. Wireless Security Setting

Wireless Security Settings

SSID -- "Tenda"

Security Mode: WPA-Personal

WPA Algorithms:  AES  TKIP  TKIP&AES

Pass Phrase: PlsChangeMe

Key Renewal Interval: 3600 seconds

Note: Wireless Security Setting  
802.11n standard only defines Open-None (Disable), WPA-personal-AES, WPA2-personal-AES three kinds of encryption modes, different vendors may have compatibility issues.

Back Next

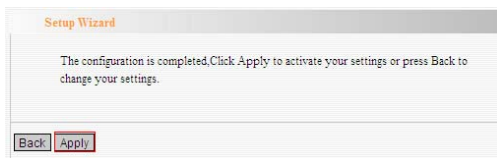
You can select WEP, WPA-personal, WPA2-personal and other security modes. Note the parameters you set for wireless client access.

It is suggested that you choose WPA-personal for “Security Mode” and AES for “WPA Algorithms.” Input 8 ~ 63 numbers, letters, and symbols for pass phrase. Click “Next” to save the configuration. More details please refer



to the following chapter.

5.5.5. Click “Apply” to save the settings and reboot the router to let the settings take effect.



Note: Only the computers with wireless network adapter can access to the wireless router if the mode take effect and set the computer to obtain IP address automatically. More details refer to Appendix II.

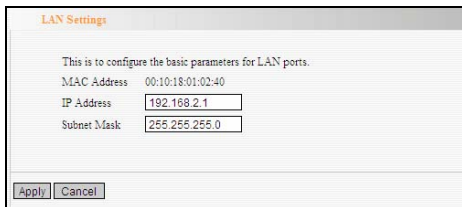
## Chapter 6 Advanced Settings

### 6.1 LAN Settings

This section will describe how to configure the TCP/IP parameters.

#### 6.1.1. LAN settings in WISP and Wireless Router

mode



LAN Settings

This is to configure the basic parameters for LAN ports.

MAC Address 00:10:18:01:02:40

IP Address 192.168.2.1

Subnet Mask 255.255.255.0

Apply Cancel

- ✧ MAC Address: The device's physical MAC address as seen on your local network is unchangeable.
- ✧ IP Address: The Router's LAN IP addresses (not your PC's IP address). 192.168.2.1 is the default value. Once you change it, you need to use the new IP to access the router.
- ✧ Subnet Mask: It's shown the Router's subnet mask for measurement of the network size. 255.255.255.0 is the default value.

6.1.2. LAN settings in AP, Client+AP and WDS+AP mode

LAN Settings

This is to configure the basic parameters for LAN ports.

MAC Address: 00:10:18:01:02:40

IP Mode: Static IP

IP Address: 192.168.2.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.254

Primary DNS server: 0.0.0.0

Secondary DNS server: 0.0.0.0

Host name: Tenda (optional)

Apply Cancel

- ✧ MAC Address: The device's physical MAC address as seen on your local network is unchangeable.
- ✧ IP Mode: There are two modes, Static IP and Dynamic IP. If you select Static IP, you need to input the parameters provided by your ISP. If you choose Dynamic IP, you should adjust the connection properties to obtain an IP address and DNS sever automatically in Internet protocol.
- ✧ IP Address: The device's LAN IP addresses. 192.168.2.1 is the default value. If you change it, you need to use the new IP to login to the Web interface.
- ✧ Subnet Mask: It's shown the device's subnet mask for measurement of the network size. 255.255.255.0 is the default value.
- ✧ Default Gateway: Input the Gateway provided by your ISP. If you are not sure, please consult your ISP.

- ✧ Primary DNS Sever: Input the primary DNS sever provided by your ISP.
- ✧ Secondary DNS Sever: you can input it or empty it. The parameters are also provided by your ISP
- ✧ Host Name: The device's wins name which you can use it to visit the device.

Notice: Once you changed the IP address of the LAN port, you should use the new IP to enter into the Web interface.

## 6.2 WAN Settings

WAN setting is only for WISP mode and Wireless Router mode.

### 6.2.1 ADSL Virtual Dial-up (via PPPoE)

**WAN Settings**

WAN connection mode: PPPoE

Account

Password

MTU

Service Name  (Do NOT Modify Unless Necessary)

AC Name  (Do NOT Modify Unless Necessary)

Internet Connection Option:

Connect Automatically

Connect Manually

Connect on Demand

Max Idle Time:  (60-3600 seconds)

Connect on Fixed Time

IMPORTANT: Please set the time in system Tools, before you select this Internet connection.

Time: From   to

Time format, Hours:0-23; Minute:0-59

- ✧ WAN Connection Mode: It shows the current connection method.
- ✧ Account: Input the user name provided by your ISP.
- ✧ Password: Enter the password provided by your ISP.
- ✧ MTU: Maximum Transmission Unit. It is the size of largest datagram that can be sent over a network. The default value is 1492. Do NOT modify it unless necessary. But if some specific website or web application software can not be open or enabled, you can have a try to change the MTU value as 1450, 1400, etc.

- ✧ Service Name: It is defined as a set of characteristics that are applied to a PPPoE connection. Enter it if provided. Do NOT modify it unless necessary.
- ✧ AC Name: Enter it if provided. Do NOT modify it unless necessary.
- ✧ Connect Automatically: Connect automatically to the Internet after rebooting the system or connection failure.
- ✧ Connect Manually: Connect to the Internet by users manually.
- ✧ Connect on Demand: Re-establish your connection to the Internet after the specific time (Max Idle Time). Zero means your Internet connection at all time. Otherwise, enter the minutes to be elapsed before you want to disconnect the Internet access.
- ✧ Connect on Fixed Time: Connect to the Internet during the time you fix.

Notice:

The “Connect on Fixed Time” can be deployed only when you have set the current time in “Time Settings” from “System Tools”.

## 6.2.2 Static IP

WAN Settings

WAN connection mode: Static IP

IP Address

Netmask

Gateway

Primary DNS Server

Secondary DNS Server  (optional)

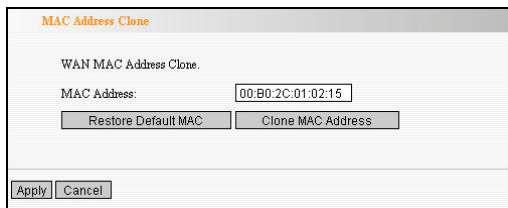
MTU  (Do NOT Modify Unless Necessary)

If your connection mode is static IP, you can modify the following addressing information.

- ✧ IP Address: Here enter the WAN IP address provided by your ISP. If you are not clear, consult your ISP please.
- ✧ Subnet Mask: Enter the subnet mask provided by your ISP. Generally, it is 255.255.255.0
- Gateway: Enter the WAN Gateway here. If you are not certain, please consult your local ISP.
- ✧ Primary DNS Server: Enter the Primary DNS server provided by your ISP.
- ✧ Secondary DNS Server: Enter the secondary DNS.

### 6.3 MAC Address Clone

This page is for the Router's MAC address to WAN. (Only in WISP mode and Wireless Router mode)



MAC Address Clone

WAN MAC Address Clone.

