HotPort™

firetide™
instant mesh networks™

User Guide
HotPort 3200 Series & 3600 Series
Outdoor Wireless Mesh Node
March 2006

HotPort Limited End User Product Warranty

Pursuant to all provisions described herein, Firetide products are warranted for one (1) year from the date of purchase against defects in the build materials and workmanship. Firetide also warrants that the Software will materially conform to the documentation supplied by Firetide with the Software. In the event that the Software fails to materially conform to the documentation and an authorized Firetide reseller is notified in writing of such failure within the warranty period, Firetide or its reseller shall use commercially reasonable efforts to promptly correct the nonconformity. Firetide does not warrant that the use of the Software will be uninterrupted or error free. Firetide does not warrant that the Products will meet any requirements or specifications of any End User Customer. This warranty applies to the entire Firetide product, including antennas and the AC power adapter.

The above warranties are void if the alleged defect cannot be verified by Firetide or if, as determined by Firetide, the product failure was due to tampering, abuse, misuse, accident, shipping, handling, or storage; or if the product has been installed, used, or maintained in a manner not described in the product user manual, if the product has been altered In any way, or If product serialization has been altered. Any attempt to disassemble or repair the product by anyone other than Firetide immediately voids this warranty.

This warranty applies only to the original End User purchaser of the product and may not be transferred to any other individual or entity.

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In no event will Firetide be liable for any special, incidental, consequential, punitive or indirect damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or other pecuniary loss) arising out of the use or inability to use the product or the performance, interruption or failure of the product, irrespective of the cause of action, even if Firetide has been advised of the possibility of such damages. Firetide's cumulative liability for all claims arising out of or in connection with this warranty will not exceed the amount paid by the original End User purchaser to purchase the product. The amounts payable for the product are based in part on these limitations and these limitations shall apply not-withstanding the failure of essential purpose of any remedy. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so to that extent the above limitations or exclusions may not apply to you.

By using the product the original End User purchaser agrees to and is bound by these terms and conditions.

In the event that a product fails to meet this warranty and Firetide's authorized reseller is notified in writing of such failure within the warranty period, Firetide shall, at its own discretion, either repair the product or replace it with the same or a functionally-equivalent product free of charge. Replacement products may contain refurbished materials in whole or in part. Firetide will honor this warranty provided the product is returned through an authorized Firetide reseller or dealer with shipping charges prepaid, along with a proof of purchase describing the original purchase date and product serial numbers if applicable. The authorized reseller must acquire a Return Materials Authorization (RMA) number from Firetide prior to returning any product. Firetide does not accept shipments of defective products without shipping charges prepaid.

Explanation of Graphical Symbols

This symbol is intended to alert the user to the presence of important operating, maintenance, and servicing instructions in the literature accompanying this unit. Failing to comply with this instruction may result in electrical shock.

This symbol is intended to alert the user to the presence of important operating, maintenance, and servicing instructions in the literature accompanying this unit. Failing to comply with this instruction may result in a hazard.

DO NOT OPEN THE COVER

• Dangerous voltages inside.

• No serviceable parts inside.

• Refer to qualified service personnel.

• Unit must be disconnected from power prior to servicing.

• Unit has tamper-evident labeling that indicates when the cover has been removed.

Contents

Firetide HotPort Wireless Mesh Nodes

The Firetide™ HotPort™ High-Performance Mesh Network provides a high-capacity, self-healing wireless mesh backbone for indoor and outdoor networks. The HotPort system enables multiple network services and standard Ethernet devices to operate on the wireless backbone, creating secure and reliable wireless networks for video surveillance, voice, and data.

All HotPort mesh nodes, indoor or outdoor, connect wirelessly to other nodes to form a high-performance wireless mesh network. Ethernet packets are automatically switched across the mesh, in a manner analogous to an Ethernet switch, using AutoMesh™, a proprietary protocol developed by Firetide. AutoMesh has been optimized for efficiency in wireless mesh environments.

