



WS323 300Mbps Wireless Range Extender User Guide

HUAWEI TECHNOLOGIES CO., LTD.





WS323 300Mbps Wireless Range Extender

V100R001

User Guide

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The power consumption of product in networked standby if all wired network ports are connected and all wireless network ports are activated is 2.3 W.

For the product information displayed on the manufacturers' freely accessible websites required by (EU) No 801/2013, please visit <http://consumer.huawei.com/certification>.

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1 Product Overview

1.1 Supported Features

The WS323 300Mbps Wireless Range Extender (WS323 for short) is a high-speed wireless device designed for homes and business travelers. The WS323 can serve as a router that provides a Wi-Fi access point, a repeater used with a wireless router to expand the wireless signal coverage, or a wireless network adapter.

This chapter describes the features supported by the WS323:

Wireless functions

- Service set identifier (SSID) configuration

- SSID hiding

- Channels: channel 1 to 13 or automatic channel selection

- Frequency bands: 20 MHz, 40 MHz, or automatic selection

- Wi-Fi modes: 802.11b, 802.11g, 802.11n, 802.11b/g, or 802.11b/g/n

- Wi-Fi security: encryption using advanced encryption standard (AES), temporary key integrity protocol (TKIP), and 64/128-bit wired equivalent privacy (WEP), certification using Wi-Fi protected access-pre-shared key (WPA-PSK), WPA2-PSK, or WPA-PSK+WPA2-PSK, and wireless MAC address filtering

- WPS

- Working modes: Wi-Fi router, Wi-Fi repeater, and Wi-Fi client

- Automatic signal detection and signal strength display in Wi-Fi client and Wi-Fi repeater modes

- FCC support band 1 and band 4 for 5G

- CE support band 1/2/3/4 for 5G

Easy Configuration and Management

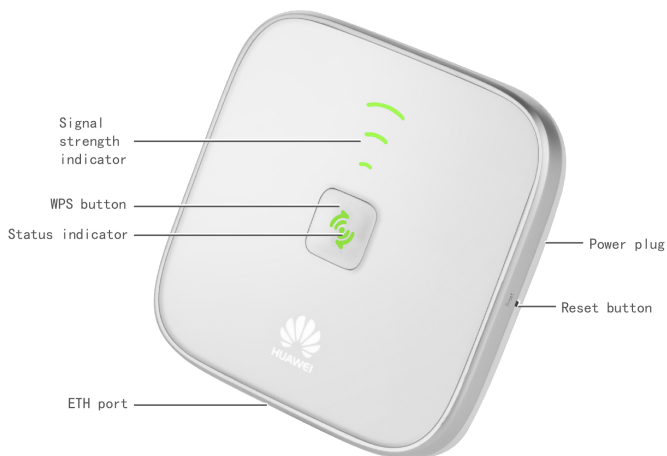
The WS323 provides password-protected web management pages to protect your personal data. Local device configuration, management, and upgrade on the web management page

Remote device management using the TR069

Switch between Wi-Fi router, Wi-Fi repeater, and Wi-Fi client modes on the web management page

1.2 Ports and Buttons

Table 1-1 Lists the WS323's ports, indicators, and buttons, as well as their functions.



NOTE

Pictures shown in this document are only for your reference.

Table 1-1 WS323 ports and buttons









Item	Functions
Power plug	Can be plugged into a power socket.
WPS button	Quickly sets up a wireless connection or changes WS323's working mode.
Reset button	<p>After the WS323 is powered on, press and hold the Reset button for 6s or more to restore the WS323 to its factory settings.</p> <p> NOTE Restoring the WS323 to its factory settings will erase your user-defined data.</p>
Status indicator	Shows the WS323 working status. For details, see section 1.2.2 Indicators.
Signal strength indicator	Shows the network signal strength. For details, see section 1.2.2 Indicators.
ETH port	Connects the WS323 to a network device.

Table 1-2 Using the WPS Button for Quick Configuration

Function	Operation
WPS connection	<p>Press and hold the WPS button more than 1 second and less than 3 seconds, and press the wireless client's WPS button within 2 minutes.</p> <p>When the  status indicator turns from blinking to steady on, the connection is set up.</p>

Function	Operation
Switching between 2.4 GHz and 5 GHz	<p>Press and hold the WPS button until:</p> <p>the three  indicator start blinking at the same time to switch between the 2.4 GHz and 5 GHz working bands.</p> <p>When the blue  indicator starts blinking, the WS323 is switched to the 2.4 GHz band.</p> <p>When the green  indicator starts blinking, the WS323 is switched to the 5 GHz band.</p>
Switching the working mode	Press and hold the WPS button until:
	the  indicator starts blinking to switch to WiFi Router mode.
	the  indicator starts blinking to switch to WiFi Client mode.
	the  indicator starts blinking to switch to WiFi Repeater mode.



NOTE

WPS is a computing standard that attempts to automate secure wireless network setup and connection. The WPS function lets you securely add wireless clients to a WLAN without entering the user name and password.

1.3 Indicators

Table 1- Lists the WS323 indicators and their meanings.

Table 1-3 WS323 indicators and their meanings

Item	Status	Meaning
Status indicator	Off	The WS323 is powered off or faulty.
	Blinking	Blinking red: The WS323 is powering on. Blinking blue: the WS323 is connecting to the network in 2.4GHz mode. Blinking green: the WS323 is connecting to the network in 5GHz mode.
	Steady on	Steady red: The WS323 is working properly but is not connected to a network. Steady blue: the WS323 is connected to the network in 2.4GHz mode. Steady green: the WS323 is connected to the network in 5GHz mode.
Signal strength indicator	Off	The WS323 is not connected to a network.
	Blinking	The WS323 is connecting to a network or changing its working mode.
	Steady on	The WS323 is connected to a network. The lightened indicator bars indicate the network signal strength. Three bars mean the network signals are strong, while one bar means the network signals are weak.

**NOTE**

The WS323 signal strength indicator only works in Wi-Fi repeater and Wi-Fi client modes.

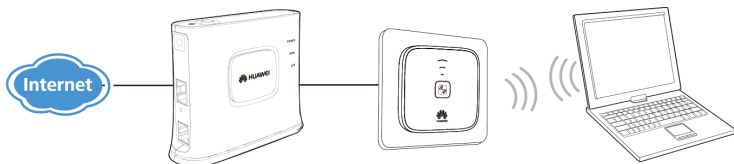
2 Hardware Installation

2.1 Application Modes

2.1.1 Wi-Fi Router Mode

When working in Wi-Fi router mode, the WS323 is connected to the Internet through its Ethernet port and works as a Wi-Fi access point in a home, providing Internet access for wireless clients, such as phones and computers. To set up a wireless connection, all you have to do is pressing the WPS buttons on the WS323 and the wireless client.

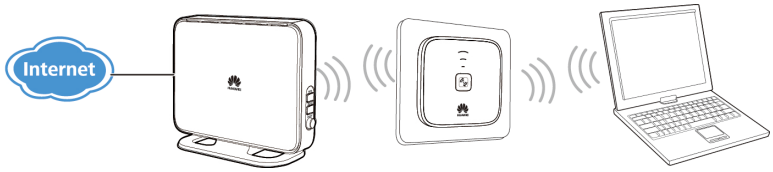
Best used in: one-story houses, apartments, hotels, and similar structures.



2.1.2 Wi-Fi Repeater Mode

When working in Wi-Fi repeater mode, the WS323 is wirelessly connected to the Internet, providing Internet access for wireless clients, such as phones and computers. This mode is used to expand the uplink access point's signal coverage. To quickly connect the WS323 to the Internet, all you have to do is pressing the WPS buttons on the WS323 and access point device.

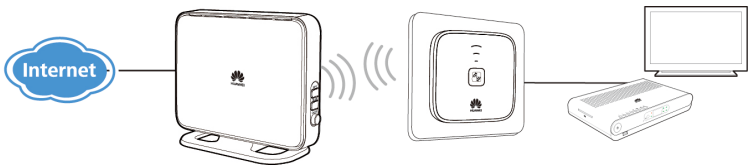
Best used in: villas, duplex house, and other large venues.



2.1.3 Wi-Fi Client Mode

When working in Wi-Fi client mode, the WS323 is connected to a client, such as set-top box (STB) or computer, through its Ethernet port, providing the client with access to a wireless access point. To quickly connect the WS323 to the Internet, all you have to do is pressing the WPS buttons on the WS323 and access point device.

Best used in: devices that require wireless Internet connections. For example, network multimedia players and Internet TV.



2.2 Powering On

Insert WS323's power plug into a power socket. The WS323 is then powered on.

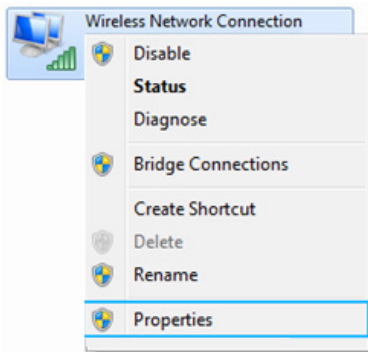


2.3 Setting the Computer IP Address

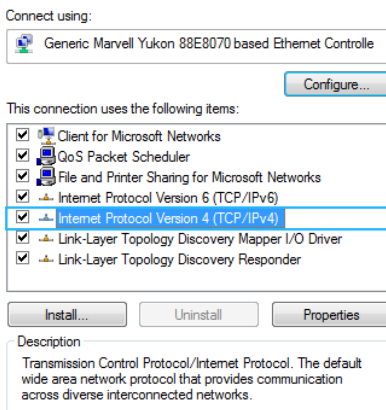
Before you set the computer's IP address, ensure that your computer is installed with a wireless network adapter.