MAC Address:

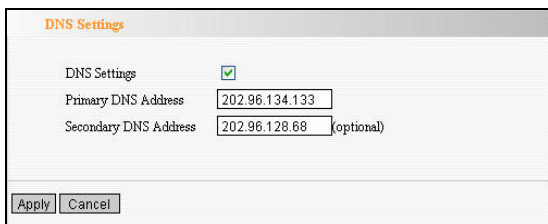
Some ISPs require end-user's MAC address binding to access their network. ISP will provide a valid MAC address and you should input MAC address and save the configuration.

- ✧ MAC Address: The MAC address to be registered with your Internet service provider.
- ✧ Clone MAC Address: Register your PC's MAC address.
- ✧ Restore Default MAC Address: Restore to the default hardware MAC address.

### 6.4 DNS Settings



DNS is short for Domain Name System (or Service), an Internet service that translate domain names into IP addresses which are provided by your Internet Service Provider. Please consult your Internet Service Provider for details if you do not have them.



DNS Settings	
DNS Settings	<input checked="" type="checkbox"/>
Primary DNS Address	<input type="text" value="202.96.134.133"/>
Secondary DNS Address	<input type="text" value="202.96.128.68"/> (optional)

- ✧ DNS Settings: Click the checkbox to enable the DNS server. The Router's DHCP sever will answer the client's requests and distribute DNS address.
- ✧ Primary DNS Address: Enter the necessary address provided by your ISP.
- ✧ Secondary DNS Address: Enter the second address if your ISP provides, which is optional.

Notice: After the settings are completed, reboot the device to activate the modified settings.

## Chapter 7 Wireless Setting

### 7.1 Basic Settings

The screenshot shows the 'Basic Settings' configuration page for a Tenda router. The 'Enable Wireless' checkbox is checked. The 'Network Mode' is set to '11b/g/n mixed mode'. The 'Main SSID' is 'Tenda'. The 'Minor SSID' is empty. 'Broadcast(SSID)' is set to 'Enable'. 'MBSSID AP Isolation' is set to 'Disable'. 'AP Isolation' is set to 'Disable'. The 'BSSID' is '00:80:2C:01:02:10'. The 'Channel' is set to 'AutoSelect'. 'Operating Mode' is set to 'Mixed Mode'. 'Channel BandWidth' is set to '20'. 'Guard Interval' is set to 'Auto'. 'MCS' is set to 'Auto'. 'Reverse Direction Grant(RDG)' is set to 'Enable'. 'Extension Channel' is set to 'Auto Select'. 'Aggregation MSDU (A-MSDU)' is set to 'Disable'. At the bottom, there are 'Apply' and 'Cancel' buttons.

- ✧ Enable Wireless: Check to enable the Router's wireless features; uncheck to disable it.
- ✧ Network Mode : Select one mode from the following. The default is 11b/g/n mode.  
11b mode: Allow the wireless client to connect with the device in 11b mode at the

maximum speed of 11Mbps.

11g mode: Allow the 11g/11n-compliant client device to connect with the AP at the maximum speed of 54Mbps.

11b/g mode: Allow the 11b/g-compliant client device to connect with the AP with auto-negotiation speed, and 11n wireless client to connect the device with 11g speed.

11b/g/n mode: Allow the 11b/g/n-compliant client device to connect with the AP with auto-negotiation speed.

- ✧ SSID: SSID (Service Set Identifier) is the unique name of the wireless network. This device has two SSID and the main SSID is necessary.
- ✧ Broadcast (SSID): Select “Enable” to enable the device's SSID to be visible by wireless clients. The default is enabled. If you disable it, the clients must know the SSID to communicate.
- ✧ BSSID: Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.

- ✧ Standard Channel: Specify the effective channel (from 1 to 13\Auto) of the wireless network.
- ✧ Extension Channel: To increase data throughput of wireless network, the extension channel range is used in 11n mode.
- ✧ Channel Bandwidth: Select the channel bandwidth to improve the wireless performance. When the network has 11b/g and 11n clients, you can select the 40M; when it is an 11n network, select 20/40M to improve its throughput.

## 7.2 Wireless Security Setting

It is used to configure the AP network's security setting. Here presents the common encryption methods, including WPA-personal, WPA2-personal, WAP/WAP2-Personal, Mixed WEP, Open, Shared. It is suggested you choose WPA-personal for "Security Mode" and AES for "WPA Algorithms". Please note that all connecting wireless devices will need to match these security settings in their connection settings. In this section, three common encryption methods are introduced.

### 7.2.1 WPA-personal

WPA (Wi-Fi Protected Access), a Wi-Fi standard, is a more recent wireless encryption scheme, designed to improve the security features of WEP. It applies more powerful encryption types (such as TKIP [Temporal Key Integrity Protocol] or AES [Advanced Encryption Standard]) and can change the keys dynamically on every authorized wireless device.

**Security Settings**

SSID -- "Tenda"

Security Mode:

WPA Algorithms:  AES  TKIP  TKIP&AES

Pass Phrase:

Key Renewal Interval:  second

**Notice:** Wireless Security Settings  
802.11n only defines three standard encryption methods: Open-None (Disable), WPA-Personal-AES, WPA2-Personal-AES. Other encryption methods are nonstandard. There may be compatibility problems among different manufacturers.

- **WPA Algorithms:** Provides TKIP [Temporal Key Integrity Protocol] or AES [Advanced Encryption Standard].
- **Pass Phrase:** Enter the encrypted characters with 8-63 ASCII characters.
- **Key Renewal Interval:** Set the key's renewal period.

### 7.2.2 WPA2-personal

WPA2 (Wi-Fi Protected Access version 2) provides higher security than WEP (Wireless Equivalent Privacy) or WPA (Wi-Fi Protected Access). Besides TKIP encryption, new AES encryption mode is provided.

**Security Settings**

SSID -- "Tenda"

Security Mode

WPA Algorithms  AES  TKIP  TKIP&AES

Pass Phrase

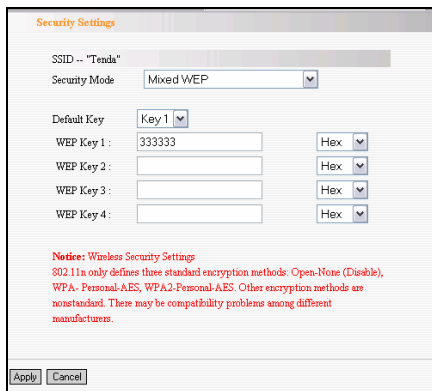
Key Renewal Interval  second

**Notice:** Wireless Security Settings  
802.11n only defines three standard encryption methods: Open-None (Disable),  
WPA- Personal-AES, WPA2-Personal-AES. Other encryption methods are  
nonstandard. There may be compatibility problems among different  
manufacturers.

- ❖ **WPA Algorithms:** Provides TKIP [Temporal Key Integrity Protocol] or AES [Advanced Encryption Standard].
- ❖ **Pass Phrase:** Enter the encrypted characters with 8-63 ASCII characters.
- ❖ **Key Renewal Interval:** Set the key's renewal period.