Models are available for operation at 2.4 GHz for high capacity and maximum range or at 5 GHz for high capacity and minimal interference from 2.4 GHz devices. For use on US Public Safety bands, a 4.9 GHz unit is available. This frequency may only be used by FCC-licensed Public Safety agencies.

A Firetide mesh is completely portable, so relocating your entire network is as easy as taking your HotPort nodes with you to your new site, leaving no wires behind.

The HotPort Family

HotPort nodes are available in both indoor and outdoor models, and with a range of single-band and multiple-band radios.

Outdoor Nodes

HotPort 3200 and 3600 series outdoor mesh nodes have weatherproof enclosures and connect wirelessly to otherHotPort nodes to form a high-performance wireless mesh network.

3200 series nodes operate at 2.4 GHz or at 5 GHz. Units designed for use on the 4.9 GHz Public Safety band are available in the US for use by FCC-licensed Public Safety agencies. 3600 series nodes are single band, and are available in 2.4 GHz and 5 GHz models.

All models feature a built-in, dual-port 10/100 Ethernet switch. Both Ethernet ports are weatherproof. Port 1 accepts power from PoE; port 2 can power other PoE equipment. A removable sunshield and a mounting bracket are provided with each unit.

Indoor Nodes

HotPort 3100 and 3500 series mesh nodes provide fast and easy indoor network deployment. They are plenum-rated and feature a four-port 10/100 Ethernet switch for connecting devices at any location to a wireless mesh backbone.

Summary of HotPort Models

Model & SKU	Use	Band	RF Output Power	Data Rate	Default Channel
3101	Indoor	2.4, 5 GHz	standard	10 Mbps	2.462 GHz DSSS, Ch 11
3103	Indoor	2.4, 5 GHz	standard	25 Mbps	2.462 GHz DSSS, Ch 11
3100/PS	Indoor, Public Safety	2.4, 4.9, 5 GHz	standard	25 Mbps	2.462 GHz DSSS, Ch 11
3500-2401	Indoor	2.4 GHz	high	10 Mbps	2.462 GHz DSSS, Ch 11
3500-5001	Indoor	5 GHz	high	10 Mbps	5 805 GHz OFDM, Ch 161
3500-2403	Indoor	2.4 GHz	high	25 Mbps	2.462 GHz DSSS, Ch 11
3500-5003	Indoor	5 GHz	high	25 Mbps	5 805 GHz OFDM, Ch 161
3203	Outdoor	2.4, 5 GHz	standard	25 Mbps	2.462 GHz DSSS, Ch 11
3200/PS	Outdoor, Public Safety	2.4, 4.9, 5 GHz	standard	25 Mbps	2.462 GHz DSSS, Ch 11
3600-2400	Outdoor	2.4 GHz	high	25 Mbps	2.462 GHz DSSS, Ch 11
3600-5000	Outdoor	5 GHz	high	25 Mbps	5.805 GHz OFDM, Ch 161

Note: Data Rates are typical for single-hop connections.

What is a Firetide Mesh Network?

The HotPort high-performance mesh network is the third generation of mesh networking products from Firetide, a leading developer of wireless mesh networks. The HotPort system is a multi-function mesh network that enables standard Ethernet devices, such as access points, surveillance cameras, IP telephones, network servers, and printers to access networking services on the wireless mesh backbone.

Mesh networking can be compared to the Internet, where data can be rerouted onto 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 be improved by adding more nodes and enriching the density of the mesh. More redundant paths mean 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 to many different physical environments.

Firetide High-Performance Mesh Network

High Capacity

The HotPort mesh network provides exceptional performance and scalability and is designed especially for high-bandwidth/low-latency applications, such as real-time video, voice, and large Wi-Fi HotZones. The HotPort system features high-performance hardware and software that provides up to 25 Mbps sustained throughput across the mesh network.

Scalable

The HotPort mesh network has a scalable architecture, allowing expansion of the network from just a few nodes to many. To add more nodes, you can simply copy the configuration from an existing node to the new nodes. Multiple mesh networks operating on different radio spectrums or IP addresses can be physically connected to each other to expand the overall network, while still retaining their separate mesh identities.

