HP R100-Series Wireless VPN Routers Quickstart

This Quickstart shows you how to install and get started using the HP R110 802.11n Wireless VPN Router and HP R120 802.11ac Wireless VPN Router, hereafter referred to as the HP R110 and HP R120. (See *Products list* on page 6 for part numbers.)

The latest documentation, including the *HP R100-Series Wireless VPN Routers Configuration/Administration Guide,* is available at www.hp.com/support/manuals.

The HP R100-Series routers are all-in-one networking devices incorporating an IPv6-capable router, gigabit LAN switch, 802.11 wireless access point, SPI firewall and VPN encryption technology. The HP R110 provides a single radio dual band 802.11n access point and aggregate VPN capacity of 30 Mbps. The HP R120 provides a dual-radio 802.11ac access point and aggregate VPN performance of up to 200 Mbps.

Hardware overview

Rear view

1: Power jack
2: Power On/Off button
3: Wi-Fi On/Off button
4: LAN ports 1-4
5: WAN port
6: Reset button
7: WPS button
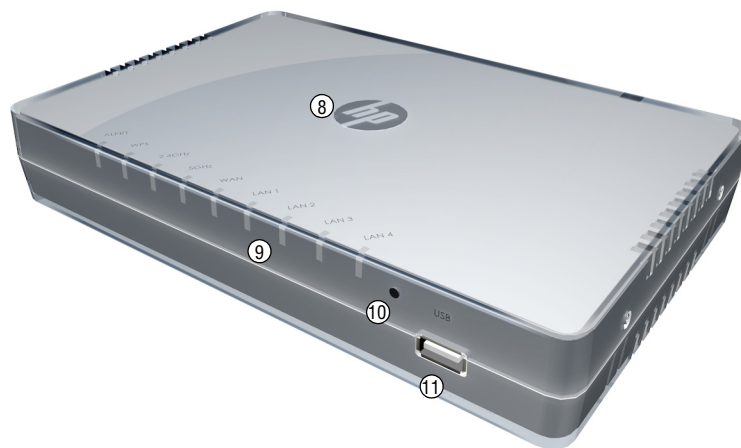
Front view

8: Power LED
9: System and port status LEDs
10: USB port LED
11: USB 2.0 port

Package contents

The HP R110 or HP R120 router, two mounting screws with wall anchors, four rubber feet, AC/DC power adapter, and documentation.

Ports

- **Four LAN Ethernet ports:** Auto-sensing 10/100/1000 BaseT Ethernet ports with RJ-45 connectors.
- **One WAN Ethernet port:** Auto-sensing 10/100/1000 BaseT Ethernet port with RJ-45 connector.
- **USB port:** A standard USB 2.0 port that can be connected to an external USB storage device. For details, see the USB port description in the *HP R100-Series Wireless VPN Routers Configuration/Administration Guide*.

Radio and antennas

The HP R110 provides a single dual-band radio with three antennas supporting 3x3 MIMO three-spatial-stream 802.11n. The HP R110 supports 802.11b/g/n operation modes at 2.4 GHz or 802.11a/n operation modes at 5 GHz. The HP R110 does not support concurrent operation at 2.4 GHz and 5 GHz.

The HP R120 provides dual radios (2.4 GHz and 5 GHz) with three antennas per radio supporting 3x3 MIMO three-spatial-stream 802.11n and 802.11ac. The HP R120 supports 802.11b/g/n operation modes at 2.4 GHz and 802.11a/n/ac operation modes at 5 GHz. The HP R120 supports concurrent operation at 2.4 GHz and 5 GHz.

Wi-Fi On/Off button

Press the button for more than three seconds and then release it to turn the wireless function of the router on or off.

WPS button

Press the button for more than three seconds to enable Wi-Fi Protected Setup (WPS) and allow a wireless client device to securely join the network. Within two minutes, initiate the WPS procedure on the wireless client device. See the wireless client documentation for information on how to connect to access points using WPS.