### 7.2.3 Mixed WEP

WEP (Wired Equivalent Privacy), a basic encryption method, usually encrypts wireless data using a series of digital keys (64 bits or 128 bits in length). By using the same keys on each of your wireless network devices, you can prevent unauthorized wireless devices from monitoring your transmissions or using your wireless resources. Select Mixed WEP to enter the following window:



Security Settings

SSID -- "Tenda"

Security Mode: Mixed WEP

Default Key: Key 1

WEP Key 1: 333333 Hex

WEP Key 2: Hex

WEP Key 3: Hex

WEP Key 4: Hex

**Notice: Wireless Security Settings**  
802.11n only defines three standard encryption methods: Open-None (Disable), WPA- Personal-AES, WPA2-Personal-AES. Other encryption methods are nonstandard. There may be compatibility problems among different manufacturers.

Apply Cancel

- ✧ SSID: Select the SSID (main SSID or minor SSID) to configure security setting from the drop-down menu.

- ✧ Security Mode: From the drop-down menu select the corresponding security encryption modes.
- ✧ WEP Key: Set the WEP key with the format of ASCII or Hex.
- ✧ Key Explanation: You can enter ASCII code (5 or 13 ASCII characters. Illegal character as “/” is not allowed.) Or 10/26 hex characters.
- ✧ Default Key : Select one key from the four configured keys as the current available

### 7.3 Advanced Settings

This section is to configure the advanced wireless setting of the Router, including the BG Protection Mode, Basic Data Rates, Fragmentation Threshold, RTS Threshold, and WMM etc.



**Advanced Settings**

BG Protection Mode	Auto
Basic Data Rates	Default(1-2-5.5-11 Mbps)
Beacon Interval	100 ms (range 20 - 999, default 100)
Fragment Threshold	2346 (range 256 - 2346, default 2346)
RTS Threshold	2347 (range 1 - 2347, default 2347)
TX Power	100 (range 1 - 100, default 100)

---

WMM Capable  Enable  Disable

AFSD Capable  Enable  Disable

Apply Cancel

- ✧ BG protection Mode: Auto by default. It is for 11b/g wireless client to connect 11n wireless network smoothly in a complicated wireless area.
- ✧ Basic Data Rates: For different requirement, you can select one of the suitable Basic Data Rates. Here, default value is (1-2-5.5-11Mbps...). It is recommended not to modify this value.
- ✧ Beacon Interval: Set the beacon interval of wireless radio. Default value is 100. It is recommended not to modify this value.
- ✧ Fragment Threshold: The fragmentation threshold defines the maximum transmission packet size in bytes. The packet will be fragmented if the arrival is bigger than the threshold setting. The default size is

2346 bytes. It is recommended not to modify this value.

- ✧ RTS Threshold: RTS stands for “Request to send”. This parameter controls what size data packet the frequency protocol issues to RTS packet. The default value of the attribute is 2346. It is recommended not to modify this value in SOHO environment.
- ✧ TX Power: Set the output power of wireless radio. The default value is 100.
- ✧ WMM Capable: It will enhance the data transfer performance of multimedia data when they’re being transferred over wireless network. It is recommended to enable this option.
- ✧ APSD Capable: It is used for auto power-saved service. The default is disabled.

## 7.4 WPS Settings

WPS (Wi-Fi Protected Setting) can be easy and quick to establish the connection between the wireless network clients and the device through encrypted contents. The users only enter PIN code or press WPS button on the panel to configure it without selecting encryption method

and secret keys by manual. In the “WLAN settings” menu, click “WPS settings” to enter the next screen.

**WPS Config**

You could setup security easily by choosing PIN or PBC method to do Wi-Fi Protected Setup.

WPS Settings:  Disable  Enable

WPS mode:  PBC  PIN

WPS Summary	
WPS Current Status:	Idle
WPS Configured:	No
WPS SSID:	Tenda
WPS Auth Mode:	WPA2-PSK
WPS Encryp Type:	AES
WPS Default Key Index:	2
WPS Key(ASCII):	88888888
AP PIN:	01090727

- ✧ WPS settings: To enable or disable WPS function. The default is “disable”.
- ✧ WPS mode: PBC (Push-Button Configuration) and PIN code.
- PBC: Select the PBC or press the WPS button on the back panel of the device for about one second (Press the button for about one second and WPS indicator will be blinking for 2 minutes, which means the WPS is enabled. Two minutes later, the WPS indicator will be off, which means the WPS connection is completed. If more clients are added, repeat the above

steps. At present, the WPS supports up to 32 clients access.)

- ✧ PIN: If this option is enabled, you need to enter a wireless client's PIN code in the field and keep the same code in the WPS client.
- ✧ WPS Summary: Show the current state of Wi-Fi protected setting, including authorized mode, encryption type, default key and other information.
- ✧ WPS Current Status: Idle means WPS in idle state. Start MSC process means the process has been started and waits for being connected. Configured means the negotiation is successful between server and clients.
- ✧ WPS Configured: "yes" means WPS feature is enabled and goes into effect. "Not used" means it is not used. Usually the AP-security has been enabled, here will displayed "not used".
- ✧ WPS SSID: Show the main SSID set by WPS.
- ✧ WPS Auth. Mode: The authorization mode deployed by WPS, generally WPA/WPA2-personal mode.
- ✧ WPS Encrypt Type: The encryption type used by WPS, generally AES/TKIP.

- ✧ WPS key : The effective key generated by AP automatically.
- ✧ AP PIN (KEY) : The PIN code used by default.
- ✧ Reset OOB: When this button is pressed, the WPS client will be idle state, and WPS indicator will be turned off. AP will not respond the WPS client's requests.

## 7.5 Wireless Access Control

To secure your wireless LAN, the wireless access control is actually based on the MAC address management to allow or block the specific clients to access the wireless network. Select “WLAN Setting->Access Control” to display the following screen:

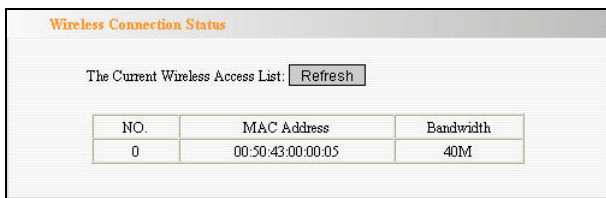
Wireless Access Control						
MAC Address Filter: <span>Allow</span>						
MAC Address Management						
MAC Address						
<input type="text" value="00"/>	<input type="text" value="11"/>	<input type="text" value="22"/>	<input type="text" value="33"/>	<input type="text" value="44"/>	<input type="text" value="55"/>	Action
<input type="text" value="00:11:22:33:44:55"/>					<input type="button" value="Add"/>	<input type="button" value="Delete"/>
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>						

- ✧ **MAC Address Filter:** Allow/Block MAC address filter. Select “off” to mal-function MAC address; “Block” to prevent the MAC addresses in the list from accessing the wireless network; “Allow” to allow the MAC address in the list to access the wireless network.

- ✧ **MAC Address Management:** Input the MAC address to implement the filter policy. Click “Add” to finish the MAC add operation.
- ✧ **MAC Address list:** Show the added MAC addresses. You can add or delete them.

