



Installation and User Guide

HotPoint 1000R Outdoor Wireless Mesh Router



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FCC Class B Notice

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

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/television technician for help.

Modifications

Any modifications made to this device that are not approved by Firetide, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Radiation Exposure Statement

The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. OEM Integrators, end-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

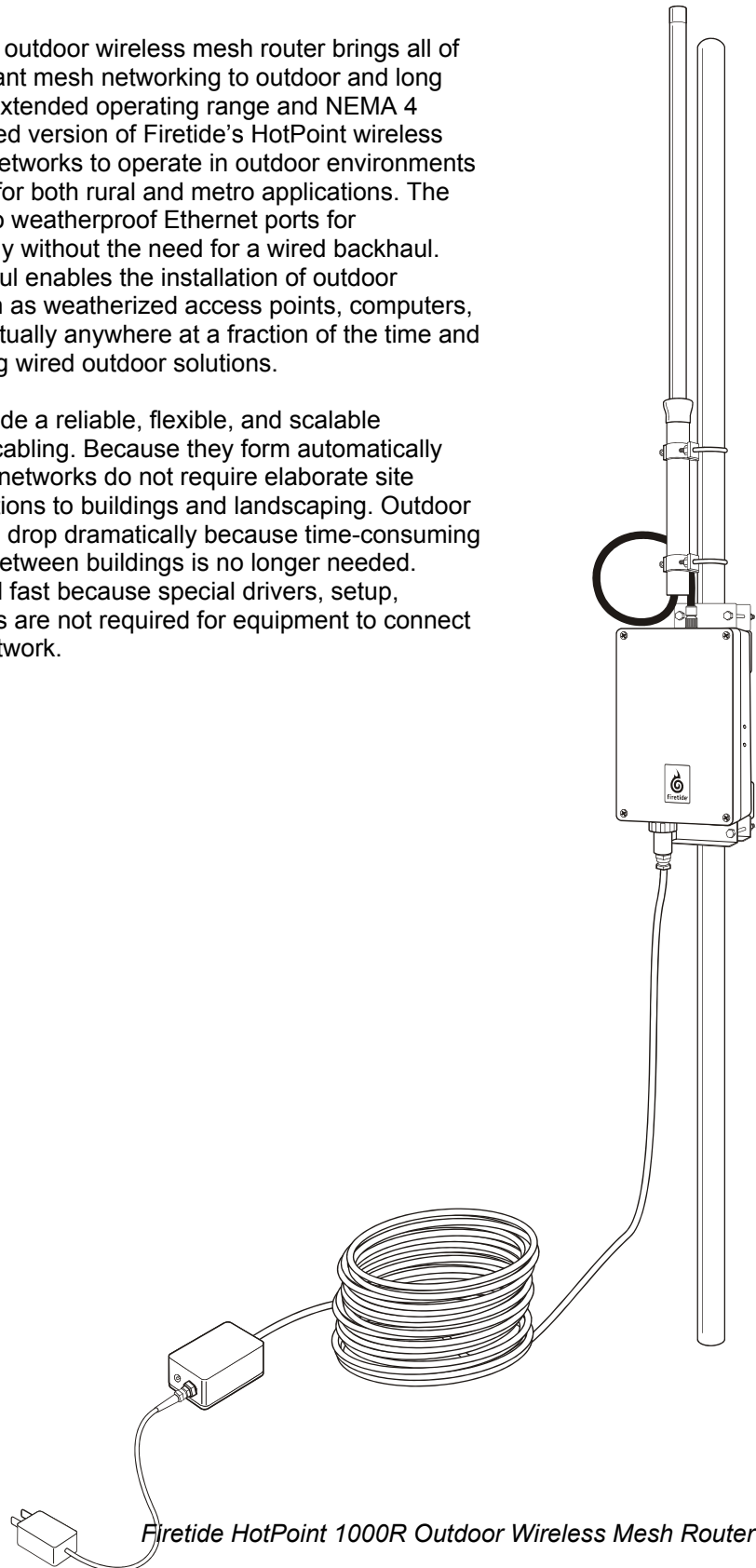
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Firetide™ HotPoint™ 1000R Outdoor Wireless Mesh Router

The Firetide HotPoint 1000R outdoor wireless mesh router brings all of the benefits of Firetide's instant mesh networking to outdoor and long range applications. With its extended operating range and NEMA 4 certified enclosure, this rugged version of Firetide's HotPoint wireless mesh router enables mesh networks to operate in outdoor environments and to span great distances for both rural and metro applications. The HotPoint 1000R provides two weatherproof Ethernet ports for provisioning Ethernet instantly without the need for a wired backhaul. Eliminating the wired backhaul enables the installation of outdoor networking equipment—such as weatherized access points, computers, and surveillance cameras—virtually anywhere at a fraction of the time and cost associated with installing wired outdoor solutions.

Firetide mesh networks provide a reliable, flexible, and scalable alternative to standard LAN cabling. Because they form automatically without wires, Firetide mesh networks do not require elaborate site surveys or physical modifications to buildings and landscaping. Outdoor network installation costs will drop dramatically because time-consuming trenching and cable pulling between buildings is no longer needed. Provisioning is also easy and fast because special drivers, setup, interfaces, and configurations are not required for equipment to connect to a Firetide instant mesh network.