Reliable

The self-healing architecture of the HotPort mesh network and its redundant paths between nodes make it very reliable and fault tolerant. Mesh traffic will reroute over a different path automatically if a path becomes obstructed or if a node is taken out of service or moved to another location.
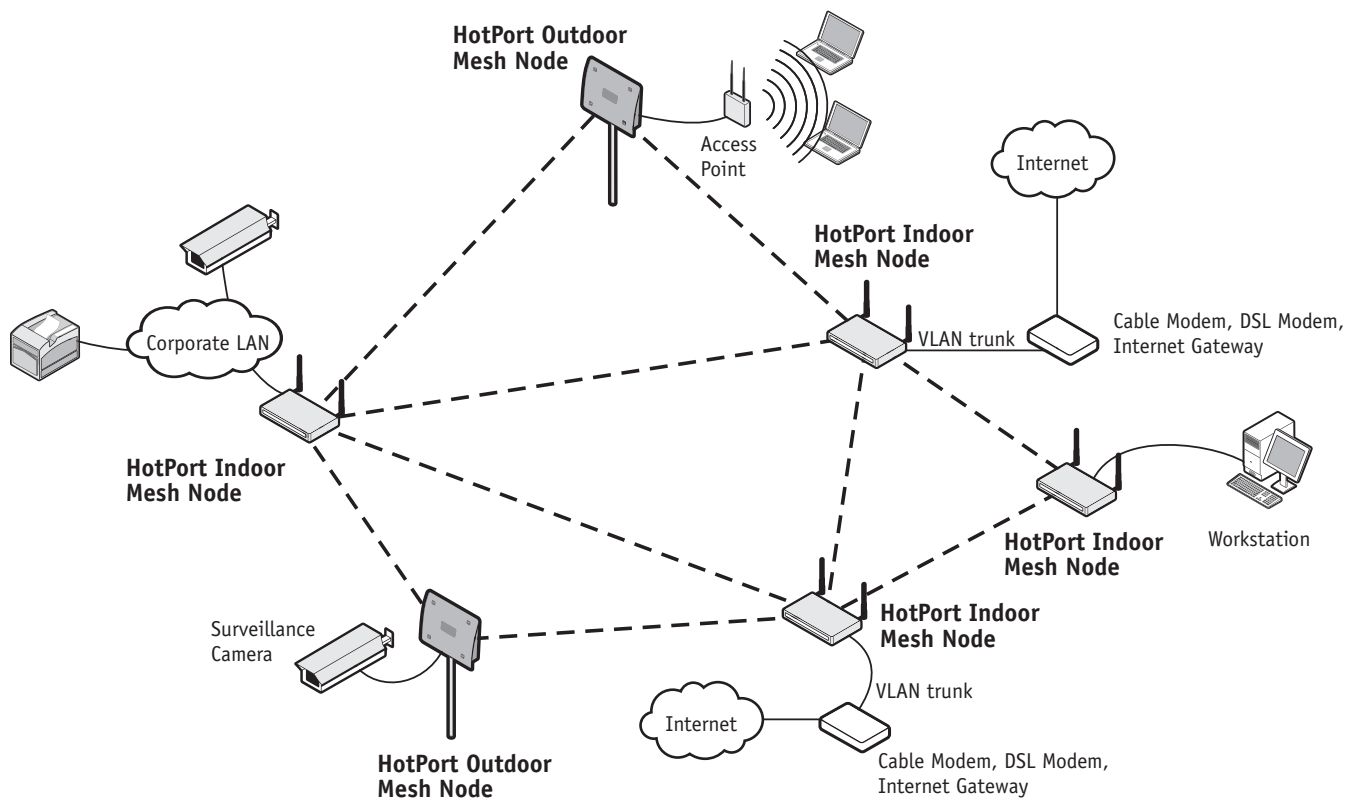
Firetide Mesh Network with Indoor and Outdoor Wireless Mesh Nodes

Wireless Mesh Network Applications

Wi-Fi Networks

Providing a wireless backbone for Wi-Fi networks and HotSpots is one of the most prominent applications of a wireless mesh network. Because it supports access points of any brand, price, size, and features, the HotPort mesh provides more flexibility for Wi-Fi deployment than other mesh solutions. Each HotPort node also supports multiple access points, so higher density Wi-Fi networks can be deployed at a lower cost than using mesh nodes that are limited to a single integrated access point.

