Powerline AV+ 200 Adapter
Kit XAVB1501
User Manual
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Getting Started

This chapter describes your Powerline AV+ 200 Adapter Kit XAVB1501, and how your adapters can fit into a home network.

Hardware Features

The package includes two adapters and two Ethernet cables. The appearance of your adapter depends on the country in which it was sold.

Your adapters may look like one of these:

Figure 1. Adapters can vary in appearance
Product Details

The following figure shows the adapter in detail:

![Filtered AC Socket](image_url)

**Filtered AC Socket**

The filtered AC socket can remove some electrical noise that can affect Powerline performance. Plugging the power plugs of nearby devices into the filtered AC socket may improve performance.

**Buttons**

Two buttons are located on the side of the adapter:

- **Security/Power.** This button serves a dual function:
  - **Set the Power Mode:** The Powerline adapter’s normal state is Power On. When you first plug it into an electrical outlet, it is in Power On mode. To go to Power Off (power saving mode), press and hold the button for 5 – 10 seconds. Pressing the button again for less than 2 seconds returns it to Power On. You can also unplug and plug in the adapter to restore it to Power On.
  - **Set Security:** Press and hold this button for 2 – 4 seconds. If you are setting up two XAV1501 devices, press the button on each device for 2 – 4 seconds within 2 minutes. The two devices connect automatically and the Power LED starts blinking.

- **Factory Reset.** Press the Factory Reset button for 1 second, then release to return the Powerline adapter to its factory default settings.
**LEDs**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power LED</strong></td>
<td>• <strong>Solid green.</strong> The electrical power is on.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Blinking green.</strong> The adapter is in the process of restarting or setting up security.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Amber.</strong> The adapter is in power saving mode.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Off.</strong> There is no electrical power.</td>
</tr>
<tr>
<td><strong>Powerline LED</strong></td>
<td>• <strong>Solid.</strong> The adapter is connected to a Powerline network.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Blinking.</strong> The adapter is sending or receiving data.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Off.</strong> The adapter has not found any other compatible Powerline devices using the same encryption key.</td>
</tr>
</tbody>
</table>

The Pick A Plug feature lets you pick the electrical outlet with the strongest link rate, indicated by the color displayed by the LED:

- **Green:** Link rate > 80 Mbps (best)
- **Amber:** Link rate > 50 and < 80 Mbps (better)
- **Red:** Link rate < 50 Mbps (good)

| Ethernet LED | • **Solid.** The Ethernet port is linked, but there is no activity.          |
|             | • **Blinking.** There is traffic on the Ethernet port.                       |
|             | • **Off.** There is no Ethernet connection.                                  |

**Powerline Adapter Label**

The product label shows unique details specific to your adapter. The product label is located on the back:

![Product label image]

**Figure 3. Adapter product label**
Powerline Adapter in a Home Network

You can use Powerline Adapters to extend your Ethernet network anywhere in your home using your existing electrical power lines.

Here, an Ethernet cable connects the router to the Powerline network. In another room, an Ethernet cable connects a gaming console to the Powerline network.

Figure 4. Powerline network with two Powerline adapters

For best performance, plan the location of your Powerline devices (to make a Powerline network, you need at least two Powerline devices):

- Use an electrical outlet that is not controlled by a wall switch to avoid someone unknowingly turning off the power to the outlet.
- Do not plug in Powerline products to a power strip, extension cord, or surge protector as this might prevent them from working correctly, or reduce the network performance.
- Avoid plugging Powerline products into electrical outlets located near an appliance that uses a lot of power, such as a washer or dryer, or a refrigerator. This could potentially prevent the adapters from working correctly, or reduce network performance.

Different Powerline adapter models can share the network. All Powerline NETGEAR AV products (models XAV101, XAV1004, XAV2001, XAV2501, and XAVN2001) are compatible.
To set up your Powerline network:

1. Make sure that your home router is up and running and that Ethernet wired connections are working.
2. Install the first Powerline adapter based on the installation instructions that came in the package.
3. Install the second Powerline adapter, which finds the adapter you just installed. The two Powerline devices form a Powerline network.
4. Install any additional Powerline adapters that you plan to use.
5. Test to make sure that the computer or peripheral can access the Powerline network. For example, on a computer, use the Internet. Another way to test this is to install the Powerline Utility and use it to view all devices on the Powerline network.
6. NETGEAR recommends that you secure your Powerline network from unauthorized access, especially in settings such as apartment buildings. See Powerline Network Security.