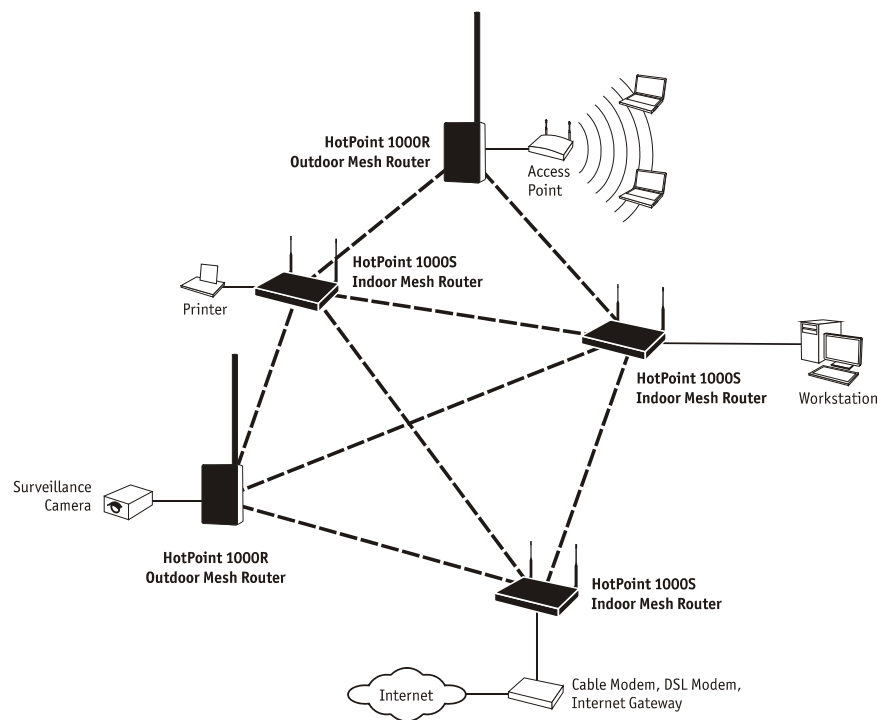
Firetide Wireless Instant Network

Firetide developed the Wireless Instant Network, based on the HotPoint Wireless Mesh Router, to enable faster, easier and more affordable network deployment. Firetide's patented mesh networking technology makes it possible to survey, plan and deploy an entire network in less than one day rather than weeks. The Firetide network is also portable. Your entire network can be relocated simply by taking your HotPoint routers with you to your new location.

What is a Firetide Mesh Network?

Firetide mesh networks feature a self-configuring, self-healing, multi-hop topology. Because of these inherent self-organizing properties, a mesh network requires no manual configuration. Thus, creating a new network or adding or relocating network equipment is as easy as powering up new nodes. The network automatically discovers the new nodes and integrates them into the mesh.

A big advantage of a mesh network is its robustness and ability to heal itself. If a node is disconnected, congested, or fails to operate, neighboring nodes are notified, and data is routed around it. There is no need for a network engineer to intervene, troubleshoot, and cure the problem.



Firetide Mesh Network with Indoor and Outdoor Wireless Mesh Routers

Mesh networking can be compared to the Internet, where data can be rerouted on other paths if one path becomes disabled or congested. Losing a node or two or a link won't bring down the entire mesh network. Unlike other WLAN technologies, a mesh network's reliability and scalability can actually improve by adding more nodes and enriching the density of the mesh. More redundant paths means the network in aggregate can handle far more data traffic, and is therefore quite scalable. Mesh networks are ideal whenever the network must be reliable,

scalable, and flexible. They are very portable and can adapt well to many different physical environments.

Building a Firetide Mesh Network

Installing, expanding, or even relocating a Firetide Mesh network is easy and fast. Simply place a HotPoint router wherever you need an Ethernet port and connect it to an AC power source. As long as the HotPoint router is within operating range of other HotPoint routers, you can connect and operate your network devices immediately. Although network planning is often not required for basic installations, adhering to a few simple guidelines will help ensure that your network performs reliably and gives you the full benefits and performance that mesh networking has to offer.

Important! Use the Correct RJ-45 Ethernet Cable

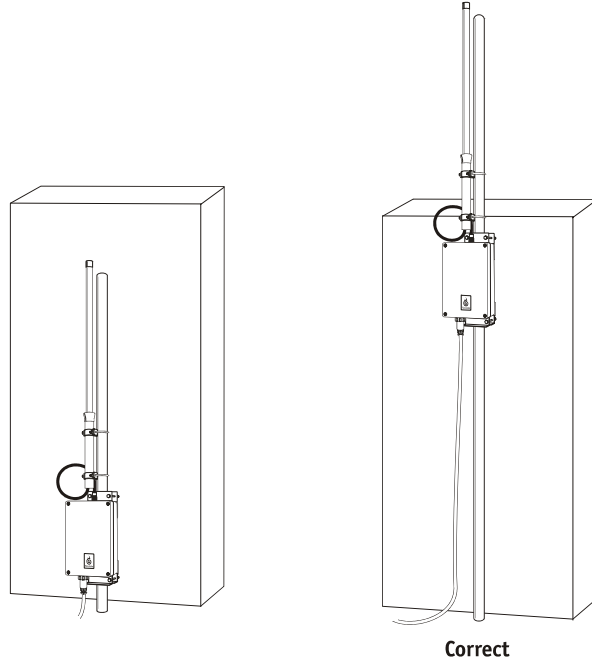
The type of Ethernet cable to use depends on what you connect to the HotPoint router. End devices such as video cameras and access points require crossover cables. Multi-user devices such as hubs and switches as well as most cable and DSL modems require straight-through (non-crossover) cables. Devices with auto-sensing MDI/MDIX ports can use either crossover or straight-through cables. Both cable types with weatherproof connectors are available from your Firetide dealer. See Accessories on page 22 for available cables.

