Tenda®

User Guide

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Wireless N150 MINI AP/Router

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Chapter 1 Product Overview

Thanks for purchasing this A6 Wireless N150 Mini AP/Router (hereunder referred to as device).

A6 is a typically multi-purpose device that provides 5 working modes: Wireless AP Mode, Wireless Router Mode, WISP Mode, Client Mode and Universal Repeater Mode, meeting your diversified needs.

Plus, it can either be powered by an included power adapter or your PC via an included USB cable.

Super mini design with ultimate powerful functionalities, fitting diversified wireless applications, and the device is an idea choice for businessmen and fashion follower.

1.1 Features

- Delivers up to 150Mbps wireless data rate.
- Provides 5 working modes: wireless AP, wireless router, WISP, client and Universal repeater modes.
- 64-/128-bit WEP, WPA and WPA2 secure your wireless network against unauthorized access.
- 1 10/100Mbps Ethernet port for Internet/LAN connection.
- Can be connected to an XDSL/Cable MODEM; support Dynamic/Static IP Internet connection.
- Local/remote web based management.
- Adopts wireless Roaming technology to ensure high

efficient and reliable wireless connection.

- MAC-based access control.
- Syslog records device's usage status.
- Support automatic or manual select of IEEE802.11 mode (network mode).
- Provides UPnP, DDNS, virtual server and DMZ features.
- Disallow/allow specified LAN users to access Internet. Internal firewall protects against potential attacks from hackers .
- Provides USB or external AC adapter as a power source.

1.2 Package Contents

Please unpack the box and check the following items:

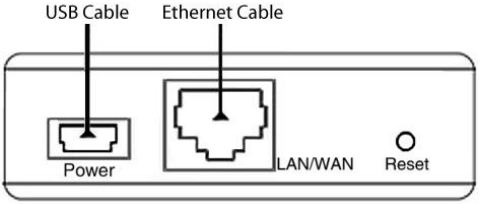
- A6 Wireless N150 Mini AP/Router
- Power Adapter
- USB Cable
- Quick Installation Guide
- CD-ROM

If any of the above items are incorrect, missing, or damaged, please contact your Tenda reseller for immediate replacement.

1.3 Panel Overview

LED Overview

Status	Description
A blue solid light	Device is starting
A blue blinking light	Device is working normally



LED/Button Overview

- **Reset:** Reset button. Pressing it for about 7 seconds restores the device to factory defaults.
- **Power:** Power receptacle for connection to power outlet via the included power adapter or to one USB port on your notebook using the included USB cable.
- **LAN/WAN:** LAN/WAN interchangeable port. The port functions as a WAN port for connection to a DSL MODEM or other network devices in Wireless Router mode and as a LAN port for connection to a PC or an Ethernet switch, etc. in wireless AP, Repeater, Client or WISP mode.

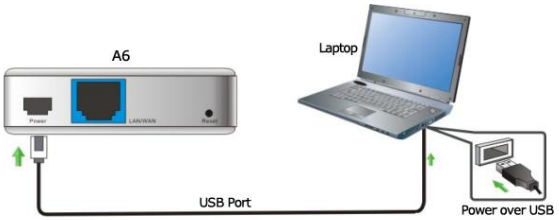
Chapter 2 Hardware Installation

2.1 Installation

Before you start configuring the device, follow below steps to install device. For optimum wireless performance, it is advisable to place the device in the center of the coverage.

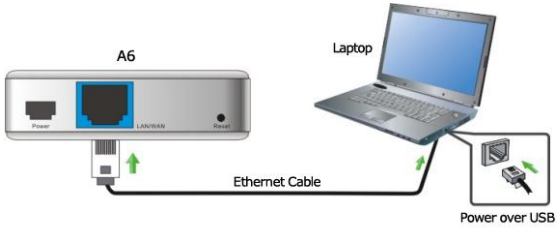
2.1.1 Connect the device to a power source

Use the included power adapter or USB cable (with the other end connected to your notebook) to power the device. (Using a power adapter with a different voltage rating than the one included with the device may cause damage to the device.)



2.1.2 Connect your notebook to the device

2.1.2.1. If you are using a wired adapter, connect your notebook to the device using an Ethernet cable.

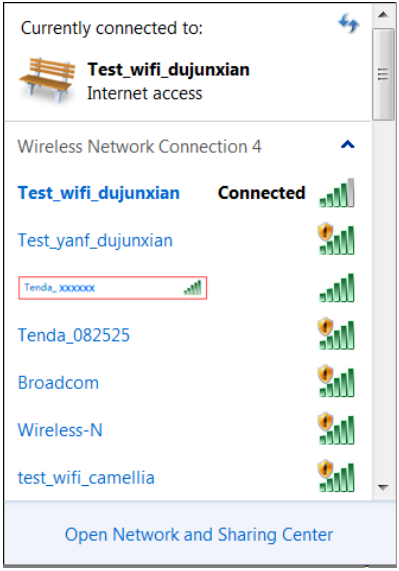


2.1.2.2. If you are using a wireless adapter, follow steps below to config your adapter:

a. Click “Start”→ ”Control Panel” → “Network and Internet” →”Network and Internet Sharing Center”→“ Change adapter settings”. As seen below, Wireless Network Connection displays

“Not Connected”.

b. Right click Wireless Network Connection and select “Connect/Disconnect” to display below screen. Click “Refresh” if you do not find “Tenda_**xxxxxx**”, where “**xxxxxx**” represents the last six characters in device MAC address.



c. Select “Tenda_**××××××**”and click “Connect”.

Chapter 3 Working Modes Overview

The device provides 5 working modes and is preset to wireless AP mode by default. You can select a mode that best fits yourself and the device delivers corresponding functions accordingly.

3.1 Wireless AP Mode

In this mode, the device converts the wired signal into wireless signals, extending existing network coverage. It works as a central access point for multiple wireless clients (generally, wireless adapters) concurrently. Simply connect the device to Internet-enabled broadband at hotel, home or office without configuration required on the device and multiple users can share Internet access. Note that you must config same security settings on your adapter to connect to the device if you encrypt the device wireless network. This mode is also your best choice if there is already a wired router on existing network. Simply connect the device to the wired router using an Ethernet cable (For details, refer to section 5-1). Refer to below topology for connecting network devices involved when using this mode.

3.2 Wireless Router Mode

In this mode，the device works as a wireless NAT router with DHCP feature. Simply connect the device to a DSL/cable modem, and a wireless network is created to be shared by multiple wireless clients.

Refer to below topology for connecting network devices involved when using this mode.

5-2 For more info, see section 5-2 hereof

3.3 WISP Mode

In this mode, the device functions as a wireless signal amplifier, ideal for wifi hot spot access and bridging, and provides NAT and DHCP server features. You only need to config some simple settings on the device to wirelessly connect to the other Internet-enabled wireless device without configuring it, so that multiple users can share the Internet connection via the device. If you would like more PCs using wired adapters to share this connection, then simply connect a switch to the device.

Refer to below topology for deploying network devices involved when using this mode.

5-2 For more info, see section 5-3 hereof

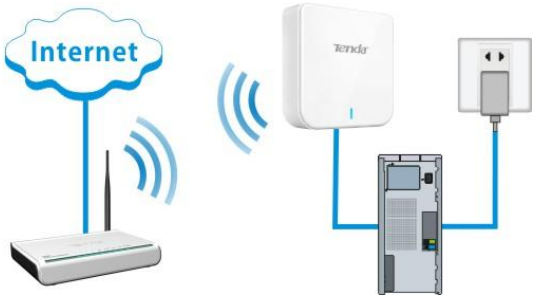
3.4 Client Mode

In this mode, the device is equivalent to a wireless adapter that enables a PC without an installed wireless network adapter to connect to a wireless network for Internet connection. Note that

the DHCP server is deactivated by default in this mode to avoid potential collision and the Ethernet port is working as a LAN port only, so you must config TCP/IP settings manually on your PC to connect to the device using an Ethernet cable.

It's best for connecting your multimedia player, IPTV set-top box or other internet-enabled device to a wireless network.

Refer to below topology for deploying network devices involved when using this mode.



For details, see section 5-4.

3.5 Universal Repeater Mode

In this mode, the device delivers wireless repeating function and amplifies wireless signal without changing network topology. Use this mode to amplify and transmit wireless signal when sharing wireless Internet connection with your neighbors.

It is best for use with an IPTV set-top box, broadband satellite receptor or for purpose of extending existing coverage.

Refer to below topology for deploying network devices involved when using this mode.

For details, see section 5-5.

Chapter 4 Login to Web Utility

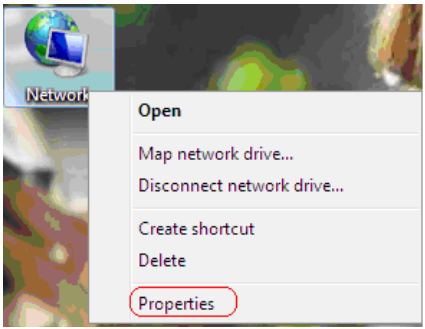
This chapter presents how to access device Web Utility. Follow below instructions if you are using Windows 7.

4.1 Using a wired connection

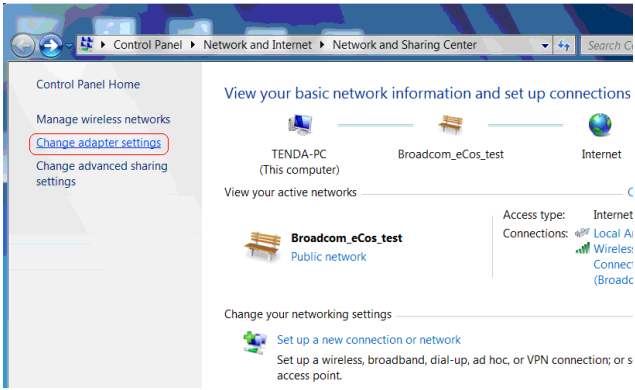
4.1.1 Config TCP/IP settings

If you are connecting to the device via an Ethernet cable, do as follows to config TCP/IP settings on your PC.

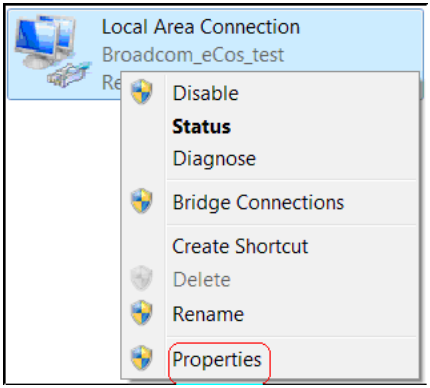
1. Right click “Network” on your desktop and select “Properties”.



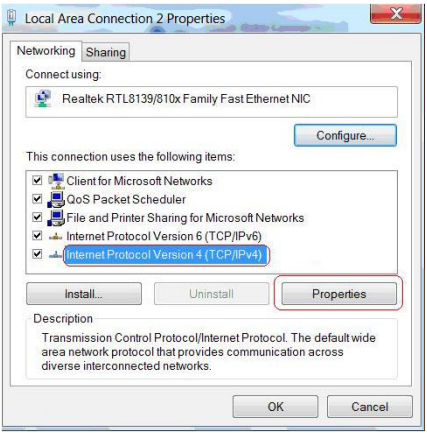
2. Click “Change adapter settings”.



3. Right click “Local Area Connection” and select “Properties”.

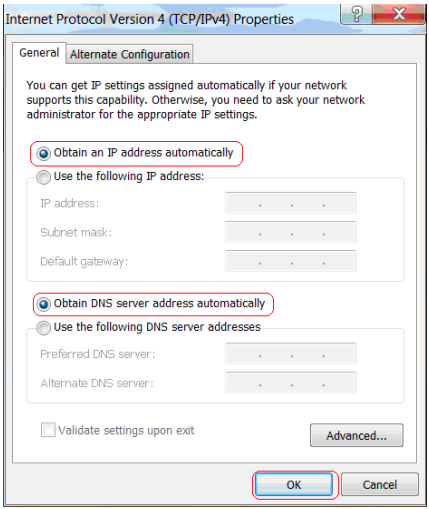


4. Select “Internet Protocol (TCP/IP)” on the appearing window and click the “Properties” button.



5. Select “Use the following IP address” or “Obtain an IP address automatically”.

a. To “Obtain an IP address automatically” simply click the corresponding button.



b. “Use the following IP address”

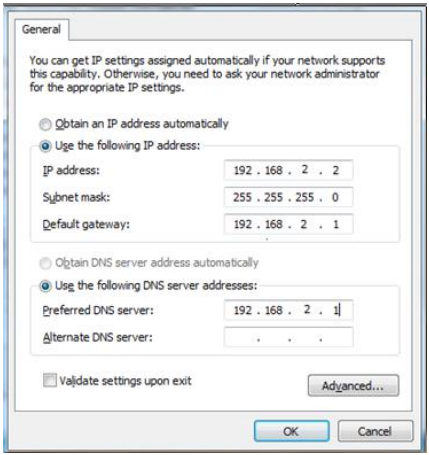
IP address: Enter 192.168.2.xxx (xxx can be any value from 2~253).