On Windows 7

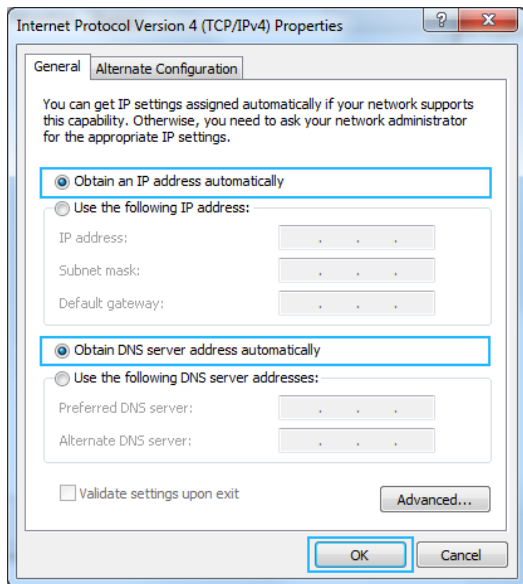
- Step 1** Choose **Start > Control Panel > Network and Internet > Network and Sharing Center**.
- Step 2** Choose **Change adapter settings > Wireless Network Connection**. Right-click **Wireless Network Connection**, and choose **Properties**.



Step 3 Double-click **Internet Protocol Version 4 (TCP/IPv4)**.



Step 4 Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**. Click **OK**.

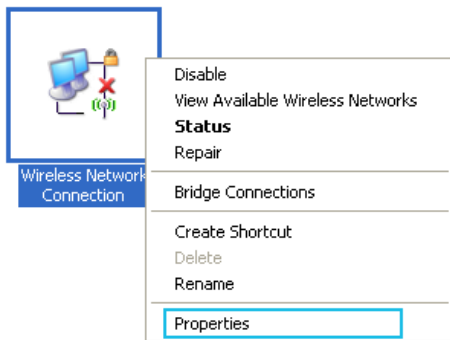


On Windows XP

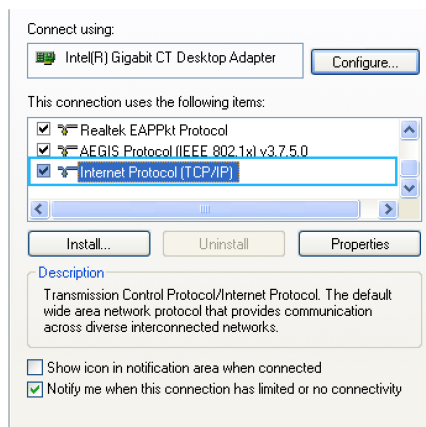
Step 1 Choose **Start > Control Panel > Network and Internet Connections**.

Step 2 Choose **Network Connections > Wireless Network Connection**.

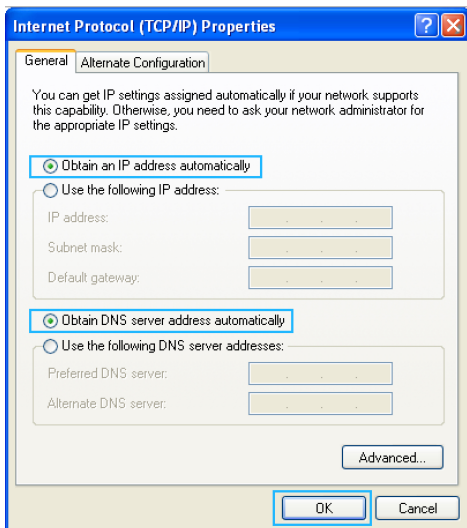
Right-click **Wireless Network Connection**, and choose **Properties**.



Step 3 Double-click **Internet Protocol (TCP/IP)**.



Step 4 Select **Obtain an IP address automatically** and **Obtain DNS address automatically**. Click **OK**.



3 Wireless Connection Setup

3.1 Manually Setting Up a Wireless Connection

The wireless configuration software provided by Windows is used as an example to describe how to set up a wireless connection.



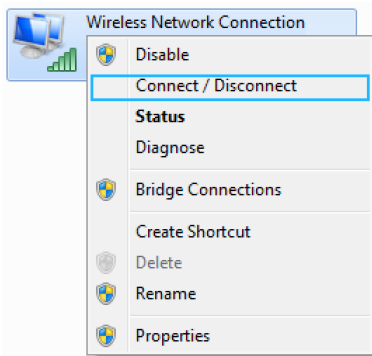
NOTE

You can also use the tool built into the network adapter to set up a wireless connection. For details, see the network adapter's user guide.

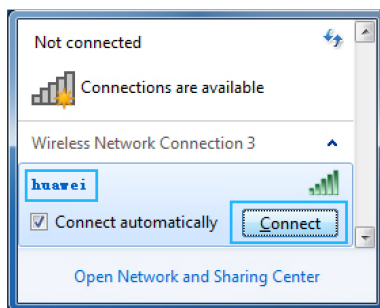
Before setting up a wireless connection, record the WLAN name and password of the WS323. The default WLAN name and password are printed on the WS323 cover label.

On Windows 7

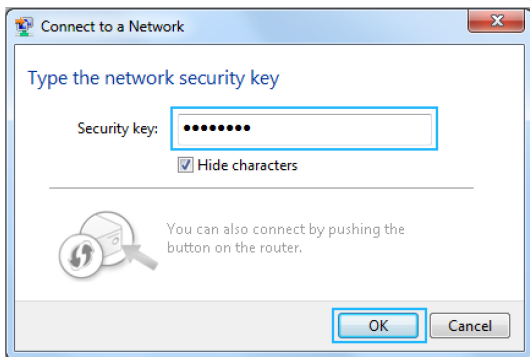
Step 1 Choose **Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**. Right-click **Wireless Network Connection**, and select **Connect/Disconnect**.



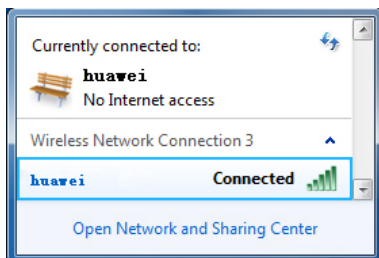
Step 2 From the wireless network list, select the WLAN provided by the wireless device you want to connect. Click **Connect**.



Step 3 In the displayed dialog box, enter the WLAN password, and click **OK**.

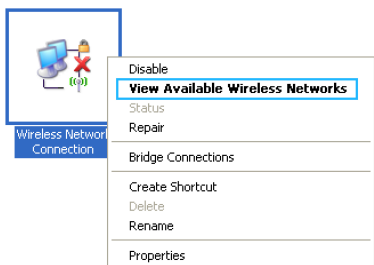


- Step 4** In the wireless network list, check the WLAN connection status. If the status is **Connected**, the computer is wirelessly connected to the WS323.



On Windows XP

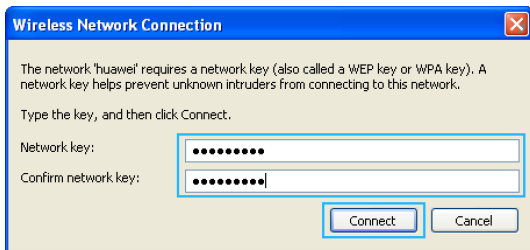
- Step 1** Choose **Start > Control Panel > Network and Internet Connections > Network Connections**. Right-click **Wireless Network Connection**, and choose **View Available Wireless Networks** from the shortcut menu..



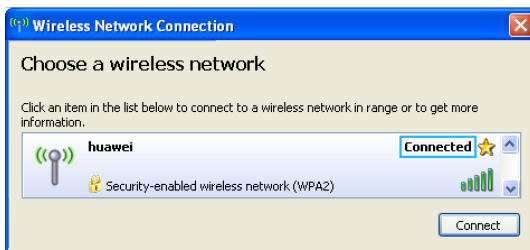
Step 2 From the wireless network list, select the WLAN provided by the wireless device you want to connect. Click **Connect**.



Step 3 In the displayed dialog box, enter the WLAN password, and click **Connect**.



Step 4 In the wireless network list, check the WLAN connection status. If the status is **Connected**, the computer is wirelessly connected to the WS323.



3.2 Setting Up a Wireless Connection Using the WPS Button

Push the WPS button once to quickly set up a wireless connection between the WS323 and any WPS-capable device. Before you set up a wireless connection using the WPS button, verify the following:

- The wireless network security mode of the WS323 is WPA2-PSK or WPA-PSK/WPA2-PSK.

- Step 1** The wireless device (laptop, tablet, or mobile phone) to connect to the WS323 is WPS-capable. Press the WPS button on the wireless device to start WPS negotiation. For details, see the user guide for the wireless device
- Step 2** Within 2 minutes, press and hold the WPS button on the WS323 for 1 second or more. The WPS button indicator blinks.

When the WPS indicator on the WS323 is steady on, a connection between the WS323 and wireless device is set up. The WPS indicator is on for 300 seconds. Then the WPS indicator turns off.

