HUAWEI WS320

Wireless Repeater

User Guide

HUAWEI WS320 Wireless Repeater

User Guide

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Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://www.huawei.com

Email: terminal@huawei.com

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1 Warnings and Precautions

Basic Requirements

- During storage, transportation, and operation of the device, keep it dry and prevent it from colliding with other objects.
- Do not dismantle the device. In case of any fault, contact an authorized service center for assistance or repair.
- Without authorization, no organization or individual can change the mechanical, safety, or performance design of the device.
- When using the device, observe all applicable laws and regulations and respect the legal rights of other people.

Environmental Requirements for Using the Device

- Keep the device far from sources of heat and fire, such as a heater or a candle.
- Keep the device far from electronic appliances that generate strong magnetic or electric fields, such as a microwave oven or a refrigerator.
- Place the device in a cool and well-ventilated indoor area. Do not expose the device to direct sunlight.
- Do not block the openings on the device with any object. Reserve a minimum space of 10 cm around the device for heat dissipation.
- Do not place any object (such as a candle or a water container) on the device. If any foreign object or liquid enters the device, stop using the device immediately, power it off, remove all the cables connected to it, and then contact an authorized service center.
- During thunderstorms, power off the device, and then remove all the cables connected to it to prevent it from getting damaged due to lightning strikes.

Precautions for Using Wireless Devices

- When using the device, ensure that the antenna of the device is at least 20 cm away from all persons.
- Do not use the device where using wireless devices is prohibited or may cause interference or danger.
- The radio waves generated by the device may interfere with the operation of electronic medical devices. If you are using any electrical medical device, contact its manufacturer for the restrictions on the use of the device.
- Do not take the device into operating rooms, intensive care units (ICUs), or coronary care units (CCUs).

Areas with Inflammables and Explosives

- Do not use the device where inflammables or explosives are stored, for example, in a gas station, oil depot, or chemical plant. Otherwise, explosions or fires may occur. In addition, follow the instructions indicated in text or symbols.
- Do not store or transport the device in the same box as inflammable liquids, gases, or explosives.

Safety of Children

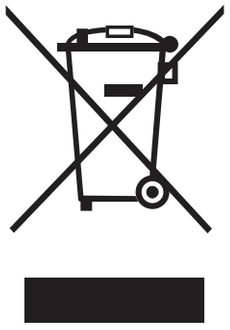
Keep the device and its accessories out of the reach of children. Otherwise, they may damage the device and its accessories by mistake, or they may swallow the small components of the device, causing suffocation or other dangerous situations.

Maintenance

- If the device is not used for a long time, power it off, and then remove all the cables connected to it.

- If any exception occurs, for example, if the device emits any smoke or unusual sound or smell, stop using the device immediately, power it off, remove all the cables connected to it, and then contact an authorized service center.
- Before cleaning the device, stop using it, power it off, and then remove all the cables connected to it.
- Use a clean, soft, and dry cloth to clean the device shell. Do not use any cleaning agent or spray to clean the device shell.

Disposal and Recycling Information



This symbol on the device (and any included batteries) indicates that the device (and any included batteries) should not be disposed of as normal household garbage. Do not dispose of your device or batteries as unsorted municipal waste. The device (and any batteries) should be handed over to a certified collection point for recycling or proper disposal at the end of its life.

For more detailed information about the recycling of the device or batteries, contact your local city office, the household waste disposal service, or the retail store where you purchased this device.

The disposal of this device is subject to the Waste from Electrical and Electronic Equipment (WEEE) Directive of the European Union. The purpose for separating WEEE and batteries from other waste is to minimize any environmental impact and health hazard due to the presence of hazardous substances.

Reduction of Hazardous Substances

This device is compliant with the EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (Regulation No 1907/2006/EC of the European Parliament and of the Council) and the EU Restriction of Hazardous Substances (RoHS) Directive (Directive 2002/95/EC of the European Parliament

and of the Council). For more information about the REACH compliance of the device, visit the Web site www.huaweidevice.com/certification. You are recommended to visit the Web site regularly for up-to-date information.

EU Regulatory Conformance

This device should be installed and operated with a minimum distance of 20 cm between the antenna and all persons.

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CE 0678 !

Notice: Observe the national local regulations in the location where the device is to be used. This device may be restricted for use in some or all member states of the European Union (EU).

Notice: This device may be operated in all member states of the EU.

France: Outdoor use limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz.

Italy: For private use, a general authorisation is required if WAS/RLAN's are used outside own premises. For public use, a general authorisation is required.

Luxembourg: General authorisation required for network and service supply.

Norway: This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund.

Federal Communications Commission (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 device should be installed and operated with a minimum distance of 20 cm between the antenna and all persons.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which

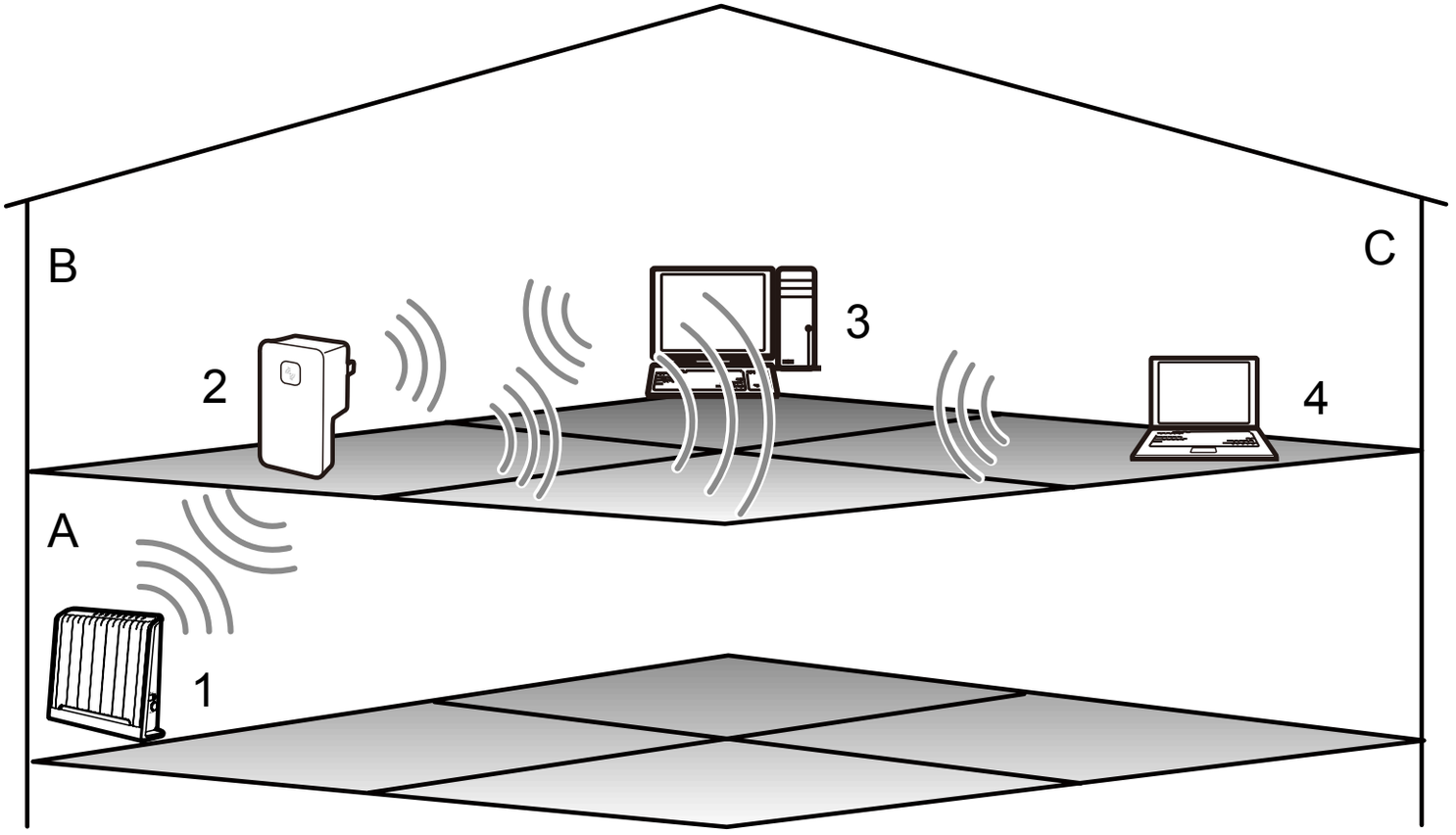
can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Warning: Changes or modifications made to this device not expressly approved by Huawei Technologies Co., Ltd. may void the FCC authorization to operate this device.

2 Function Overview

HUAWEI WS320 Wireless Repeater (hereinafter referred to as the WS320) is a wireless signal repeater that can work with a wireless router to extend the wireless network coverage.The following figure shows the network connection between the WS30 and other related devices.The PC in Room C on the second floor is some distance from the wireless router in Room A on the first floor. The WS320 is used to process the wireless signals transmitted between the PC and the wireless router. Thus, a wireless network can be established.



1 Wireless router 2 WS320

3 and 4 PCs installed with a wireless adapter

3 Setting Up a Wireless Connection

When using the WS320, you need to set up a wireless connection between the WS320 and the wireless router only. Then the PC can connect to the wireless network extended by the WS320 as it connects to the wireless network implemented by the wireless router.You only need to connect the WS320 to the wireless network once. Then when you restart the WS320 again, the WS320 will automatically connect to the wireless network that it connected to last time.