## 7.6 Connection Status

This page shows wireless client’s connection status, including MAC address, Channel bandwidth. Select “WLAN Setting->connection status” to enter the following screen:



NO.	MAC Address	Bandwidth
0	00:50:43:00:00:05	40M

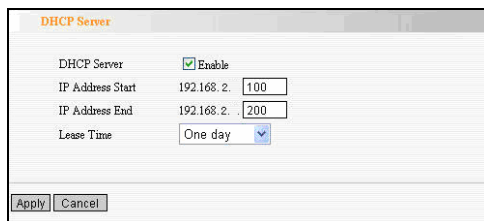
- ✧ **MAC Address:** Shows current MAC addresses of the hosts connecting to the Router.
- ✧ **Bandwidth:** Shows current frequency bandwidth the wireless client used.

## Chapter 8 DHCP Server

DHCP server is for the WISP mode and wireless Router mode.

### 8.1 DHCP Settings

DHCP (Dynamic Host Control Protocol) is to assign an IP address to the computers on the LAN/private network. When you enable the DHCP Server, the DHCP Server will allocate automatically an unused IP address from the IP address pool to the requesting computer in premise of activating “Obtain an IP Address Automatically”. So specifying the starting and ending address of the IP Address pool is needed.



The screenshot shows a configuration window titled "DHCP Server". It contains the following settings:

DHCP Server	<input checked="" type="checkbox"/> Enable
IP Address Start	192.168.2. <input type="text" value="100"/>
IP Address End	192.168.2. <input type="text" value="200"/>
Lease Time	<input type="text" value="One day"/> <input type="button" value="v"/>

At the bottom of the window, there are two buttons: "Apply" and "Cancel".

✧ DHCP Server: Activate the checkbox to enable



DHCP server.

- ✧ IP Address Start: Enter the range of IP address pool for DHCP server distribution.
- ✧ IP Address End: Enter the range of IP address pool for DHCP server distribution.
- ✧ Lease Time: The length of the IP address lease. Set an appropriate lease time to improve the recovery efficiency of invalid IP address.

For example:

If the lease time is an hour, then DHCP server will reclaim the IP address each hour.

## 8.2 DHCP List and Binding

DHCP client can display computers' IP address; MAC address, host name and other information which are assigned by the DHCP sever. You can manually enter the IP and MAC address; it would be converted to static allocation. According to the computer's MAC address, DHCP will assign the appropriate IP address. If you can not find the corresponding static binding entry, assign an IP from the DHCP pool to the computer. If the computer had been bound for the IP address and MAC and they do

not correspond, then the computer will be unable to access equipment. (Through binding prevents unauthorized to change the client IP address and to evade the monitoring device)

**DHCP List&Binding**

**Static IP**

IP Address 192.168.2.100

MAC Address 00 B0 8C 07 19 F4

NO.	IP Address	MAC Address	IP-MAC bind	Delete
1	192.168.2.100	00:B0:8C:07:19:F4	<input checked="" type="checkbox"/>	<input type="button" value="Delete"/>

Host Name	IP Address	MAC Address	Lease
-----------	------------	-------------	-------

- ✧ IP Address: Enter the IP address which needs to be bound.
- ✧ MAC Address: Enter the MAC address of the computer you want to assign the above IP address. Click “Add” to add the entry in the list.
- ✧ Hostname: The name of the computer which is added a new IP address.
- ✧ Lease Time: The left time length of the corresponding IP address lease.

## Chapter 9 Virtual Server

Virtual Server feature is only for wireless signal amplification mode and the wireless Router mode.

### 9.1 Port Range Forwarding

This section deals with the port range forwarding mainly. The Port Range Forwarding allows you to set up a range of public services such as web servers, ftp, e-mail and other specialized Internet applications to an assigned IP address on your LAN.

**Port Range Forwarding**

The Router can be configured as a virtual server on behalf of local services behind the LAN port. The given remote requests will be re-directed to the local servers via the virtual server. This section deals with the port range forwarding mainly. The Port Range Forwarding allows you to set up kinds of public services such as web servers, ftp, e-mail and other specialized Internet applications on your network.

NO.	Start Port-End Port	To IP Address	Protocol	Enable	Delete
1.	23-80	192.168.2.10	TCP	<input type="checkbox"/>	<input type="checkbox"/>
2.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
3.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
4.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
5.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
6.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
7.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
8.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
9.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
10.		192.168.2.	TCP	<input type="checkbox"/>	<input type="checkbox"/>

Well-Known Service Port:   ID

✧ Start/End Port: Enter the start/end port number which

ranges the External ports used to set the server or Internet applications.

- ✧ IP Address: Enter the IP address of the PC where you want to set the applications.
- ✧ Protocol: Select the protocol (TCP/UDP/Both) for the application.
- ✧ Enable: Click to check it for corresponding operation.
- ✧ Delete: Click to clear the parameters.
- ✧ Well-Known Service Port: Select the well-known services as DNS, FTP from the drop-down menu to add to the configured one above. For the port not in the list, you can input manually.
- ✧ Add: Add the selected well-known port to the policy ID.

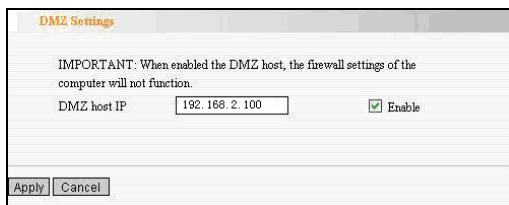
The server at the IP address of 192.168.2.10 in LAN provides WEB service at the port of 80 and Telnet service at the port of 23. If you want the clients on the Internet to visit this server, please set the device as the diagram above.

NOTE: If you set the virtual server of the service port as 80, you must set the Web management port on Remote Web Management page to be any value except 80 such as

8080. Otherwise, there will be a conflict to disable the virtual server.

## 9.2 DMZ Settings

In some special cases, we need to completely expose a computer in LAN to the WAN to achieve intercommunication. This computer can be set to the DMZ host.



✧ DMZ Host IP Address: The IP address of the computer you want to expose.

✧ Enable: Click it to enable the DMZ host.

For example:

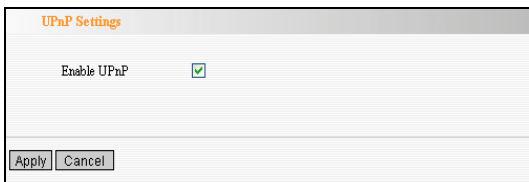
Set the computer at the IP address of 192.168.2.100 in LAN as a DMZ Host to intercommunicate with another host on the Internet.

**IMPORTANT:**

When the DMZ host is enabled, the firewall settings of the DMZ host will no longer work.

### 9.3 UPnP Settings

It supports latest Universal Plug and Play. This function goes into effect on Windows XP or Windows ME or this function would go into effect if you have installed software that supports UPnP. With the UPnP function, host in LAN can request the router to process some special port switching so as to enable host outside to visit the resources in the internal host.



- ✧ Enable UPnP: Click the checkbox to enable the UPnP.

## Chapter 10 Security Settings

The security settings are for WISP mode and Wireless Router mode.

### 10.1 Client Filter Settings

To facilitate your further management to online behavior of the computers in LAN, you can enable client filter to control some ports access to Internet.