4 Configuring Wi-Fi Router Mode

The WS323 can work as a wireless router, providing a Wi-Fi access point for homes and business travelers.

To change the WS323 into WiFi Router mode, press and hold the WS323's WPS button until the longest signal strength indicator blinks. Then the WS323 will restart and change into WiFi Router mode.

WS323 works in 2.4GHz or 5GHz band. To change WS323's band mode, press and hold the WS323's WPS button until the three signal strength indicators blink at the same time. When the band mode is changed, the WS323's status indicator changes its color.

To set up a wireless connection, press and hold the WS323's WPS button more than 1 second and less than 3 seconds, and press the wireless client's WPS button within 2 minutes. When the connection is set up, the WS323's status indicator turns from blinking to steady on.

4.1 Setting Internet Access Parameters

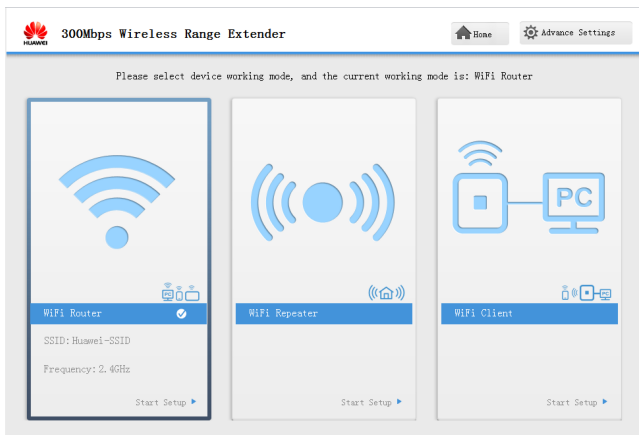
Step 1 Launch a browser, enter **http://192.168.33.1**, and press **Enter**. In the **Login** window, enter **admin** for both the **user name** and **password**, and click **Login**.



NOTE

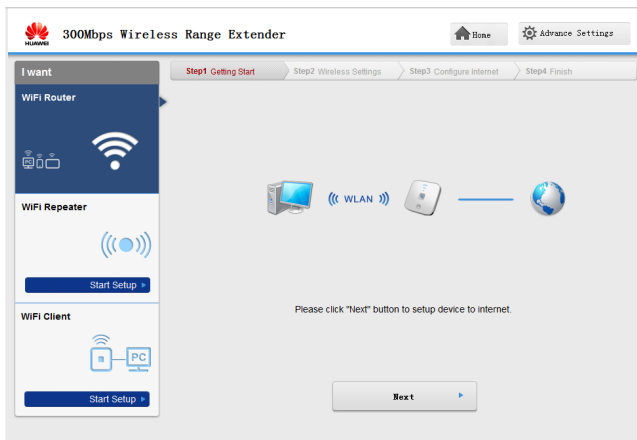
To protect your router from unauthorized access, change the user name and password after the first login. For details, see chapter 8.1 "Changing the Administrator Password of the Web management pageWeb management page."

Step 2 Click **WiFi Router**.

**NOTE**

Switching between working modes will restart the WS323. The login page will be displayed and you need to enter your user name and password.

Step 3 Click **Next**.



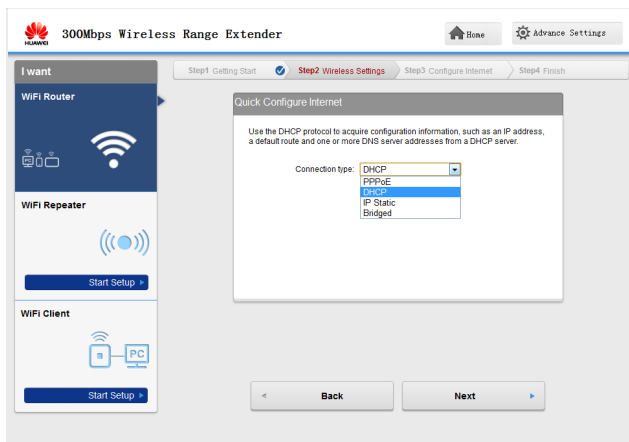
Step 4 Choose the network connection type.

Choose the connection type based on the application scenario. Table 4-1 describes the connection types.

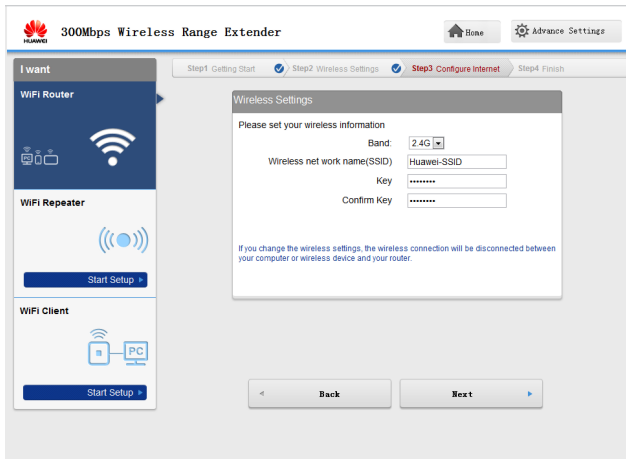
Table 4-1 Configuring the Internet access parameters

Application Scenario	Connection Type
The user name and password are provided by your service provider.	PPPoE
The user name and password are provided by your service provider. Set up a dial-up connection on one computer only.	Bridge
Certain parameters, such as the static IP address and DNS server address, are provided by your service provider.	Static IP

Application Scenario	Connection Type
No parameters are provided by your service provider. The IP address is automatically assigned by the service provider.	DHCP



Step 5 Configure the network connection parameters, and click **Next**.



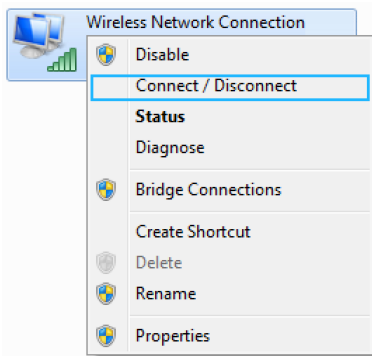
The configuration succeeded.

4.2 Wireless Connection Setup

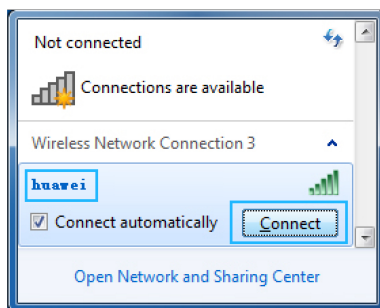
4.2.1 Manually Setting Up a Wireless Connection

On Windows 7

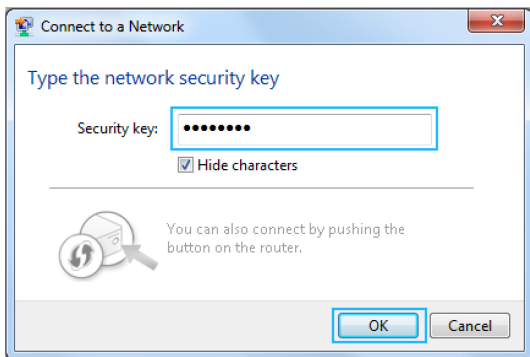
Step 1 Choose **Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**. Right-click **Wireless Network Connection**, and select **Connect/Disconnect**.



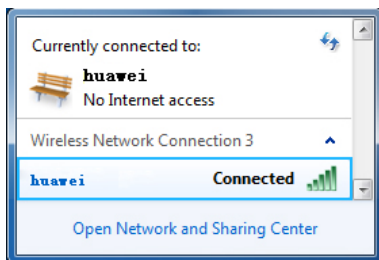
Step 2 From the wireless network list, select the WLAN provided by the WS323. Click **Connect**.



Step 3 In the displayed dialog box, enter the WLAN password, and click **OK**.

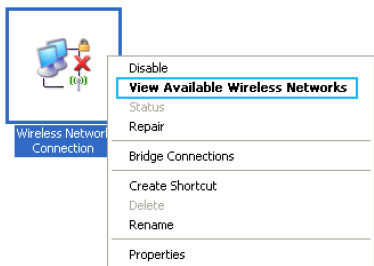


- Step 4** In the wireless network list, check the WLAN connection status. If the status is **Connected**, the computer is wirelessly connected to the WS323.



On Windows XP

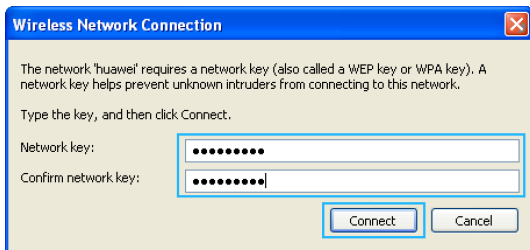
- Step 1** Choose **Start > Control Panel > Network and Internet Connections > Network Connections**. Right-click **Wireless Network Connection**, and choose **View Available Wireless Networks** from the shortcut menu.



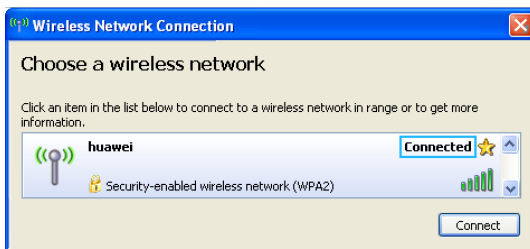
- Step 2** From the wireless network list, select the WLAN provided by the WS323. Click **Connect**.