Understand HotPoint Antenna Patterns

HotPoint 1000R outdoor mesh routers have omni directional antennas that radiate in a broad circular pattern perpendicular to the antenna shaft. For optimum coverage, orient the antennas in your mesh network vertically (perpendicular to the ground).

Line-of-Sight Improves Operating Distance

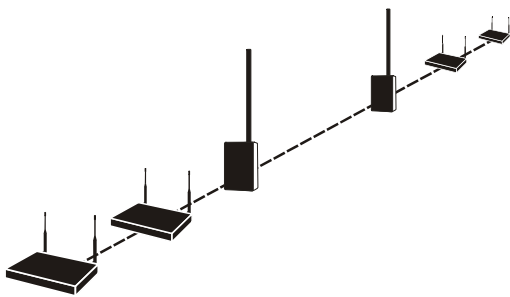
Although HotPoint wireless mesh routers can communicate between walls and buildings, you can increase the working distance of your outdoor mesh router by avoiding obstacles made of dense materials such as concrete and metal. Positioning the HotPoint 1000R units so the space between them provides an unobstructed, line-of-sight view, will greatly increase the effective range and reliability of transmission. They should be located high enough to prevent interruption from passing motor vehicles or pedestrians.



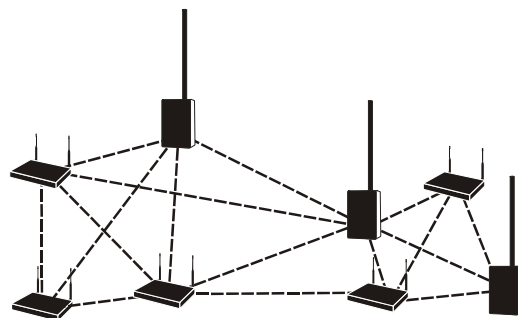
For best results, position the HotPoint 1000R antenna above obstructions.

Create a Mesh Topology for Maximum Performance and Reliability

Unlike simple point-to-point bridging, Firetide provides true mesh networking with flexible and redundant paths. This improves overall performance, allows the network to be extended over long distances, and reduces the chance of single point failures. To fully benefit from the self-forming and self-healing properties of the mesh, place each HotPoint router within direct range of two or more HotPoint routers. Also, do not install your HotPoint network in a linear, point-to-point configuration. The Firetide network protocol is optimized for two- and three-dimensional topologies including vertical connections between multiple floors in a building.



Linear or Point-to-Point Topology (incorrect)



Multipoint to multipoint Mesh Topology (correct)

Linear vs. Mesh Topology

Use the HotPoint Manager Software

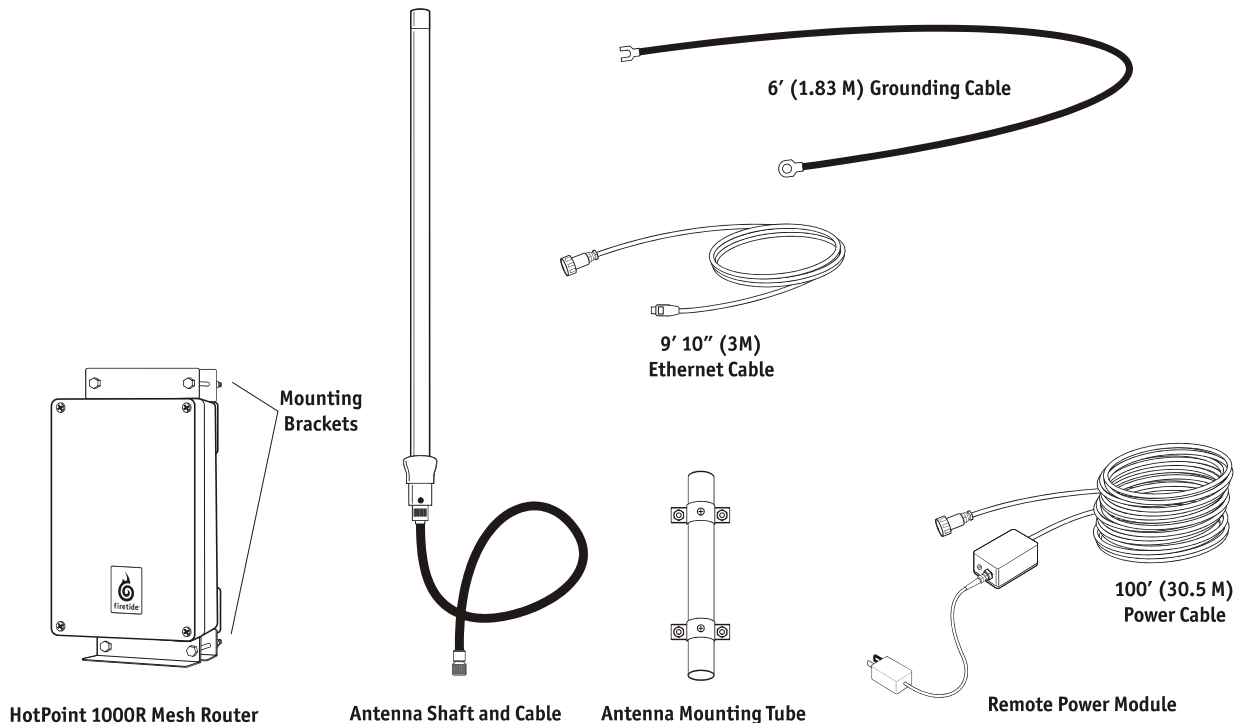
Although this software is not required for installing or operating your network, the HotPoint Manager software provides an easy way to monitor and manage the mesh and your HotPoint routers. Because wireless connections between HotPoint routers are invisible, this software lets you “see” which units are within direct range of each other. HotPoint Manager also provides additional security and optional configuration features. You can download the software from the Firetide web site. See page 16 for information on downloading and installing HotPoint Manager.