Multiple Services over the Mesh

The HotPort mesh network provides a high-performance wireless infrastructure to support multiple, simultaneous applications and services, including those that require extra capacity and fast throughput. Typical applications that benefit from this level of performance are video surveillance networks, voice over IP (VoIP) services, and metro-scale Wi-Fi HotZones. In addition to ample bandwidth, the HotPort mesh also provides VLAN and traffic prioritization functionality to group and prioritize traffic on the mesh for maximum efficiency and throughput.

Video

The high-capacity and sustained throughput of the HotPort network makes it ideal for IP video networks and video surveillance applications, especially those requiring multiple cameras or fast frame rates. Wi-Fi cameras are not needed because any camera with an Ethernet interface can connect directly to a HotPort mesh node. HotPort outdoor mesh nodes (HotPort 3200 and 3600 series) also support Power over Ethernet (PoE), allowing you to provide power to the HotPort via an Ethernet connection to Power Sourcing Equipment.

Voice over IP

The HotPort mesh network enables clear VoIP traffic over the wireless backbone. In addition to benefiting from the very high sustained throughput of the mesh, the traffic prioritization capability enables you to assign the highest priority to voice traffic to ensure the best quality of service.

Data

In addition to supporting Wi-Fi data using access points connected to the mesh, the HotPort mesh network also provides direct cabled connectivity for computers and servers via the Ethernet ports provided on each node. These direct connections simplify connectivity and enhance performance by eliminating the overhead and complexity of using access points and wireless clients to connect to the mesh. A direct connection to the mesh also eliminates the security concerns associated with connecting clients via Wi-Fi access points.

Printing

With the HotPort mesh network, any wired network printer can operate over the wireless mesh backbone without any additional setup, drivers, or software. The printer simply connects to one of the Ethernet ports on a HotPort mesh node the same way it would connect to a wired network. This wireless capability allows network printers to operate virtually anywhere, including on mobile carts and in temporary settings.

Provide Ethernet Anywhere

The HotPort mesh network delivers live Ethernet service virtually anywhere, indoors or outdoors, without a wired backbone. This makes the mesh ideal for any location where network cabling is too difficult, invasive, or expensive to install, such as in historic buildings and outdoor locations, or in temporary venues, such as conferences and festivals, or office space that changes frequently. The HotPort mesh provides conventional Ethernet functionality, so Ethernet devices do not require any additional software, drivers, or setup to operate on the mesh.

High-Performance Nodes

Each node on the HotPort mesh features hardware optimized for maximum speed on the mesh and at each location. In addition to providing fast transport between hops, each node also features an integrated high-speed Ethernet switch for local line-rate switching up to 100 Mbps per port. These Ethernet ports support virtually any Ethernet device, including access points, high-speed video cameras, VoIP telephones, computers, printers, and network servers. Indoor nodes (HotPort 3100/3500 series models) provide four 10/100 Ethernet ports and outdoor nodes (HotPort 3200/3600 series models) provide two 10/100 ports. HotPort outdoor mesh nodes also support 802.3af-compliant Power over Ethernet.

Indoor/Outdoor Operation

The HotPort indoor and outdoor mesh network nodes are fully compatible with each other for seamless network connectivity between indoor and outdoor locations. Indoor mesh nodes are plenum-rated and provide four 10/100 Mbps Ethernet ports for indoor networking devices, such as access points and computers. Outdoor mesh nodes feature weatherproof NEMA 4X enclosures, high-gain antennas for extended range, and two Power over Ethernet-enabled 10/100 Mbps Ethernet ports.