- Step 3** In the displayed dialog box, enter the WLAN password, and click **Connect**.



Step 4 In the wireless network list, check the WLAN connection status. If the status is **Connected**, the computer is wirelessly connected to the WS323.



4.2.2 Setting Up a Wireless Connection Using the WPS Button

Push the WPS button once to quickly set up a wireless connection between the WS323 and any WPS-capable device. Before you set up a wireless connection using the WPS button, verify the following:

- The wireless network security mode of the WS323 is WPA2-PSK or WPA-PSK/WPA2-PSK.
- The wireless device (laptop, tablet, or mobile phone) to connect to the WS323 is WPS-capable.

- Step 1** Press the WPS button on the wireless device to start WPS negotiation.
For details, see the user guide for the wireless device.
- Step 2** Within 2 minutes, press and hold the WPS button on the WS323 for 1 second or more. The WPS button indicator blinks.

When the WPS indicator on the WS323 is steady on, a connection between the WS323 and wireless device is set up. The WPS indicator is on for 300 seconds. Then the WPS indicator turns off.

5 Configuring Wi-Fi Repeater Mode

The WS323 can work as a repeater together with a wireless router to expand the WLAN coverage.

To change the WS323 into WiFi Repeater mode, press and hold the WS323's WPS button until the shortest signal strength indicator blinks. Then the WS323 will restart and change into WiFi Repeater mode.

To set up a wireless connection, press and hold the WS323's WPS button more than 1 second and less than 3 seconds, and press the access point device's WPS button within 2 minutes. When the connection is set up, the WS323's status indicator turns from blinking to steady on.

5.1 Setting Internet Access Parameters

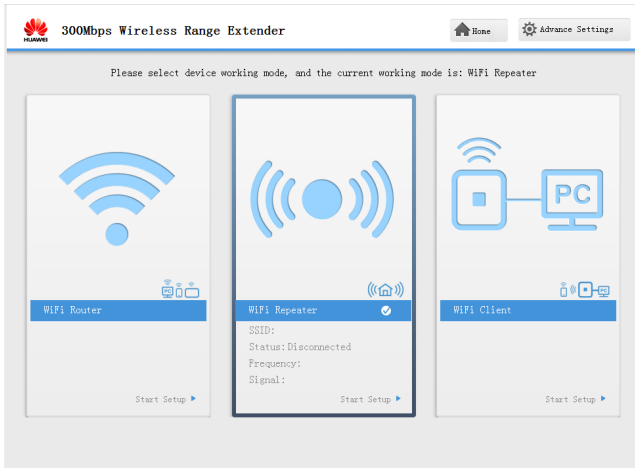
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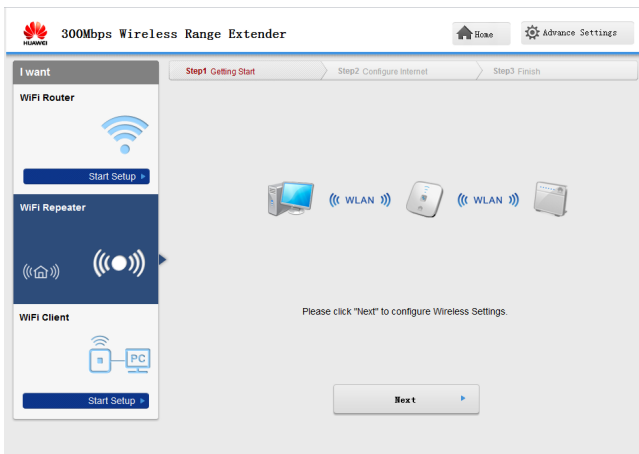
NOTE

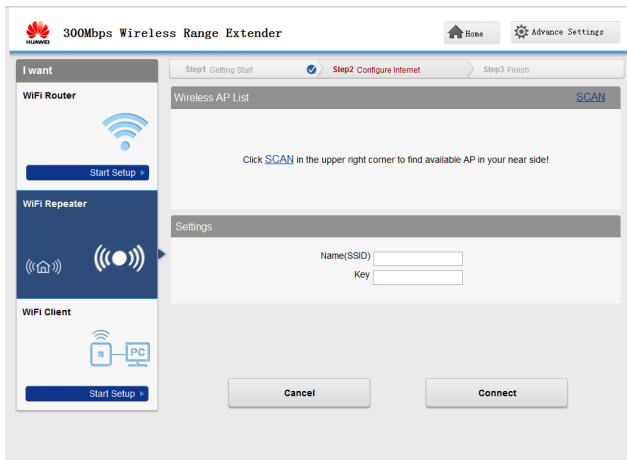
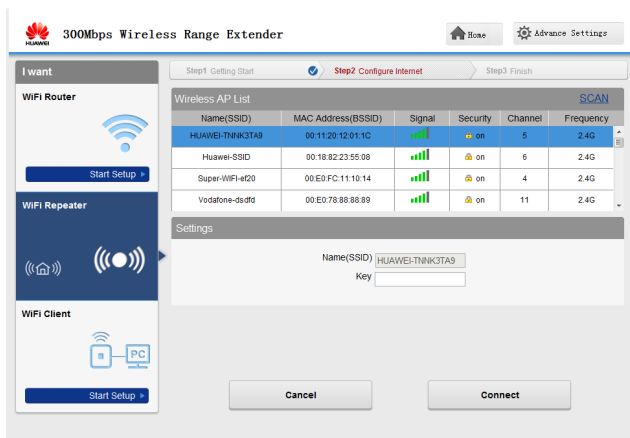
To protect your router from unauthorized access, change the user name and password after the first login. For details, see chapter 8.1 "Changing the Administrator Password of the Web management page".

Step 2 Click **WiFi Repeater**.



Step 3 Click Next.



Step 4 Click **SCAN** to scan the network.**Step 5** Choose the network SSID and configure the network connection parameters.

The configuration succeeded.

**NOTE**

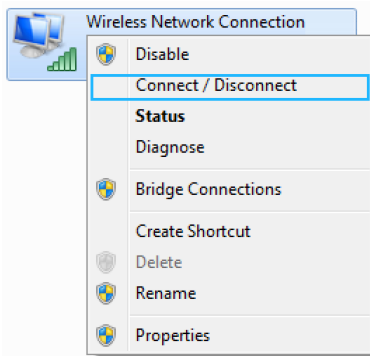
After the configuration, the WS323's SSID and password will be synchronized to those of the connected network. Enter the SSID and password of the WLAN when connecting the WS323 to other devices.

5.2 Wireless Connection Setup

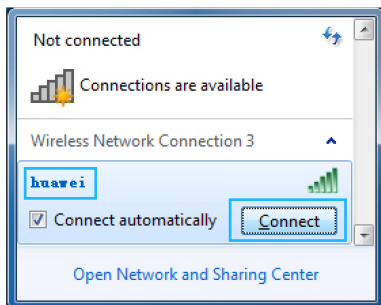
5.2.1 Manually Setting Up a Wireless Connection

On Windows 7

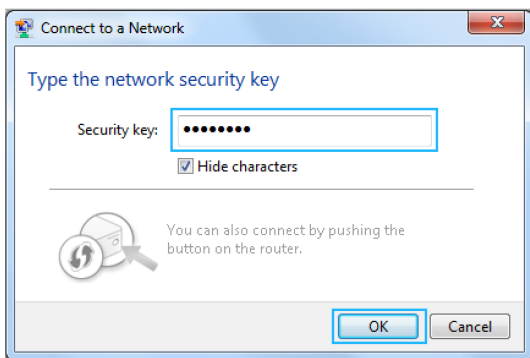
Step 1 Choose **Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**. Right-click **Wireless Network Connection**, and select **Connect/Disconnect**.



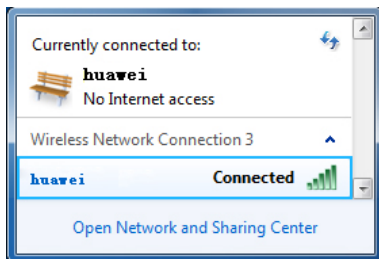
Step 2 From the wireless network list, select the WLAN provided by the wireless device you want to connect. Click **Connect**.



Step 3 In the displayed dialog box, enter the WLAN password, and click **OK**.

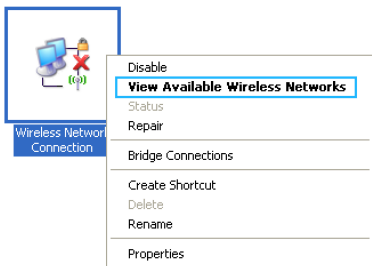


Step 4 In the wireless network list, check the WLAN connection status. If the status is **Connected**, the computer is wirelessly connected to the WS323.