HotPoint 1000R Installation

Be sure to read and understand all installation instructions and safety instructions before proceeding with the installation.

Unpacking

The HotPoint 1000R Outdoor Wireless Mesh Router package contains the following items. If you are missing any of these items, contact your Firetide reseller.



HotPoint 1000R Wireless Outdoor Mesh Router Components

Mesh Router

- HotPoint 1000R Outdoor Mesh Router with NEMA 4x enclosure with two weatherproof connector caps.

Antenna

- Hi Gain antenna with coaxial cable attached
- Antenna wall/pole mounting tube.

Remote power module

- 100' (30.5 M) Remote power cable with indoor power adapter.

Mounting Brackets

- Wall/pole mounting brackets for HotPoint 1000R enclosure

External Grounding Cable

- 6', #10AWG, stranded ground wire with ring/fork attachment connectors.

External Ethernet Cable

- 3 meter, shielded, straight-through, one-side watertight, one-side non-watertight, RJ-45 to RJ-45 CAT 5e Ethernet patchcord with black cable jacket suitable for industrial applications/low smoke, zero halogen.

Ethernet Crossover Cable

- 1meter, RJ-45 to RJ-45, Ethernet patch cord for restoring default settings.

Documentation

- End user license agreement (EULA)
- Warranty and registration card
- Installation and User Guide (this document)



WARNING! IMPORTANT SAFETY PRECAUTIONS

The HotPoint 1000R outdoor wireless mesh router must be installed by a qualified professional such as a licensed electrician. Failure to install this equipment properly may result in equipment damage and personal injury or death.

Carefully observe these instructions and any special instructions that are included with the equipment you are installing. Look over the site before beginning any installation, and anticipate possible hazards, especially these:

CONTACTING POWER LINES CAN BE LETHAL.

Do not install the HotPoint 1000R outdoor mesh router where possible contact with power lines can be made. Antennas, masts, towers, guy wires or cables may lean or fall and contact these lines. People may be injured or killed if they are touching or holding any part of equipment when it contacts electric lines. Make sure there is NO possibility that equipment or personnel can come in contact directly or indirectly with power lines.

ASSUME ALL OVERHEAD LINES ARE POWER LINES!

The horizontal distance from a tower, mast or antenna to the nearest power line should be at least twice the total length of the mast/antenna combination. This will ensure that the mast will not contact power if it falls either during or after installation.

TO AVOID FALLING, USE SAFE PROCEDURES WHEN WORKING AT HEIGHTS ABOVE GROUND.

- Select equipment locations that will allow safe and simple installation.
- Don't work alone. A friend or co-worker can save your life if an accident happens.
- Use approved non-conducting ladders and other safety equipment. Make sure all equipment is in good repair.
- If a tower or mast begins falling, don't attempt to catch it. Stand back and let it fall.
- If anything such as a wire or mast does come in contact with a power line, **DON'T TOUCH IT OR ATTEMPT TO MOVE IT.** Instead, save your life by calling the power company.
- Don't attempt to erect antennas or towers on windy days.

MAKE SURE ALL TOWERS AND MASTS ARE SECURELY GROUNDED, AND ELECTRICAL CABLES CONNECTED TO ANTENNAS HAVE LIGHTNING ARRESTORS. This will help prevent fire damage or human injury in case of lightning, static build-up, or short circuit within equipment connected to the antenna. The HotPoint 1000R has an external ground connector and built in lightning protection. Be sure that any other equipment connected to the HotPoint 1000R also has the same level of protection.

- The base of the antenna mast or tower must be connected directly to the building protective ground or to one or more approved grounding rods, using 10AWG ground wire and corrosion-resistant connectors.
- Refer to the National Electrical Code for grounding details.