Powerline Network Security

A Powerline network consists of two or more Powerline adapters using the same network encryption key. Securing your network protects the information you send over the Powerline network from unwanted access. If you do not set up security on your network, anyone nearby with a Powerline network can potentially use his or her connection to gain access to your network and information you send over the Internet. This is especially relevant in settings such as apartment buildings, office buildings, dorm rooms, and other populated areas.

There are two ways to secure your Powerline network.

- Use the Security button to automatically generate a random encryption key.
- Use the Powerline Utility to specify an encryption key for your Powerline network. If you already have a Powerline network, you need to use the Powerline Utility, which is located on your Resource CD. See Chapter 2, Powerline Utility.
- To return the Powerline Adapter to its factory default settings, press its Factory Reset button for 1 second, then release.

Use the Security Button to Set the Encryption Key

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**Note:** An adapter can generate a private key only once. If you want to replace a private key, first reset the adapters to their factory settings. To do this either press the Factory Reset button for 1 second, then release, or use the Powerline Utility factory defaults feature (see Return to the Default Network Encryption Key on page 17).
You can use the Security button to change the default encryption key and set a private encryption key instead. The default encryption key is HomePlugAV.

1. Verify that all the Powerline adapters to be configured are plugged in.

**WARNING!**

Do not press the Security button on the Powerline adapter until installation is complete and all adapters on your network are plugged in and communicating with each other. Pressing the Security button too soon can temporarily disable Powerline communication. If this should occur, reset the Powerline adapter to its factory default settings (press the Reset button for 1 second, then release).

2. Press the Powerline adapter Security button for 2 seconds.
   - The Power LED starts blinking after you release the button.
   - The adapter automatically creates a new, randomly generated network encryption key that each Powerline adapter on the network will use.

   At this point, the other adapters in your network cannot communicate with each other.

3. Within 2 minutes of pressing the Security button on the Powerline adapter, press the Security button on the second adapter for 2 seconds.

   In order to pair the devices, you need to press both buttons within 2 minutes.

   This securely configures your Powerline network with the same network encryption key.

4. If your network has more than two adapters, press the Security button on the next adapter for 2 seconds, then press the Security button on any additional adapters in your network for 2 seconds. The adapters retain security settings even if they are unplugged.
This chapter explains how to install and use the Powerline Utility. The Powerline Utility works with Powerline AV products model XAV101v2 and XAV1501. These Powerline models are compatible and can share the same Powerline network.

You can use the Powerline Utility to access a local Powerline device that is connected to your computer with an Ethernet cable and also to access remote Powerline devices. Remote devices are on the Powerline network, but are not directly cabled to the computer on which you are using the Powerline Utility.

You can use the NETGEAR Powerline Utility to:

- Set up encryption for your Powerline network
- Perform diagnostics and monitor performance
- Set up Quality of Service (QoS)
- Restore a device to default configuration settings
Install the Powerline Utility

This utility allows you to set your own unique Powerline network encryption key, and prioritize traffic passing through your Powerline network.

All devices on a Powerline network can be managed from one computer. If you add another Powerline device, you can install the Powerline Utility on the computer connected locally to the new adapter, or open the utility on the computer originally used to set up the Powerline network encryption key. You can use any computer to manage the network, but this section assumes that you are working from the computer that is connected to a Powerline adapter.

To download and install the Powerline Utility:

1. From your browser, go to this URL link:
   
   http://kb.netgear.com/app/products/model/a_id/17963 to display the following screen:

   ![Download the Powerline utility](image)

2. Click the link and follow the instructions to download and install the Powerline utility.
3. Follow the wizard prompts, and click **Finish** when the wizard is done.
4. There are two ways to launch the XAVB1501 Powerline Utility:

- Click the XAVB1501 Powerline Utility shortcut icon located on your desktop.
- Navigate to **Start > Programs > NETGEAR > NETGEAR Powerline Utility.**

### Device Settings Tab

When launched, the Powerline Utility opens to the Device Settings tab. If all devices are not shown, click the **Refresh** button to detect all Powerline adapters on your network.