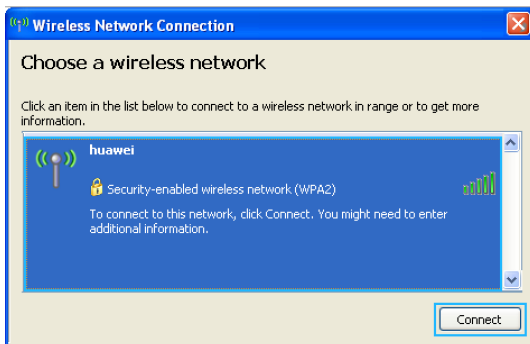


On Windows XP

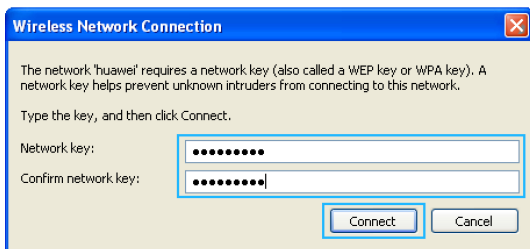
Step 1 Choose **Start > Control Panel > Network and Internet Connections > Network Connections**. Right-click **Wireless Network Connection**, and choose **View Available Wireless Networks** from the shortcut menu.



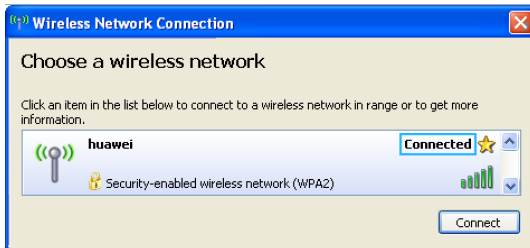
Step 2 From the wireless network list, select the WLAN provided by the wireless device you want to connect. Click **Connect**.



- Step 3** In the displayed dialog box, enter the WLAN password, and click **Connect**.



- Step 4** In the wireless network list, check the WLAN connection status. If the status is **Connected**, the computer is wirelessly connected to the WS323.



5.2.2 Setting Up a Wireless Connection Using the WPS Button

Push the WPS button once to quickly set up a wireless connection between the WS323 and any WPS-capable device. Before you set up a wireless connection using the WPS button, verify the following:

- The wireless network security mode of the WS323 is WPA2-PSK or WPA-PSK/WPA2-PSK.
- The wireless device (laptop, tablet, or mobile phone) to connect to the WS323 is WPS-capable.

Step 1 Press the WPS button on the wireless device to start WPS negotiation.

For details, see the user guide for the wireless device.

Step 2 Within 2 minutes, press and hold the WPS button on the WS323 for 1 second or more. The WPS indicator blinks.

When the WPS indicator on the WS323 is steady on, a connection between the WS323 and wireless device is set up. The WPS indicator is on for 300 seconds. Then the WPS indicator turns off.

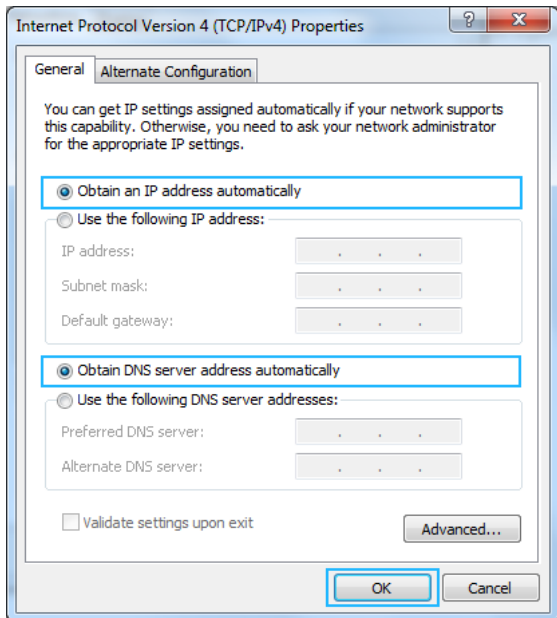
5.2.3 Setting Up a Wireless Connection Using a Network Cable

Step 1 Use a network cable to connect the WS323 to your computer.

Step 2 Set the computer to automatically obtain an IP address. For details, see section 2.3 "Setting the Computer IP Address."

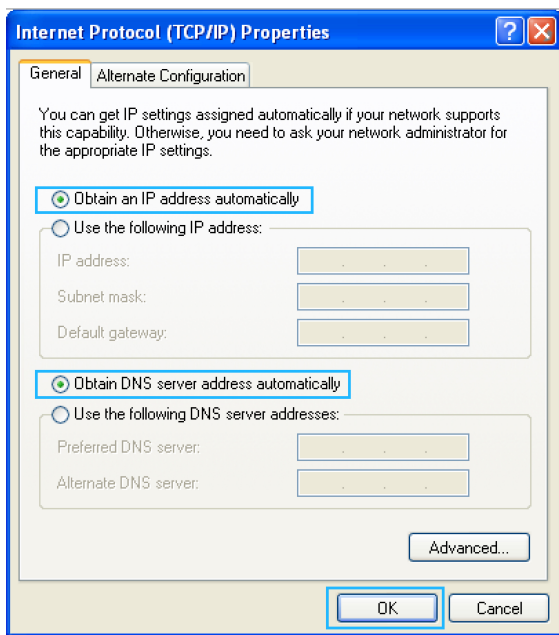
On Windows 7

Select **Obtain an IP address automatically** and **Obtain DNS address automatically**. Click **OK**.



On Windows XP

Select **Obtain an IP address automatically** and **Obtain DNS address automatically**. Click **OK**.



6 Configuring Wi-Fi Client Mode

The WS323 can work as a wireless network adapter to provide Internet access for devices without the WLAN function.

To change the WS323 into WiFi Client mode, press and hold the WS323's WPS button until the middle signal strength indicator blinks. Then the WS323 will restart and change into WiFi Client mode.

To set up a wireless connection, press and hold the WS323's WPS button more than 1 second and less than 3 seconds, and press the access point device's WPS button within 2 minutes. When the connection is set up, the WS323's status indicator turns from blinking to steady on.

6.1 Setting Internet Access Parameters

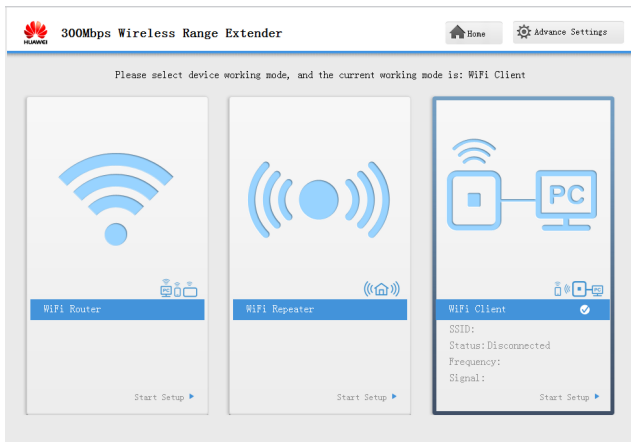
Step 1 Launch a browser, enter **http://192.168.33.1**, and press **Enter**. In the **Login** window, enter **admin** for both the **user name** and **password**, and click **Login**.



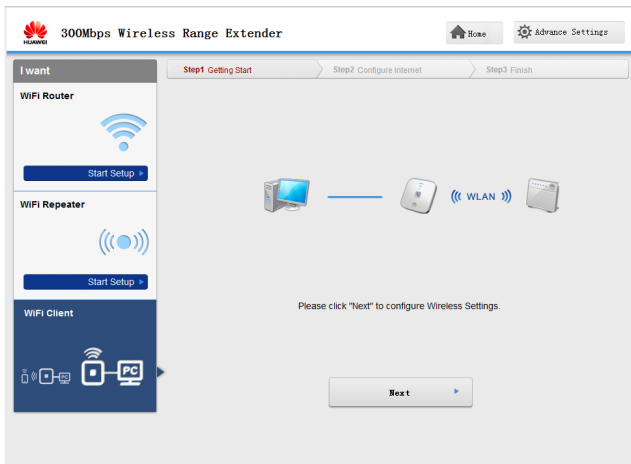
NOTE

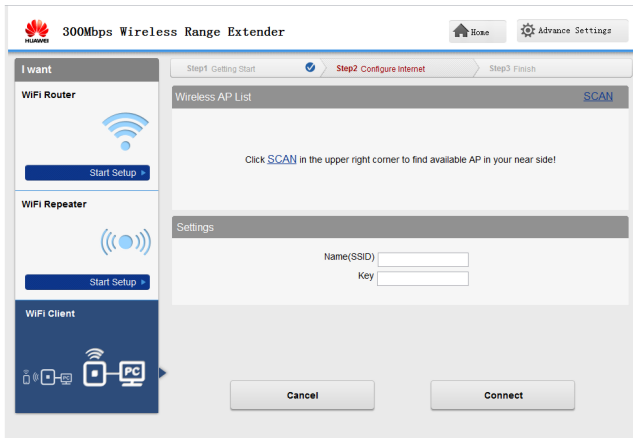
To protect your router from unauthorized access, change the user name and password after the first login. For details, see chapter 8.1 "Changing the Administrator Password of the Web management pageWeb management page".

Step 2 Click **WiFi Client**.



Step 3 Click Next.



Step 4 Click **SCAN** to scan the network.**Step 5** Choose the network SSID and configure the network connection parameters.

The configuration succeeded.