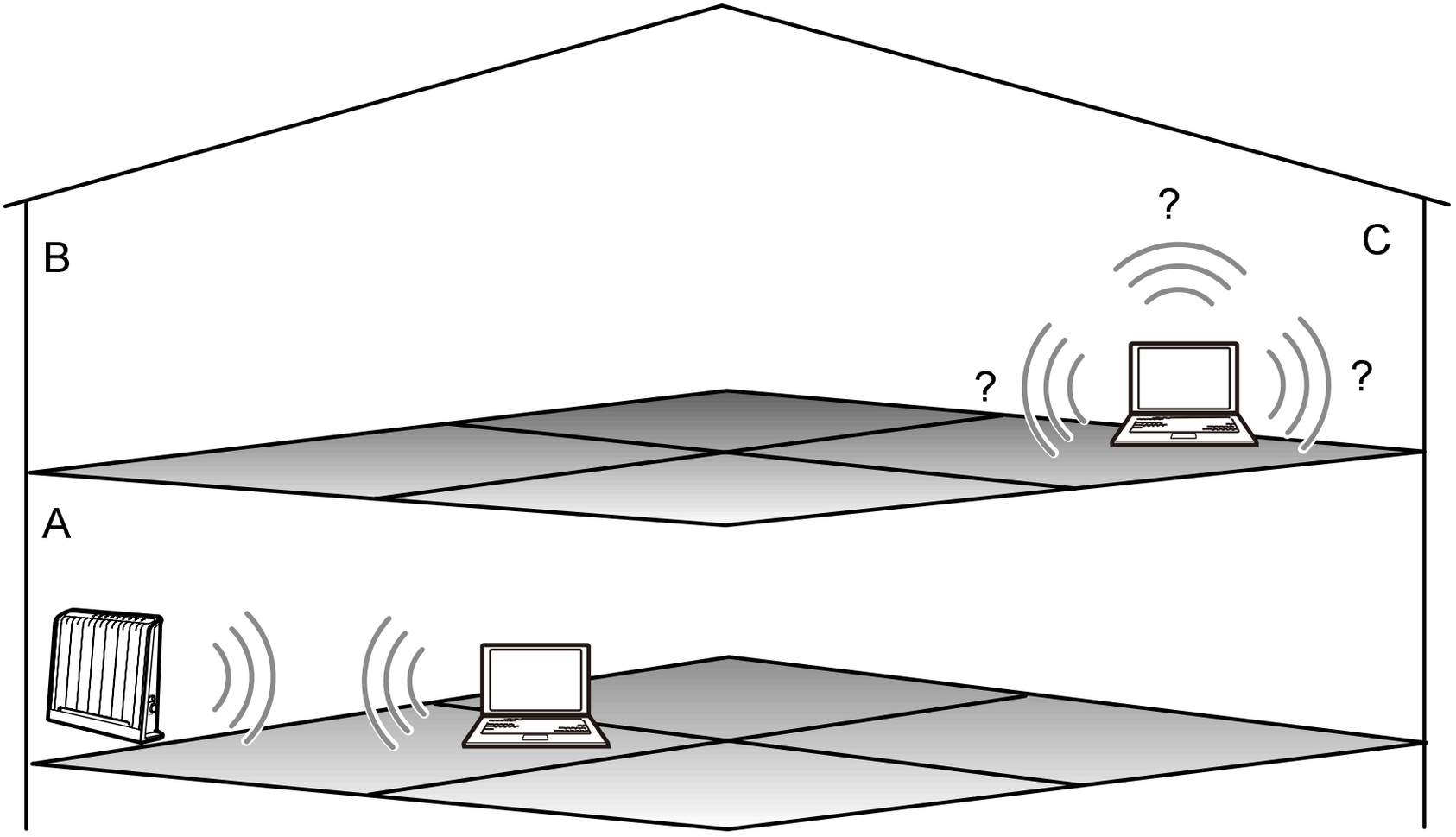
The WS320 support two methods of setting up a wireless connection.You can choose one of the following configuration methods based on your installation environment and operation habit.

Setting Up a Wireless Connection Through the WPS Button

If your wireless router supports the Wi-Fi Protected Setup (WPS) function implemented through Push Button Configuration (PBC), you can quickly set up a wireless connection between the WS320 and the wireless router by pressing the WPS button.

Wi-Fi Protected Setup, abbreviated to WPS, is a standard used for simplifying the security settings of a wireless network.Through the WPS function, you can securely connect your wireless terminal to a wireless network without entering the name and password of the network.

Suppose that you are in the network environment as shown in the following figure.

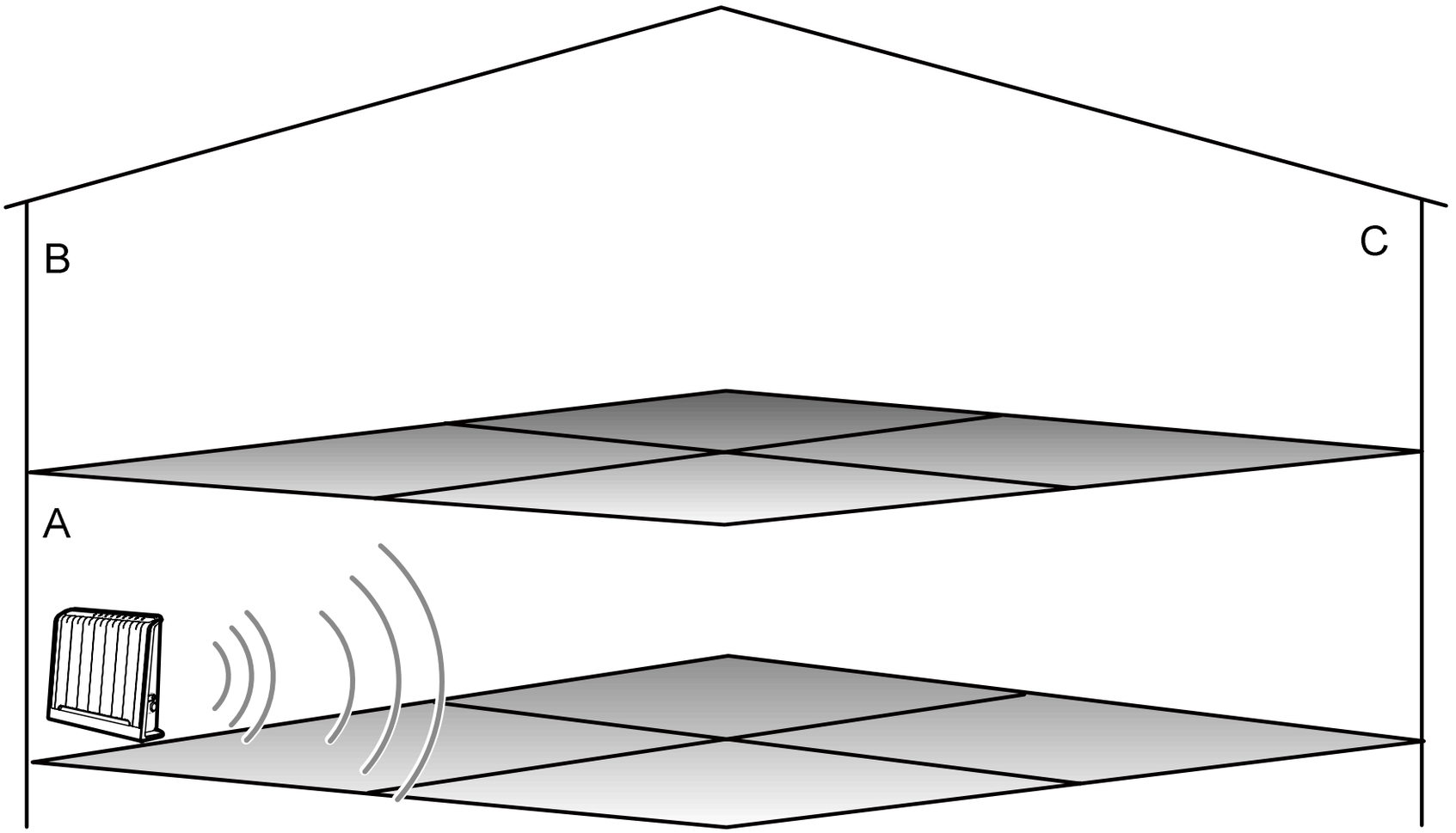


Your PC is placed in Room A and it is connected to a wireless network.Because Room C is far from the wireless router and wireless signals are blocked by several walls, the PC in Room C cannot connect to the wireless network.Room B is between Room A and Room C.