Subnet mask: Enter 255.255.255.0.

Default gateway: Enter 192.168.2.1.

Preferred DNS server: Enter 192.168.2.1 in case that you don’t know the local DNS server address (Or contact your ISP for help).

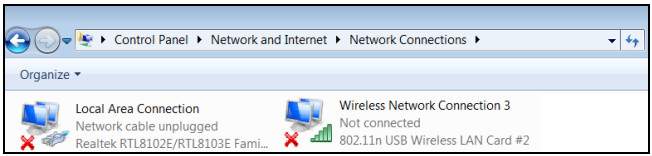
At last, click OK to save your settings.



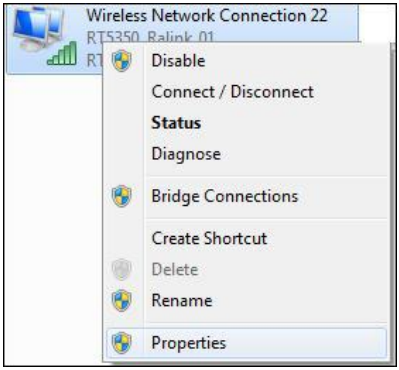
4.2 If you are connecting to the device wirelessly, do as follows

(Note that you can only connect to the device wirelessly when using Wireless Router or AP mode.)

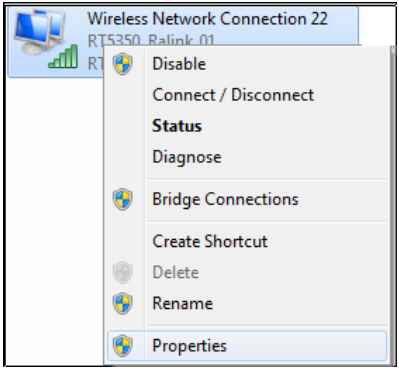
1. Click “Network”-“Properties” and then left click “Change adapter settings” to open network connection screen. And you will see the wireless connection displays “Not connected”.

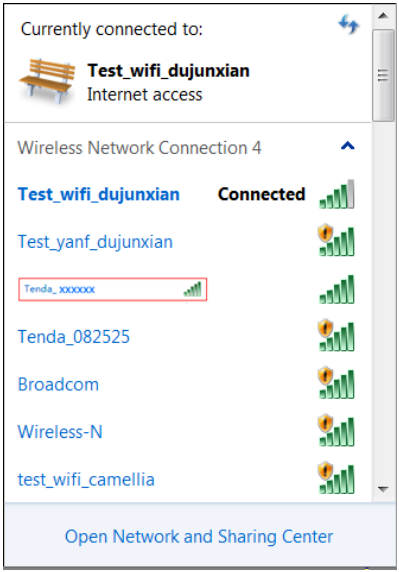


2. Click the “Wireless Network Connection”, select “Properties” and then refer to steps 4-5 above to config TCP/IP settings for the wireless adapter.



3. Right click “Wireless Network Connection” and select “Connect/Disconnect” to display all scanned wireless networks.





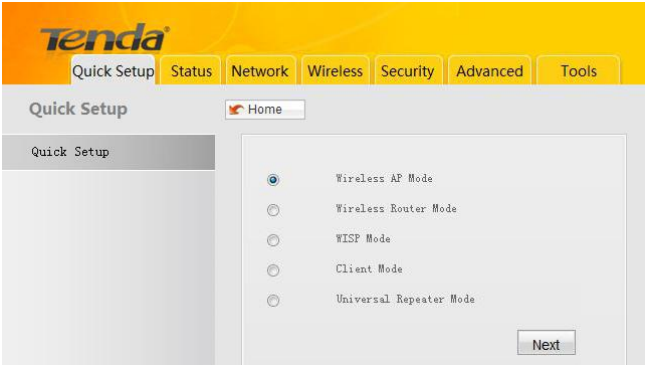
4. Select the SSID entitled “Tenda_××××××” (where×××××× represents the last 6 characters in the device MAC address) and click “Connect”. If you don’t find it, please click “Refresh Network List”.

4.3 Login to Web Utility

Launch a web browser, input “http：//192.168.2.1”and press “Enter” after you configured the TCP/IP settings on your PC.

Enter “admin” (factory default password) in the Password field and click “Login”.

You will see below screen if you entered a correct password.



Chapter 5 Quick Setup for Internet Access in 5 Working Modes

5.1 Quick Setup----Wireless AP Mode

The device is in Wireless AP mode by default. So simply connect the device to Internet service at hotel, home or office without configuration required on the device and multiple users within coverage can share Internet access. Just remember to set all wireless clients to “obtain an IP address automatically”.

Refer to below topology for connecting network devices when using this mode.

Note: Normally, internet access in hotels is DHCP/dynamic IP, which means devices connecting to the network can obtain IP addresses automatically. However, if you’re not able to obtain an IP address, ask the hotel network administrator for an available IP address and configure it manually on your PC.

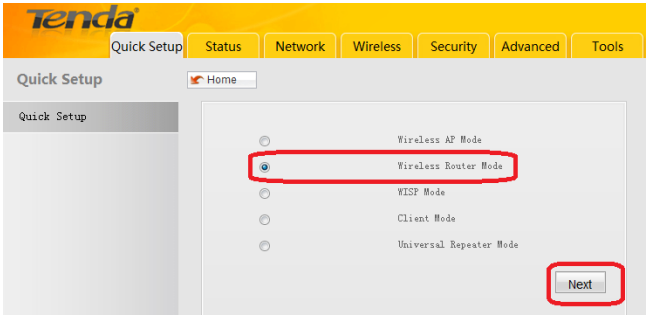
5.2 Quick Setup----Wireless Router Mode

In this mode，the device works as a wireless NAT router with DHCP feature. Simply connect the device to an Internet-enabled DSL/CABLE modem from your ISP side, and multiple wireless clients can share this single Internet connection using IP addresses obtained from the device' DHCP server.

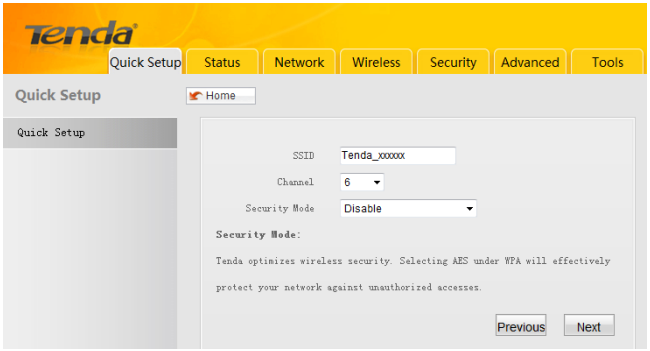
Note： In the Wireless Router mode, the device Ethernet port works as a WAN port for Internet connection, so you can only access the router's Web utility via a wireless connection.

To config settings in this mode, first make sure you have accessed below interface following instructions in Chapter 4 and then do as follows:

1. Select "Wireless Router" and then click "Next" on the Quick Setup interface.



2. You will see the interface below.



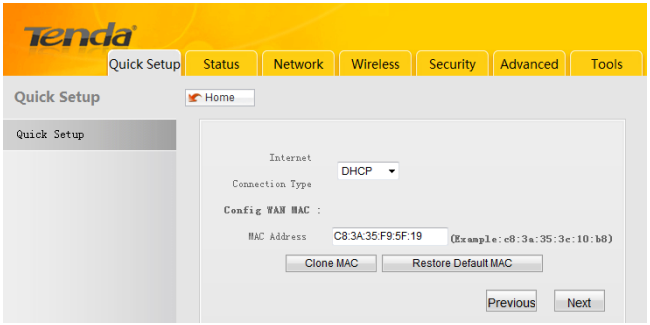
- **SSID ：** A SSID (Service Set Identifier) is the unique name of a wireless network.
- **Channel:** Select a least interferential channel for your wireless network to operate on from the drop-down list. If you're not sure of it, select auto.
- **Security Mode:** Select WEP, WPA or WPA2 to encrypt your wireless network.

For security purpose, it is advisable to encrypt your wireless network with WPA-AES. Simply enter a security key made up of 8-63 numeric, alphabetic characters or signs like @, # and $, etc.

For detailed configurations, refer to later sections hereof.

After you finish above settings, click "Next".

3. Below screen allows you to config your Internet connection settings.



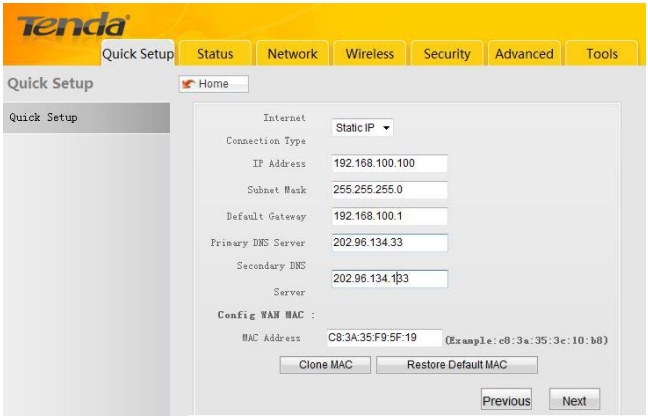
Three Internet connection types are provided: PPPOE, Dynamic IP and Static IP. Select your connection type. If you are not sure about which to select, consult your ISP.

➢ **DHCP**

This is the default connection type. No configurations are required for this connection. Simply click “Next” to complete settings.

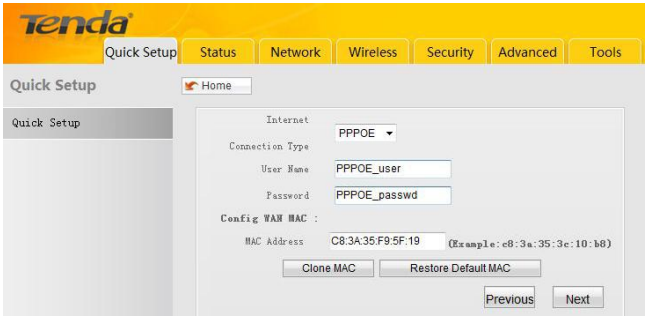
Static IP

If your ISP offers you static IP Internet connection type, select “Static IP" from corresponding drop-down menu, enter IP address, subnet mask, Primary DNS and secondary DNS (optionary) info provided by your ISP in corresponding fieldsand then click “Next”.



➢ **PPPoE**

Select PPPoE, if your ISP is using a PPPoE connection, enter the PPPoE user name and password provided by your ISP in corresponding fields as seen below and then click “Next”.



After the device is rebooted, go to “Status” to check the WAN connection status. If it shows “Connected”, it indicates you can

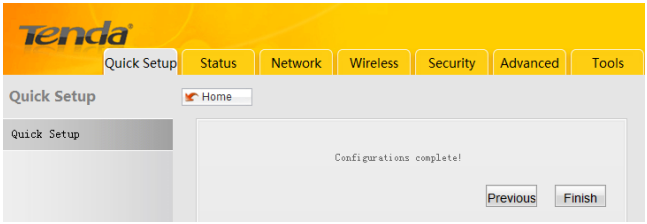
start surfing Internet now. For more settings, see later sections hereof.

- **Config WAN MAC address (Optional)**

Normally you don't need to change the default WAN MAC address. However, some ISP may bind a specific MAC address for Internet connection authentication. In this case, you will be provided with a valid MAC address, simply enter such MAC in the WAN MAC Address field. If you unfortunately forget it, consult your ISP for help.

- **WAN MAC Address:** Displays device's current WAN MAC address, you can manually change it.
- **Restore to Factory Default MAC:** Click it to restore router's WAN MAC to factory default value.
- **Clone MAC:** Click to copy your PC's MAC to router's WAN MAC Address field.