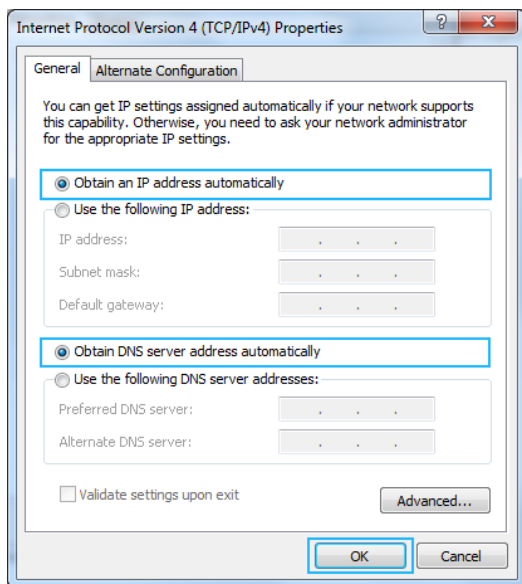
6.2 Setting Up a Connection with a Computer

Step 1 Use a network cable to connect the WS323 to your computer.

Step 2 Set the computer to automatically obtain an IP address. For details, see section 2.3 "Setting the Computer IP Address."

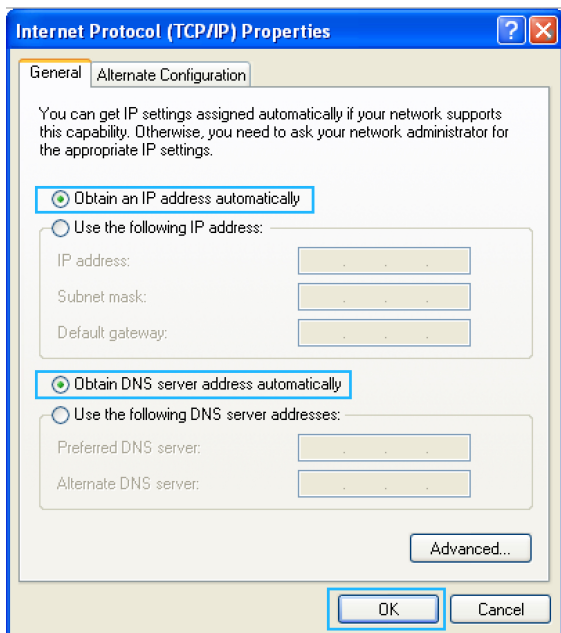
On Windows 7

Select **Obtain an IP address automatically** and **Obtain DNS address automatically**. Click **OK**.



On Windows XP

Select **Obtain an IP address automatically** and **Obtain DNS address automatically**. Click **OK**.



7 Network Security

7.1 Hiding the WLAN Name

This function is available in Wi-Fi router and Wi-Fi repeater modes.



NOTE

In Wi-Fi repeater mode, this function applies to the WS323 maintenance SSID only.

- Step 1** Log in to the web management page.
- Step 2** Click **Advance Settings**.
- Step 3** In the navigation tree, choose **Basic > WIFI Router** (Wi-Fi router mode) or **Basic > Management WIFI** (Wi-Fi repeater mode) to display the **WLAN configuration** page.
- Step 4** In **SSID Index**, select the **SSID** index you want to hide for.
- Step 5** Set **SSID** to **Enable**.
- Step 6** Set **Hide broadcast** to **Enable**.
- Step 7** Click **Submit**.

Country code:	UNITED KINGDOM
11N Guard Interval:	long
Transmit power:	100%
SSID index:	SSID1
SSID:	Huawei-SSID *
SSID:	<input checked="" type="checkbox"/> Enable
Hide broadcast:	<input type="checkbox"/> Enable
AP isolation:	<input type="checkbox"/> Enable
Security:	WPA2-PSK
WPA pre-shared key:	***** *
Confirm WPA pre-shared key:	***** *
WPA encryption:	AES

7.2 Changing your WLAN Name and password

WLAN access requires the WLAN name and password. To improve your WLAN security, regularly change your WLAN name and password.

This function is available in Wi-Fi router and Wi-Fi repeater modes.



NOTE

In Wi-Fi repeater mode, this function applies to the WS323 maintenance SSID only.

- Step 1** Log in to the web management page.
- Step 2** Click **Advance Settings**.
- Step 3** In the navigation tree, choose **Basic > WIFI Router** (Wi-Fi router mode) or **Basic > Management WIFI** (Wi-Fi repeater mode) to display the **WLAN configuration** page.
- Step 4** In **SSID Index**, select the SSID index you want to modify.
- Step 5** In **SSID**, enter a **new WLAN name**.

Step 6 In **WPA pre-shared key**, enter a new WLAN password, and re-enter the new password to confirm it.

Step 7 Click **Submit**.

Country code:	UNITED KINGDOM	▼
11N Guard Interval:	long	▼
Transmit power:	100%	▼
SSID index:	SSID1	▼
SSID:	Huawei-SSID	*
SSID:	<input checked="" type="checkbox"/> Enable	
Hide broadcast:	<input type="checkbox"/> Enable	
AP Isolation:	<input type="checkbox"/> Enable	
Security:	WPA2-PSK	▼
WPA pre-shared key:	*****	*
Confirm WPA pre-shared key:	*****	*
WPA encryption:	AES	▼

7.3 Using High Secure Encryption

This function is available in Wi-Fi router and Wi-Fi repeater modes.



NOTE

In Wi-Fi repeater mode, this function applies to the WS323 maintenance SSID only.

Step 1 Log in to the web management page.

Step 2 Click **Advance Settings**.

Step 3 In the navigation tree, choose **Basic > WIFI Router** (Wi-Fi router mode) or **Basic > Management WIFI** (Wi-Fi repeater mode) to display the **WLAN configuration** page.

Step 4 Click **WLAN**.

Step 5 In **Security**, select **WPA-PSK/WPA2-PSK**.

Step 6 In **WPA pre-shared key**, enter the **WLAN password you specified**.

Step 7 In **WPA Encryption**, select **AES**.

Step 8 Click **Submit**.

Country code:	UNITED KINGDOM	▼
11N Guard Interval:	long	▼
Transmit power:	100%	▼
SSID index:	SSID1	▼
SSID:	Huawei-SSID	*
SSID:	<input checked="" type="checkbox"/> Enable	
Hide broadcast:	<input type="checkbox"/> Enable	
AP isolation:	<input type="checkbox"/> Enable	
Security:	WPA2-PSK	▼
WPA pre-shared key:	*
Confirm WPA pre-shared key:	*
WPA encryption:	AES	▼

7.4 Allowing Only Specified Computers to Access your WLAN

To prevent unauthorized access to your WLAN, you can specify which devices are allowed to access your WLAN.

Each network device is assigned with a unique MAC address. After you specify which MAC addresses can be used to access your WLAN, only those devices with the specified MAC addresses can connect to your WLAN.

This function is available in Wi-Fi router and Wi-Fi repeater modes.



NOTE

In Wi-Fi repeater mode, this function applies to the WS323 maintenance SSID only.

Step 1 View and record the MAC address of the laptop.

**NOTE**

For details, see chapter 9.2 “Checking the Computer MAC Address”.

Step 2 Log in to the web management page.

Step 3 Click **Advance Settings**.

Step 4 Choose **Basic > WIFI Router** in Wi-Fi router mode and choose **Basic > Management WIFI** in Wi-Fi repeater mode to display the **WLAN configuration** page.

Step 5 In Wi-Fi router mode, click **MAC Filter**. In Wi-Fi repeater mode, click **WLAN Filtering**.

Step 6 Select **Enable**.

Step 7 In Filtering mode, select Whitelist.

Step 8 Click **New**.

Step 9 In **Select SSID**, select the WLAN name.

Step 10 In **Source MAC address**, enter the MAC address of the laptop.

**NOTE**

The format of the MAC address entered in **Source MAC address** is different from that of the MAC address displayed in the command line window of a Windows XP operating system. The colons (:) replace the hyphens (-).

Step 11 Click **Submit**.

Enable

Filtering mode: Blacklist Whitelist Note: If Whitelist is choosed and MAC filter is empty, WPS will be disabled

MAC Address	Remove
-------------	--------

Settings

Select SSID:

Source MAC address:

7.5 Controlling Computer Internet Access

Your WS323 provides MAC address filtering. With this function, you can confine Internet access to specific computers or deprive specific computers of Internet access. While using this function, you can also set limits on the duration of Internet usage.

This function is available in Wi-Fi router mode.

- Step 1** Log in to the web management page.
- Step 2** Click **Advance Settings**.
- Step 3** In the navigation tree, choose **Advanced > SNTP**.
- Step 4** Select **Enable auto synchronization with network time**.
- Step 5** Select a time service address for **Time server 1**.
- Step 6** Select your time zone for **Time zone**.
- Step 7** Click **Submit**.

The screenshot shows the web management interface for the WS323. The top navigation bar includes 'Status' and 'Help'. The main content area is divided into two sections: 'Status' and 'Settings'. In the 'Status' section, 'Status' is set to 'Disabled' and 'Current Time' is '2012-01-01 13:13:31'. A checkbox labeled 'Enable auto synchronization with network time' is checked. The 'Settings' section contains the following fields:

- Time server 1:** A dropdown menu with 'clock.fmt.he.net' selected.
- Time server 2:** A dropdown menu with 'clock.nyc.he.net' selected.
- Time zone:** A dropdown menu with '(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi' selected.
- Synchronization Interval:** A text input field containing '86400'.
- Enable daylight saving time:** An unchecked checkbox.

A 'Submit' button is located at the bottom right of the settings section.