Now you want the PC in Room C to connect to the wireless network also. To set up the wireless connection, do as follows:

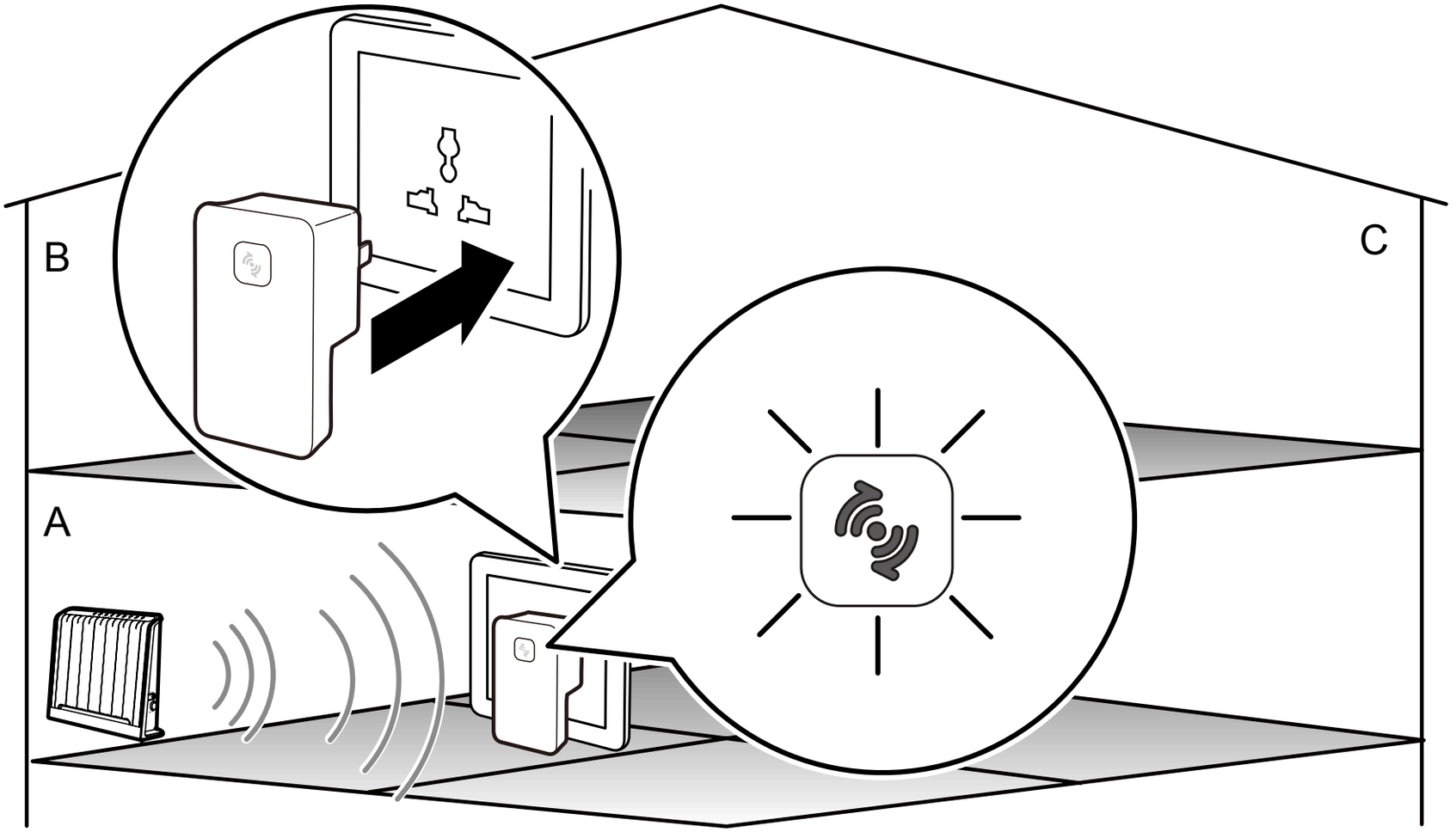
Step 1 Power on the wireless router in Room A. On the wireless router, ensure that the wireless network function and the WPS function implemented through PBC are enabled.

The method of configuring a wireless network on a router varies with the routers produced by different manufacturers.For details about the configuration method, see the wireless router operation guide provided by the manufacturer.



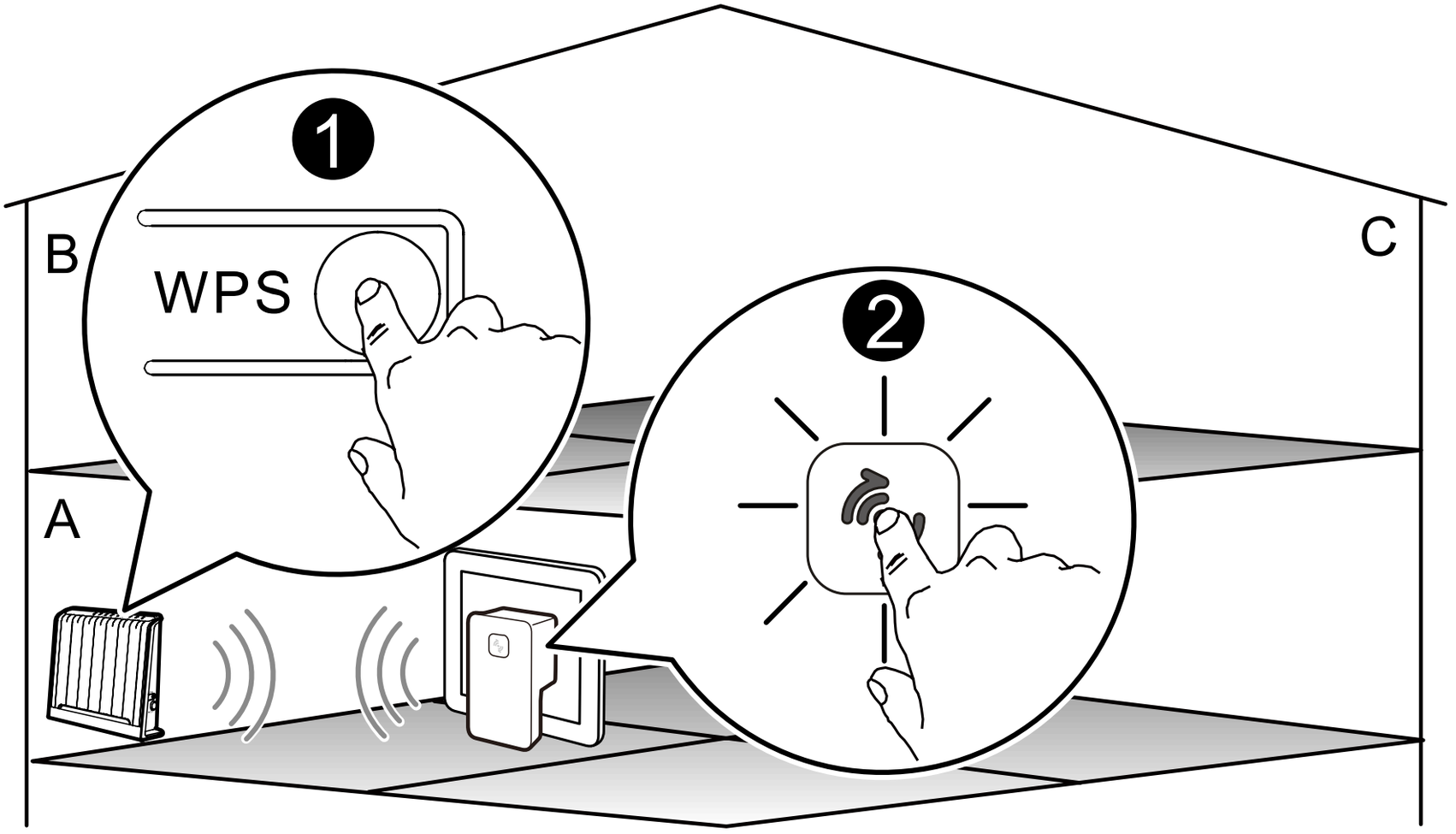
Step 2 In Room A, connect the WS320 to a power socket near the wireless router.

After the WS320 is powered on, the indicator on the panel turns on in red, indicating that the WS320 is being started.Wait for about one minute. Then the indicator on the WS320 turns solid yellow, indicating that the WS320 has been started but not connected to the wireless router.



Step 3 Press the WPS button on the wireless router to start the WPS negotiation of the router.Press and hold the WPS button of the WS320 for over 1s within two minutes, and then release the button.

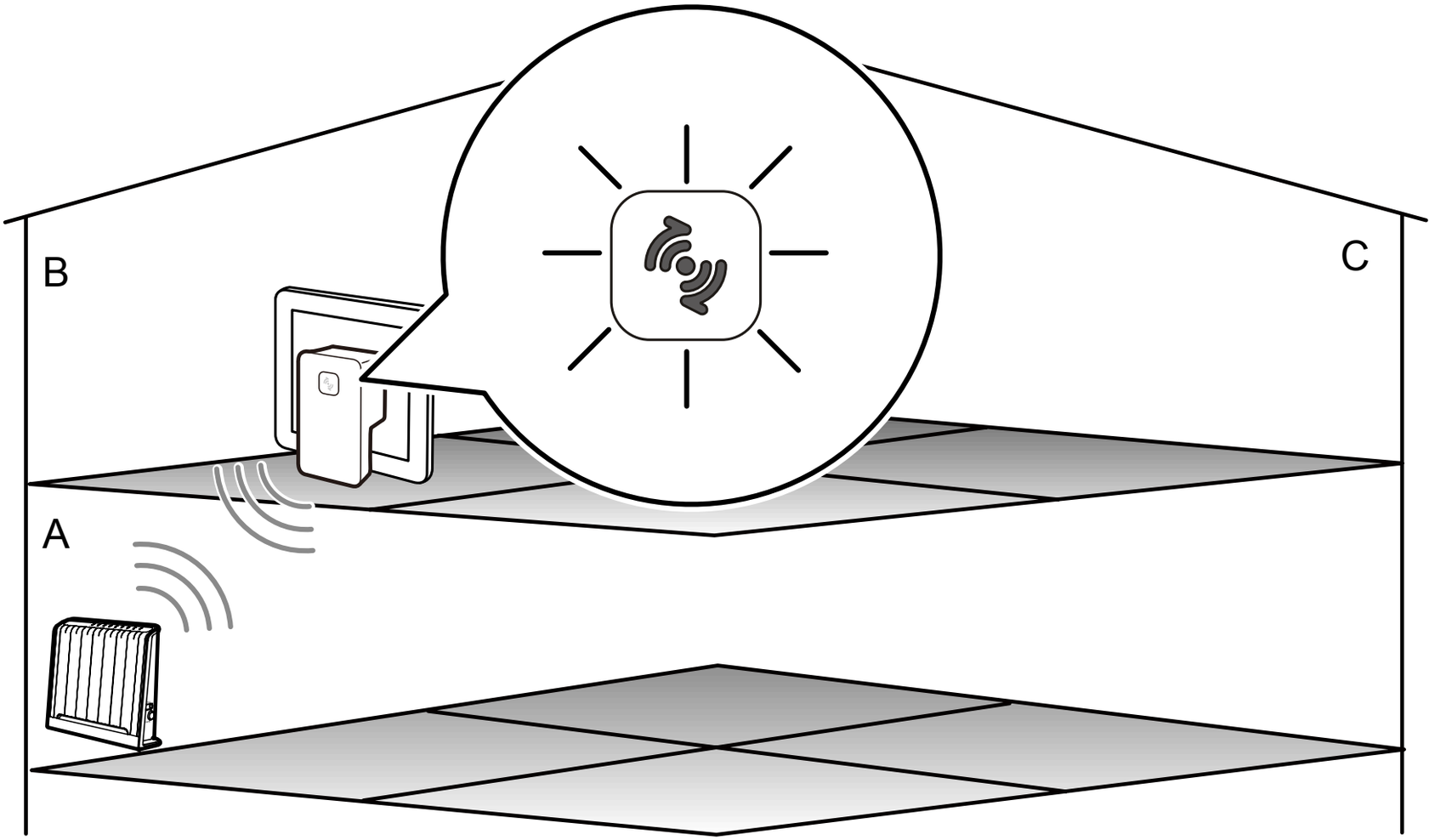
At this time, the indicator of the WS320 blinks in yellow, indicating that the WS320 is trying to connect to the wireless router through the WPS function.Wait for a moment (generally about 10s and less than 120s). When the indicator of the WS320 turns solid green, it indicates that the WS320 successfully connects to the wireless router through the wireless network.