4. Click "Finish" and reboot the device to activate new settings.

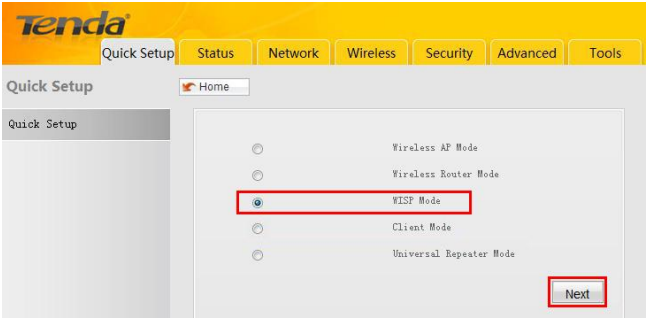


5.3 Quick Setup----WISP Mode

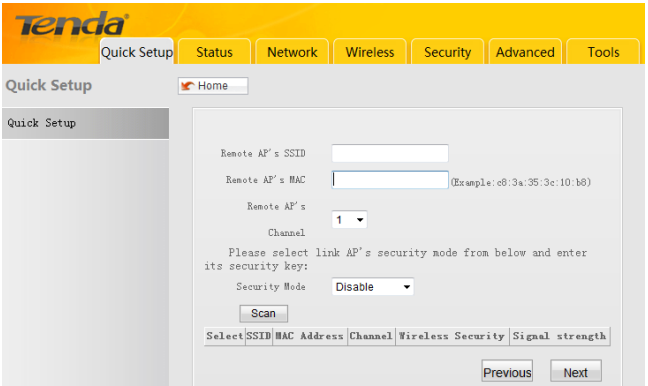
To config Internet connection in WISP mode, first make sure you

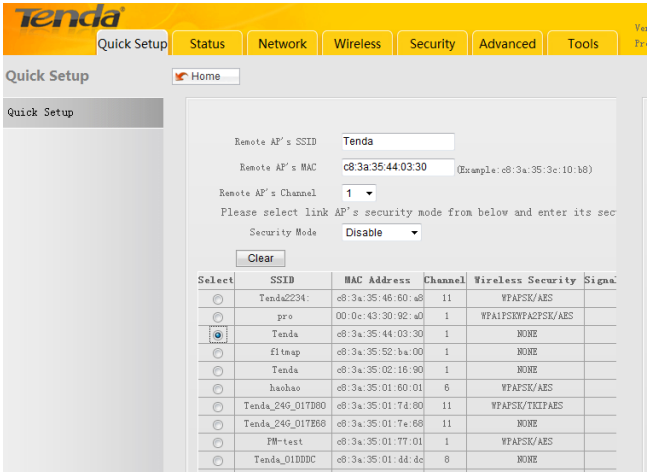
have accessed below interface following instructions in Chapter 4 and then do as follows:

1. Select “WISP Mode” and click “Next” on “Quick Setup” section.



2. You shall come to below screen.



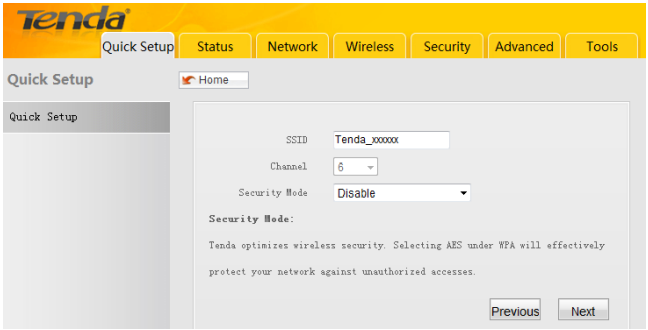


- Remote AP's **SSID:** Service Set Identifier), unique wireless network name; Enter a SSID of the link partner (to which your device is going to connect).
- Remote AP's **Channel:** Select the channel which the link partner (to which the device is going to connect) is currently operating on.
- Remote AP's **MAC Address:** Enter the MAC address (also called BSSID) of the link partner (to which the device is going to connect).
- **Security Mode:** Config same security settings (including security key) set on the link partner here on your device. For detailed configurations, refer to Wireless----＞Security section.

For convenience purpose, it is advisable to use the “Open Scan” option to search and select the link partner to add certain settings to the device automatically.

After you finish the above settings, click “Next”.

3. Below screen shall display.



- **SSID:** Service Set Identifier), unique wireless network name; Define a wireless network name (SSID) for the device.
- **Channel:** Select a channel from the drop-down menu for the device to operate on. There are 13 channels available.

For security purpose, it is advisable to encrypt your wireless network with WPA-AES. Simply enter a security key made up of 8-63 numeric, alphabetic and characters. For detailed configurations, refer to section7.2 hereof.

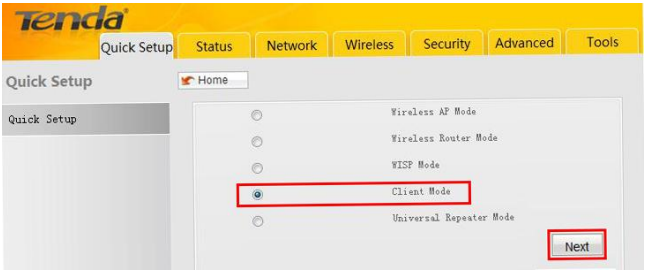
Note: It is strongly recommended not to change the channel settings when using this mode, as improper change may cause connection failure. After you finish above settings, click “Next”.

After finishing above settings, set PCs to “Obtain an IP address automatically”.

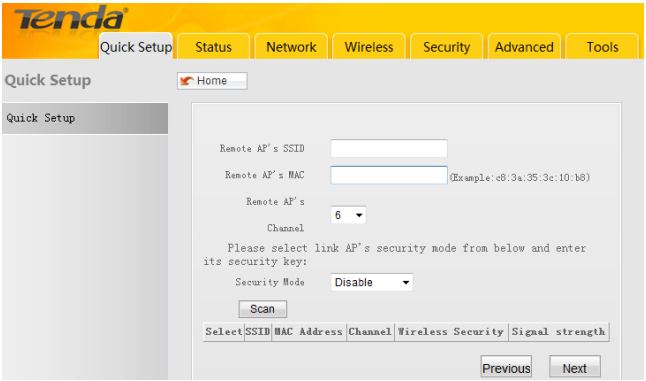
5.4 Client Mode

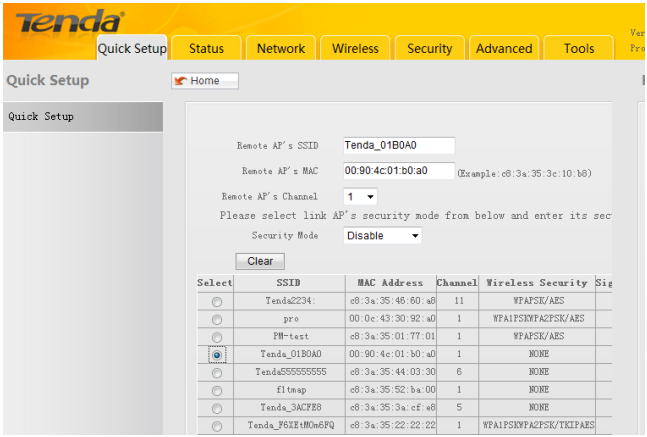
To config Internet connection settings in the Client Mode, first make sure you have accessed below interface following instructions in Chapter 4 and then do as follows:

1. Select “Client Mode” and click “Next”.



2. Below screen shall display.





- Remote AP's **SSID:** Service Set Identifier), unique wireless network name; Enter a SSID of the link partner (to which your device is going to connect).
- Remote AP's **Channel:** Select the channel which the link partner (to which the device is going to connect) is currently operating on.
- Remote AP's **MAC Address:** Enter the MAC address (also called BSSID) of the link partner (to which the device is going to connect).
- **Security Mode:** Config same security settings (including security key) set on the link partner here on your device. For detailed configurations, refer to Wireless----＞Security section.

For convenience purpose, it is advisable to use the “Open Scan”

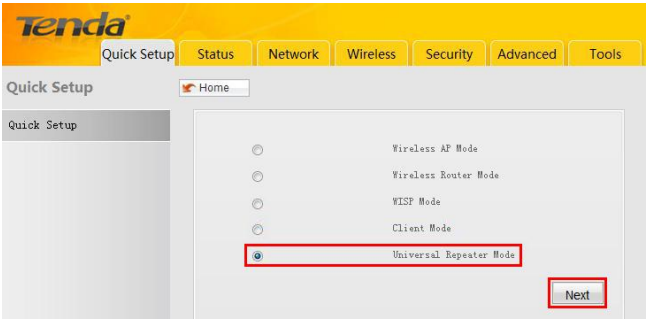
option to search and select the link partner to add certain settings to the device automatically.

After you finish the above settings, click “Finish” and reboot the device to activate new settings.

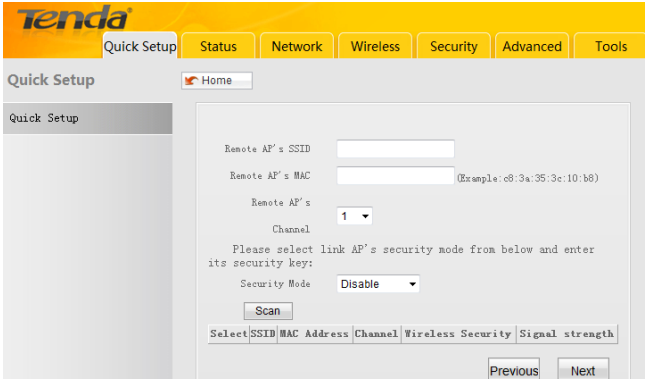
5.5 Universal Repeater Mode

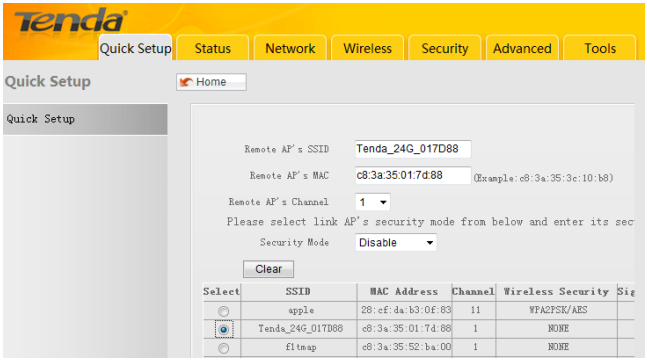
To config Internet connection settings in the Universal Repeater Mode (also referred to Client + AP Mode), first make sure you have accessed below interface following instructions in Chapter 4 and then do as follows:

1. Select “Universal Repeater Mode” and click “Next”.



2. Below screen shall display.





- Remote AP's **SSID**: Service Set Identifier), unique wireless network name; Enter a SSID of the link partner (to which your device is going to connect).
- Remote AP's **Channel**: Select the channel which the link

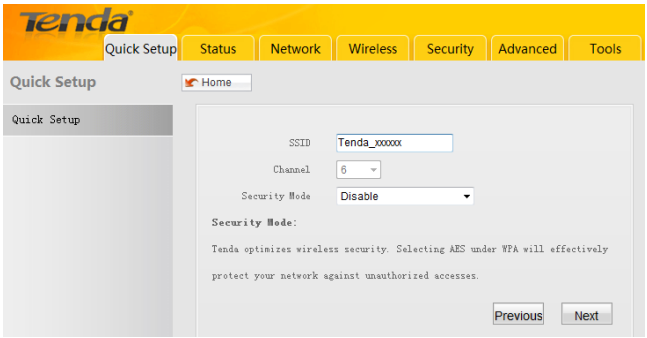
partner (to which the device is going to connect) is currently operating on.

- Remote AP's **MAC Address:** Enter the MAC address (also called BSSID) of the link partner (to which the device is going to connect).
- **Security Mode:** Config same security settings (including security key) set on the link partner here on your device. For detailed configurations, refer to Wireless---->Security section.

For convenience purpose, it is advisable to use the "Open Scan" option to search and select the link partner to add certain settings to the device automatically.

After you finish the above settings, click "Next".

3. Below screen shall display.



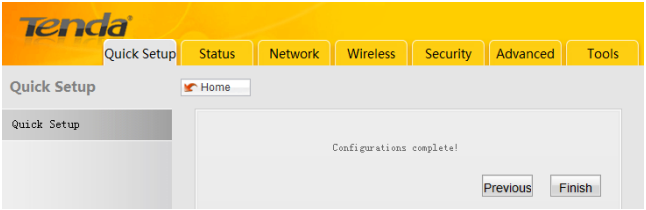
- **SSID:** Service Set Identifier), unique wireless network name; Define a wireless network name (SSID) for the device.

- **Channel:** Select a channel from the drop-down menu for the device to operate on. There are 13 channels available.

For security purpose, it is advisable to encrypt your wireless network with WPA-AES. Simply enter a security key made up of 8-63 numeric, alphabetic characters or signs like @, # and $, etc. For detailed configurations, refer to later sections hereof.

Note: It is strongly recommended not to change the channel settings when using this mode, as improper change may cause connection failure. After you finish above settings, click “Next”.