2.4 GHz and 5 GHz Spectrums

HotPort mesh networks have the flexibility to operate in 2.4 GHz or 5 GHz spectrums. Both spectrums offer high-capacity operation, with 2.4 GHz operation providing the longest range, and 5 GHz operation offering a shorter range but minimal interference in environments that are saturated with 2.4 GHz wireless traffic.

Best Price/Performance

Wireless mesh networks can significantly reduce the labor costs and lead times of network installation by eliminating a significant amount of backhaul cabling. However, these savings will not be realized if the cost of the mesh hardware is too high or if too many nodes or auxiliary devices are needed to build a reliable mesh. Firetide HotPort mesh networks provide exceptional value with the lowest cost per node of any high-capacity mesh solution. HotPort mesh nodes provide excellent wireless connectivity for maximum coverage at each location, and no auxiliary servers or additional devices are required to support larger node populations.

Easy to Deploy/Instant Mesh Network

Firetide HotPort mesh networks greatly simplify network deployment by eliminating network backhaul cabling and streamlining the process of provisioning and managing wireless networks. After basic configuration and startup, HotPort nodes automatically find each other to form the wireless mesh. The network automatically heals itself if a node goes down or if a path between nodes is blocked. Minimal network management is required to deploy the network. Network management is provided with an intuitive graphical interface on a workstation that can be connected either directly to the mesh or remotely via the Internet.

Product Features

Below are descriptions of some of the HotPort wireless mesh network's features.

Mesh Management Using HotView Software

HotView™ mesh management software provides live monitoring, as well as local and remote management of Firetide HotPort wireless mesh networks. The software features an intuitive graphical user interface and provides complete access to all mesh and individual node settings, including security, VLANs, traffic prioritization, radio power controls, and Network Gateway Interconnects. Live monitoring features include mesh and node statistics and a graphical view that uses node icons to indicate active connections. Users can also import graphics of floor plans or maps. The icons for each node can be moved over the graphics to show where they are physically located.

Security

The HotPort mesh network includes several layers of security, including AES key and WEP encryption.

AES (Advanced Encryption Standard) encryption can be used to protect data exchanged between any two nodes in a wireless mesh. When AES encryption is enabled for a wireless mesh, all payload data leaving the nodes in the mesh is encrypted using 128- or 256-bit keys. The data remains encrypted as it passes through the intermediate nodes and is only decrypted at the end node where it leaves the mesh network. This provides end-to-end security for the customer data passing through the HotPort wireless mesh.

WEP (Wired Equivalent Policy) supports 40/64- and 104/128-bit encryption to protect all traffic on the mesh, including routing and management traffic. This can be used to protect traffic over the wireless links.

For additional security, a proprietary mesh protocol prevents non-HotPort devices from participating on the mesh. Secure network access can also be provided for applications that do not allow Wi-Fi client services by connecting computers to the mesh directly using cables connected to the Ethernet ports on a HotPort node.

Packet Filtering

HotPort nodes can filter packets based upon the MAC address of the traffic. You can configure each Ethernet port to deny or permit access for traffic coming from or to specific devices (identified by the devices' MAC addresses).

VLANs

The HotPort mesh network includes support for virtual local area networks (VLANs) to enable traffic to be separated into smaller groups and application-specific LANs. VLANs allow small groups of users to operate within their own private space on the mesh, and they can also improve mesh performance by directing traffic onto specific VLAN routes. The HotPort mesh supports 802.1Q VLAN tagging of packets entering and exiting the mesh.

You can configure each Ethernet port to operate as part of a VLAN. A HotPort wireless mesh can support multiple VLANs. You can assign ports to different VLANs. Only ports belonging to the same VLAN can switch traffic among themselves. You can create up to 16 logically separated VLAN networks within a single mesh. The HotPort mesh also supports VLAN trunks.

Traffic Prioritization

The HotPort system provides three traffic prioritization levels (Low, Medium, or High) to prioritize traffic on the mesh. This helps ensure that certain types of traffic requiring high throughput or continuous service, such as voice, take precedence over other forms of traffic. Every port on every node on the mesh can be set to any of these three priority levels.