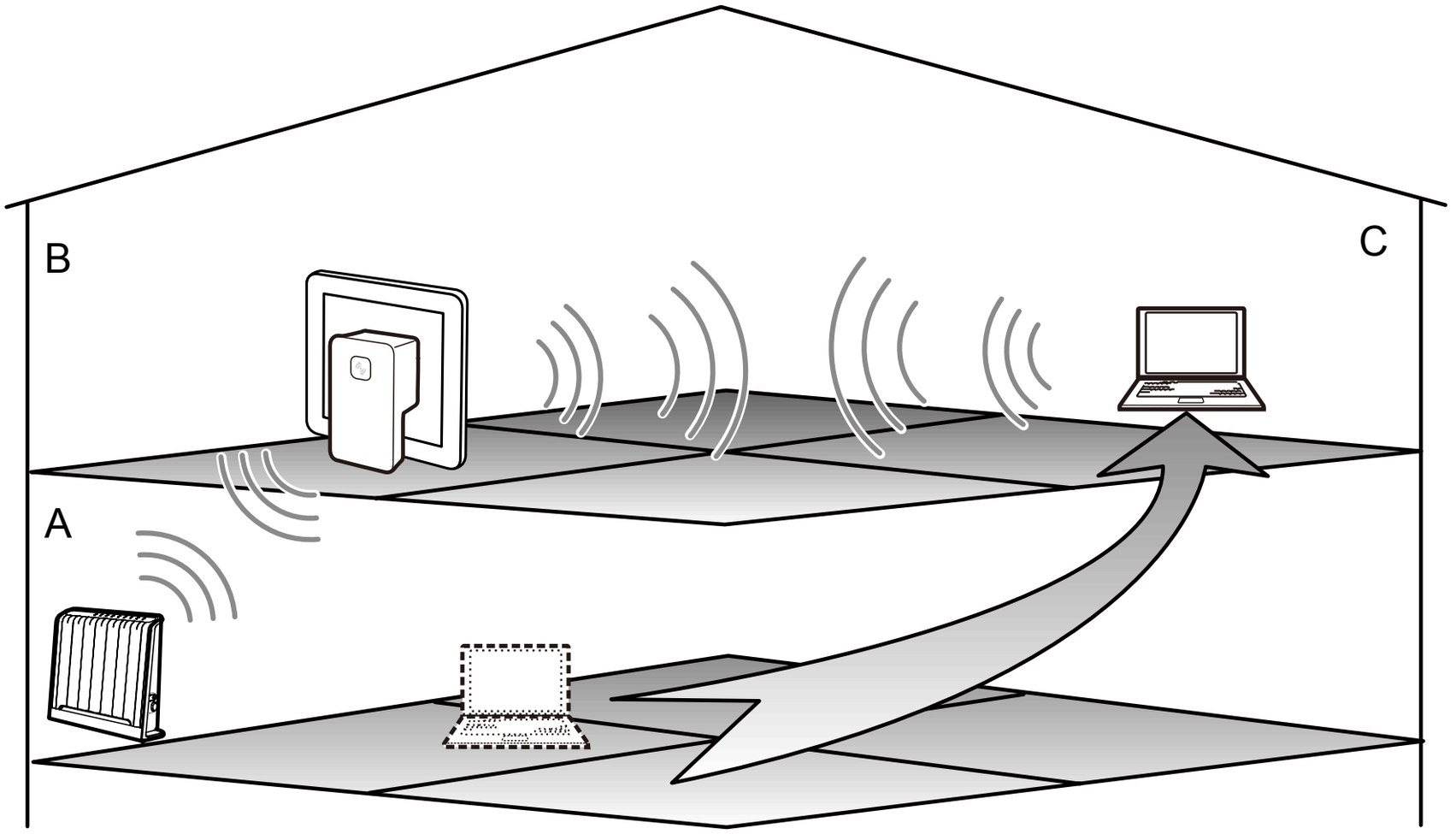
Step 4 Unplug the WS320 in Room A, and then plug it into the power socket in Room B.

After the WS320 is powered on, the indicator on the panel turns on in red, indicating that the WS320 is being started.Wait for about one minute. Then the indicator of the WS320 blinks in yellow, indicating that the WS320 is trying to connect to the wireless network.When it successfully connects to the wireless network, the indicator of the WS320 turns solid green.

If the indicator turns solid yellow after it blinks in yellow, it indicates that the WS320 cannot connect to the wireless network.In this case, adjust the position of the WS320, placing the WS320 near the wireless router.



Step 5 Place the PC in Room C.After being started, the PC automatically connects to the wireless network extended by the WS320.At this moment, the extended network can be used the same as that implemented in Room A.



Setting Up a Wireless Connection Through the Web-Based Configuration Utility

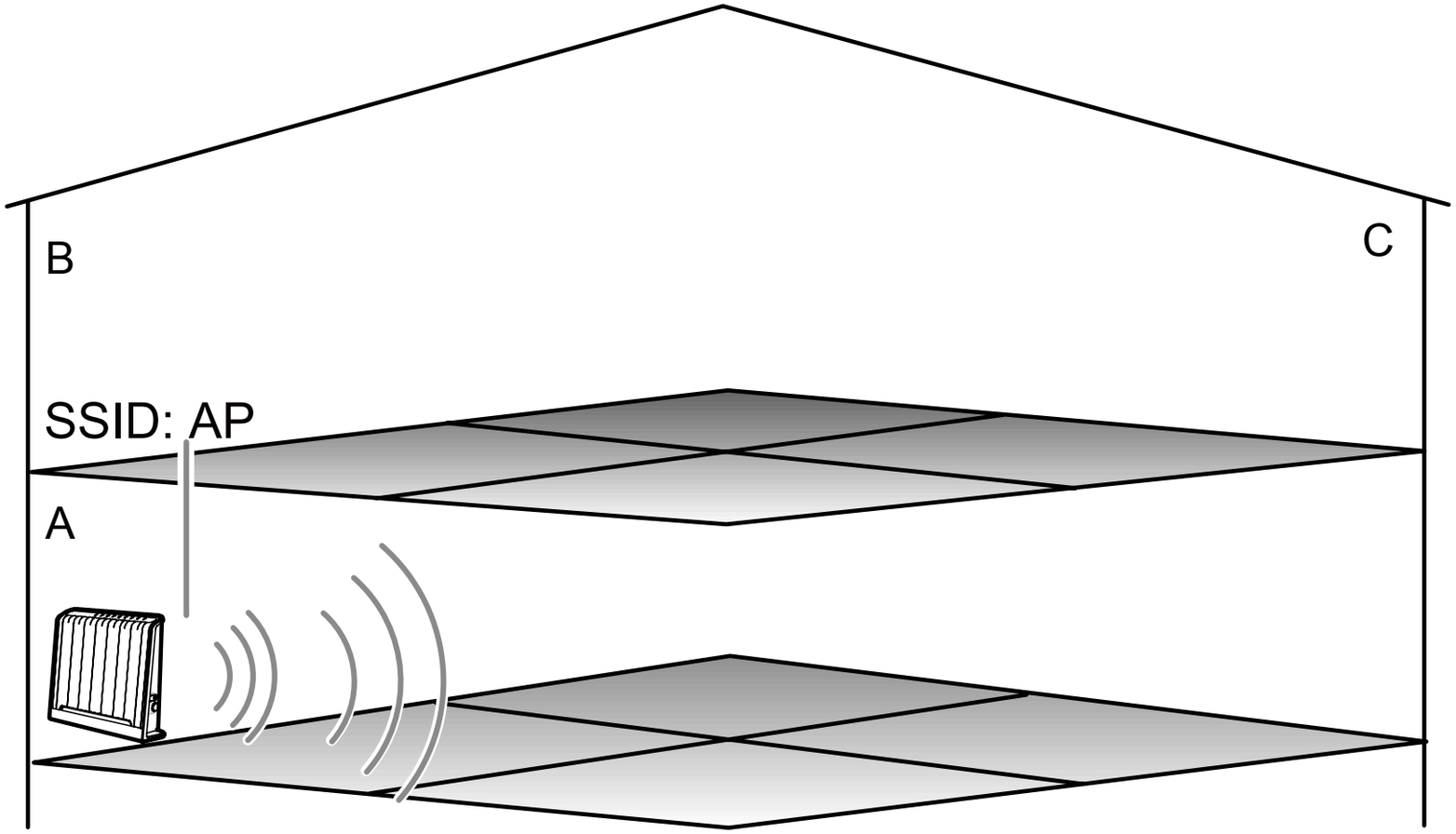
If the wireless router does not support the WPS function, you can manually connect the WS320 to the wireless router by using the Web-based configuration utility.