IF A PERSON COMES IN CONTACT WITH ELECTRICAL POWER, AND CANNOT MOVE:

- **DON'T TOUCH THAT PERSON, OR YOU MAY BE ELECTROCUTED.**
- Use a non-conductive dry board, stick or rope to push or drag them so they no longer are in contact with electrical power.
- Once they are no longer contacting electrical power, administer CPR if you are certified, and request emergency medical aid immediately.

Mounting the Enclosure

The HotPoint 1000R enclosure should be mounted securely to a wall or a pole approximately 2” (51 mm) in diameter.

Mounting Guidelines

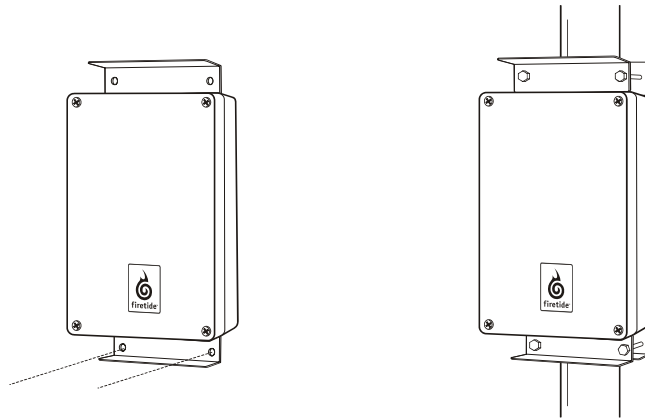
- For best results, the mounting location should enable maximum performance of the antenna and any attached devices such as access points or cameras. Whenever possible, provide clear line-of-sight access for the antenna. You can test various locations by mounting the unit to a portable stand until you can determine the ideal location for permanent mounting.
- The location must allow for a solid connection to earth ground. Be sure the earth ground wire or strap does not obstruct access to the enclosure.
- The unit must be within 100’ (30 M) of an indoor AC outlet for power. Note: AC power is not required if the HotPoint 1000R will receive power via PoE (power over Ethernet) from an attached peripheral device. Note: If power is provided to the Hotpoint 1000R via a PoE carrying Ethernet connector, use the sealing cap from the Ethernet connector to cover the power input connector.
- Avoid areas with heavy vehicle and foot traffic. Do not install near rain gutters and downspouts or areas subject to flooding.

Wall Mounting

1. Attach the angled mounting brackets to the rear of the enclosure as shown.
2. Use four screws to attach the enclosure securely to the wall. Use appropriate anchors when attaching to masonry or other materials

Pole Mounting

1. Attached the angled mounting bracket to the rear of the enclosure as shown.
2. Position the unit against the pole and clamp it securely in place using the rear “U” brackets and four bolts provided.



Wall and Pole Mounting

Mounting the Antenna

The antenna consists of an antenna shaft with an attached coaxial cable and a mounting tube. Remove the set screw that secures the antenna shaft to the tube and separate the two components

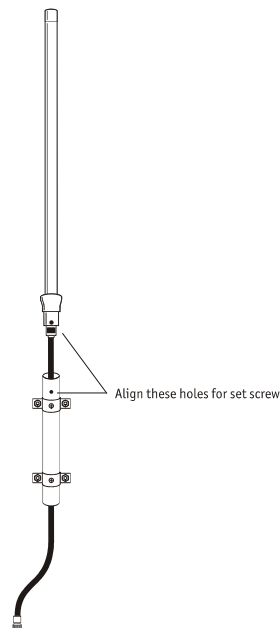
Note: The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. OEM Integrators, end users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Wall Mounting

1. Position the mounting tube vertically above or to the side of the HotPoint 1000R enclosure to permit easy attachment of the coaxial antenna to the connector at the top of the enclosure.
2. Use four screws to attach the mounting tube securely to the wall. Use appropriate anchors when attaching to masonry or other materials
3. Replace the antenna shaft by first threading the coaxial cable through the tube and then securing the shaft to the tube using the set screw.
4. Connect the end of the coaxial cable to the antenna connector at the top of the HotPoint 1000R enclosure.

Pole Mounting

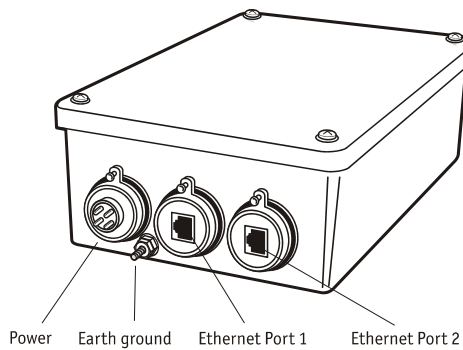
1. Position the mounting tube on the pole above the HotPoint 1000R enclosure. Be sure allow spacing for easy attachment of the coaxial antenna to the connector at the top of the enclosure.
2. Clamp the tube securely to the pole using the two "U" bolts provided.
3. Replace the antenna shaft by first threading the coaxial cable through the tube and then securing the shaft to the tube using the set screw.
4. Connect the end of the coaxial cable to the antenna connector at the top of the HotPoint 1000R enclosure.