- Step 8** In the navigation tree, choose **Advance > Filter**.
- Step 9** Click **MAC Filter**.
- Step 10** Click **New**.
- Step 11** Set the following parameters based on rule 1.
 - Rule name: Prohibited before 19:00

- Source MAC address: 00:11:09:11:04:DD
- Time control: Enable
- Start time: 00:00
- End time: 18:59
- Effective day: Select from Monday to Sunday.
- Status: Disable

Step 12 Click **Submit**.

MAC filtering	New		Remove		Help			
Rule Name	Source MAC Address	Bridge destination MAC Address	Time Control	Monday to Sunday	Time	Priority	Status	Remove
Settings								
Rule name:	<input type="text"/>							
Source MAC address:	<input type="text" value="00:11:09:11:04:DD"/> (AABB:CC:DD:EE:FF)							
Bridge destination MAC address:	<input type="text" value="00:11:09:11:04:DD"/> (AABB:CC:DD:EE:FF)							
Time control:	<input checked="" type="checkbox"/> Enable							
Start time:	<input type="text" value="00:00"/>							
End time:	<input type="text" value="23:59"/>							
Effective day:	<input checked="" type="checkbox"/> Monday <input checked="" type="checkbox"/> Tuesday <input checked="" type="checkbox"/> Wednesday <input type="checkbox"/> Thursday <input type="checkbox"/> Friday <input type="checkbox"/> Saturday <input checked="" type="checkbox"/> Sunday							
Priority:	<input type="text"/>							
Status:	Disable							
								<input type="button" value="Submit"/>

Step 13 Click **New**.

Step 14 Set the following parameters based on rule 2.

- Rule name: Prohibited after 20:00
- Source MAC address: 00:11:09:11:04:DD
- Time control: Enable
- Start time: 19:59
- End time: 23:59
- Effective day: Select from Monday to Sunday.
- Status: Disable

Step 15 Click **Submit**.

MAC filtering				New	Remove	Help		
Rule Name	Source MAC Address	Bridge destination MAC Address	Time Control	Monday to Sunday	Time	Priority	Status	Remove
Settings								
Rule name:	<input type="text"/>							
Source MAC address:	<input type="text"/>	(AA:BB:CC:DD:EE:FF)						
Bridge destination MAC address:	<input type="text"/>	(AA:BB:CC:DD:EE:FF)						
Time control:	<input checked="" type="checkbox"/> Enable							
Start time:	<input type="text" value="00:00"/>							
End time:	<input type="text" value="23:59"/>							
Effective day:	<input checked="" type="checkbox"/> Monday	<input checked="" type="checkbox"/> Tuesday	<input checked="" type="checkbox"/> Wednesday	<input type="checkbox"/> Thursday	<input type="checkbox"/> Friday	<input type="checkbox"/> Saturday		
	<input type="checkbox"/> Sunday							
Priority:	<input type="text"/>							
Status:	Disable <input type="button" value="v"/>							
								<input type="button" value="Submit"/>

TIP

To delete a rule, select the rule from the rule list. In the **Remove** column, select the rule. Then click **Remove**.

7.6 Configuring the Firewall

The WS323 provides a firewall to help secure its WLAN and any devices connected to it. Set the firewall level based on site requirements to quickly configure the firewall.

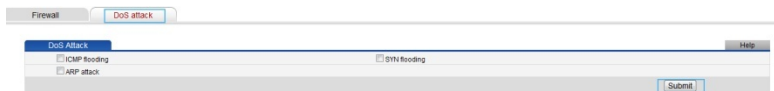
- Step 1** Log in to the web management page.
- Step 2** Click **Advance Settings**.
- Step 3** In the navigation tree, choose **Advanced > Firewall**.
- Step 4** In **Firewall Level**, select the firewall level you specified.
- Step 5** Click **Submit**.



Step 6 Click **DoS Attack**.

Step 7 Under **DoS Attack**, select the **ICPMP flooding**, **SYN flooding** and **ARP attack**.

Step 8 Click **Submit**.



7.7 Filtering Out Inappropriate Websites

Use URL filtering to prevent certain websites from being accessed. For example, if `www.***.com` is not suitable for browsing, use URL filtering to create a blacklist rule to block that website.

This function is available in Wi-Fi router mode.

Step 1 Log in to the web management page.

Step 2 Click **Advance Settings**.

Step 3 In the navigation tree, choose **Advance > Filter**.

Step 4 Click **IP Filter**.

Step 5 Click **New**.

Step 6 Select **Protocol**. Then select **TCP** for **Protocol**.

Step 7 Set the following parameters as planned.

- Source start port: 80
- Source end port: 80
- Destination start address: 192.168.33.166
- Destination end address: 192.168.33.166
- Destination start port: 80
- Destination end port: 80
- Priority: 1

Step 8 Click **Submit**.

The screenshot shows the 'IP Filtering' configuration interface. At the top, there are tabs for 'MAC Filter', 'ip Filter', 'Application Filter', and 'URL Filter'. The 'ip Filter' tab is active. Below the tabs is a table with columns: Rule Name, Interface, Protocol, Source Address Range, Source Port Range, Destination Address Range, Destination Port Range, Priority, Status, and Remove. Below the table is a 'Settings' section with the following fields: Rule name (text), Source start address (text), Source start port (text), Destination start address (text), Destination start port (text), Source end address (text), Source end port (text), Destination end address (text), Destination end port (text), Priority (text), and Input interface (dropdown menu set to 'All'). There are also dropdown menus for 'Protocol' (set to 'All') and 'Status' (set to 'Create'). A 'Submit' button is located at the bottom right of the form.

7.8 Changing WLAN Repeater Mode Settings

In Wi-Fi repeater mode, you can change the WLAN repeater mode settings to let the uplink access point identify the number and information of wireless clients connected to the WS323.

This function is available in Wi-Fi repeater mode.

For example, your WS323 is working in Wi-Fi repeater mode and is connected to an uplink access point, computer 1, and computer 2. The uplink access point uses MAC filtering to block computer 1's signals while keeps computer 2's signals. You want the access point to deem the WS323 as two stations and distinct the signals of computer 1 and 2.

Step 1 Log in to the web management page.

Step 2 Click **Advance Settings**.

Step 3 In the navigation tree, choose **Basic > WIFI Repeater**.

Step 4 Click **AP List**.

Step 5 From the **WLAN Repeater Mode** drop-down list, select **Multi-STA**.

The screenshot shows a web interface for configuring a wireless range extender. At the top, there is a navigation bar with a button labeled "AP List". Below this, the "Repeater Settings" section is visible, containing two dropdown menus: "WLAN Repeater Mode" set to "Single-STA" and "Country code" set to "UNITED KINGDOM". A "Help" button is located in the top right corner of this section. Below the settings is the "Wireless AP List" section, which contains a "SCAN" button and another "Help" button. A message at the bottom of the "Wireless AP List" section reads: "Click [SCAN](#) in the upper right corner to find available AP in your near side!".

8 Maintenance Guide

8.1 Changing the Web Management Password

The correct user name and password are required to log in to the web management page. Regular changes to the web management page password can effectively prevent unauthorized users from logging in and modifying important parameters.

Step 1 Log in to the web management page.

Step 2 Click **Advance Settings**.

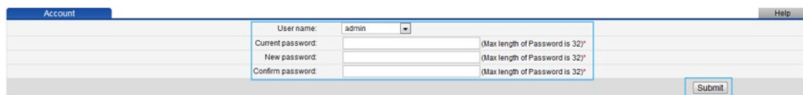
Step 3 In the navigation tree, choose **Maintenance > Account**.

Step 4 In **User Name**, select **admin**.

Step 5 In **Current password**, enter the currently used password.

Step 6 In **New password**, enter a new password. In **Confirm password**, enter the new password again to confirm it.

Step 7 Click **Submit**.



The screenshot shows a web management interface with a header bar containing 'Account' on the left and 'Help' on the right. Below the header is a form for changing the password. The form has four rows of input fields:

User name	admin	
Current password		(Max length of Password is 32)
New password		(Max length of Password is 32)
Confirm password		(Max length of Password is 32)

A 'Submit' button is located at the bottom right of the form area.

8.2 Changing the IP Address Used to Log In to the Web management page

The IP address used to log in to the WS323 web management page is the WS323 IP address. For security or other purposes (for instance, if the default WS323 IP address

conflicts with that of another device on the same network), you can change the WS323 IP address.

Use the new IP address to log in to the web management page.

Step 1 Log in to the web management page.

Step 2 Click **Advance Settings**.

Step 3 In the navigation tree, choose **Basic > LAN setting**.

Step 4 Click **DHCP Server**.

Step 5 In **IP address** under the **LAN Host Settings** group box, enter the new IP address **192.168.3.88** in **IP address**.

Step 6 Under **LAN Host Settings**, click **Submit**.