4. Click “Finish” and reboot the device to activate new settings.



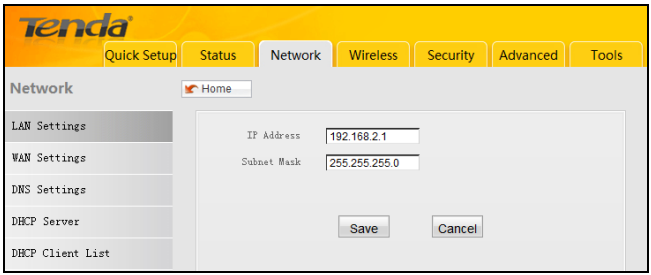
Note: The device must share identical channel, security (including security key), extension channel (if any) settings with the link partner to achieve successful connection in this mode.

Chapter 6 Network

6.1 LAN Settings

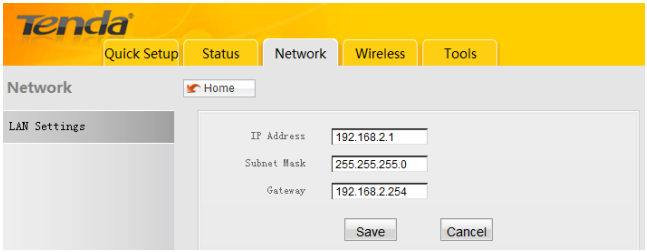
This section allows you to config the TCP/IP settings for the device's LAN interface. Settings to config vary depending on different working modes.

1. If you are currently using the WISP/Wireless Router Mode, see below:



- **IP Address:** Device's LAN IP, 192.168.2.1 by default. You can change it according to your needs; just remember to use the new one to log on to the device's web utility if you changed it.
- **Subnet Mask:** Device's LAN subnet mask, 255.255.255.0 by default.

2. If you are currently using the Wireless AP/Client/Universal Repeater Mode, see below:



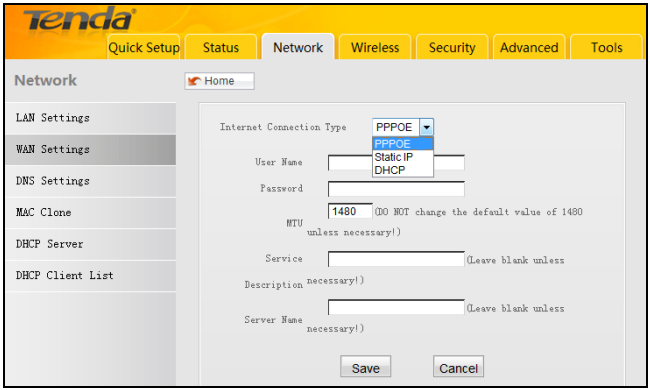
- **IP Address:** Device's LAN IP, 192.168.2.1 by default. You can change it according to your needs; just remember to use the new one to log on to the device's web utility if you changed it.
- **Subnet Mask:** Device's LAN subnet mask, 255.255.255.0 by default.
- **Gateway:** Enter the Gateway address provided by your ISP.

Note: If you change the device's LAN IP address, you must use the new one to logon to the web-based configuration utility.

6.2 WAN Settings

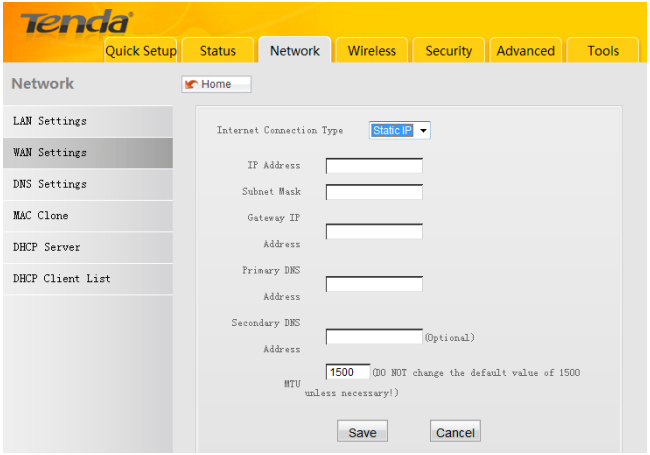
This section is only available in WISP Mode and Wireless Router Mode.

PPPoE



- **Internet connection Type:** Displays the current Internet connection type.
- **User Name:** Enter the User Name provided by your ISP.
- **Password:** Enter the password provided by your ISP.
- **MTU:** Maximum Transmission Unit. DO NOT change it from the factory default of 1480 unless necessary. You may need to change it for optimal performance with some specific websites or application software that cannot be opened or enabled; in this case, try 1450, 1400, etc.
- **Service Description:** Description of PPPoE connection. Leave blank unless necessary.
- **Server Name:** Description of server. Leave blank unless necessary.

Static IP

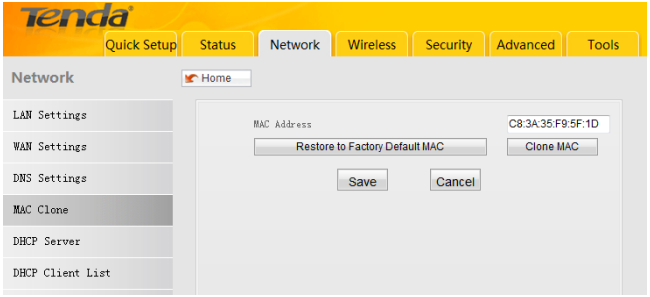


If your ISP assigns a fixed IP address to you, then select Static IP, and enter the IP address, subnet mask, primary DNS and secondary DNS(optional) info provided by your ISP in corresponding fields.

- **IP Address:** Enter the WAN IP address provided by your ISP. Consult your ISP if you are not clear.
- **Subnet Mask:** Enter WAN Subnet Mask provided by your ISP. The default is 255.255.255.0.
- **Gateway:** Enter the WAN Gateway provided by your ISP.
- **Primary DNS Server:** Enter the DNS address provided by your ISP.
- **Secondary DNS Server:** Enter the other DNS address if your ISP provides 2 such addresses (optional).

6.3 MAC Clone

The MAC clone feature is only available in Wireless Router mode. This section allows you to config the device WAN MAC address.

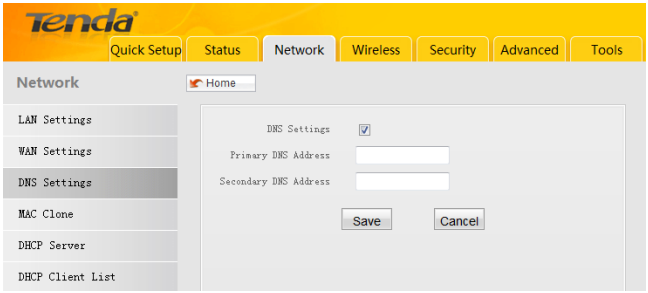


Normally you don't need to change the default WAN MAC address. However, some ISP may bind a specific MAC address for Internet connection authentication. In this case, you will be provided with a valid MAC address, simply enter such MAC in the WAN MAC Address field. If you unfortunately forget it, consult your ISP for help.

- **WAN MAC Address:** Displays device's current WAN MAC address, you can manually change it.
- **Restore to Factory Default MAC:** Click it to restore router's WAN MAC to factory default value.
- **Clone MAC:** Click to copy your PC's MAC to device's WAN MAC Address field.

6.4 DNS

DNS is short for Domain Name System or Domain Name Service. It resolves catchy domain names into corresponding IP addresses.

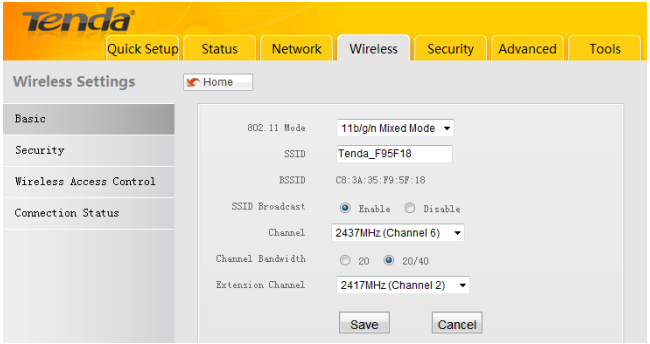


- **DNS:** Check/uncheck to enable/disable the DNS feature.
- **Primary DNS Server:** Enter the DNS address provided by your ISP.
- **Secondary DNS Server:** Enter the other DNS address if your ISP provides 2 such addresses (optional).

Chapter 7 Wireless

7.1 Basic Settings

Note: Below screen will not be displayed when in “Client Mode”.



- **802.11 Mode:** Select a right mode according to your wireless client.
- **11b mode：** Select it if you have only Wireless-B clients in your wireless network.
- **11g mode：** Select it if you have only Wireless-G clients in your wireless network.
- **11b/g mixed mode:** Select it if you have only Wireless-B and Wireless-G clients in your wireless network.
- **11b/g/n mixed mode:** Select it if you have Wireless-B, Wireless-G and Wireless-N clients in your wireless network.
- **SSID ：** A SSID (Service Set Identifier) is the unique name of a wireless network. It is configurable.

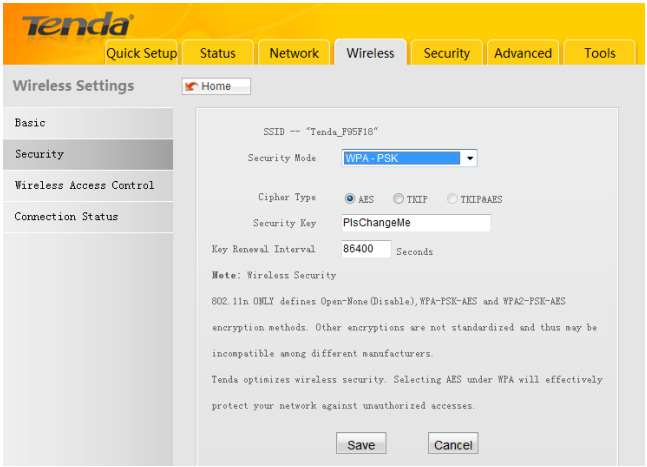
- **BSSID ：** A BSSID, in IEEE 802.11 wireless network, is the MAC address of a wireless AP.
- **SSID Broadcast:** Select “Enable”/“Disable” to make your wireless network visible/ invisible to any wireless clients within coverage when they perform a scan to see what’s available. When disabled, this SSID becomes invisible to any wireless clients within the coverage. Manually enter the SSID if you want to connect to it. By default, it is enabled.
- **Channel:** For an optimal wireless performance, you may select the least interferential channel for your wireless network to operate on from the drop-down list. There are 13 channels available. Select Auto if you are not sure of it.
- **Channel Bandwidth:** Select a proper channel bandwidth to enhance wireless performance. When there are11b/g and 11n wireless clients, select 20/40M; when there are only non-11n wireless clients, select 20M; when the wireless network mode is 11n mode, please select 20/40M to boost throughput.
- **Extension Channel：** Working network frequency range for 11n mode.

7.2 Wireless Security

This section allows you to encrypt your wireless network to block unauthorized accesses and malicious packet sniffing with WEP, WPA and WPA2. For better security, it is advisable to use the WPA-AES encryption.

7.2.1 WPA-PSK

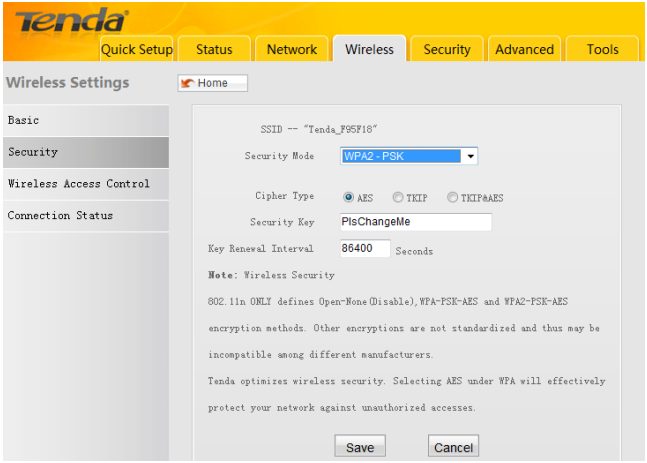
The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only authorized network users can access the wireless network.



- **Cipher Type:** Select either AES (advanced encryption standard) or TKIP (temporary key integrity protocol) type.
- **Security Key:** Enter a security key，which must be between 8-63 ASCII characters.
- **Key Renewal Interval:** Enter a valid time period for the key.

7.2.2 WPA2-PSK

The later WPA2 protocol features compliance with the full IEEE 802.11i standard and uses Advanced Encryption Standard (AES) in addition to TKIP encryption protocol to guarantee better security than that provided by WEP or WPA.