Reset button

The Reset button is accessible through a hole on the front panel of the HP R110/R120, labeled as 6 on page 1. To reset the HP R110/R120 to factory defaults, insert a paper clip into the Reset button hole and hold the button for more than three seconds, then release.

Status LEDs

LED	State	Description
Power	Off	The HP R110/R120 has no power.
	White	The HP R110/R120 is fully operational.
Alert	Amber	The HP R110/R120 has a hardware failure or the software has failed to load. Reset or power cycle the HP R110/R120. If this condition persists, contact HP customer support.
	Flashing amber	Indicates one of the following conditions: • The HP R110/R120 is starting up following a hard or soft reset. • The HP R110/R120 is upgrading firmware. • The HP R110/R120 software is being reset to factory defaults. • A hacker attack is detected. The Alert LED remains flashing until the hacker attack ends. • The Alert LED remains flashing for 30 seconds when a USB overcurrent condition is detected.
USB	Off	Either an unsupported or defective USB device is attached.
	Blue	A USB device is attached.
WPS	Off	WPS is not active.
	Blue	On for 20 seconds when WPS is successful.
	Flashing blue	WPS is active and waiting for a wireless client device to join the network.
WAN	Off	The WAN port is not connected.
	Blue	The WAN port has a valid link. Flashing indicates network activity.
LAN 1-4	Off	The LAN port is not connected.
	Blue	The LAN port has a valid link. Flashing indicates network activity.
2.4 GHz	Off	The 2.4 GHz radio is disabled.
	Blue	The 2.4 GHz radio is enabled. Flashing indicates wireless network activity.

LED	State	Description
5 GHz	Off	The 5 GHz radio is disabled.
	Blue	The 5 GHz radio is enabled. Flashing indicates wireless network activity.

Powering the HP R110/R120

The HP R110/R120 is powered by an HP AC/DC Power Adapter.

Caution: **Only use the AC/DC power adapter that is supplied with the HP R110/R120. Do not use any other adapter.**

Important information to read before installing

Warning: **This device is intended for indoor installation only. Before installing or using the HP R110/120, ensure that you read and understand all safety information and regulatory requirements, particularly those relevant to your region. Failure to follow this guidance could result in a non-compliant situation.**

Cabling: You must use supported Cat 5e (or better) cables, and where applicable, surge protection, for your given region.

Country of use: During setup, you are prompted to select the country of use. After the country has been set, the HP R110/R120 automatically limits the available wireless channels, ensuring compliant operation in the selected country. Entering the incorrect country can result in illegal operation and can cause harmful interference to other systems.

Safety: Consider the following safety information during installation.

- If your network covers an area served by more than one power distribution system, make sure all safety grounds are securely interconnected.
- Network cables can occasionally be subject to hazardous transient voltages (caused by lightning or disturbances in the electrical power grid).
- Handle exposed metal components of the network with caution.
- The HP R110/R120 is powered on when connected to an AC power source using its AC/DC power adapter and the power button is pushed in.

Installation

The HP R110/R120 can be mounted on a desktop or a wall.

When mounting the HP R110/R120 on a wall, ensure that the surface to which you attach the HP R110/R120 and the fasteners you use can support at least 0.58 kg (1.3 lb). Allow extra weight for cables. When mounting on a wall, HP highly recommends that you use the included mounting screws and wall anchors.

There are two slots on the bottom of the HP R110/R120 that can be used for wall mounting.

Mounting on a wall

1. On the wall where the HP R110/R120 will be installed, mark two holes for the screws (wall anchors) 146 mm (5.75 inch) apart.

Note: The wall anchors are not needed when mounting on wooden walls.

2. Drill two holes for the wall anchors, typically 4.7 mm (3/16 inch) in diameter, and then insert the anchors and tap them flush with the wall surface.

3. Insert the mounting screws into the wall anchors, leaving their heads 3 mm (0.12 inch) clear of the wall surface.

4. With the LEDs facing down, position the HP R110/R120 mounting slots over the screw heads, and then slide the HP R110/R120 down onto the screws. Do not let go of the HP R110/R120 until you confirm that it is securely in place.