DHCP Server		Static Address	
LAN Host Settings Help			
IP address:	192.168.1.1	* (http://mediarouter.home)	
Server Subnet mask:	255.255.255.0	*	
DHCP Server Help			
DHCP server:	<input checked="" type="checkbox"/> Enable		
Start IP address:	192.168.1.2	*	
End IP address:	192.168.1.254	*	
Lease duration:	<input type="checkbox"/> permanent lease		
	1	day(s) 0	hours) 0 minute(s) 0 seconds(s)
Primary DNS server address:	192.168.1.1		
Secondary DNS server address:			
<input type="button" value="Submit"/>			

8.3 Restoring Default Settings

Using the Configuration Tool

If the WS323 parameter settings were configured incorrectly, log in to the web management page to reload the default configuration file and restore the WS323 to its default settings. Perform this operation with caution. After the WS323 is restored

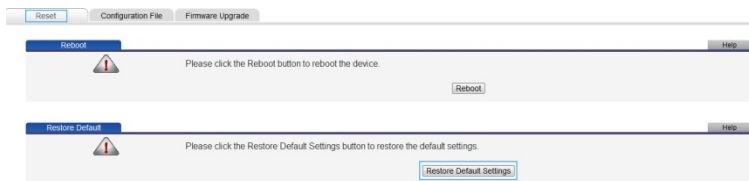
to its default settings, all custom data and settings will be lost, and the password will be restored to **admin**. Log in to the web management page.

Step 1 Click **Advance Settings**.

Step 2 In the navigation tree, choose **Maintenance > Device**.

Step 3 Click **Reset**.

Step 4 Click **Restore Default Settings**.



Step 5 In the displayed dialog box, click **OK**.

Using the Reset Button

If you forget the login password to the web management page or could not access the web management page, use the **Reset** button on the WS323 rear panel to restore the WS323 to its default settings. Perform this operation with caution. After the WS323 is restored to its default settings, all custom data and settings will be lost, and the password will be restored to admin.

Step 1 Press the WS323 **On/Off** button to power the WS323 on.

Step 2 Press and hold the **Reset** button for 6 seconds or more.

The WS323 will restart, which will cause temporary network interruptions.



NOTE

After the WS323 is restored to its default settings, change the computer IP address so that it is in the same network segment as the 192.168.33.1 default IP address.

9 Reference Operations

9.1 Enabling Wireless Configuration on Windows

On Windows XP

- Step 1** Right-click **My Computer** and choose **Manage** from the shortcut menu.
- Step 2** In the left pane of the **Computer Management** window, choose **Computer Management (Local) > Services and Applications > Services**.
- Step 3** In the right pane of the **Computer Management** window, right-click **Wireless Zero Configuration** and choose **Properties** from the shortcut menu.
- Step 4** In the displayed dialog box, check that **Service** status is **Started**.
- Step 5** Click **OK** to close the dialog box. Then close the **Computer Management** window.

On Windows 7 or Windows Vista

- Step 1** Right-click **Computer** and choose **Manage** from the shortcut menu.
- Step 2** In the left pane of the **Computer Management** window, choose **Computer Management (Local) > Services and Applications > Services**.
- Step 3** In the right pane of the **Computer Management** window, right-click **WLAN AutoConfig** and choose **Properties** from the shortcut menu.

Step 4 In the displayed dialog box, check that **Service** status is **Started**.

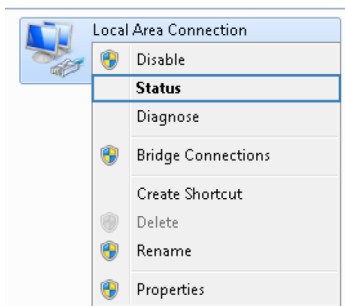
Step 5 Click **OK** to close the dialog box. Then close the **Computer Management** window.

9.2 Checking the Computer MAC Address

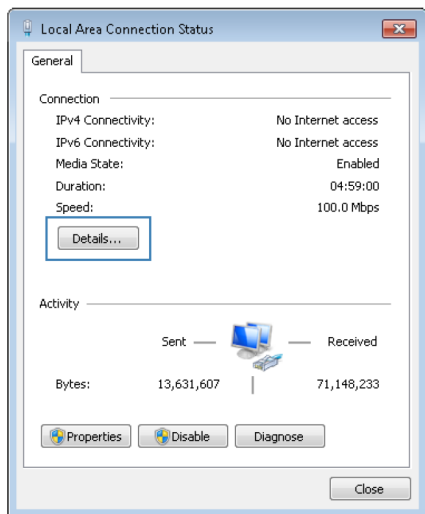
The MAC address, also known as the physical address, is a unique identifier assigned to a network adapter. A MAC address contains six groups of two hexadecimal digits, such as 2C-41-38-8D-75-8D. This section demonstrates how to check your computer's MAC address.

On Windows 7

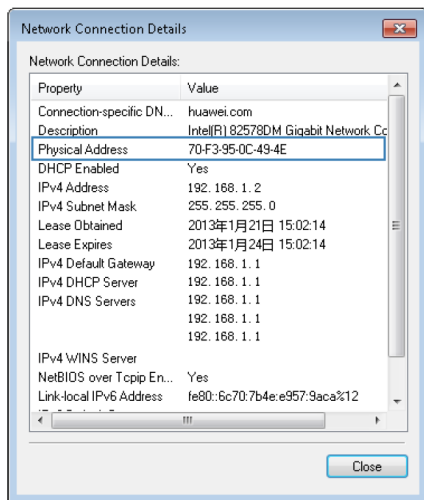
Step 1 Choose **Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**. Right-click **Local Area Connection** and choose **Status** from the shortcut menu.



Step 2 Click **Details**.

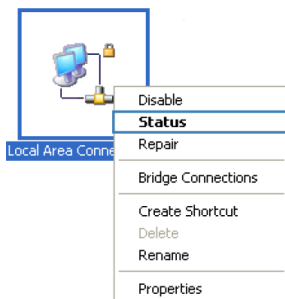


Step 3 In **Network Connection Details**, find the line similar to **Physical Address** 70-F3-95-0C-49-4E. The 70-F3-95-0C-49-4E string is your computer's MAC address.

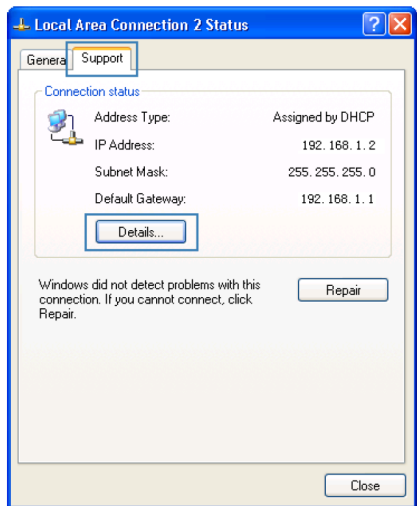


On Windows XP

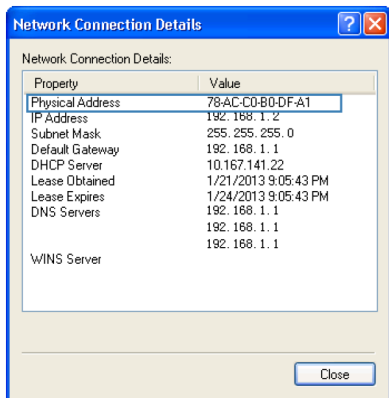
Step 1 Choose **Start > Control Panel > Network and Internet Connections > Network Connections**. Right-click **Local Area Connection** and choose **Status** from the shortcut menu.



Step 2 Click the **Support** tab. Under **Connection** status, click **Details**.



Step 3 In **Network Connection Details**, find the line similar to **Physical Address 78-AC-C0-B0-DF-A1**. The 78-AC-C0-B0-DF-A1 string is your computer's MAC address.



10 FAQs

What are the meanings of the WS323 signal indicator?

The WS323 signal indicator only works in Wi-Fi repeater and Wi-Fi client modes.

The number of lightened bars shows the network signal strength. Three bars mean the network signals are strong, two bars mean the network signals are good, and one bar means the network signals are weak. It is recommended that you use the WS323 in a network where the signal strength is strong or good.

What Can I Do If I Cannot Open the Web Management Page?

- Step 1** Open Internet Explorer. Choose Tools > Internet Options > Connection > LAN settings, and ensure that all check boxes are deselected.
- Step 2** Check that the computer IP address is 192.168.33.* (* is any integer from 2 to 254).
- Step 3** Check that the cables are securely connected to the WS323 and that the LAN port's indicator is on.
- Step 4** Ensure that the user name and password are correct.

If the problem persists, restore the WS323 to its default settings.

What Can I Do If the WS323 Cannot Access the Internet through a Wireless Network Adapter Sometimes or If the WLAN Connection Is Unsteady?

This is probably because the WS323 has its cables connected loosely, is placed too close to electronic appliances with intensive interference, or is too far from the computer. Verify that:

Step 1 The power and telephone cables are correctly connected to the WS323.

Step 2 Your computer and the WS323 are far from electric appliances that generate strong magnetic or electric fields, such as microwave ovens, refrigerators, and cordless telephones.

Step 3 The WS323 is in an open area, and there are no obstacles, such as concrete or wooden walls, between the WS323 and computer.

Step 4 The WS323 is close to the computer.

Step 5 The angle between the WS323 and computer is appropriate.

**NOTE**

Do not use the WS323 during thunderstorms, as the signal strength may be unsteady and the WS323 itself may be damaged due to lightning strikes.

What Is the Difference Between Wireless MAC Address Filtering and MAC Address Filtering?

- Wireless MAC address filtering: controls whether a computer can connect to the WS323 over the WLAN.
- MAC address filtering: controls whether a computer connected to the WS323 can access the Internet.

How to Turn on or off WLAN

The WLAN function is enabled by default. To turn off the wireless network function, power off the WS323.