You need to access the Web-based configuration utility through the wireless network of the WS320.By default, an unencrypted wireless network has been configured on the WS320.The service set identifier (SSID) of the wireless network is **Repeater**.When you use the WS320 for the first time, you can connect to the

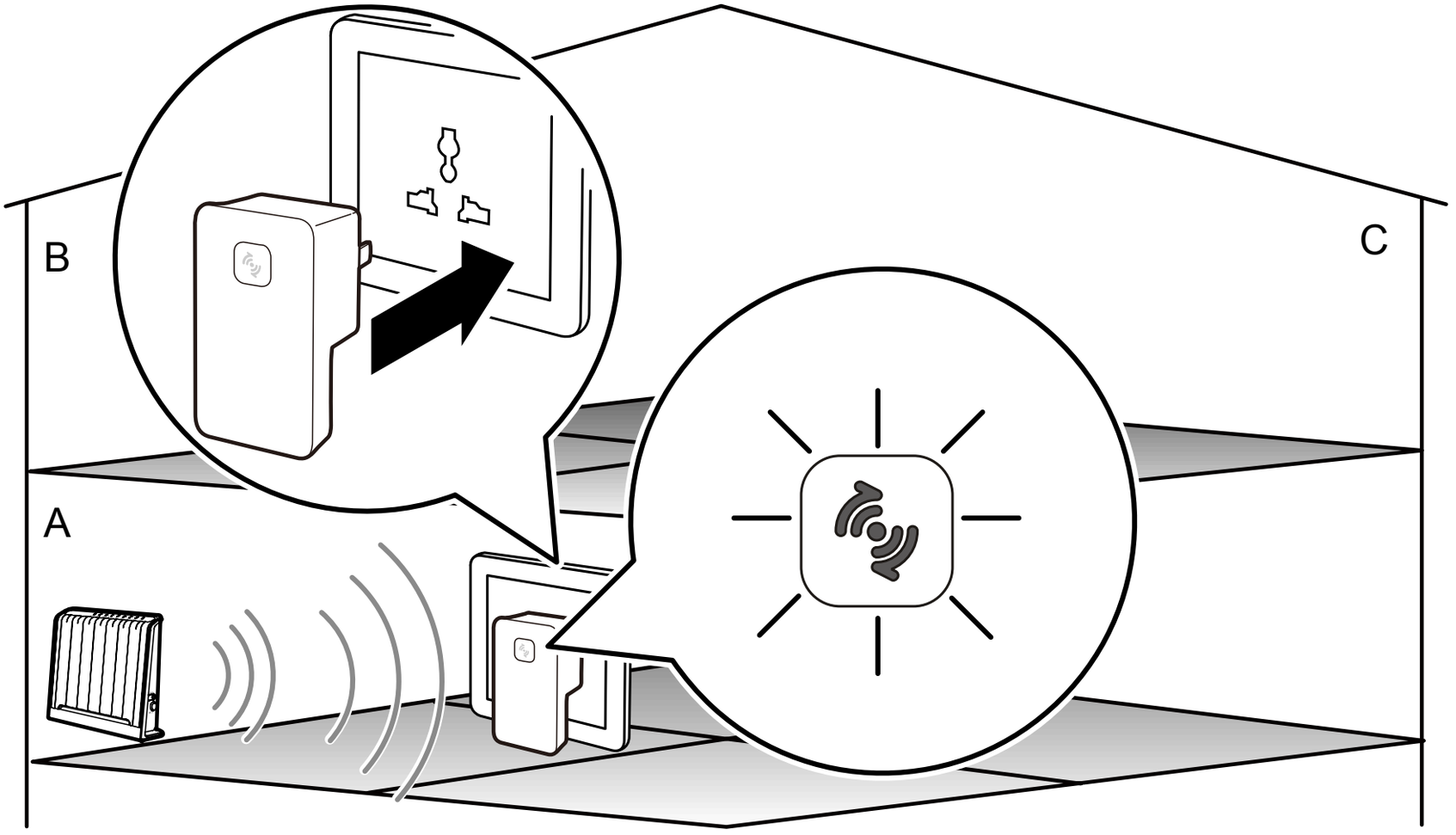
default wireless network to access the Web-based configuration utility of the WS320.

Suppose that the wireless SSID of the wireless router is **AP**. To perform the configuration, do as follows:

Step 1 Power on the wireless router in Room A. Ensure that the wireless network function of the wireless router is enabled.

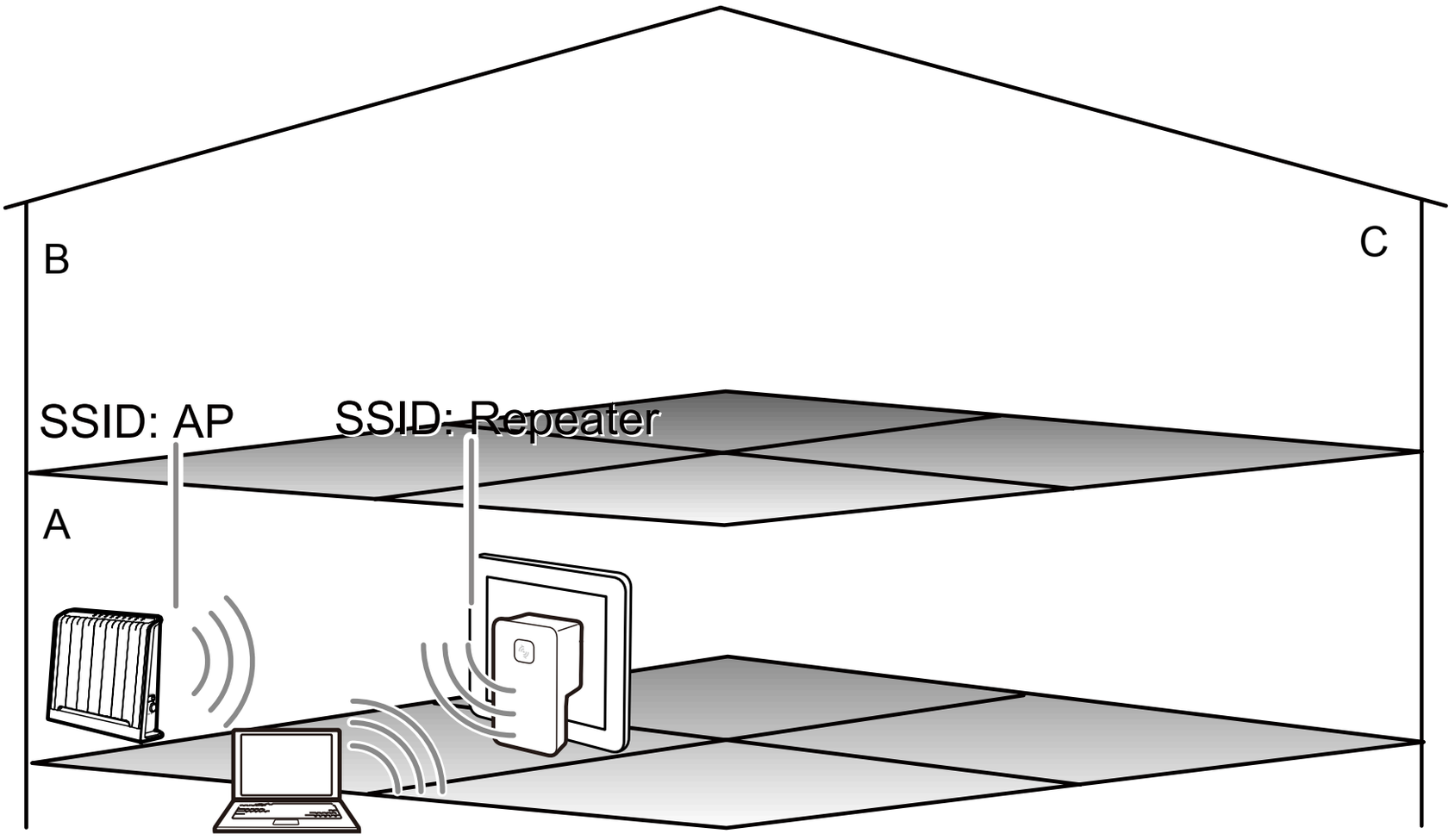


Step 2 In Room A, connect the WS320 to a power socket near the wireless router.Wait for about one minute until the WS320 is started.


B
C
A

Step 3 In Room A, log in to the quick configuration webpage of the WS320 on the PC.

1. Set up a wireless connection between the PC and the WS320.The SSID of the wireless network to be connected is **Repeater**.
2. Configure the network connection of the PC and ensure that the PC obtains an IP address automatically.
3. Launch the browser on the PC, and then access any Web address (such as **http://ws320)** on the browser. The quick configuration webpage of the WS320 is displayed.