Wall mounting
1: HP R110/R120 wall-mounting slots
2: Mounting screws
3: Wall anchors
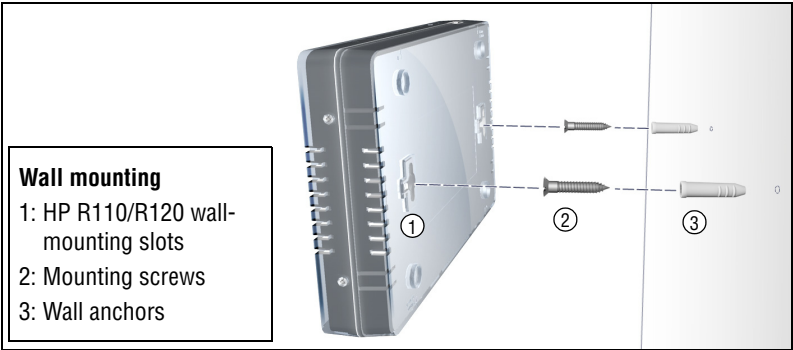
Placing on a desktop

The HP R110/R120 can also be installed on a desktop using the rubber feet. Attach the included four rubber feet to recessed areas on the bottom of the HP R110/R120, and then place it on the desktop in the preferred location.

Desktop mounting
1: Rubber feet
2: HP R110/R120 feet location
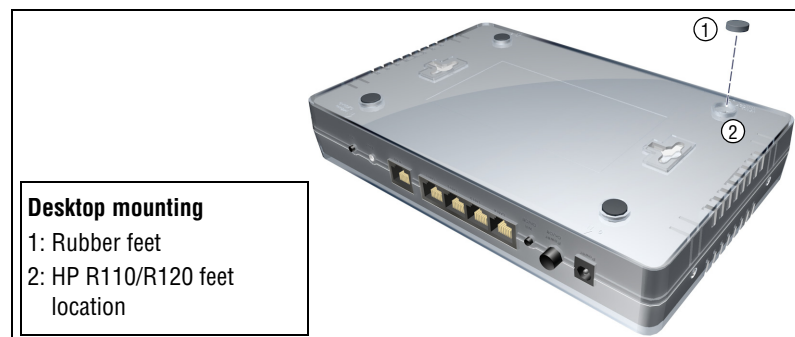
Initial configuration

This procedure describes how to perform initial configuration for a factory-default HP R110/R120. For illustration purposes, a simple scenario is used.

In this scenario, the HP R110/R120 links wired and wireless computers to the Internet through a cable modem provided by an Internet Service Provider (ISP). For instructions on how to configure other scenarios, see the *HP R100-Series Wireless VPN Routers Configuration/Administration Guide.*

Simple scenario

1: Wired computer	4: Cable modem
2: AC/DC power adapter	5: Internet
3: HP R110/R120	6: Wireless computer
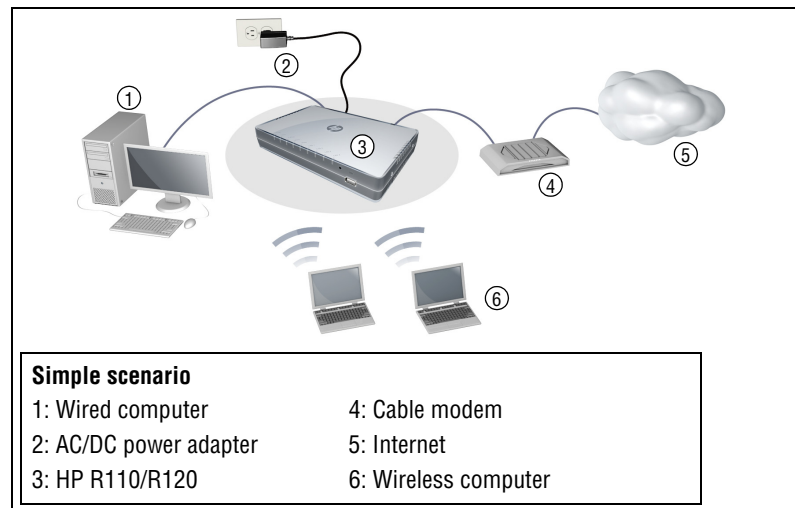
The HP R110/R120 is managed through its web-based management interface using Microsoft Internet Explorer 8 or later, Google Chrome v29 or later, or Mozilla Firefox v24 or later.