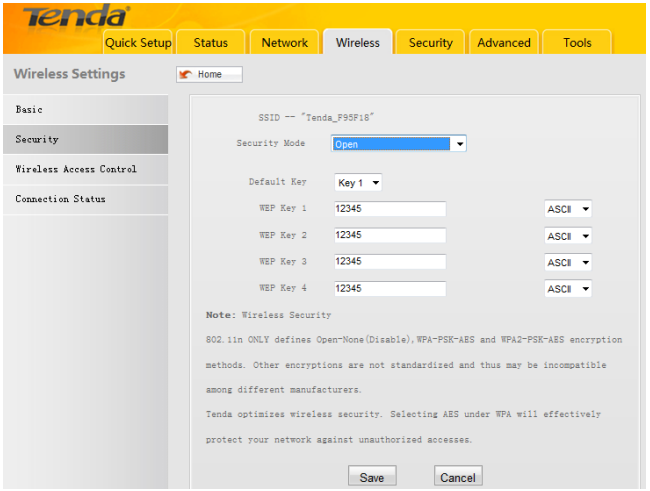


- **Cipher Type:** Select one cipher type from AES (advanced encryption standard), TKIP (temporary key integrity protocol) or TKIP&AES.
- **Security Key:** Enter a security key， which must be between 8-63 ASCII characters.
- **Key Renewal Interval:** Enter a valid time period for the key.

7.2.3 WEP

WEP， based on RC4, is intended to provide data

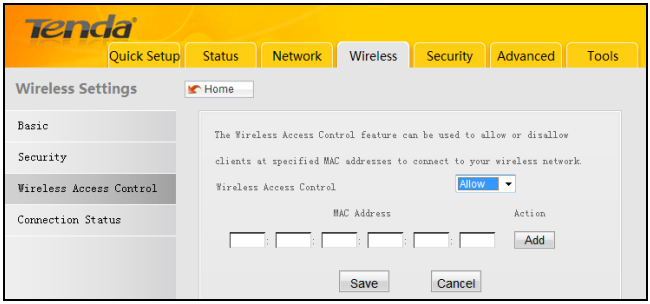
confidentiality comparable to that of a traditional wired network. Two methods of authentication can be used with WEP: Open System authentication and Shared Key authentication.



- **Security Mode:** Select WEP from the drop-down menu.
- **Default Key:** Select a currently valid key from keys 1-4.
- **WEP Key1/2/3/4:** Enter 5 or 13 ASCII characters (Invalid characters like / "'and so on are not allowed) if you select ASCII or enter 10 or 26 HEX characters if you select Hex. Note that you must enter the key content in the corresponding format selected.

7.3 MAC-based Wireless Access Control

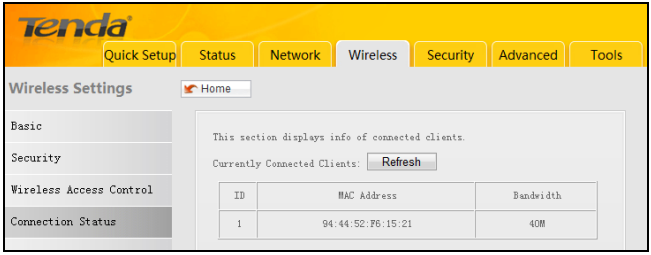
The MAC-based Wireless Access Control feature can be used to allow or disallow clients at specific MAC addresses to connect to your wireless network.



- **Wireless Access Control: "Allow"** only allows PCs at specified MAC addresses to connect to your wireless network while **"Deny"** only blocks PCs at specified MAC addresses from connecting to your wireless network.
- **MAC Address:** Enter a MAC of a wireless client manually and click **"Add"**.
- **Add:** Click it to add a new MAC to the MAC address list.
- **Delete:** Click it to remove an existing entry.

7.4 Connection Status

This interface displays the information of currently connected wireless clients (if any).



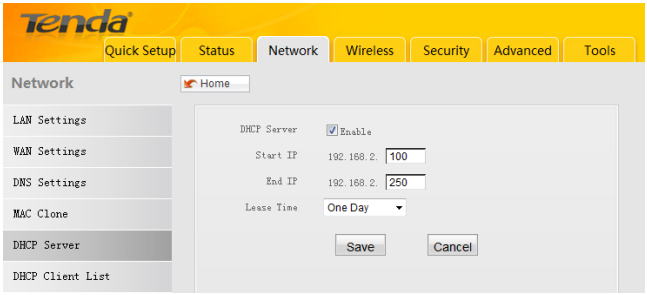
- **MAC Address:** Displays MAC addresses of currently connected wireless clients.
- **Bandwidth:** Displays bandwidth used by currently connected wireless clients.

Chapter 8 DHCP Settings

The DHCP server feature is only available in WISP Mode and Wireless Router Mode.

8.1 DHCP Server

The Dynamic Host Configuration Protocol (DHCP) is an automatic configuration protocol used on IP networks. If you enable the built-in DHCP server on the device, it will automatically configure the TCP/IP settings for all your LAN computers (including IP address, subnet mask, gateway and DNS etc), eliminating the need for manual intervention.



- **DHCP Server-Enable:** Check or uncheck the box to enable or disable the device's DHCP server feature.
- **Start IP Address:** Enter the starting IP address for the DHCP server's IP assignment.
- **End IP Address:** Enter the ending IP address for the DHCP

server's IP assignment.

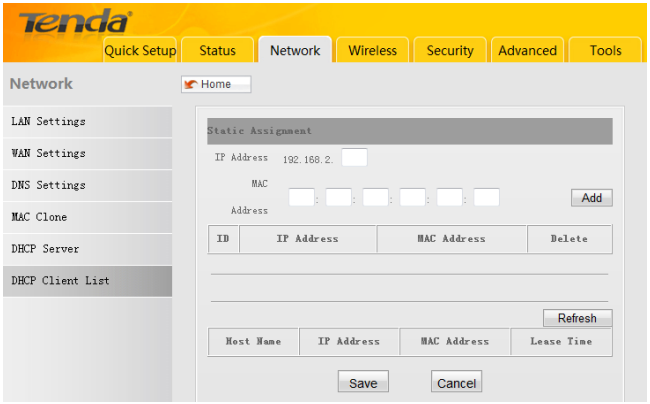
- **Lease Time:** The length of time for the IP address lease. Configuring a proper lease time improves the efficiency for the DHCP server to reclaim disused IP addresses.

For example: If the lease time is set to one hour, then the DHCP server will reclaim disused IP addresses every hour.

8.2 DHCP Client List/ Static Assignment

The DHCP Client List section displays a DHCP dynamic client list, which includes host name, IP address, MAC address and lease time info.

Static Assignment: If you would like some devices on your network to always have fixed IP addresses, you can use this feature and manually add a static DHCP assignment entry for each such device. And then a registered MAC will get a correspondingly reserved IP address while an unregistered MAC will be assigned with an unused IP address.



- **IP Address:** Enter the IP address for static DHCP assignment.
- **MAC Address:** Enter the MAC address of a computer to always receive the same IP address (the IP you just specified).
- **Host name:** Displays name of a given host (DHCP client).
- **Lease Time:** Remaining time for a corresponding IP address lease.

Chapter 9 Advanced Applications

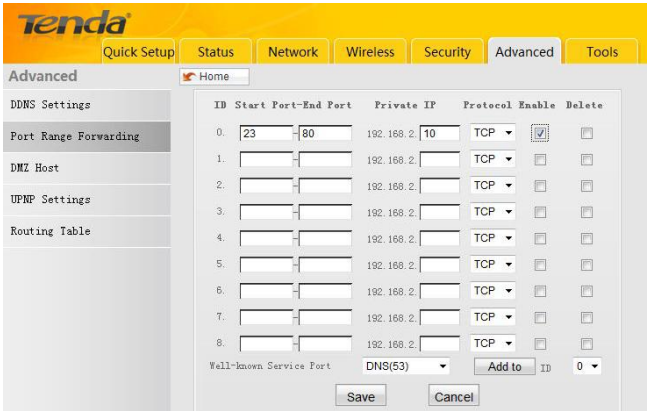
The Port Range Forwarding feature is only available in WISP Mode and Wireless Router Mode.

9.1 Port Range Forwarding

The Port Range Forwarding feature allows you to set up public services on your network, such as web servers, ftp servers, e-mail servers, or other specialized Internet applications.

When users send these types of requests to your network via the Internet, the device will forward those requests to the appropriate servers (computers). Before using forwarding, you should assign static IP addresses to the designated servers.

If you need to forward all ports to one computer, go to DMZ.



- **Start/End Port:** Enter the number or range of port(s) used

by the server or Internet applications.

- **LAN IP:** Enter an IP address of the computer to work as a server in LAN.
- **Protocol:** Includes TCP, UDP and Both. Select "Both" when you are not sure about which protocol to use.
- **Enable:** Check the **"Enable"** option to activate a corresponding entry next to it.
- **Delete:** Check the **"Delete"** option to delete a corresponding entry next to it.

Well-Known Service Port: The "Well-Known Service Port" provides commonly used protocol ports. Select one from them and then click the "Add to" button to automatically add selected port to the Start Port-End Port fields of selected entry ID. You can also manually add the ports which are not included in the "Well-Known Service Port".

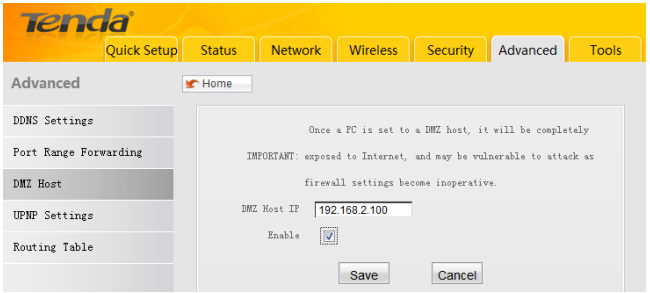
- **Add to:** Add a selected Well-Known Service Port to the Start Port-End Port boxes of the entry you select.

For example: A LAN PC at 192.68.2.10 hosts WEB service on Port 80 and provides Telnet service on Port 23. To make such services accessible to Internet users, config as shown on the screenshot above.

Note: If you include port 80 on this section, you must set the port on remote (web-based) management section to a different number than 80, such as 8080, otherwise the Port Range Forwarding feature may not take effect.

9.2 DMZ Settings

The DMZ feature allows one network computer to be exposed to the Internet for use of a special-purpose service such as Internet gaming or videoconferencing. DMZ hosting forwards all the ports at the same time to one PC. The Port Range forwarding feature is more secure because it only opens the ports you want to have opened, while DMZ hosting opens all the ports of one computer, exposing the computer to the Internet.



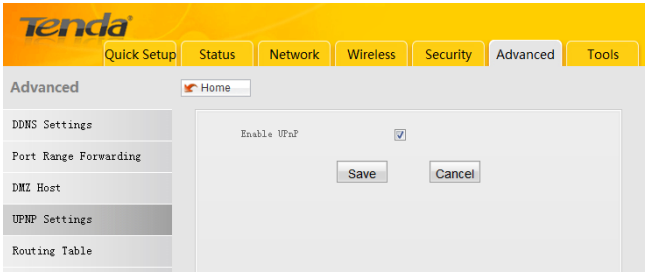
- **DMZ Host IP Address:** Enter the IP address of a LAN computer which you want to set to a DMZ host.
- **Enable:** Check/uncheck to enable/disable the DMZ host.

For example: To set a PC at 192.168.2.100 to a DMZ host for intercommunication with another host on the Internet, config same settings as shown above on the screenshot on the device.

NOTE: Once you set a PC to a DMZ host, it will be completely exposed to extranet and gains no more protection from the device firewall.

9.3 UPnP Settings

UPnP (Universal Plug and Play) works in Windows XP, Windows ME or later operational systems (NOTE: Operational system needs to be integrated with or installed with Directx 9.0) or in an environment with installed application software that supports UPnP. It allows a network device to discover and connect to other devices on the network. With this feature enabled, hosts in LAN can request the device to perform special port forwarding so as to enable external hosts to access resources on internal hosts.



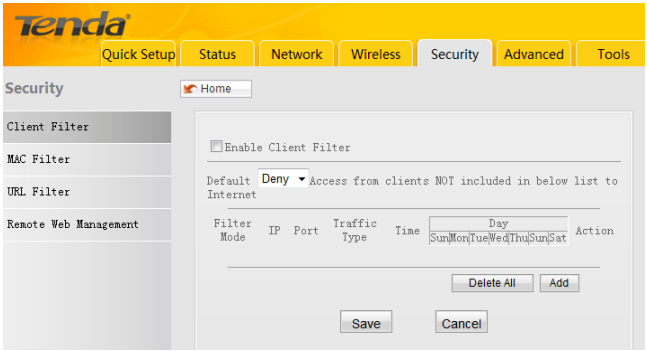
- **Enable UPnP:** Check/uncheck to enable/disable the UPnP feature.