The screenshot shows the 'Client Filter' configuration page. At the top, 'Client Filtering Settings' is checked. The 'Access Policy' is set to '10'. The 'Enable' checkbox is checked, and there is a 'Delete the Policy' button with the text 'Clear'. The 'Filtering Mode' has two radio buttons: 'Disable' (unselected) and 'Enable' (selected), with the text 'access the Internet' next to the 'Enable' option. Below this, there are input fields for 'Policy Name' (100), 'Start IP' (192.168.2.100), 'End IP' (192.168.2.100), 'Port' (80 to 80), and 'Type' (TCP). At the bottom, there are 'Times' (9:00 to 18:00) and 'Date' (Everyday, Sun, Mon, Tue, Wen, Thr, Fri, Sat) settings. 'Apply' and 'Cancel' buttons are at the bottom left.

Client filter: Select it to enable client filter.

Access Policy: Select one number from the drop-down menu.

Enable: Check to enable the access policy.

Filter Mode: Click one radio button to enable or disable to access the Internet. Every rule is applicable only to the corresponding MAC address.

Policy Name: Enter a name for the access policy selected.

IP Start/End: Enter the starting/ending IP address.

Port: Enter the port range based over the protocol for access policy.

Type: Select one protocol (TCP/UDP/Both) from the drop-down menu.

Times: Select the time range of client filter.

Date: Select the day(s) to run the access policy.

If you don't want the computer at the IP address of 192.168.2.100 to access the Internet from 9: 00 to 18: 00 everyday without restrictions to other computers in LAN, you need to set the packet filtering list as the above diagram.

## 10.2 URL Filter Settings

In order to control the computer to access to websites, you can use URL filtering to allow the computer to have access to certain websites at fixed time and forbids it having access to certain websites at fixed time.



The screenshot shows the 'URL Filter' configuration page. At the top, 'URL Filtering Setting' is checked and set to 'Enable'. Below this, 'Access Policy' is set to '10'. The 'Enable' checkbox is checked, with a 'Delete the Policy' button next to it. 'Filtering Mode' has two radio buttons: 'Disable' (unselected) and 'Enable' (selected), with the text 'access the Internet' next to the 'Enable' option. The 'Policy Name' field contains '123'. The 'Start IP' field contains '192.168.2.123' and the 'End IP' field contains '192.168.2.123'. The 'URL' field contains 'sina.sohu.yahoo'. At the bottom, there are time and date settings: 'Times' is set to '9:00 - 18:00' and 'Date' has 'Everyday' checked, with other days (Sun, Mon, Tue, Wed, Thu, Fri, Sat) unchecked. 'Apply' and 'Cancel' buttons are at the bottom left.

- URL Filter: Check to enable URL filter.
- Access Policy: Select one number from the drop-down menu.
- Enable: Check to enable the access policy.
- Filter Mode: Click one radio button to enable or disable to access the Internet.
- Policy Name: Enter a name for the access policy selected.
- Start/End IP: Enter the starting/ending IP address.
- URL: Specify the text strings or keywords needed to be filtered. If any part of the URL contains these strings or words, the web page will not be accessible and displayed.

- Times: Select the time range of client filter.
- Date: Select the day(s) to run the access policy.
- Apply: Select Apply to enable the settings.

For example:

If you want the computer at the IP address of 192.168.2.123 to access the Internet from 9: 00 to 18: 00 everyday and only can search the WEB pages contain the strings such as sina, sohu, and yahoo; you need to set the packet filtering list as the above diagram. (Notice: different strings need to be apart by a comma.)

### 10.3 MAC Address Filter

In order to manage the computers in LAN better, you could control the computer's access to Internet by MAC Address Filter.

**MAC Filter**

MAC Filtering Settings:  Enable

Access Policy: 10

Enable:  Delete the Policy:

Filtering Mode:  Disable  Enable access the Internet

Policy Name: alice

MAC Address: 00 : C0 : 9F : AD : FF : C5

Times: 8 : 0 ~ 18 : 0

Date:  Everyday  Sun  Mon  Tue  Wen  Thr  Fri  Sat

- ✧ MAC address filter: Enable it to filter MAC address.
- ✧ Access Policy: Select one number from the drop-down menu.
- ✧ Enable: Click this to enable the policy.
- ✧ Filter Mode: Click one radio button to enable or disable to access the Internet in specific time. Every rule is applicable only to the corresponding MAC address.
- ✧ Policy Name: Enter a name for the access policy selected.
- ✧ MAC Address: Enter the MAC address of the computer you want to run the access policy.

- ✧ Times: Select the time range of client filter.
- ✧ Date: Select the day(s) to run the access policy.
- ✧ Apply: Select Apply to enable the settings.

For example:

If you want to configure the host with MAC address 00:22:15:55:2A:15 not to access the Internet at 9 : 00-18: 00 from Monday to Friday, you need to set it as above.

#### 10.4 Prevent Network Attack

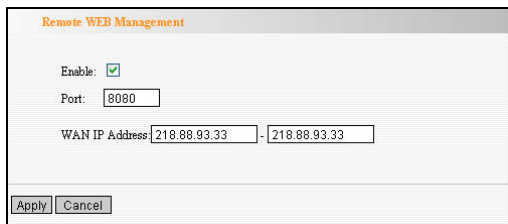
This section is to protect the internal network from exotic attack such as SYN Flooding attack, Smurf attack, LAND attack, etc. Once detecting the unknown attack, the Router will restrict its bandwidth automatically. The attacker's IP address can be found from the "System Log".

- Prevent Network Attack: Enable it for attack prevention.



## 10.5 Remote WEB Management

This section is to allow the network administrator to manage the Router remotely. If you want to access the Router from outside of the local network, please select the “Enable”.



- ✧ Enable: Check to enable remote web management.
- ✧ Port: The management port open to outside access.
- ✧ WAN IP Address: Specify the range of the WAN IP

address for remote management.

Note:

1. If you want to login to the Web-based interface via port 8080, you need use the format of WAN IP address: port (for example *http://220.135.211.56:8080*) to implement remote login.
2. If your WAN IP address starts and ends with 0.0.0.0, it means all hosts in WAN can implement remote Web management. If you change the WAN IP address as 218.88.93.33-218.88.93.35, then only the IP addresses as 218.88.93.33, 218.88.93.34 and 218.88.93.35 can access the Router.

For example:

If you want to configure the IP address 218.88.93.33 to access the device's web interface, please set it as above.

## 10.6 WAN Ping

The ping test is to check the status of your internet connection. When disabling the test, the system will ignore the ping test from WAN.



WAN Ping

Ignore the Ping from WAN

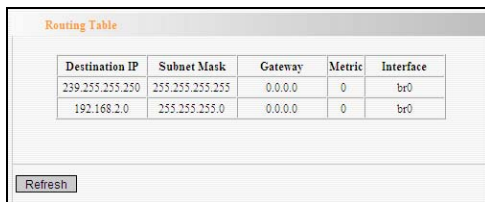
Apply Cancel

- ✧ Ignore the Ping from WAN:  
Check to ignore the ping request and give no reply.

## Chapter 11 Routing setting

### 11.1 Routing Table

This page shows the primary routing table.