You must perform the initial configuration from a computer that is directly connected to one of the HP R110/R120 LAN ports. If you configure the HP R110/R120 from a wireless computer, you might lose contact with the HP R110/R120 when you change the wireless configuration.

Note: Do not power on the HP R110/R120 until directed.

A. Configure your computer

1. Verify that the Ethernet network interface of your computer is set to obtain an IP address automatically from DHCP.

2. Disable any wireless connection on your computer.

B. Connect cables and power on the HP R110/R120

1. Connect your cable modem to the WAN port on the HP R110/R120 using a standard Ethernet cable.

2. Connect the LAN port on your computer to one of the LAN ports on the HP R110/R120 using a standard Ethernet cable.

3. Connect other equipment to the LAN ports using standard Ethernet cables.

4. Connect the AC/DC power adapter to the power socket on the HP R110/R120, and then plug the AC/DC power adapter into a standard electrical wall socket.

5. Power on the HP R110/R120 by pressing the power button.

   Initially, the HP R110/R120 LAN port LEDs turn on and off. Wait approximately one minute until the Alert LED turns off before proceeding to the next step.

C. Connect to the management interface and log in

Note: A factory-default HP R110/R120 is assumed.

1. In a web browser, enter the address: **https://192.168.1.1**.

2. On the Login page, specify **admin** for both **Username** and **Password,** and then select **Login**.

Note: HP recommends that you change the default password on the **System > Admin** page and select **Save**. Passwords must be at least six characters long and include four different characters.

3. On the License Agreement page, read the agreement and select **Accept HP End User License Agreement**.

4. A Country prompt appears. Select the country in which the HP R110/R120 is operating, and then click **Save**.

Caution: **To ensure compliance, you must select the correct country. See** *Country of use* **on page 3.**

The HP R110/R120 management interface home page opens.

The management interface is organized with menus and sub-menus. Instructions for making menu selections, such as "select **LAN > Settings**" indicate that you should select the **LAN** menu, and then the **Settings** menu.
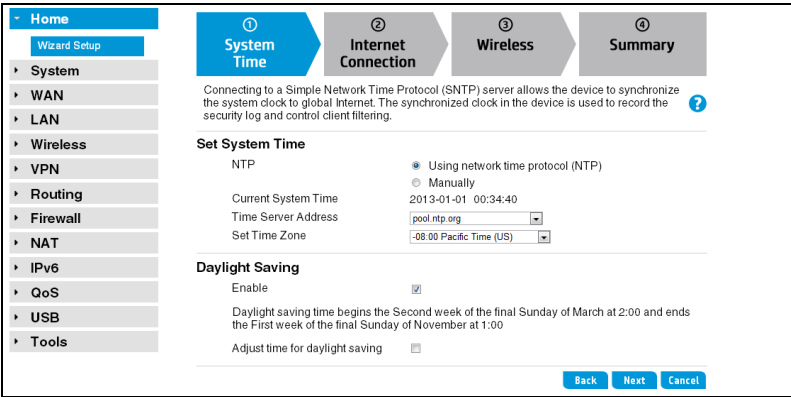
Main menu

Sub-menu
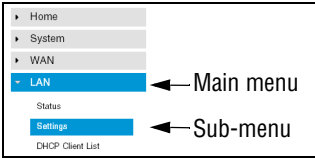
D. Run the wizard to set up the HP R110/R120

1. Select **Home** on the management interface menu.
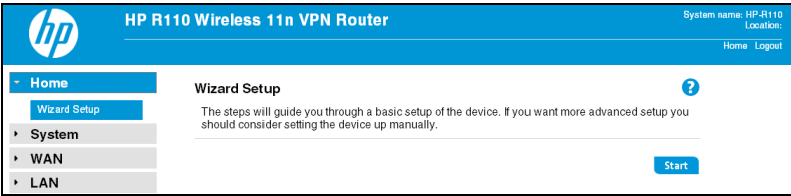
2. Select **Start** to start the wizard.