Chapter 10 Security

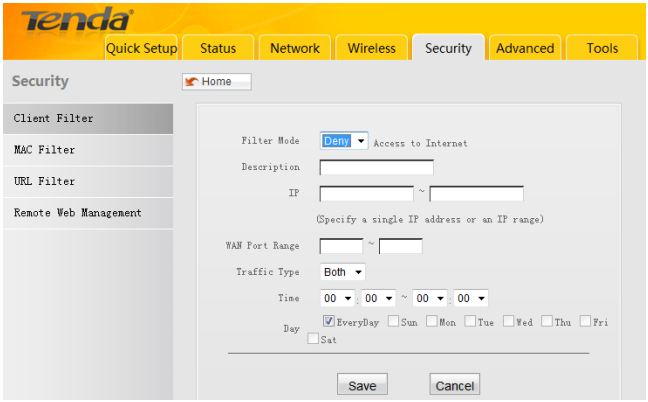
The Security feature is only available in WISP Mode and Wireless Router Mode.

10.1 Client Filter

To better manage PCs in LAN, you can allow or disallow such PCs to access certain ports on Internet using the Client Filter functionality.



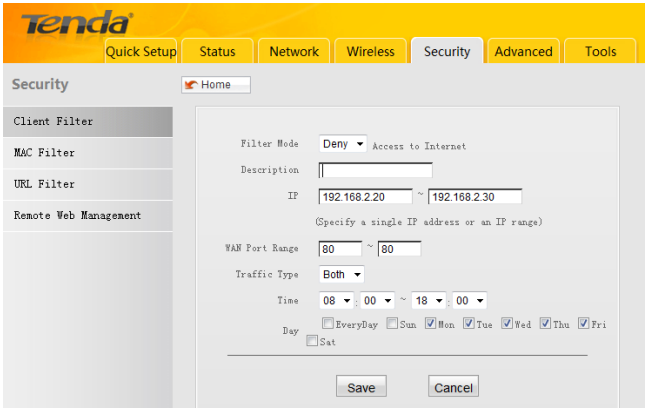
Click “Add” to enter page below:



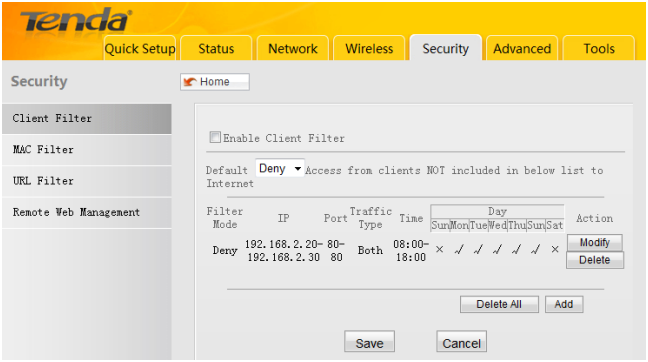
- **Filter Mode:** Select Deny or Allow according to your own needs.
- **Deny Access to Internet**: Disallow specified packets to pass through the device; other packets are processed according to default mode.
- **Allow Access to Internet**: Allow specified packets to pass through the device; other packets are processed according to default mode.
- **Description:** Enter a name of a new filter rule
- **IP Address:** Specify a single IP address or an IP range.
- **Time:** Select a time range for the rule to take effect.
- **Day:** Select a day or several days for the rule to take effect.
- **WAN Port Range:** Enter port number. You can specify a range of ports or a single port. Allowed port ID ranges from 1 to 65535.
- **Traffic Type:** Select a protocol or protocols for the traffic

("Both" includes TCP and UDP).

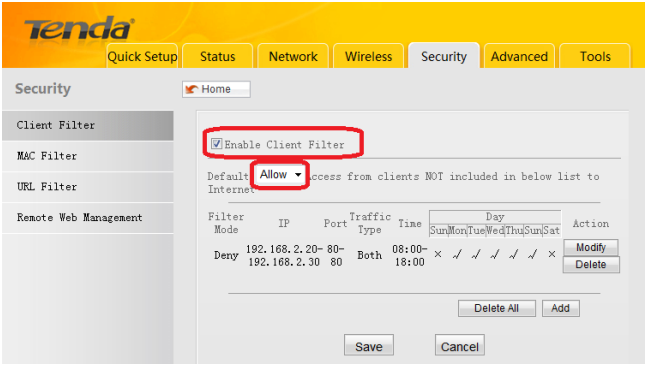
Example: To prohibit PCs within the IP address range of 192.168.2.20-192.168.2.30 from accessing Internet from 8:00 to 18：00 during working days, do as follows:



Click "Save" and you will find such entry in the List below.

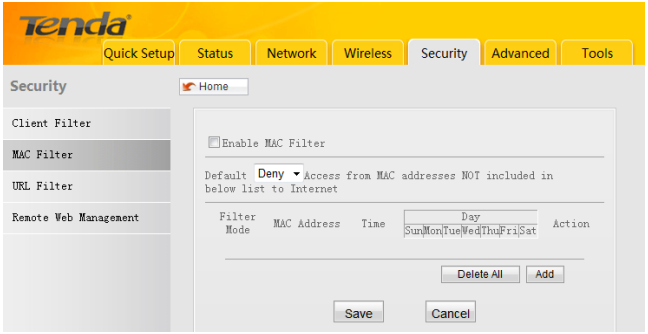


Select “Allow” from the “Default Mode” drop-down list and check “Enable Client Filter” feature.

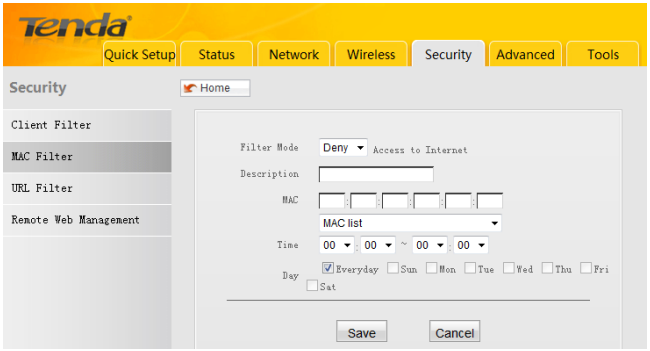


10.2 MAC Address Filter

To better manage PCs in LAN, you can use the MAC Address Filter function to allow/disallow such PCs to access to Internet.



Click “Add” to enter page below:

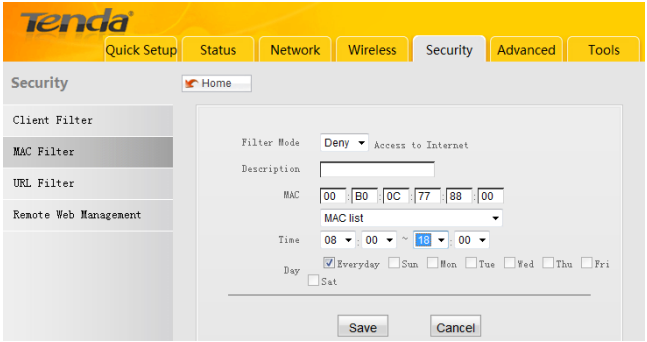


- **Filter Mode:** Select Deny or Allow according to your own needs.

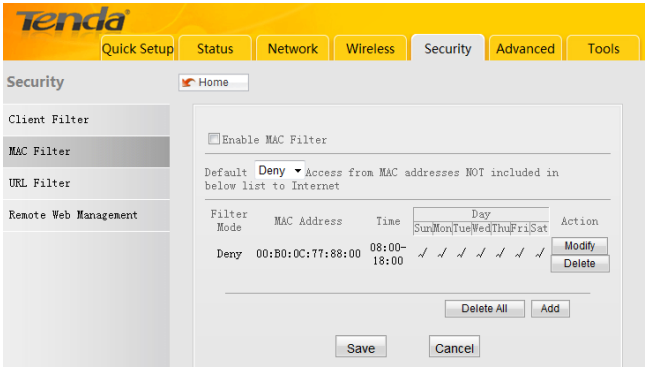
  Deny Access to Internet: Disallow specified packets to pass through the router; other packets are processed according to default rule.
- **Allow Access to Internet**: Allow specified packets to pass through the router; other packets are processed according to default rule.
- **Description:** Simply describe a corresponding entry.
- **MAC Address:** Enter the PC’s MAC address that you want to filter out or select it from the MAC list.
- **Time:** Select a time range for the corresponding entry to take effect.
- **Day:** select a day or several days for the corresponding entry to take effect.

Example: To prevent a PC at the MAC address of

00:B0:0C:77:88:00 from accessing Internet from 8:00 to18：00 everyday, config same settings on the screenshot below on your device:

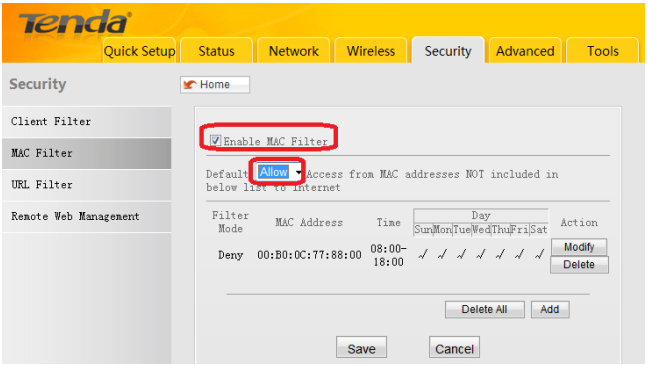


Click “Save” to display the following page.



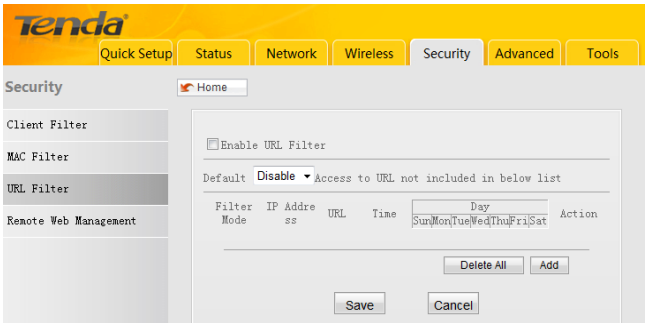
Select “Allow” from the “Default” drop-down list and check the

“Enable MAC Filter” feature.

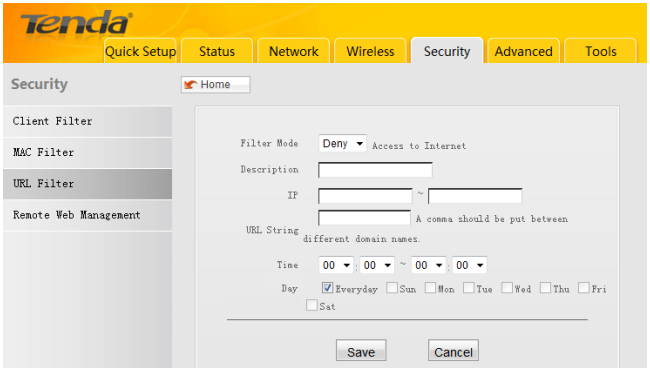


10.3 URL Filter

To better control LAN PCs, you can use the URL filter functionality to allow or disallowsuch PC to access certain websites within a specified time range.



Click “Add” to display page below:

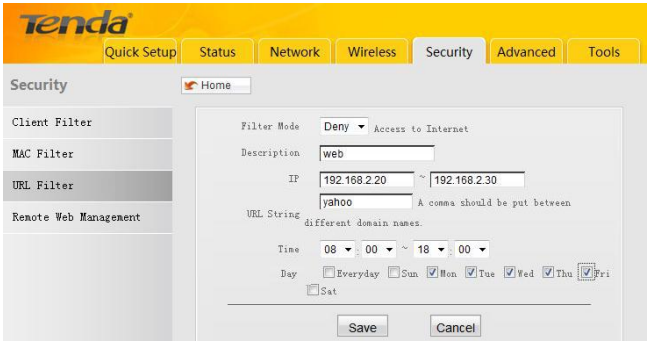


Filter Mode: Select Deny or Allow according to your own needs.

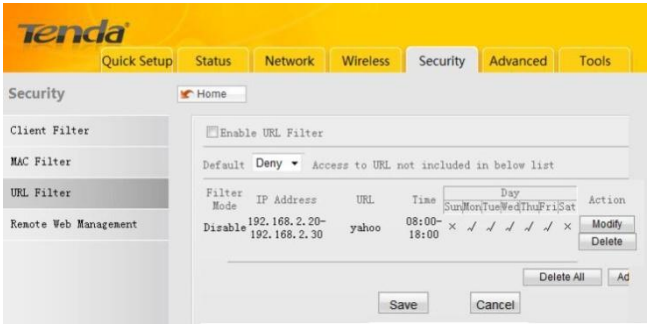
Deny Access to Internet: Disallow specified packets to pass through the router; other packets are processed according to default rule.