You might see a message at the bottom of the screen regarding the power saving feature. If the unit goes into power saving mode, the Powerline Utility does not find it. Keeping a connected Ethernet cable plugged into the device keeps it active.

By clicking the LED status light you can toggle the LED between on and off.
The following table describes the features on the **Device Settings** Tab.

**Table 1. Powerline Utility Device Settings Tab**

<table>
<thead>
<tr>
<th>Field or Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Names</td>
<td>This lists the Powerline devices detected on the network after the utility completes a scan for devices. The device name is initially set by the utility, but can be changed to reflect your specific adapter. For example, “Office” or “Master Bedroom”.</td>
</tr>
<tr>
<td>Model</td>
<td>This identifies the model number of the Powerline Adapter.</td>
</tr>
<tr>
<td>MAC Address</td>
<td>The MAC address for the Powerline device. This is also on the product label, which might not be visible when the device is plugged in.</td>
</tr>
<tr>
<td>Quality (Mbps)</td>
<td>This indicates the type of traffic that can be handled smoothly and the link rate for each Powerline device: HD Video, SD/DVD Video, or Data.</td>
</tr>
<tr>
<td></td>
<td>• HD Video. The device can handle high-definition video traffic smoothly. This status will be shown if the transmit and receive link speed is greater than 80 Mbps.</td>
</tr>
<tr>
<td></td>
<td>• SD/DVD Video. The transmit and receive link speed is greater than 50 Mbps or less than 80 Mbps.</td>
</tr>
<tr>
<td></td>
<td>• Data. The device cannot handle video data smoothly. This status will be shown if the transmit or receive link speed is less than 50 Mbps.</td>
</tr>
<tr>
<td>LED On/Off button</td>
<td>Enable or disable the LEDs for a Powerline device. The LEDs are enabled by default.</td>
</tr>
</tbody>
</table>

**Add a Device to a Powerline Network**

If you are adding a device to a Powerline network, and the network encryption key has been left at its default setting, all you need to do is plug the new device into a power outlet.

If the network encryption key has been customized, there are two ways to set the security:

- You can use the Security button to add the new device to your network. See *Adding Adapters to Your Network* on page 6.
- You can use the XAVB1501 Powerline Utility to add the new device to the network, as described in the following sections.

The procedure for setting the network encryption key depends on whether the computer running the XAVB1501 Powerline Utility is connected directly to the new adapter (local) or is connected to a different device in the Powerline network (remote).

**To add a local Powerline device:**

A local Powerline device is connected to your computer with an Ethernet cable.

1. Plug the new adapter into an available AC power outlet.
2. Connect the Ethernet cable that came with the adapter to the adapter’s Ethernet port and an Ethernet port on the computer.
3. Start the Powerline Utility. This displays the Device Settings tab. Wait for the utility to detect the new device.

4. Select the **Advanced** tab, and click the **Security** arrow.

5. From the Device Name column select the device.

6. Type the network encryption key into the **Create a New Encryption Key** field.

7. Click the **Apply Security to Selected Devices** button.

8. Select the **Device Settings** tab to perform a scan.

   Verify that the devices in the Powerline network appear in the device list. It may take a minute or two for all devices in the network to be detected.

**To add a remote Powerline device:**

Remote devices are on the Powerline network, but are not directly cabled to the computer on which you are using the Powerline Utility.

If you are using a custom network encryption key, set all the devices to the default network encryption key of **HomePlugAV** so that they can communicate with each other. Then set all the devices to the network encryption key that you want to use.

1. To change the encryption key for a remote device, you must enter the password for the device. The password is printed on the product label.

2. Click the device name for a remote Powerline device to highlight it in blue.

   **Note:** Be sure to change the password of remote devices before changing it on the local device so that you can maintain connectivity throughout this process.

3. Click **Enter Password**.

4. Enter the device password, and then click **OK**.

   The device password is located on the product label.