Routing Table

Destination IP	Subnet Mask	Gateway	Metric	Interface
239.255.255.250	255.255.255.255	0.0.0.0	0	br0
192.168.2.0	255.255.255.0	0.0.0.0	0	br0

Refresh

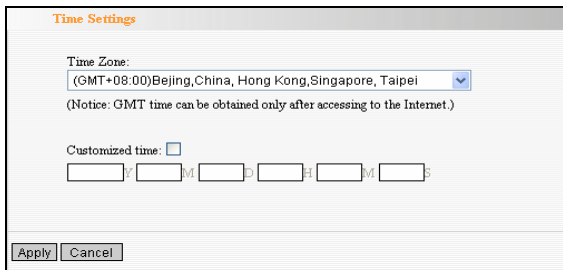
The main duty for a router is to look for a best path for every data frame, and transfer this data frame to the destination. So, it's essential for the router to choose the best path, i.e. routing arithmetic. In order to finish this

function, many transferring paths, i.e. routing table, are saved in the router, for choosing when needed.

## Chapter 12 System Tools

### 12.1 Time Settings

This section is to select the time zone for your location. If you turn off the Router, the settings for time disappear. However, the Router will automatically obtain the GMT time again once it has access to the Internet.



The screenshot shows a window titled "Time Settings" with a light gray background. At the top, the title "Time Settings" is displayed in orange. Below the title, there is a "Time Zone:" label followed by a drop-down menu showing "(GMT+08:00)Beijing,China, Hong Kong,Singapore, Taipei". A notice below the menu reads "(Notice: GMT time can be obtained only after accessing to the Internet.)". Underneath, there is a "Customized time:" label with an unchecked checkbox. Below the checkbox are six input fields for time components: Year (Y), Month (M), Day (D), Hour (H), Minute (M), and Second (S). At the bottom of the window, there are two buttons: "Apply" and "Cancel".

- ✧ Time Zone: Select your time zone from the drop-down menu.
- ✧ Customized time: Enter the time you customize.

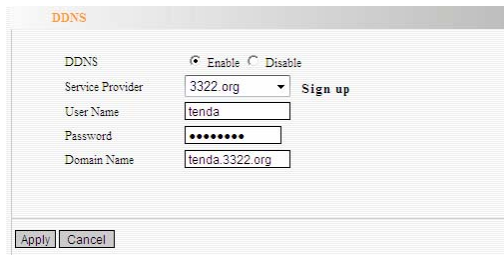
Note



When the Router is powered off, the time setting will be lost. Before the Router will obtain GMT time automatically, you need connect with the Internet and obtain the GMT time, or set the time on this page first. Then the time in other features (e.g. firewall) can be activated.

## 12.2 DDNS

The DDNS (Dynamic Domain Name System) is supported in WISP mode and Wireless Router mode. It is to assign a fixed host and domain name to a dynamic Internet IP address, which is used to monitor hosting website, FTP server and so on behind the Router. If you want to activate this function, please select “Enable” and a DDNS service provider to sign up.



The screenshot shows the DDNS configuration page. At the top, the title "DDNS" is displayed in orange. Below the title, there are two radio buttons: "Enable" (which is selected) and "Disable". Underneath, there are four input fields: "Service Provider" (a dropdown menu showing "3322.org" with a "Sign up" link to its right), "User Name" (text box with "tenda"), "Password" (text box with masked characters "\*\*\*\*\*"), and "Domain Name" (text box with "tenda.3322.org"). At the bottom of the form, there are two buttons: "Apply" and "Cancel".

➤ Main Features:

1. Owing to ISP most times provides dynamic IP address, DDNS is used to capture the changeable IP address and match the fixed domain. Then users can have access to the Internet to communicate with others.

2. DDNS can help you establish virtual host in your home and company.

✧ Service Provider: Select one from the drop-down menu and press “Sign up” for registration.

✧ User Name: Enter the user name the same as the registration name.

✧ Password: Enter the password you set.

Domain Name: Enter the domain name which is optional.

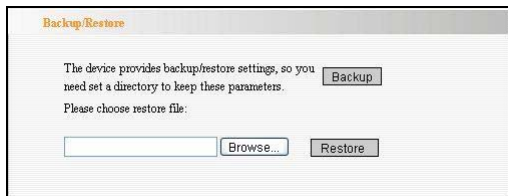
User name	tenda
Password	123456
Domain name	tenda.3322.org

After mapping the port in the virtual server, setting account

information in DDNS server and in the address field entering <http://tenda.3322.org>, you can access the Web page.

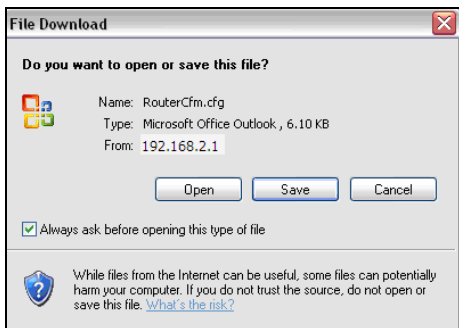
### 12.3 Backup/Restore Settings

The device provides backup/restore settings, so you need set a directory to keep these parameters.



#### ➤ Backup Setting :

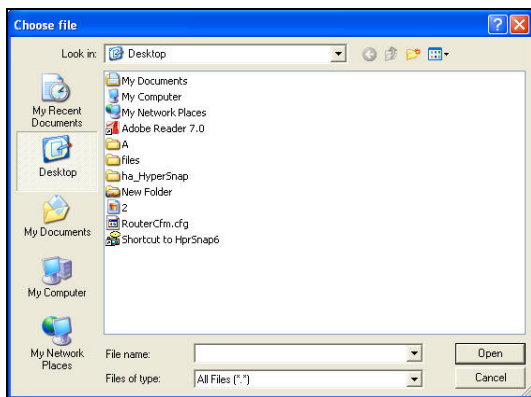
Click “Backup” button to back up the Router’s settings and select the path for save.



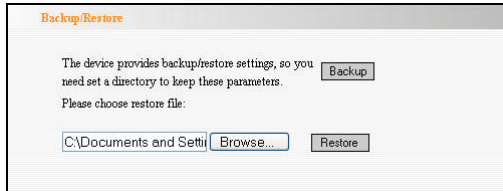
Click "Save" to save the configuration files.

➤ Restore Setting :

Click "Browse" button to select the backup files.



Click "Restore" button to restore previous settings.



## 12.4 Restore to Factory Default Setting

This button is to reset all settings to the default values. It means the Router will lose all the settings you have set. So please Note down the related settings if necessary.



- ✧ Restore: Click this button to restore to default settings.
- ✧ Factory Default Settings:  
User Name: admin  
Password: admin

IP Address: 192.168.2.1

Subnet Mask: 255.255.255.0

Note: After restoring to default settings, please restart the device, then the default settings can go into effect.

## 12.5 Upgrade

The Router provides the firmware upgrade by clicking the “Upgrade” after browsing the firmware upgrade packet which you can download from [www.tenda.cn](http://www.tenda.cn).

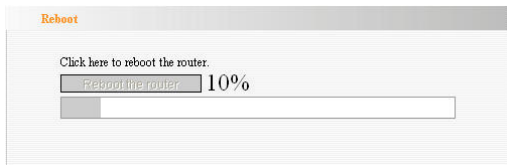


- Browse: click this button to select the upgrade file.
- Upgrade: click this button to start the upgrading process. After the upgrade is completed, the Router will reboot automatically.