- **Allow Access to Internet**: Allow specified packets to pass through the router; other packets are processed according to default rule.
- **Time:** Select a time range for the corresponding entry to take effect.
- **Day:** select a day or several days for the corresponding entry to take effect.
- **Description:** Simply describe a corresponding entry.
- **IP Address:** Specify an IP address or an IP range.
- **URL character string:** Enter a domain name or a part of a domain name to be filtered.

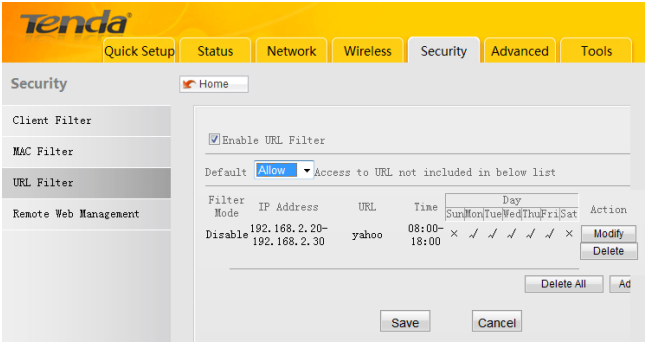
For example: If you want to disallow only PCs within the IP range of 192.168.2.20~192.168.2.30 on your LAN to access only websites containing “yahoo” from 8：00 to 18：00 during working days: Monday- Fridaywhile not restricting other PCs, then config same settings as shown on below screenshot on your device:



Click “Save” to display page below:

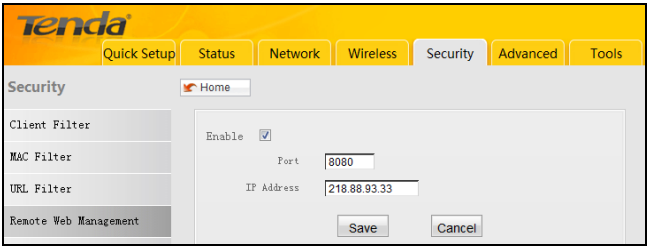


Select “Allow” from the “Default” drop-down list and check the “Enable URL Filter” feature.



10.4 Remote Web-based Management

The Remote Web-based Management feature allows users to configure your device from Internet via a web browser.



- **Enable:** Check or uncheck to enable or disable the remote web-based management feature.
- **Port:** Enter a port number for remote web-based management.
- **IP Address:** Enter the IP address of a PC on Internet authorized to access and manage the device's web-based utility remotely.

⚠Note:

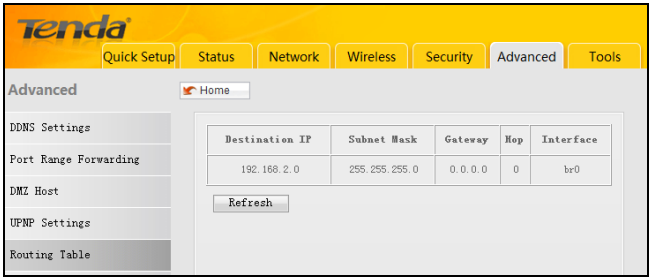
If you enter 0.0.0.0 in the IP address box, then all PCs on Internet can access your router's Web-based utility to view or change your settings remotely once you enable the remote Web-based management feature.

For example: If you want to allow only a PC at the IP address of 218.88.93.33 to access your router's web-based utility from Internet via port: 8080, then config same settings shown on the screenshot above on your device. And what this IP user needs to do is to simply launch a browser and enter http: //220.135.211.56:8080 (provided that the router's WAN IP address is 220.135.211.56).

Chapter 11 Routing Settings

11.1 Routing Table

This page displays the device core routing table which lists destination IP, subnet mask, gateway, hop count and interface.

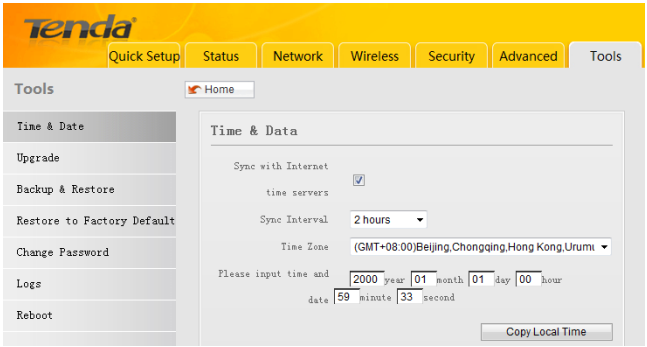


The principal task for a router is to look for an optimal transfer path for each data packet passing through it, and transfer it to the specified destination. So, it's essential for the router to select an optimal path, i.e. routing algorithm. To complete this work, the router stores related data of various transfer paths, i.e. establishing a routing table, for future route selection.

Chapter 12 Tools

12.1 Time Settings

This section assists you in setting the device's system time; you can either select to set the time and date manually or automatically obtain the GMT time from Internet.



- **Sync with Internet time servers:** Time and date will be updated automatically from Internet.
- **Sync Interval:** Determines a time length when device periodically updates its time and date info from Internet. The default is 2 hours.
- **Time Zone:** Select your current time zone.
- **Copy Local Time:** Click it to copy your PC's time to the device.

NOTE: The configured time information loses once the device is powered off. But it obtains the GMT time automatically when you

reconnect it to the Internet. Features/functions based on time (e.g. security settings) take effect only after Time and Date settings are configured or updated automatically from Internet.

12.2 DDNS

Dynamic DNS or DDNS is a term used for the updating in real time of Internet Domain Name System (DNS) name servers. We use a numeric IP address allocated by Internet Service Provider (ISP) to connect to Internet; the address may either be stable ("static"), or may change from one session on the Internet to the next ("dynamic"). However, a numeric address is inconvenient to remember; an address which changes unpredictably makes connection impossible. The DDNS provider allocates a static hostname to the user; whenever the user is allocated a new IP address this is communicated to the DDNS provider by software running on a computer or network device at that address; the provider distributes the association between the hostname and the address to the Internet's DNS servers so that they may resolve DNS queries. Thus, uninterrupted access to devices and services whose numeric IP address may change is maintained.

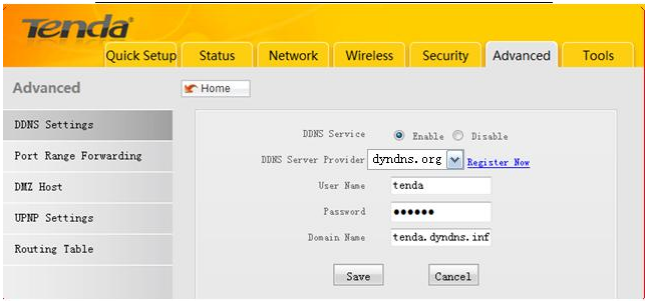
It is useful when you are hosting your own website, FTP server, or other server behind the device.

Before you can use this feature, you need to sign up for DDNS service with a DDNS service provider, like www.dyndns.org or www.noip.com . If you do not want to use this feature, keep the default Disable.

- **DDNS:** Click Enable or Disable radio button to enable/disable the DDNS feature.
- **Service Provider:** Select your DDNS service provider from the drop-down menu.
- **Username:** Enter the DDNS username.1provided by your DDNS service provider.
- **Password:** Enter the DDNS password provided by your DDNS service provider.
- **Domain Name:** Enter the DDNS domain name distributed by your DDNS service provider (optional).

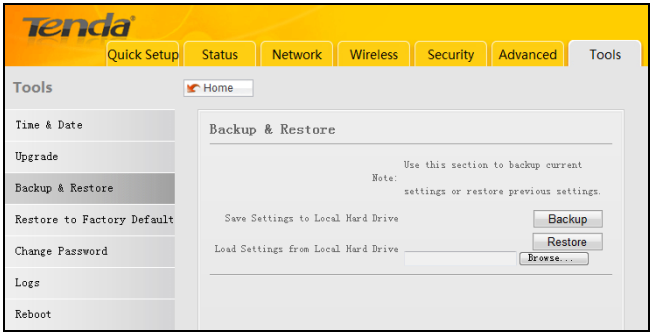
For example: If you have registered a DDNS service in dyndns.org and are given tenda, 123456, tenda.dyndns.info respectively as username, password and domain name for a web server on your PC at 192.168.2.10, then configure port settings on port range forwarding interface under virtual server menu and enter this information on the above DDNS interface. Others can access your web server by simply entering http://tenda.dyndns.info in their browser address bar.

Username	tenda
Password	123456
Domain Name	tenda.dyndns.info

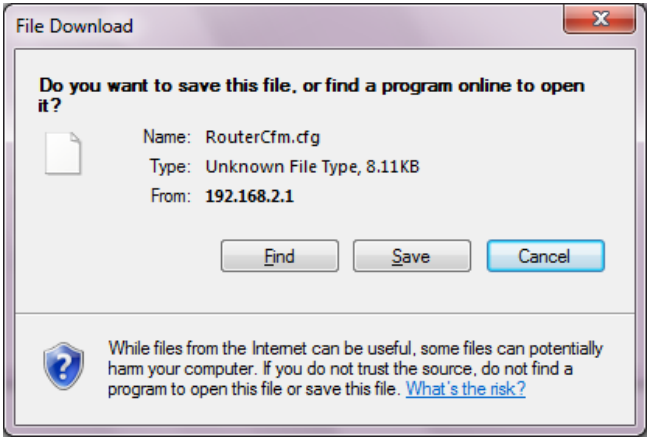


12.3 Backup/Restore Settings

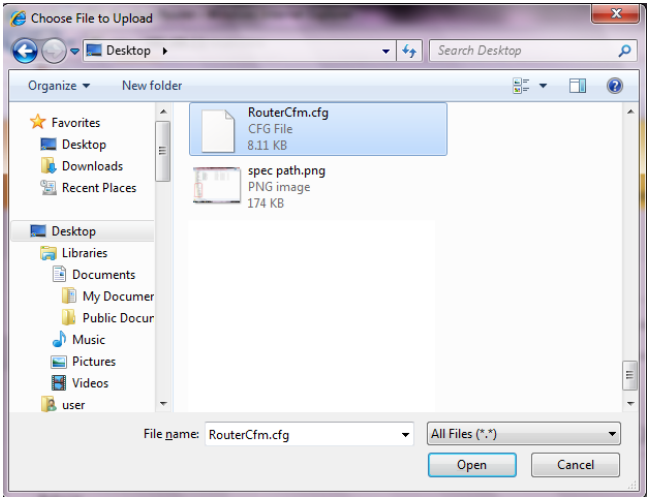
This section allows you to backup current settings or to restore the previous settings configured on the device.



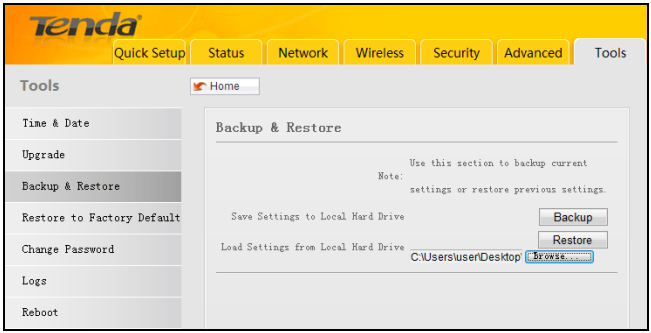
Backup Settings: Once you have configured the device the way you want it, you can save these settings to a configuration file on your local hard drive that can later be imported to your device in case that the device is restored to factory default settings. To do this, click the “Backup” button and specify a directory to save settings on your local hardware.



Restore Settings: Click the "Browse" button to locate and select a configuration file that is saved previously to your local hard drive.

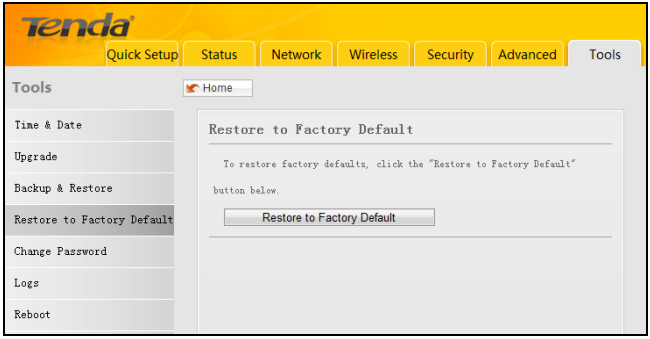


And then click the "Restore" button to reset your device to previous settings.