5. From the Device Name column, select the device.

6. Type the network encryption key into the **Apply the Encryption Key** field.

7. Click the **Apply Security to Selected Devices** button.

8. Select the **Device Settings** tab. This will perform an automatic scan.

   Verify that the devices in the Powerline network appear in the device list. It may take a minute or two for all devices in the network to be detected.
Security

Click the **Advanced Settings** tab to display the following screen:

![Security Settings](image)

From this screen you can perform a number of security tasks, such as:

- Change the network encryption key
- Set up a custom network encryption key
- Return to the factory default network encryption key
- Change the network encryption key for one unit at a time

**Change the Network Encryption Key**

You can specify the network encryption key from the Security tab.

1. Select **Advanced Settings > Security**.

   When all the devices are set to the default network encryption key and are plugged in, they are listed on the Device Settings tab.

2. Select the check box for each device name that you want to add encryption for.

   Here you have two options:

   a. Use the Default Encryption Key option

      When you click this option, the factory default encryption key of **HomePlugAV** is automatically put into the field.

   b. Create your own Encryption Key

      This option lets you set your own network encryption key. Type your network encryption key in the field provided.
3. Apply the changes by clicking the **Apply Security to Selected Devices** button. When completed, the utility displays a message indicating that the operation was successful.

4. Click **OK**.

**Set Up a Custom Network Encryption Key**

When all the devices are set to the default network encryption key and are plugged in, they are listed on the Device Settings tab.

To set up a custom network encryption key for all the Powerline devices:

1. Select the **Device Settings** tab to automatically perform a scan to detect the adapter status.
   
   Wait for the new device to be listed. A new device can be identified by its MAC address.

2. Select **Advanced Settings > Security**, and select the check boxes next to each device in the Device Name column.

3. Type your network encryption key in the Create a New Encryption Key field.

4. Click **Apply Security to Selected Devices**.
   
   The utility displays a message indicating that the operation was successful.

5. Select the **Device Settings** tab to perform a scan.
   
   Verify that all devices are detected with your network encryption key.

---

**Note:** If one or more of your Powerline devices are not listed, see *Quality of Service (QoS)* on page 18.
Return to the Default Network Encryption Key

1. Plug the new device into an AC power outlet.
2. Start the Powerline Utility
   - Wait for the utility to detect the devices in your Powerline network.
   - Check that all the devices in the established network are displayed on the Device Settings tab.

   **Note:** Before you can reset a remote device, you must enter its password. The password is printed on the product label located on the back of the adapter.

3. Select Advanced Settings > Security, and in the Device Name column, select the check box next to each device you want to set.
4. Click the Use Default Encryption Key button.
   The default encryption key, HomePlugAV, displays in the encryption field.
5. Click Apply Security to Selected Devices.
Quality of Service (QoS)

Select Advanced Settings > QoS (Quality of Service) to go to the QoS screen to prioritize your Powerline network traffic.

By default, all types of traffic on the Powerline network are assigned the same priority. For most applications, this works fine. However, there are situations where performance improves if you assign a higher priority to certain types of traffic, such as multimedia files.

Prioritize by General Application Type

If your network traffic is a mix of multimedia and document/database traffic you might want to give priority to a particular traffic type. If it is important that your multimedia playback is smooth, even while document files are being transferred over the network, then give priority to multimedia traffic. Conversely, if it is more important for your network to be responsive to database applications, give priority to this type of application over multimedia applications.

The adapter supports the following:

- MAC address
- IP port
- VLAN tags
- ToS bits (Type of Service routing)

To set the priority of data transfers by the type of protocol:

1. Start the XAVB1501 Powerline Utility and wait for the utility to detect the adapters connected to the network.
2. Select Advanced Settings > QoS (Quality of Service).
3. To set the traffic prioritization rule into the selected adapter device, specify the priority in the QoS Setup section of the screen.

4. Click **Apply**.

**Note:** QoS settings are applied only to the device that is selected on the QoS tab.

These options only apply to QoS-configured business networks. IEEE 802.1p uses prioritization bits in Layer-2 frames. Type of Service routing (ToS) uses prioritization bits in Layer-3 IP packets. The deprecated ToS values range from 0 to 7.
Diagnostics

Select Advanced Settings > Diagnostics to display the diagnostics to help you diagnose and troubleshoot performance issues. Using this feature you can delete a device from the device history, save a report, or print a report.