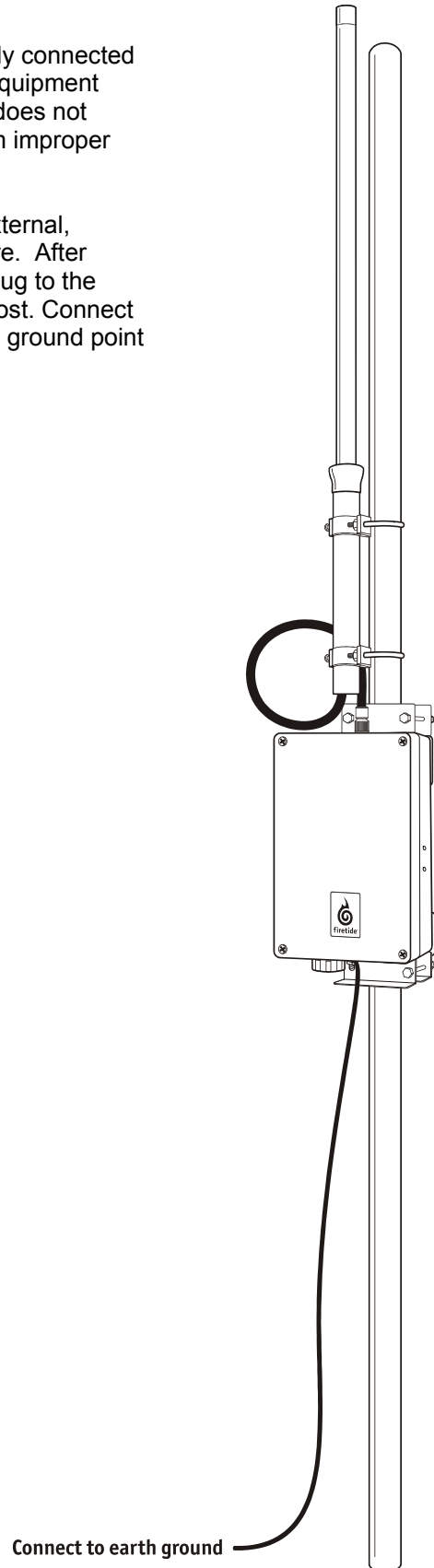
Connecting to Earth Ground

- **Warning!** The HotPoint 1000R must be properly connected to earth ground. Failure to do so may result in equipment damage, injury or death. The product warranty does not cover damages resulting in part or in whole from improper grounding.

The HotPoint 1000R outdoor mesh router has an external, threaded grounding post at the base of the enclosure. After mounting the unit securely, secure the ground wire lug to the threaded post using the two nuts supplied with the post. Connect the other end of the ground wire to an existing earth ground point or a grounding rod.



HotPoint 1000R Connectors



Power Connections

There are two options for supplying power to the HotPoint 1000R outdoor mesh router.

Option 1. Remote Power Module

The remote power module provides power to the HotPoint 1000R enclosure from an indoor AC outlet. You can also plug an optional power over Ethernet (PoE) injector into the module to power a peripheral device connected to the second (rightmost connector) HotPoint 1000R Ethernet port.

- **Caution!** The Remote Power Module AC adapter is for indoor use only.
1. Feed the 100' (30 M) power cable from the indoor AC outlet location to the HotPoint 1000R enclosure. The connectors at each end are wired identically. If necessary, you can remove the connectors with a small screwdriver to enable feeding the cable through conduit or small openings.

Important! When reattaching the connectors, be sure to connect each of the four conductors to the correct terminal. Incorrect wiring may result in equipment failure and possible damage.

2. Remove the protective cap from the power connector on the HotPoint 1000R enclosure and attach the power cable connector. Tighten the connector to ensure a watertight seal.
3. Attach the connector at the other end of the cable to the indoor remote power module.
4. Plug the AC adapter into the indoor AC outlet.
5. If you are using a PoE injector, plug it into the auxiliary power connector on the remote power module and connect the injector to an indoor AC power source.

Option 2. Power over Ethernet (PoE) from a Peripheral Device

The HotPoint 1000R can also receive power from a peripheral device such as an access point or camera. This device must be able to supply PoE and must be attached to center (middle connector) Ethernet port on the HotPoint 1000R.

Ethernet Ports

The HotPoint 1000R outdoor mesh router has two weatherproof Ethernet ports to provide Ethernet connectivity to outdoor peripheral devices such as access points or surveillance cameras. Use of these ports is optional.

Power over Ethernet (PoE)

Ethernet port 1 (center connector) supports PoE for powering the HotPoint 1000R outdoor mesh router from a peripheral device attached to this connector.

Ethernet port 2 (right connector) supports PoE for powering a peripheral device attached to this connector.

Connecting Peripheral Devices

1. Remove the protective cap from the Ethernet port you want to use and plug in the Ethernet cable. Tighten the cable connector to ensure a watertight seal.
2. Attach the other end of the Ethernet cable to the peripheral device.