3. Either configure the system time manually by entering the date and time, or keep the default setting of **Using network time protocol (NTP)**. Set the time zone for your region, and enable daylight saving, if required. Click **Next**.

4. Set the **Connection Type** for the WAN connection to your ISP. The default setting is to use the DHCP protocol. Click **Next**.
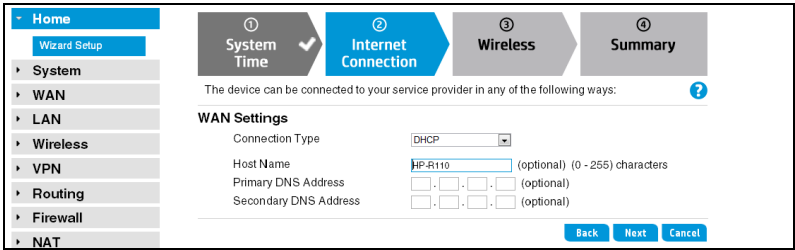
5. Configure the wireless settings:

- Select the 2.4 GHz or 5 GHz radio band for your wireless network. (The HP R120 has separate settings for the 2.4 GHz and 5 GHz bands.)

- Set the radio operating mode. Select a compatibility mode if support for older 802.11a/b/g devices is required, otherwise HP recommends that you select either 11n only or 11ac only.

- Set a unique SSID name for the wireless network.

- Select an authentication mode for security. In this example, a setting of **WPA2-PSK** is selected and a **Passphrase** is entered for the network security. For information on other wireless security settings, see the *HP R100-Series Wireless VPN Routers Configuration/Administration Guide*.

Click **Next**.
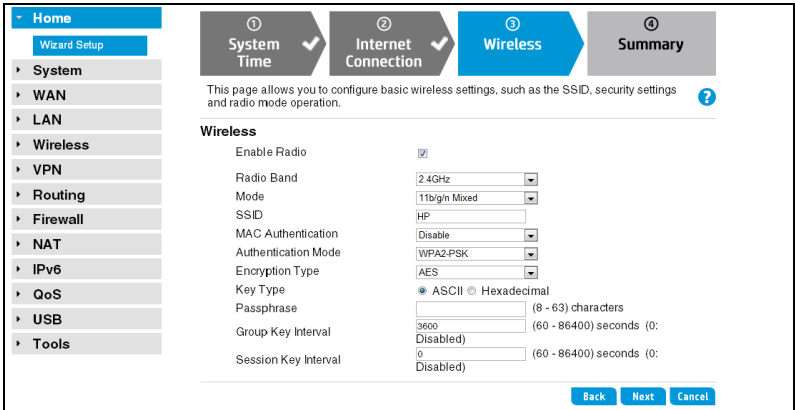
6. Confirm the settings, and then click **Finish**.

The router reboots and the HP R110/R120 is operational.

E. Test the wireless connection

For the purposes of this example, the HP R110/R120 has its DHCP server enabled (the default setting) and the cable modem is on and operating normally.

1. Disconnect the wired connection from your computer to the HP R110/R120.

2. Enable the wireless network interface of your computer.

3. Use your computer's wireless network utility to find and connect to the HP R110/R120's wireless network. The SSID name is "HP" in this example.

4. When prompted, enter the wireless security passphrase for the network, as configured in section D, step 5.

5. Confirm that you can browse the Internet from your computer.

F. To perform additional configuration

Re-launch the HP R110/R120 management interface at **https://192.168.1.1** and log in using the configured username and password.

Products list

Model	Part numbers
HP R110	J9975A (WW), J9974A (AM)
HP R120	J9977A (WW), J9976A (AM)

WW=Worldwide, AM=The Americas (North, Central, and South America)

Technical support

For worldwide technical support information, see the HP support website at www.hp.com/networking/support.