![Diagnostics Screen]

Factory Reset

The Factory Reset option returns the network encryption key to its factory default setting of HomePlugAV. Only one device at a time can be reset.

1. Select Advanced Settings > Factory Reset to display the following screen:

![Factory Reset Screen]
2. Select the Powerline device(s) to be reset.
3. Click the **Perform Factory Reset on Selected Devices** button. A confirmation message displays.
4. Click **OK** to reset the device. A message indicates whether or not the operation succeeded.
5. After you have reset each device, check that the Device Settings tab lists all devices in the network.

**Note:** If you customized your network encryption key, the local Powerline device will be disconnected from the network when you reset it to the factory default. To avoid this problem, reset all remote devices before you reset the local device.
Basic Functioning

After you plug in the Powerline adapter, the following sequence of events should occur:

1. The Power LED lights up.
2. After approximately 10 seconds, verify that:
   a. The Power LED is solid green.
   b. The Powerline LED is lit.
   c. The Ethernet LED lights or blinks.

Troubleshooting Tips

The Reset and Security buttons are located on the side panel of the adapter.

- Pressing the **Factory Reset** button longer than 2 seconds does not reset the device.
- Pressing the **Security** button longer than 2 seconds does not activate security.

**LEDs**

The LEDs indicate activity, and can be used for troubleshooting.

**LEDs Are Off When the Adapter Is Plugged In**

- First check to make sure that the electrical outlet has power.
- If power is supplied and the LEDs stay off, someone might have used the Powerline Utility to turn off the LEDs. Use the Powerline Utility to see if that is the case. If so, then use the Powerline Utility to turn them back on.

**Power LED**

- **Off.** Make sure that power is supplied to the electrical outlet, and that the Powerline devices are not plugged into an extension cord, power strip, or surge protector.
- **Amber.** Power saving mode occurs when the Ethernet LED is off. This can occur when:
- the Ethernet cable is unplugged.
- the device connected through the Ethernet cable is turned off.
- the adapter is idle for 10 minutes.

The adapter returns to normal mode within 2 seconds once the Ethernet link is up.

**Powerline LED**

- **Off.** The Powerline devices cannot find each other. Make sure that the Powerline devices are plugged into outlets with power, and that they use the same network encryption key.
  - Move the Powerline device to a location closer to the computer or devices.
  - If you have set up network security, make sure that all Powerline devices are using the same encryption key.
  - If the problem occurred after you changed the network encryption key, reset each device to its factory default settings. Then you can customize the encryption key.
- **Amber or red.** Move the Powerline device to a closer location.

**Ethernet LED Does Not Blink**

There is no data traffic. Make sure that:

- Your router and modem are switched on.
- The adapter’s cable is securely connected to a router LAN port.
- The PC connected directly to the router can access the Internet.
- Press the **Factory Reset** button on each Powerline device for 1 second to return the Powerline adapter to its factory default settings.

**If You Do Not See All Your Devices with the Powerline Utility**

If you click **Refresh** on the main screen of the Powerline Utility, and do not see all the devices you expect, it could be that a Powerline adapter is in power saving mode or is set to use a different encryption key.