Note: Do not power off the device during the upgrade.

## 12.6 Reboot the Router

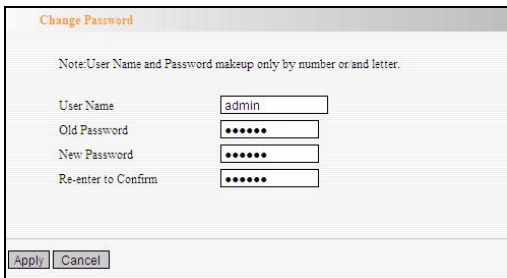
Rebooting the Router makes the settings configured go into effect. After it is rebooted, the WAN port connection will be unconnected automatically.



Reboot the router: Click this button to reboot the device.

## 12.7 Change Password

This section is to set a new user name and password to better secure your router and network.

A screenshot of a web interface titled "Change Password". It includes a note: "Note: User Name and Password makeup only by number or and letter." Below the note are four input fields: "User Name" with the value "admin", "Old Password" with six dots, "New Password" with six dots, and "Re-enter to Confirm" with six dots. At the bottom are "Apply" and "Cancel" buttons.

- User Name: Enter a new user name for the device.
- Old Password: Enter the old password.

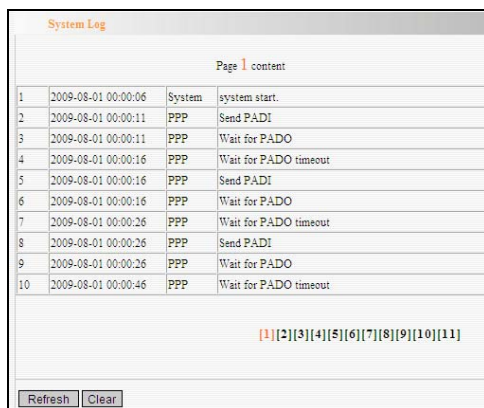
- New Password: Enter a new password.
- Re-enter to Confirm: Re-enter to confirm the new password.

Note: It is highly recommended to change the user name and password to secure your network and the Router.



## 12.8 System Log

The section is to view the system log. Click the “Refresh” to update the log. Click “Clear” to clear all shown information. If the log is over 150 records, it will clear them automatically.



The screenshot shows a web interface titled "System Log". It displays a table with 10 rows of log entries. Below the table is a pagination control showing "[1][2][3][4][5][6][7][8][9][10][11]". At the bottom of the interface are two buttons: "Refresh" and "Clear".

System Log			
Page 1 content			
1	2009-08-01 00:00:06	System	system start.
2	2009-08-01 00:00:11	PPP	Send PADI
3	2009-08-01 00:00:11	PPP	Wait for PADO
4	2009-08-01 00:00:16	PPP	Wait for PADO timeout
5	2009-08-01 00:00:16	PPP	Send PADI
6	2009-08-01 00:00:16	PPP	Wait for PADO
7	2009-08-01 00:00:26	PPP	Wait for PADO timeout
8	2009-08-01 00:00:26	PPP	Send PADI
9	2009-08-01 00:00:26	PPP	Wait for PADO
10	2009-08-01 00:00:46	PPP	Wait for PADO timeout

[1][2][3][4][5][6][7][8][9][10][11]

Refresh Clear

- Refresh: Click this button to update the log.
- Clear: Click this button to clear the current shown log.

## 12.9 Logout

After you have finished the settings completely, in logout page click “Yes” to logout the web management page.

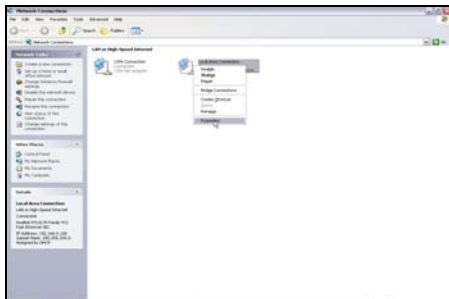
## Appendix I : How to “Obtain an IP Automatically”

If you enable DHCP (default), you can get the IP address, Gateway, DNS automatically to access the internet. Please set you device as below.

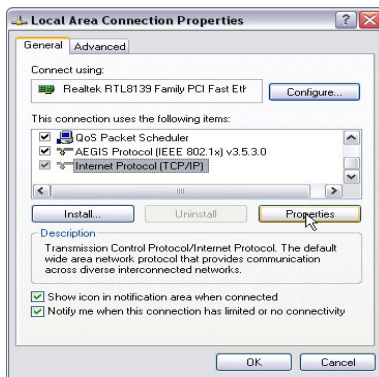
1. On your computer desktop right click “My Network Places” and select “Properties”.



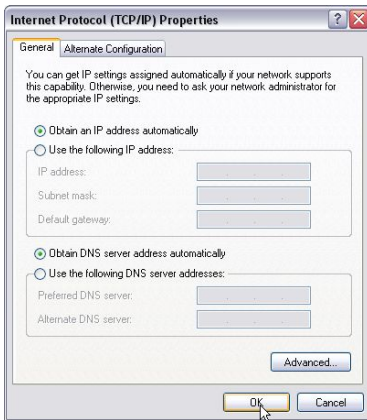
2. Right click “Local Area Network Connection” and select “Properties”. If you use wireless connection, please click “Wireless Network Connection”.



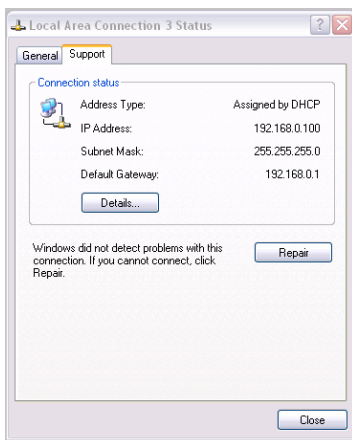
3. Select “Internet Protocol (TCP/IP)” and click “Properties”.



#### 4. Select “Obtain an IP address automatically”



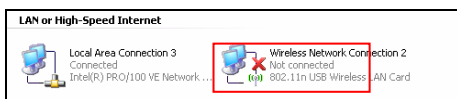
#### 5. Select “Status” within “Local Area Connection” – click "support" dialog box, you can see whether you have got the IP.



## Appendix II: How to set the network card after device encrypted

When the device is encrypted, you need to enter password to connect to the wireless device to access the internet. Set up a wireless network adapter as follows:

1. On your computer desktop right click “My Network Places” and select “Properties”.



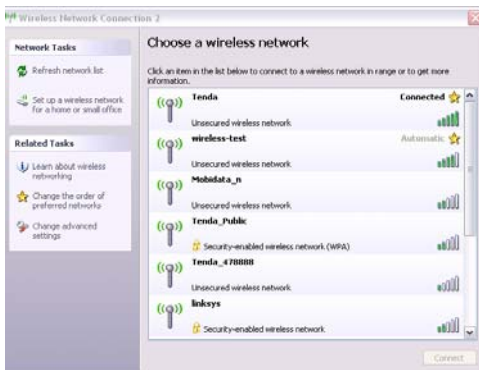
2. Select “View Available Wireless Network”. The entire wireless signal will be shown in the interface. Please select “Tenda”. If you don’t find it, please click “Refresh Network List”.