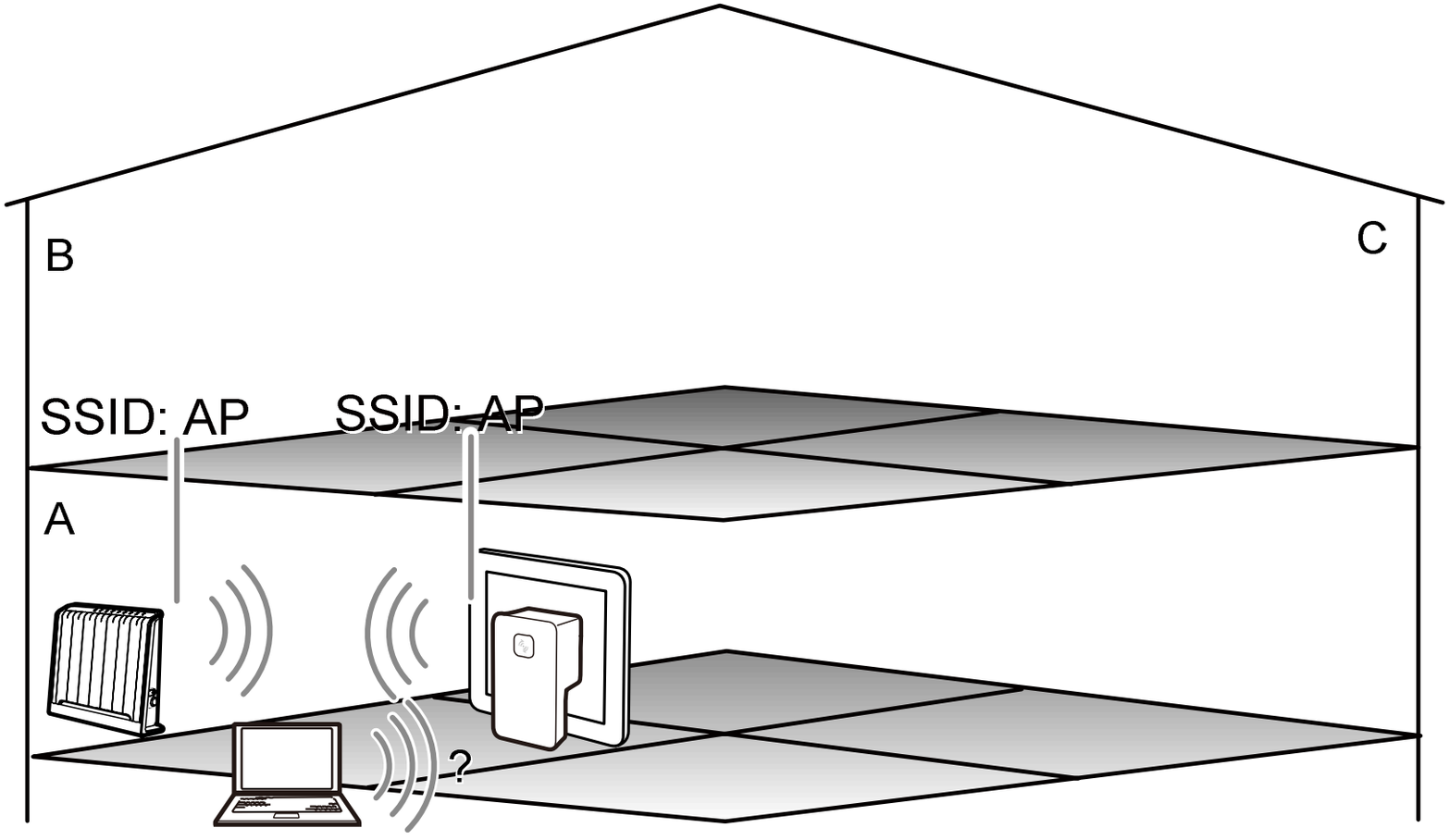
Step 4 On the quick configuration webpage of the WS320, set up a connection between the WS320 and the wireless router.

1. Click Manual Connecting.

The WS320 searches for wireless network signals.Wait patiently until the browser displays a wireless network list.

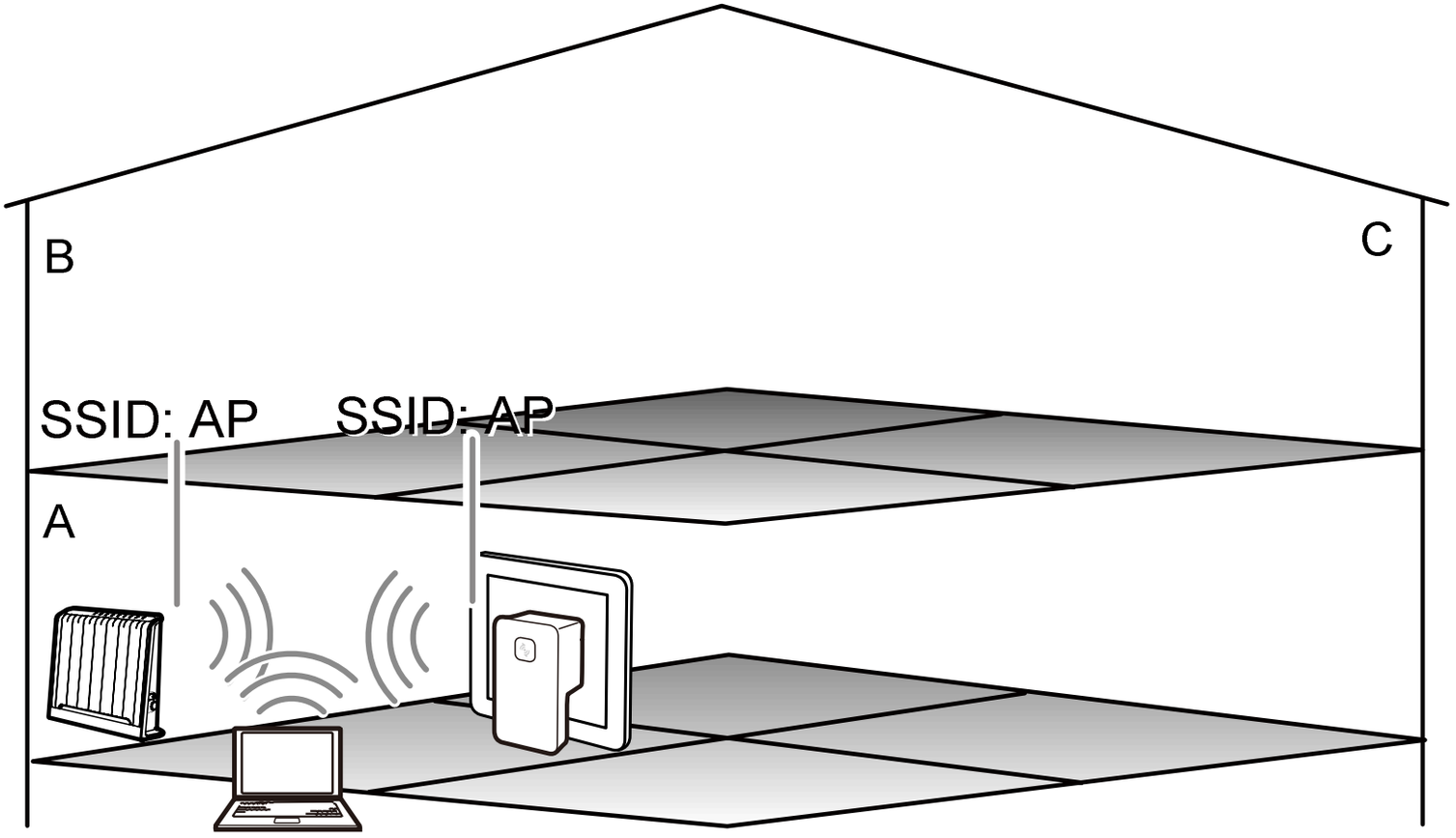
2. In the wireless network list, click the row of the wireless network whose SSID is **AP**.
3. In the lower text box, enter the password of the wireless network.
4. Click **Connect** to connect the WS320 to the wireless network with the SSID of **AP**.

Wait for a moment (about 30 seconds). When the indicator of the WS320 turns solid green after it blinks in yellow, it indicates that the WS320 successfully connects to the wireless router through the wireless network.