- **Power saving mode.** You might see a message at the bottom of the screen regarding the power saving feature. If a unit goes into power saving mode, the Powerline Utility does not find it. Keeping a connected Ethernet cable plugged into the device keeps it active so that it does not go in to power saving mode.
- **Encryption keys are different.** To fix this, you can do one of the following:
  - Reset your Powerline adapters to their factory settings and default encryption key. Then set the encryption for all of your Powerline adapters.
  - Connect your computer to each Powerline device and set up the network encryption key for one adapter at a time.
## Technical Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data and routing protocols</td>
<td>IEEE 802.3 (10BASE-T), IEEE 802.3u (100BASE-Tx)</td>
</tr>
<tr>
<td>AC input for product only</td>
<td>• 00-125V~, 0.1A (Max;NA)</td>
</tr>
<tr>
<td></td>
<td>• 200-250V~, 0.1A (Max;others),</td>
</tr>
<tr>
<td>Power consumption</td>
<td>3W</td>
</tr>
<tr>
<td>Dimensions</td>
<td>138 x 65 x 40 mm (5.43 x 2.56 x 1.57 in.)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.235 kg (0.518 lb.) each</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>0° to 40° C (32° to 104° F)</td>
</tr>
<tr>
<td>Operating humidity:</td>
<td>10–90% maximum relative humidity, noncondensing</td>
</tr>
<tr>
<td>Storage humidity</td>
<td>5–95% maximum relative humidity, noncondensing</td>
</tr>
<tr>
<td>Encryption type</td>
<td>128-bit AES</td>
</tr>
<tr>
<td>MAC addresses</td>
<td>64: number of nodes that can be added to a single network</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>200 Mbps</td>
</tr>
<tr>
<td>Compatibility</td>
<td>HomePlug AV</td>
</tr>
<tr>
<td>Data transfer rate</td>
<td>Up to 200 Mbps with real throughput greater than 80 Mbps</td>
</tr>
<tr>
<td>Frequency band</td>
<td>2-30 Mbps</td>
</tr>
<tr>
<td>Modulation type</td>
<td>OFDM symbol modulation</td>
</tr>
<tr>
<td>Electromagnetic emissions</td>
<td>FCC Part 15 Class B; CE-EMC Class B; 3-home FCC Certificate; HomePlug</td>
</tr>
<tr>
<td>Meets requirements of</td>
<td>UL Listed (UL 1950) /cUL IEC950; CE LVD; TUV CB; GS</td>
</tr>
</tbody>
</table>
Safety Information

Follow these safety guidelines to ensure your own personal safety and to help protect your system from potential damage.

- Do not service any product except as explained in your product documentation.
- Use the product only with approved equipment.
- To help avoid damaging your product, be sure that the voltage selection switch (if provided) on the power supply is set to match the power available at your location:
  - 110 volts (V), 60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
  - 100 V, 50 Hz in eastern Japan and 100 V, 60 Hz in western Japan
  - 230 V, 50 Hz in most of Europe, the Middle East, and the Far East
- Always follow your local and national wiring rules.

Additional safety information is in Appendix B, Notification of Compliance.
Safety Instructions and Precautions

**WARNING!**

Use the following safety guidelines to ensure your own personal safety and to help protect your product from potential damage. To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions.

- The socket-outlet shall be installed near the equipment and shall be easily accessible.
- Observe and follow service markings.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your service provider/retailer:
  - The power cable, extension cable, or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment.
- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.
- Operate the product only from the type of external power source indicated on the electrical ratings label.
- Also, be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cables. If you have not been provided with a power cable for your system or for any AC powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label.
The voltage and current rating of the cable should be greater than the ratings marked on the product.

- To help prevent electric shock, plug the system and peripheral power cables into properly grounded electrical outlets.
- Do not use adapter plugs. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating for all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or plugs.
- Always follow your local and national wiring rules.

Regulatory Compliance Information

This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority.

This product's firmware limits operation to only the channels allowed in a particular Region or Country. Therefore, all options described in this user's guide may not be available in your version of the product.

FCC Requirements for Operation in the United States

FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

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.

FCC Guidelines for Human Exposure

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

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

We, NETGEAR, Inc., 350 East Plumeria Drive, San Jose, CA 95134, declare under our sole responsibility that the Powerline AV+ 200 Adapter Kit XAVB1501 complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

• This device may not cause harmful interference, and
• This device must accept any interference received, including interference that may cause undesired operation.

FCC Radio Frequency Interference Warnings & Instructions

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 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 methods:

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

Modifications made to the product, unless expressly approved by NETGEAR, Inc., could void the user's right to operate the equipment.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus, the Powerline AV+ 200 Adapter Kit XAVB1501, does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

European Union

The Powerline AV+ 200 Adapter Kit XAVB1501 complies with essential requirements of EU EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC as supported by applying the following test methods and standards:

• EN55022: 2006 / A1: 2007
• EN60950-1: 2006 2nd Edition
• EN 61000-3-2:2006
• EN 61000-3-3:1995 w/A1: 2001+A2: 2005