HotPoint Manager™ Software

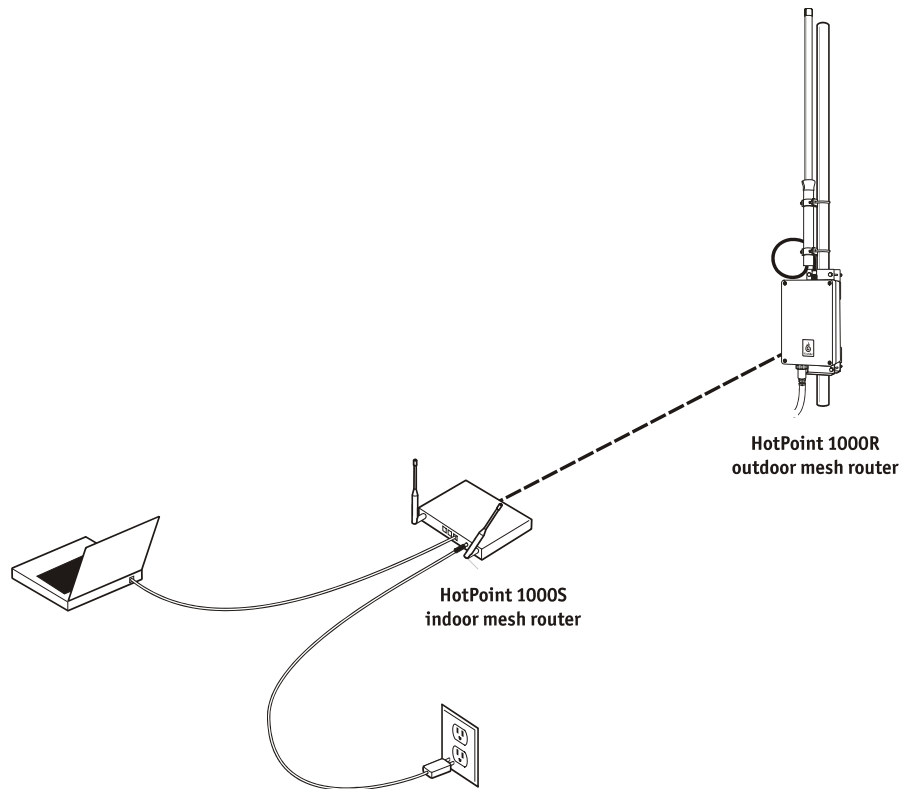
The HotPoint Manager software provides a convenient, browser-based interface for monitoring all of the HotPoint routers on your mesh network. HotPoint Manager is a Java-based application compatible with most Internet browsers and platforms including Windows, Macintosh, UNIX, and Linux. Registered users can download the HotPoint Manager software and user documentation from the Firetide web site (www.firetide.com).

Downloading and Installation Instructions

1. Go to the Firetide web site www.firetide.com
2. Select Downloads from the Support Menu
3. Read the instructions provided and download the appropriate version of the software and documentation. You may be asked to log in or to register before being permitted to download.
4. Install the software on your workstation as directed in the instructions for your operating system.

Connecting to the Mesh Network

1. Be sure all of your HotPoint routers are installed and powered.
2. Connect your workstation's network adapter directly to any one of the Hot Point routers using an Ethernet crossover cable. For safety and convenience, connect the workstation to a HotPoint 1000S wireless mesh router that is on the same mesh as your HotPoint 1000R outdoor mesh router(s). This will enable you to manage the mesh while you are indoors.
3. Turn on your workstation and configure your TCP/IP settings as described on the following page or by using the instructions provided for your operating system.



Connecting a workstation running HotPoint Manager software

For Windows XP

1. Click on the Start button.
2. Click on the Control Panel icon.
3. Double-click on the Network Connections icon.
4. Double-click on the Local Area Connection icon for the network adapter used to connect to the Firetide mesh network.
5. Select Internet Protocol (TCP/IP) and click on the Properties button.
6. Select "Use the following IP address" and enter the following information:
 - IP address: 192.168.224.200
 - Subnet mask: 255.255.255.0
7. Click OK to finish.
8. Restart your computer and proceed to "Getting Started with HotPoint Manager."

For Windows 2000

1. Click on the Start button.
2. Click on Settings and select Control Panel.
3. Double-click on the Network and Dial-up Connections icon.
4. Double-click on the Local Area Connection icon for the network adapter that is connected to the Firetide mesh network.
5. Select Internet Protocol (TCP/IP) and click on the Properties button.
6. Select "Use the following IP address" and enter the following information:
 - IP address: 192.168.224.200
 - Subnet mask: 255.255.255.0
7. Click OK to finish.
8. Restart your computer and proceed to "Getting Started with HotPoint Manager."

For Other Operating Systems and Platforms

Please refer to the HotPoint Manager User Guide (available for registered customers at www.firetide.com) for information and setup instructions.

Getting Started with HotPoint Manager

Use the following procedure to determine if your HotPoint Manager software is installed and running properly. For complete information on HotPoint manager features and more detailed instructions on its operation, download the latest HotPoint Manager User Guide available at www.firetide.com/support.

Note: Steps 1 and 2 are for launching HotPoint Manager under Windows. Your operating system may have a different procedure for launching applications.

1. From the Windows Desktop click on the Start button
2. Click on All Programs and select HotPoint Manager. The Login screen will appear.
3. Enter the following information to log into the mesh network
 - Username: admin
 - Password: admin
 - Mesh IP address: 192.168.224.100
4. Click on Login to start
5. Wait for your computer to connect to the mesh. This may take a few seconds to several minutes.
6. You should see the screen shown on the following page with a list of all of the HotPoint units on the mesh.