3. Select “Tenda” and click “Connect” or double-click “Tenda”, input the “Network key” and “Confirm network key” to connect the Router.



4. “Connected” will be shown in the interface as the following diagram.



### **Appendix III Glossary**

#### **Channel**

An instance of medium use for the purpose of passing protocol data units (PDU) that may be used simultaneously, in the same volume of space, with other instances of medium use (on other channels) by other instances of the same physical layer (PHY), with an acceptably low frame error ratio (FER) due to mutual interference.

#### **SSID**

It is the short of Service Set Identifier. An SSID is the network name shared by all devices in a wireless network. Your network's SSID should be unique to your network and identical for all devices within the network. It is case-sensitive and must not exceed 20 characters (use any of the characters on the keyboard). Make sure this setting is the same for all devices in your wireless network.

#### **WEP**

Wired Equivalent Privacy (WEP) is the method for secure wireless data transmission. WEP adds data encryption to every single packet transmitted in the wireless network. The 40bit and 64bit encryption are the same because of out 64 bits, 40 bits are private. Conversely, 104 and 128 bit are the same. WEP uses a common KEY to encode the data. Therefore, all devices on a wireless network must use the same key and same type of encryption. There are 2 methods for entering the KEY; one is to enter a 16-bit HEX digit. Using this method, users must enter a 10-digit number (for 64-bit) or 26-digit number (for 128-bit) in the KEY field. Users must select the same key number for all devices. The other method is to enter a text and let the computer generate the WEP key for you. However, since each product use different method for key generation, it might not work for different products. Therefore, it is NOT recommended using.

## WPA/WPA2

A security protocol for wireless networks that builds on the basic foundations of WEP. It secures wireless data transmission by using a key similar to WEP, but the added



strength of WPA is that the key changes dynamically. The changing key makes it much more difficult for a hacker to learn the key and gain access to the network. WPA2 is the second generation of WPA security and provides a stronger encryption mechanism through Advanced Encryption Standard (AES), which is a requirement for some government users.

### **Appendix IV: Troubleshooting**

In this part some questions and problems shown during the Router's usage and installation will be given suggesting answers. If your problems are not in the list, please log into our website [www.tenda.cn](http://www.tenda.cn) or send an E-mail to [support@tenda.cn](mailto:support@tenda.cn), and we will reply you in the earliest time.

1. Enter the IP address but can not visit the WEB management interface. What can I do?

Please make sure the cable is well connected and the corresponding indicator is light.

Make sure the device is not in Wireless Router mode.

In this mode, you can visit the WEB interface only by Wireless network.

In the wireless access point (AP) mode, your computer must specify an IP (192.168.2.2 ~ 192.168.2.254) to access the device. Please click "Start" - "Run" to enter "ping 192.168.2.1" to diagnose whether the device is connected. If it can ping pass, then check whether your browser enable a proxy server. If enabled please disable it. If you can not ping pass, you can hold down the "RESET" button for 7 seconds to restore the factory settings, and "ping 192.168.2.1" again.

2. Forget the login password and can not enter the setting page. What can I do?

Press the "RESET" button for 7 seconds to restore the Router to default settings.

3. The computer connected with the Router shows IP address conflict. What can I do?

Check if there are other DHCP servers in the LAN. If there have, disable them.

The default IP address of the Router is 192.168.2.1 and please make sure the address is not occupied by other devices. If there are two computers with the same IP

addresses, please modify one.

4. My computer can not log in equipment; can not access the internet, and a yellow triangle with exclamation point symbols shows, how to deal with?

This problem is due to your network card is not assigned the IP address. If set your computer to automatically obtain IP, please ensure that the source of the router's DHCP is turned on. DHCP can automatically assign an IP address to your computer. If there is no DHCP, please set a static IP address and fill in gateways and DNS, otherwise you can not access Internet.

5. I can not use E-mail and access the Internet. What can I do?

It happens in ADSL connection and Dynamic IP users. And you need modify the default MTU value (1492). Please in the “WAN Setting” modify the MTU value with the recommended value as 1450 or 1400.

6. How can I configure and access the Internet via Dynamic IP?

In Setup Wizard of the Web utility interface, select “Dynamic IP” connection type and click “Save” to activate it. As some ISPs bind the user computer’s MAC address,

you need to clone the Router's WAN MAC address to the binding PC's MAC address. Select "MAC Address Clone" in "Advanced Setting" to input your computer's MAC address and click "Apply" to activate it.

7. How to share my computer's source with other users in Internet?

If you want Internet users to access the internal server via the Router such as e-mail server, Web, FTP, you can configure the "Virtual Server" to come true.

Step 1: create your internal server, make sure the LAN users can access these servers and know related service port. For example, Web server's port is 80; FTP is 21; SMTP is 25 and POP3 is 110.

Step 2: in the Router's web click "Virtual Server" and select "Single Port Forwarding".

Step 3: input the external service port given by the Router, for example, 80.

Step 4: input the internal Web service port, for example, 80.

Step 5: Input the internal server's IP address. If your Web server's IP address is 192.168.2.10, please input it.

Step 6: select the communication protocol used by your

internal host: TCP, UDP, and ICMP.

Step 7: click “Apply” to activate the settings.

The following table has listed the well-known application and service port:

Server	Protocol	Service Port
WEB Server	TCP	80
FTP Server	TCP	21
Telnet	TCP	23
NetMeeting	TCP	1503、1720
MSN Messenger	TCP/UDP	File Send:6891-6900(TCP) Voice:1863、6901(TCP) Voice:1863、5190(UDP)
PPTP VPN	TCP	1723
Iphone5.0	TCP	22555
SMTP	TCP	25
POP3	TCP	110

8. Why can't I use wireless WAN function to access the Internet?

- a. Please make sure that the wireless adapter can access the Internet when connected to the computer, wireless signals scanned by the adapter are strong enough, and quality of signals is good enough. If it can scan too many wireless signals, we recommend you to use 11b/g mode for reducing interference.
- b. Please make sure that the needed parameters such as SSID, MAC address etc. are correct. It is recommended to use Auto Scan to finish the settings in the setup process.
- c. Please make sure that IP address range obtained at WAN port are different as the one obtained at LAN port. If they are at the same range, you can modify the LAN IP address to solve the problem.
- d. Please do not detach any antenna of the wireless Router when you are using the Router.

After trying all the above steps, if you still can't access the Internet, you can contact us for support.

If you still have some problems, please contact our customer service or log on our website.

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## **Appendix V Regulatory Information**

### **EU Declaration or Declaration of Conformity**

Hereby, SHENZHEN TENDA TECHNOLOGY CO.,LTD, declares that this Wireless Broadband Router is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

### **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.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

"The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter."

### **FCC 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 the minimum distance of 20 cm. Operation is subject to the following two conditions:

- 1) This device may not cause interference, and
- 2) This device must accept any interference, including interference that may cause undesired operation of the device.

**Caution!**

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.