12.4 Restore to Factory Default Settings

To restore all settings to the device's factory default values, click the "Restore to Factory Default" button:



Factory Default Settings:

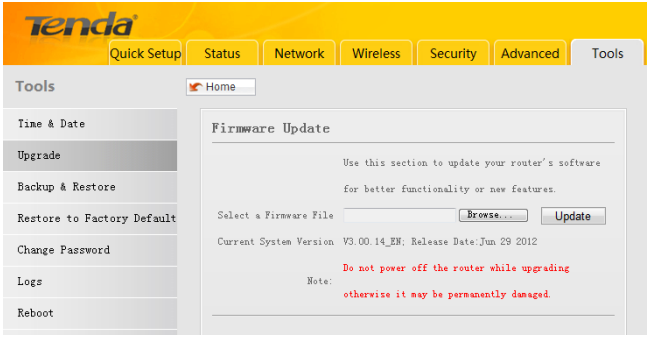
- **User Name:** admin
- **Password:** admin
- **IP Address:** 192.168.2.1
- **Subnet Mask:** 255.255.255.0

⚠**Note:** To activate your settings, you need to reboot the device after you reset it.

12.5 Firmware Upgrade

Firmware upgrade is released periodically to improve the functionality of your device and also to add new features. If you run into a problem with a specific feature of the device, log on to

our website www.tendacn.com） to download the latest firmware to update your device.



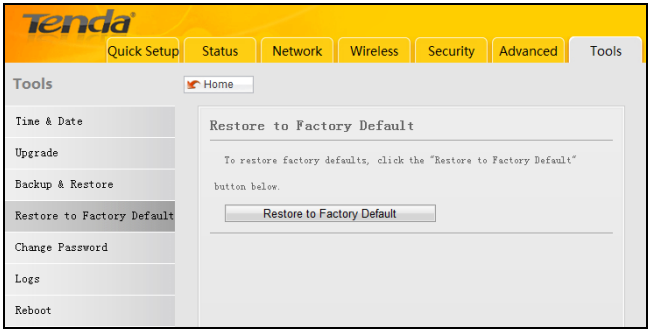
To update firmware, do as follows:

- 1. Click "Browse" to locate the firmware and "Upgrade" to update.
- 2. Router will reboot automatically when upgrade completes.
- **NOTE:** Do not disconnect the device from your management PC (the PC you use to configure the device) or power off itduring the upgrade process; otherwise, it may be permanently damaged. The device will restart automatically when the upgrade process, which takes several minutes to complete.

12.6 Reboot

This section allows you to reboot the device. New settings will be activated after reboot. And WAN connection will be disconnected

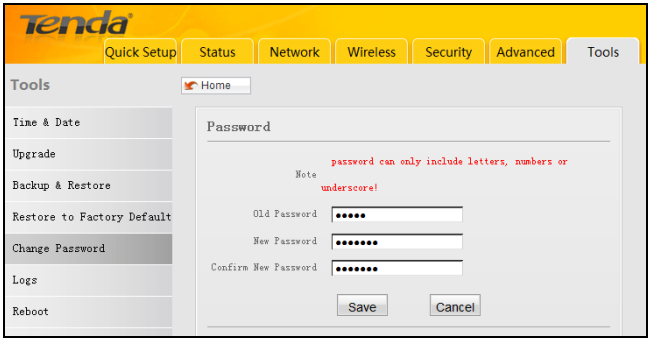
during reboot.



To restart your device, click the “Reboot” button.

12.7 Change Password

This section allows you to change login password for accessing device’s Web-based interface.



- **Old Password:** Enter the old password.
- **New Password:** Enter a new password.
- **Confirm New Password:** Re-enter the new password for confirmation.

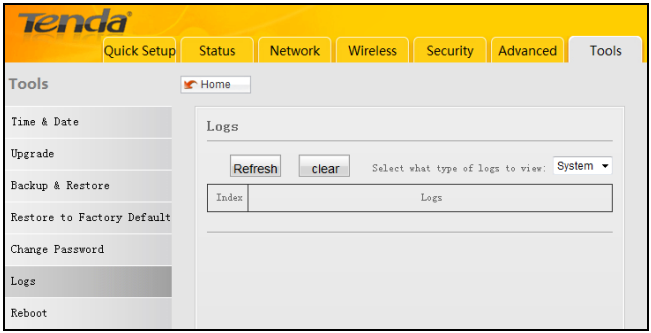
  Click “Save” to save your new password.

NOTE: For the sake of security, it is highly recommended that youchange default login password.

12.8 Logs

The Syslog option allows you to view all events that occur upon system startup.

Up to 150 entries of logs are recorded.



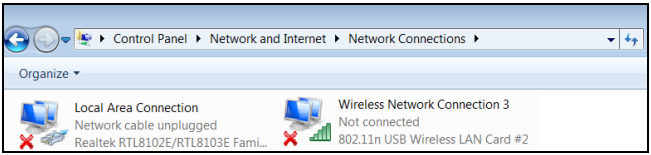
- **Refresh:** Click this button to update the log.

  Clear: Click this button to clear the log record.

Appendix 1：How to connect to an encrypted wireless network

To connect to an encrypted wireless network, you must provide a valid security key. Follow steps below (Below explains how to connect to a WPA-encrypted wireless network in Windows 7 OS):

1. Right click “Network”，select “Properties” and then left click “Change adapter settings”. As seen below, Wireless Network Connection displays Not Connected”.



2. Click the “Wireless Network Connection”, select “Connect/Disconnect”. Below screen displays all available networks.

3. Double click or select the SSID entitled “Tenda_××××××” (where×××××× represents the last 6 characters in the device MAC address) and click “Connect”. Enter the security key on appearing window (Note that security key is case-sensitive. Here we assume it is tendatenda) and click “OK”.

4. As seen below, display of “Connected” next to “Tenda_××××××” indicates a successful connection.

Appendix 2: Glossary

Channel

A communication channel, also known as channel, refers either to a physical transmission medium such as a wire or to a logical connection over a multiplexed medium such as a radio channel. It is used to transfer an information signal, such as a digital bit stream, from one or more transmitters to one or more receivers.

If there are several APs coexisting in the same area, it is recommended that you configure a different channel for each AP to minimize the interference between neighboring APs. For example, if 3 American- standard APs coexist in one area, you can setup their channels respectively to 1, 6 and 11 to avoid mutual interference.

SSID

Service set identifier (SSID) is used to identify a particular 802.11 wireless LAN. It is the name of a specific wireless network. To let your wireless network adapter roam among different APs, you must set all Aps' SSID to the same name.

WEP

Wired Equivalent Privacy (WEP) is a security algorithm for IEEE 802.11 wireless networks with the intention to provide data confidentiality comparable to that of a traditional wired network .WEP, recognizable by the key of 10 or 26 hexadecimal digits, is widely in use.

WEP uses the stream cipherRC4 for confidentiality,[5] and the CRC-32 checksum for integrity.

Standard 64-bit WEP uses a 40-bit key (also known as WEP-40), which is concatenated with a 24-bit initialization vector (IV) to form the RC4 key. The extended 128-bit WEP protocol uses a 104-bit key size (WEP-104).

A 152-bit WEP is available from some vendors.

Static WEP encryption allows to include 4 WEP Keys while dynamic WEP encryption changes WEP key dynamically.

WPA/WPA2

The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only authorized network users can access the wireless network.

The later WPA2 protocol features compliance with the full IEEE 802.11i standard and uses Advanced Encryption Standard (AES) in addition to TKIP encryption protocol to guarantee better security than that provided by WEP or WPA.

Appendix 3: FAQs

This section provides solutions to problems that may occur during installation and operation of the device. Read the following if you are running into problems. If you cannot find solutions here, please go to our website www.tenda.cn (or www.tendacn.com) or E-mail to support@tenda.cn for help.

1. Q: I entered the device's LAN IP address in the web browser but cannot access the utility. What should I do?

A:1).Verify physical connectivity by checking if corresponding port's link LED lights up. If not, try a different cable. Note that an illuminated light does NOT ALWAYS indicate successful connectivity.

2).In Wireless Router Mode, you must use a wireless network adapter to connect to the device, as the only Ethernet port works as a WAN port for Internet connection; while in Wireless AP, Universal Repeater Mode and Client Mode, you must specify an IP address (192.168.2.2 ~ 192.168.2.253) on your PC to connect to the device.

3).Click "Start" -- "Run", enter "cmd" and then"ping**192.168.2.1**"on appearing CLI to diagnose whether your PC has connected to the device or not. If ping succeeds, then check whether the Proxy Server feature is enabled on your browser. If enabled, disable it immediately. In case that ping fails, press and hold the "RESET" button on your device for 7 seconds to restore factory default settings, and then run "ping**192.168.2.1**" again.

4).Contact our technical support for help if the problem still exists after you tried all the above.

2. Q: What should I do if I forget the login password to my device (How do I reset my device)?

A: Reset your device by pressing the Reset button for over 7 seconds.

Note: All settings will be deleted and restored to factory defaults once you pressed the Reset button.

3. Q: My computer shows an IP address conflict error after having connected to the device. What should I do?

A:1) Check if there are other DHCP servers present in your LAN. If there are other DHCP servers except your router, disable them immediately.

2) The default IP address of the device is **192.168.2.1**; make sure this address is not used by another pc or device. In case that two computers or devices share the same IP addresses, change either to a different address.

4. Q: My computer can neither log in to the device nor access internet, and there is a yellow triangle with an exclamation mark shown in the network adapter icon on the right bottom corner of my computer desktop; how am I supposed to deal with it?

This problem occurs because your network card has not been assigned with an IP address. If your computer is set to obtain an

IP address automatically, please ensure that the router's DHCP function is enabled. DHCP can automatically assign an IP address to your computer. If there is no DHCP, please set a static IP address and fill in gateway and DNS, otherwise you cannot access Internet.

5. Q: I cannot access Internet and send/receive emails; what should I do?

A: This problem mainly happens to users using ADSL dialup or dynamic IP internet connection types. In this case, go to "WAN Settings" to change the MTU value from default 1492 to 1450 or 1400, etc.

6. Q: I am using Dynamic IP Internet connection type. How should I config the device for Internet access?

A: Enter the device web utility, select "Dynamic IP" on Quick Setup section and click "Save".

B: If your ISP requires a specified MAC address for Internet connection authentication, then go to MAC Clone and change the device WAN MAC address to that MAC address and click "Save".

7. Q: How do I share resources on my computer with users on Internet through the device?

A: To let Internet users access internal servers on your LAN such as e-mail server, Web, FTP, via the device, use the "Virtual Server" feature. To do so, follow steps below:

Step 1: Create your internal server, make sure the LAN users can

access these servers and you need to know related service ports, for example, Web server's port is 80; FTP is 21; SMTP is 25 and POP3 is 110.

Step 2: Click "Virtual Server" and select "Port Range Forwarding" on the Router's web interface.

Step 3: Input the start service port ID, for example, 80.

Step 4: Input the end service port ID, for example, 80.

Step 5: Input the internal server's IP address. For example, if your Web server's IP address is 192.168. 2.10. Please input it.

Step 6: Select a communication protocol used by your internal host: TCP, UDP or ICMP.

Step 7: Click "Save" to save such settings.

Below lists some well-known service ports for your reference.

Server	Protocol	Service Port ID
WEB Server	TCP	80
FTP Server	TCP	21
Telnet	TCP	23
NetMeeting	TCP	1503、1720
MSN Messenger	TCP/UDP	FileSend: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. Q:I cannot access Internet in WISP Mode; what should I do?

A: Make sure your wireless network adapter is functioning correctly on your PC and wireless signal is strong enough. If there are too many available wireless networks, it is advisable to use 802.11 b/g mode for less interference.

B: Make sure you entered correct SSID and MAC address of the link partner on the device. It is advisable to use the “Open scan” option.

C: Make sure the device WAN IP and LAN IP addresses are not on the same IP net segment. If so, change the device LAN IP.

D: Make sure antenna on the device is not detached.

If you still are unable to access Internet after you tried all the above steps, contact our technical staff for help.

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Safety Regulatory Statement

CE Mark Warning

This is a Class B product in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures. This device complies with EU 1999/5/EC.

NOTE: (1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.(2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable

FCC Statement

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

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 of the following measures:

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

Radiation Exposure Statement

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

NOTE: (1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. (2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable

NCC Notice

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更設計之特性及功能。

低功率射頻電機之作用不得影響飛航安全及幹擾合法通信；經發現有幹擾現象時，應立即停用，並改善至無幹擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之幹擾。

Safety Instructions

1. Operation temperature range ： 0-40℃

2. For applicable power supplies see user manual

Adapter information:

Model: TEA09X-05120 (X=A or E or U or D)

Input: 100-240V, 50/60Hz, 0.3A

Output: DC5V 1.2A

3. USB output：5Vdc，0.5A