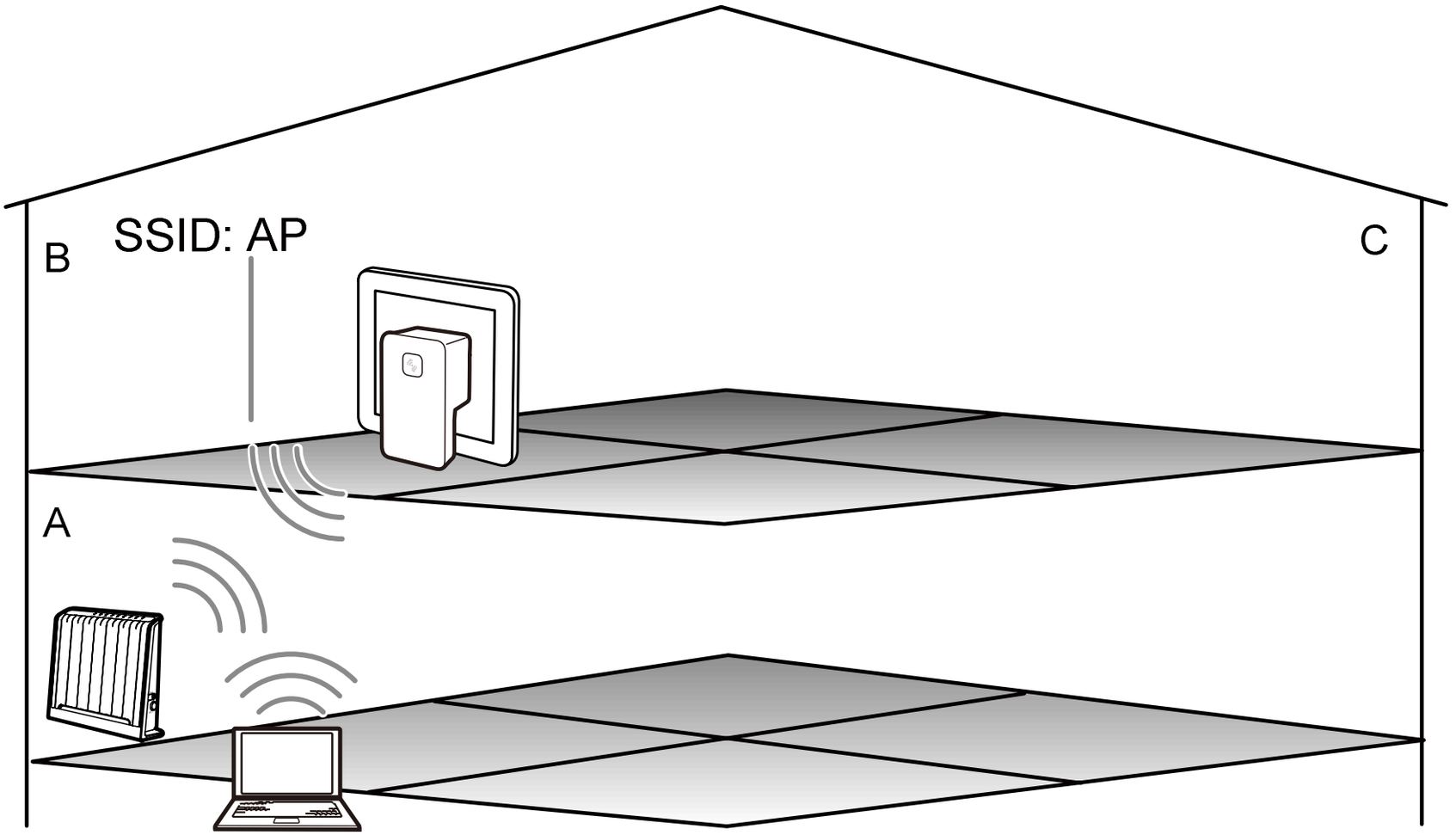

B
C
SSID: AP
SSID: AP
A
?

- If the indicator turns solid yellow after it blinks in yellow, it indicates that the WS320 cannot connect to the wireless network.At this moment, try to connect to the wireless network again on the quick configuration webpage.
- If the indicator turns solid yellow and the quick configuration webpage cannot be displayed by using the browser, press the reset button on the panel of the WS320 to restore the WS320 to the default settings. Then log in to the quick configuration webpage of the WS320 again.

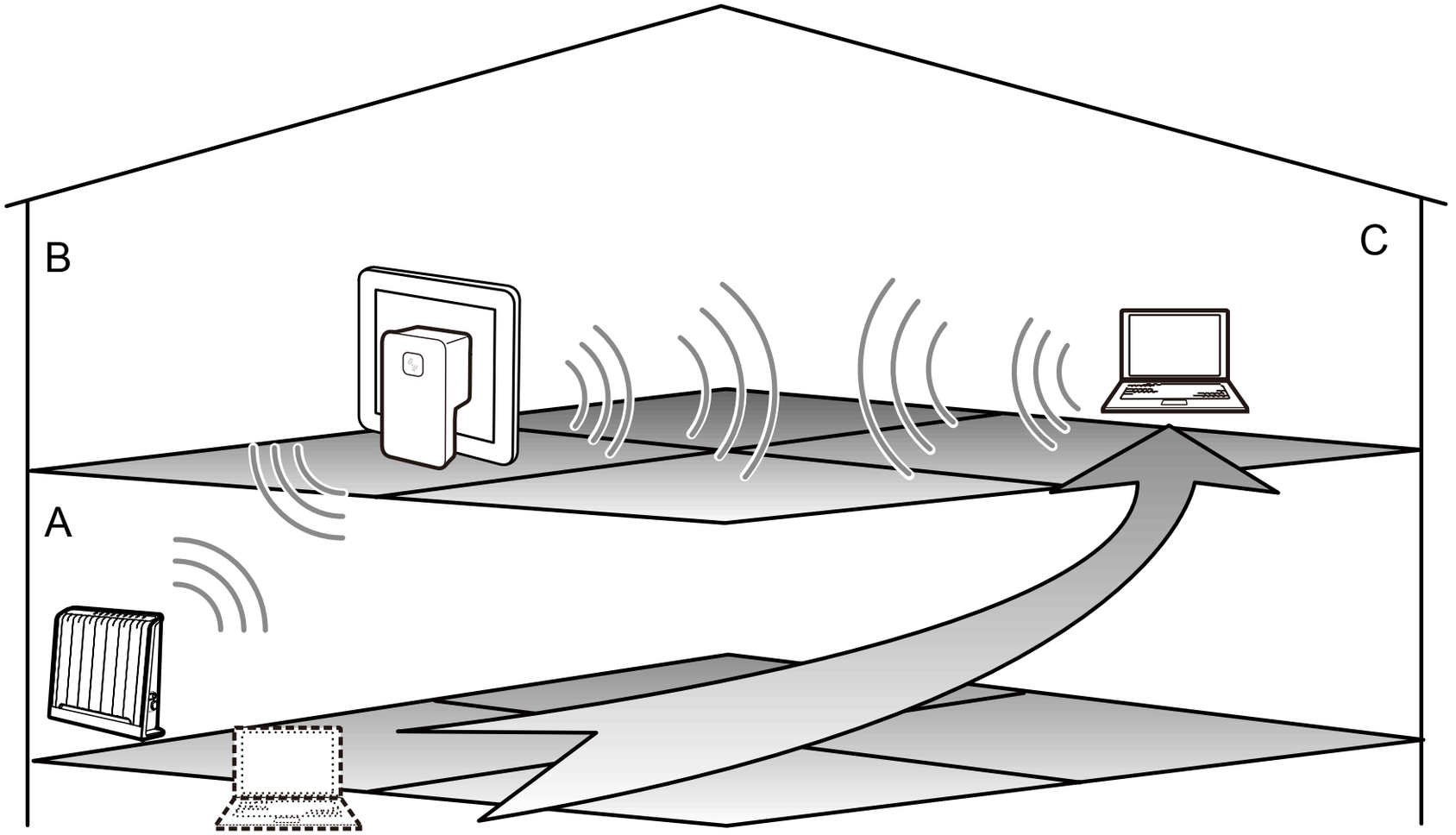
Step 5 Configure the wireless connection of the PC again, which will connect to the wireless network with the SSID of **AP**.



Step 6 Unplug the WS320 in Room A, and then plug it into the power socket in Room B.


B
SSID: AP
C
A

Step 7 Place the PC in Room C.After being started, the PC automatically connects to the wireless network extended by the WS320.At this moment, the extended network can be used the same as that implemented in Room A.



If you want to enable the SSID named **Repeater** again, you can press the reset button of the WS320 to restore the WS320 to the default settings.

4 Maintaining the WS320

Logging In to the Advanced Configuration Webpage

By default, most parameters are preset on the WS320 for supporting the network applications in general conditions.To view the working status or to change the parameters of the WS320, you can log in to the advanced configuration webpage.

You need to access the advanced configuration webpage through the wireless network of the WS320.The method of accessing the advanced configuration webpage varies with the wireless network status of the WS320 and the wireless router.

When the WS320 Is Not Connected to the Wireless Router

Step 1 Set up a wireless connection between the PC and the WS320.The SSID of the wireless network to be connected is **Repeater**.

Step 2 Configure the network connection of the PC and ensure that the PC obtains an IP address automatically.

Step 3 Launch the browser on the PC and then access any Web address (such as **http://ws320)** on the browser.

Step 4 In the upper right corner of the quick configuration webpage, click **Advanced**.

Step 5 In the login dialog box, enter the user name (**admin** by default) and the password (**admin** by default), and then click **Login**.After the password is verified, you can access the advanced configuration webpage.

When the WS320 Is Connected to the Wireless Router

Step 1 Set up a wireless connection between the PC and the WS320.The SSID of the wireless network that your PC is connected to is the same as that of the wireless network of the wireless router.

Step 2 Set the network connection of the PC and ensure that the IP address is in the same network segment as the IP address of the WS320 LAN interface.

By default, the IP address of the WS320 LAN interface is **192.168.1.254** and the subnet mask is **255.255.255.0**.If the IP address is not changed, you can set the IP address to **192.168.1.101** and the subnet mask to **255.255.255.0** on the PC.

Step 3 Launch the browser on the PC. Enter **http://192.168.1.254** in the address bar, and then press **Enter**.

Step 4 In the upper right corner of the quick configuration webpage, click **Advanced**.

Step 5 In the login dialog box, enter the user name (**admin** by default) and the password (**admin** by default), and then click **Login**.After the password is verified, you can access the advanced configuration webpage.

Connecting to a New Wireless Network

After the WS320 is connected to the wireless network of a wireless router, if you want to connect the WS320 to another wireless router, you can press the WPS button.

You can also do as follows by using the Web-based configuration utility:

Step 1 Log in to the advanced configuration webpage of the WS320.

Step 2 In the navigation tree, choose **Settings** > **Repeater** to display the configuration page.

Step 3 On the configuration page, click **Client**.

Step 4 Select the wireless network to be connected from the **WLAN AP List** list.

Step 5 In the **Settings** area, set the connection parameters of the wireless network.

Step 6 In the lower right corner, click **Connect**.

When the connection is set up successfully, **Connection Status** under **Connection Status** at bottom of the page is displayed as **Connected**.When powered in the future, the WS320 will automatically connect to the wireless network you set.

After the WS320 is connected to a new wireless network, you need to configure the wireless connection of your PC again and then connect the PC to the new wireless network.