Regulatory information

FCC Notice
FCC ID:
R110: B94MRLBB1401
R120: B94MRLBB1402 & B94MRLBB1403

This FCC Class B 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.

For the full FCC Class B equipment notice and other important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at www.hp.com/support/Safety-Compliance-EnterpriseProducts.

For products available in the USA/Canada market, 2.4 GHz operation is limited to channels 1-11.

This device is restricted for indoor use.

A 20 cm minimum distance must be maintained between the antenna and the users of this wireless device. Under such configuration, the FCC radiation exposure limits set forth for a population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Industry Canada Notice
CAN ICES-3 (B)/NMB-3(B)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices. This device and it's antennas(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with IC multi-transmitter product procedures.

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Important Note: IC Radiation Exposure Statement: This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the antenna and the user.

Notice for Brazil, Aviso aos usuários no Brasil

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Notice for Mexico

HP R110/R120:

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

HP R120:

Este dispositivo incluye un módulos de radio integrados, modelos MRLBB-1402 y MRLBB-1403.

Notice for Korea

B 급 기기 (가정용 방송통신 기자재)	이 기기는 가정용 (B 급) 전자파 적합기기로서주 로 가정에서 사용하는 것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .
Class B (broadcasting communication device for home use)	This device obtained EMC registration mainly for home use (Class B) and may be used in all areas.

해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없음

Notice for Taiwan

低功率電波輻射性電機管理辦法

第十二條　　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、加大功率或變更原設計之特性及功能。

第十四條　　低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。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干擾。

在 5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

Notice for China

仅适用于海拔 2000 米以下地区安全使用

Specifications

Specification	Description
R110 regulatory model number	MRLBB-1401
R120 regulatory model number	MRLBB-1404
R120 11n radio model number	MRLBB-1402
R120 11ac radio model number	MRLBB-1403
Frequency range	2400–2483.5 MHz 5150–5850 MHz Actual operating frequencies depend on regulatory approval for the country of use.
Wireless medium	Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM), Spatial multiplexing (MIMO)
Network standards	HP R110: 802.11a, 802.11b, 802.11g, 802.11n HP R120: 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac draft
Channel bandwidth supported	HP R110: 20 and 40 MHz HP R120: 20, 40, and 80 MHz
Spatial streams	3 (3x3 configuration)
Data rates supported	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps 802.11n: MCS0 up to MCS23 (450 Mbps) 802.11ac: NSS1-MCS0 up to NSS3-MCS9 (1300 Mbps)
Maximum available conducted transmit power	R110 2.4 GHz: 24.88 dBm R110 5 GHz Band 1/2: 25.53 dBm / 23.99 dBm R110 5 GHz Band 3/4: 22.86 dBm / 23.19 dBm R120 per chain 2.4 GHz: 18 dBm R120 all chains 2.4 GHz: 22.7 dBm R120 per chain 5 GHz: 16 dBm R120 all chains 5 GHz: 20.7 dBm Actual transmit power may be limited by the country of operation.
Dimensions	215 x 140 x 35 mm

Specification	Description
Weight	HP R110: 452 g (1.0 lb)
	HP R120: 574 g (1.27 lb)
Operating temperature	5°C to 40°C
Non-operating/storage temperature	-40°C to 70°C
Operating/non-operating relative humidity	5% to 95%, noncondensing
Altitude	Up to 3048 m (10,000 ft)

Electrical characteristics

Maximum power rating: 24 W. Power Input: 12 Vdc.

Safety

UL 60950-1; IEC/EN 60950-1; CAN/CSA-C22.2 No. 60950-1

EMC

FCC 15.107, 15.109 (US)

ICES-003 (Canada)

EN 301 489-1, EN 301 489-17 (European Union)

Radio

FCC Part 15.247, 15.407 (US)

RSS-210 (Canada)

EN 300 328, EN 301 893 (European Union)

RF exposure

FCC Bulletin OET-65C; RSS-102; EN 62311

The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate.

le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5850 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

For indoor use only.

Pour une utilisation en intérieur uniquement.