Note: If this screen does not appear, or some of your HotPoint mesh routers appear to be missing from the list, refer to the troubleshooting section of the HotPoint Manager User Guide.

Troubleshooting and Support Information

As a Firetide customer you are entitled to receive free support services on our web site and from your authorized Firetide dealer.

Troubleshooting

The best way to troubleshoot individual HotPoint routers and your entire Firetide mesh network is to use the HotPoint Manager software. With HotPoint Manager you will be able to view mesh activity, customize your network configurations and change the default settings on your HotPoint routers. This software is available from the Firetide web site. See page 17 for downloading and installation instructions.

Register with us now to Access our Support Web Site

Registering as a customer on our web site entitles you to free information and materials to help you get the most from your Firetide mesh network. Visit www.firetide.com/support for information on becoming a registered customer and for access to our support materials.

Dealer Provided Technical Support and Warranty Services

If you need additional technical assistance that is not available on our web site, please don't hesitate to contact your Firetide dealer directly. All authorized Firetide dealers are trained and authorized to provide technical support and warranty services for our products and have qualified technical staff available to help you build and maintain your Firetide mesh network.

Product Returns

Please contact your Firetide dealer for instructions on returning defective or damaged products for repair or replacement. Do not return products to Firetide, Inc.

Sales Support

If you need additional HotPoint wireless mesh routers or accessories, please contact your Firetide dealer directly. If you do not know your dealer's name, simply email sales@firetide.com and we will send you the dealer information you need. To help us provide the best service possible, be sure to include your phone number, address and the serial numbers of the HotPoint routers at your location.

Restoring Default Settings

You can change or restore the default settings for your HotPoint router using the HotPoint Manager software. You can also use the following procedure to restore the factory default settings without HotPoint Manager.

1. Connect an Ethernet crossover cable between both Ethernet ports.
2. Plug in the HotPoint power adapter and wait for red "fault" LED to turn on and then off.
3. Unplug the HotPoint power adapter and disconnect the crossover cable. The default settings are now restored.

HotPoint Factory Default Settings

AES Encryption: Disabled

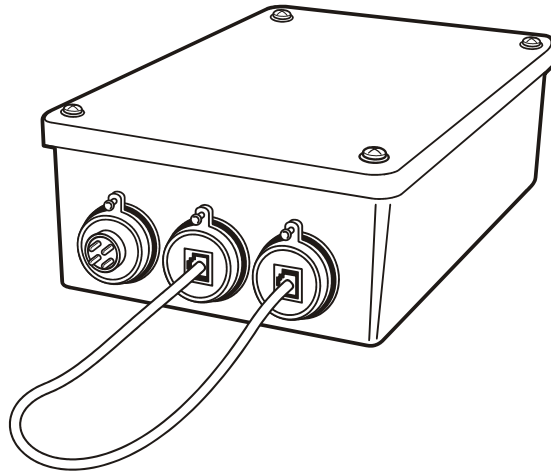
WEP Encryption: Disabled

Mesh IP address: 192.168.224.100

Ethernet ports: All ports enabled

HotPoint Manager username: admin

HotPoint Manager password: admin



Connect a crossover cable between Ethernet ports to reset.

HotPoint Accessories

Consult your Firetide dealer or the Products section of www.firetide.com for a current list of available accessories. Accessories, components and additional HotPoint wireless mesh routers are available directly from your Firetide dealer.

Specifications

Model

HotPoint 1000R Outdoor Wireless Mesh Router

Protocol

Topology Broadcast based on Reverse-Path Forwarding (TBRPF)

Encryption

AES, RSA certificates; Wireless: WEP

Radio range (open environment)

Up to 2 miles (3.22 km)

Wireless interface

- IEEE 802.11b compliant (backhaul)
- Radio Tx Power: 200mW
- Modulation: DSSS
- Data Rates: 11, 5.5, 2, 1 Mbps
- 8.5dB, 50 Ohm omni-directional antenna

Network ports

Two weatherized, autosensing 10/100 Ethernet ports

Lightning protection

(1kV/5KA with replaceable isolation cell)

Dimensions (enclosure)

6.5" x 10" x 3.25" (16.51 cm 25.4 cm x 8.25 cm)

Dimensions (with mount and antenna)

7" x 45" x 4.5" (17.78 cm x 114.3 cm x 11.43 cm)

Antenna

32" (81.28 cm) with mount

Weight (enclosure only)

4 lb (1.81 kg)

Power

- 120 VAC, 60 Hz
- 802.3af Power over Ethernet
- 10 W power consumption

Regulatory Agency Certifications

- FCC CFR47 Part 15, Class B
- FCC CFR47 Part 15, Class B
- OET-65C,

Environmental specifications

- Operating temperature: -20 C to +55 C
- Storage temperature: -40 C to 80 C
- Humidity (non-condensing) 10% to 90%
- Weather rating: NEMA 4x weatherproof
- Wind shear: 100 mph (161 kph)

Warranty

One year (limited)

Package Contents

- HotPoint 1000R outdoor wireless mesh router
- Remote power module with AC power adapter
- Wall and pole mounting brackets
- 8.5 dBi antenna with mounting bracket
- Installation and User's Guide
- Warranty card
- Registration card
- End User License Agreement card.

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