Changing the IP address of the LAN Interface

The IP address of the LAN interface is the IP address entered in the address bar of the browser before you log in to the Web-based configuration utility.To change the IP address, do as follows after you log in to the Web-based configuration utility:

Step 1 Log in to the advanced configuration webpage of the WS320.

Step 2 In the navigation tree, choose **Settings** > **DHCP** to display the DHCP configuration page.

Step 3 In the **IP address** text box, enter the new IP address.

Step 4 In the **Subnet mask** text box, enter the subnet mask.

Step 5 Click **Submit**.

When changing the IP address of the WS320 LAN interface, ensure that the new IP address does not conflict with the IP address of another device that is connected to the WS320.

Restoring Default Settings

After you restore the default settings, your customized data will be lost. Therefore, use this function with caution.

When the WS320 is powered on, press and hold the Reset button of the WS320 for over 1s by using an object with a sharp point (such as a pin), and then release it. Then the WS320 automatically restarts and the default settings are restored.After you release the Reset button, the indicator of the WS320 turns off and then changes to solid red, indicating that the WS320 is restarted after the default settings are restored.

To restore the default settings, you can also do as follows after logging in to the advanced configuration webpage:

Step 1 In the navigation tree, choose **Maintenance** > **Reset** to display the system reboot page.

Step 2 Click **Restore Default Settings**.

5 FAQs

Can I set up a wireless connection between my PC and the WS320 by pressing the WPS button of the WS320?

No, you cannot.The WPS button of the WS320 can be used only for setting up

a connection between the WS320 and a wireless router.

When my PC has connected to the wireless network of the WS320 and when the PC has automatically obtained an IP address, is the IP address allocated by the WS320 or the wireless router?

If the WS320 has set up a wireless connection with the wireless router, the IP address is allocated by the WS320; otherwise, the IP address is allocated by the wireless router.

How can I configure a wireless connection on the PC to be connected to a wireless network?

You can configure a wireless network connection by using the software delivered with the wireless network adapter.If a Windows OS is installed on your PC, you can use the wireless connection configuration software provided by the Window OS.The following contents take Windows XP as an example and describes how to configure a wireless connection.

Step 1 Enable the wireless configuration service supported by Window XP.

1. 1. Right-click **My Computer**, and then choose **Manage** from the shortcut menu.
2. In the **Computer Management** window, choose **Computer Management (Local)** > **Services and Applications** >**Services**.
3. From the services listed in the right pane of the **Computer Management** window, right-click **Wireless Zero Configuration**, and then choose **Properties** from the shortcut menu.
4. In the **Wireless Zero Configuration Properties (Local Computer)** dialog box, check whether **Service status** is **Started**.If not, click the **Start** button.

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

Step 2 Configure the wireless network connection on your PC.

1. Choose **Start** > **All Programs** > **Accessories** > **Communications** > **Network Connections**.
2. In the **Network Connections** window, right-click **Wireless Network Connection**, and then choose **Properties** from the shortcut menu.
3. In the **Wireless Network Connection Properties** dialog box, click **Wireless Networks**.
4. Select **Use Windows to configure my wireless network settings**.
5. Click **View Wireless Networks**.
6. In the 无线网络连接 dialog box, select the wireless network to be connected to from the wireless network list, and then click **Connect** in the lower right corner of the dialog box.
7. In the displayed dialog box, enter the network access password, and then click **Connect**.

After the password is verified, **Connected** appears on the icon of the wireless network in the wireless network list, which indicates that your PC is connected to the wireless network.

8. Close the **Wireless Network Connection** dialog box.
9. In the **Wireless Network Connection Properties** dialog box, click **OK**.

How can I quickly restore the WS320 to the default settings?

When the WS320 is powered on, press and hold the Reset button of the

WS320 for over 1s by using an object with a sharp point (such as a pin), and then release it. Then the WS320 automatically restarts and the default settings are restored.

Does the WPS function have any special requirement on the wireless encryption settings of a wireless router?

The WPS function has no special requirement on the wireless encryption settings;however, it is recommended that you use the Wi-Fi Protected Access 2−Pre-shared key (WPA2-PSK) security mode together with the Advanced Encryption Standard (AES) encryption rather than the Wired Equivalent Privacy (WEP) encryption method for accessing a wireless network.The reasons are as follows: If a wireless network is not encrypted or encrypted by using WEP, the security performance is poor. In addition, on some wireless routers, the WPS function is forcibly disabled when the WEP encryption is used for accessing a wireless network.

If several SSIDs are enabled on my wireless router, when the WS320 tries to connect to a wireless network by using the WPS function, which wireless network does the WS320 connect to?

By using the WPS function, the WS320 tries to connect to the wireless network with the SSID numbered **1**.

If my wireless router does not support the WPS function, how can I set up a connection between the WS320 and the router?

You can manually connect the WS320 to the wireless network of the wireless router by using the Web-based configuration utility of the WS320.

If the WS320 fails to connect to the wireless network of a wireless router after

I press and hold the WPS button, what should I do?

Step 3 Ensure that only one wireless router has started the WPS negotiation at a particular moment.

Step 4 Ensure that only one WS320 is trying to connect to the wireless router through the WPS function at a particular moment.

Step 5 On the wireless router, ensure that the wireless network function and the WPS function implemented through PBC are enabled.Note that on some wireless routers, the WPS function is forcibly disabled when the WEP encryption is used for accessing a wireless network.

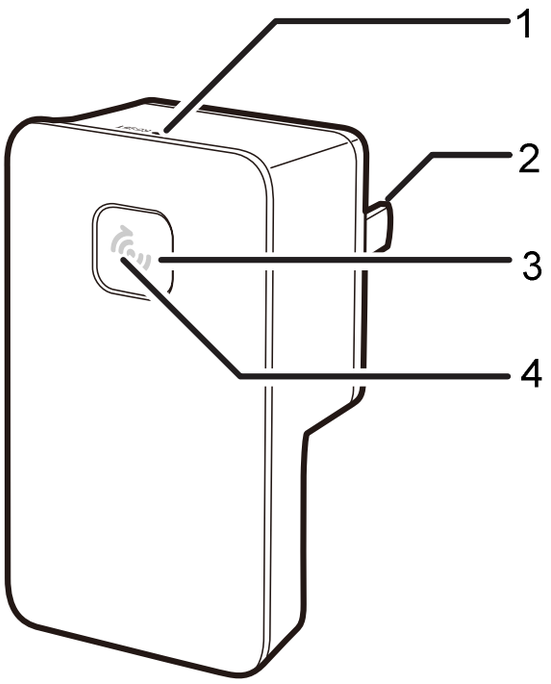
Step 6 Check the positions of the wireless router and the WS320. Ensure that they are far from the electric appliances, such as microwave ovens, refrigerators, or cordless telephones, which generate strong magnetic or electric fields.

Step 7 It is recommended that you place the wireless router and the WS320 in an open space.Although radio signals can pass through obstacles, passing through too many obstacles such as cement or wooden walls can affect the transmission of wireless signals of a wireless network.

6 Appendix

Hardware Features

The following figure shows the positions of the interface, buttons, and indicator on the WS320.



The following table describes the interface, buttons, and indicator of the WS320.

No.	Description
1	Reset button: used to restore the default settings of the WS320. When the WS320 is powered on, press and hold the Reset button of the WS320 for over 1s, and then release it. Then the WS320 automatically restarts and the default settings are restored.
2	Power plug: used to connect to the power socket.
3	WPS button: used to start the WPS negotiation of the WS320 to set up a wireless connection between the WS320 and a wireless router.
4	Status indicator: located in the middle of the WPS button and used to indicate the working status of the WS320.For details about the status indicator, see the following table.

The following table describes the functions of the indicator.

Color	Status	Description
Red	Solid on	The WS320 is being started.
	Blinking	The WS320 is updating software.
Yellow	Solid on	The WS320 has been started but not connected to a wireless router.
	Blinking	The WS310 is trying to set up a wireless connection with a wireless router.
Green	Solid on	The WS311 has set up a wireless connection with a wireless router.

Default Settings

Parameter	Default Value
IP address of the LAN interface	192.168.1.254
Subnet mask of the LAN interface	255.255.255.0
User name used to log in to the Web-based configuration utility	admin
Password used to log in to the Web-based configuration utility	admin

Parameter	Default Value
Wireless network name (SSID)	Repeater
Wireless network password	None.No password required for connection

Technical Specifications

Item	Specification
Entire-device power supply	100–240 V AC
Entire-device power consumption	< 5 W
Working temperature	0°C to 40°C (32°F to 104°F)
Working humidity	5% to 95% (non-condensing)
Dimensions (L × W × H)	76 mm × 42 mm × 59 mm
Weight	About 61 g
Wireless networking standards	802.11b, 802.11g, and 802.11n (2.4–2.4835 GHz)

Item	Specification	
Wireless network coverage	Maximum distance of 150 m from the WS320 to a wireless router (with no obstacle and interference between)	
Wireless data rates	802.11b	1Mbit/s, 2Mbit/s, 5.5Mbit/s, and 11Mbit/s
	802.11g	6Mbit/s, 9Mbit/s, 12Mbit/s, 18Mbit/s, 24Mbit/s, 36Mbit/s, 48Mbit/s, and 54Mbit/s
	802.11n (a 1T × 1R antenna used)	6Mbit/s, 6.5Mbit/s, 13.0Mbit/s, 13.5Mbit/s, 19.5Mbit/s, 26.0Mbit/s, 27.0Mbit/s, 39.0Mbit/s, 40.5Mbit/s, 52.0Mbit/s, 54.0Mbit/s, 58.5Mbit/s, 65.0Mbit/s, 81.0Mbit/s, 108.0Mbit/s, 121.5Mbit/s, and 135.0Mbit/s

HUAWEI TECHNOLOGIES CO., LTD.

Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

www.huawei.com

Part Number: 202302