Network Gateway Interconnects

The HotPort mesh network allows multiple mesh portals for efficient access to external network services, such as the Internet. This capability enables high throughput and redundancy for external services and optimizes the transport of traffic though the mesh. HotPort mesh nodes can also be assigned to specific portal groups (called "Gateway Groups") to further increase the efficiency of each portal. You configure portals by defining Network Gateway Interconnects (NGIs).

Each Gateway Group can support up to 16 NGIs and you can define up to 8 Gateway Groups. Each node on the mesh can have only one Gateway Group interconnect. Gateway groups are not required when connecting to different network domains or if only one NGI is being used.

The NGI feature provides both load balancing and redundancy when accessing various network services. This helps provide better wireless mesh data throughput because it allows packets to enter and exit the wireless mesh at the entry/exit point closest to the packet's destination, thereby conserving wireless bandwidth and reducing the number of hops required to reach the desired destination.

Radio Settings

HotPort wireless mesh nodes support a range of radio options in the 2.4 GHz and 5 GHz bands, and the 4.9 GHz Public Safety band for US use. The selected radio mode is applied to the entire wireless mesh. You can use the HotView management software to display and modify the radio transmit power level for each node.

Integrated Two-Port 10/100 Switch

You can use the HotPort 3200/3600 series' two Ethernet ports to connect any Ethernet-capable client device to the mesh. The HotPort node can switch traffic between these devices even when there is no mesh created. When multiple HotPort nodes form a wireless mesh, traffic can be switched between any clients connected to any HotPort node that is part of the mesh.

Speed and Duplex Settings

You can configure each Ethernet port for 10 or 100 Mbps speed or for automatic speed negotiation. Network traffic between a HotPort node and devices connected to its Ethernet ports travels up to full wire rate (10 or 100 Mbps). Each port can also be configured for full- or half-duplex operation. In addition, you can enable and disable individual ports.

The Ethernet ports support auto MDIX, which allows you to use either straight-through or crossover cables to connect the HotPort node to other devices.

Transmit Power Control

You can display and modify the radio TX power level on a per node basis utilizing the HotView™ management software. The maximum power (that is, 100%) is a factory-configured value that is unique to each country of operation, each channel of operation, and each antenna configuration, and has been determined to be within an authorized limit. This value cannot be changed. However, using the HotView software, a mesh administrator can set any node to operate at a reduced percentage of this maximum power (for example, 75%, 50%, or 25%; the default setting is 75%). The administrator can restore the HotPort node to its approved maximum power by setting the power level back to 100%.

Note: Transmit power control adjustments affect the node radio, so care must be exercised when making adjustments on an existing network, as the reduced power level may cause the node to lose connectivity with other mesh nodes.

Note: Adjusting the power incorrectly could have an adverse effect on proper mesh operations.

If you are not sure what the power should be adjusted to, it is best to leave it at its default configuration. If you need additional technical assistance, please contact your Firetide dealer.

Example Networks/Applications

Below are some examples of how you can use HotPort wireless mesh networks in your workplace.

- Provide Ethernet service over a wireless backbone to buildings where wired solutions via CAT5 cabling or fiber is impractical or too expensive

- Connect access points to networks from locations where it is impractical to run cable to the access points

- Connect security cameras to monitor remote locations

Managing the Mesh Network

Note: See the HotPort 3200 / 3600 Hardware Installation Guide for instructions on installing your HotPort outdoor nodes.

HotView and HotView Pro mesh management software provides a convenient, browser-based interface for monitoring all of the HotPort nodes on your mesh network. The HotView software is a Java-based application compatible with most Internet browsers and platforms, including Windows® and Linux®.

HotView and HotView Pro are described in detail in the HotView User Guide and HotView Pro User Guide. You should refer to these; the following summary of initial installation is extremely brief.

To configure the mesh, connect to the mesh utilizing the default configuration and then change the desired settings using HotView. The software lets you change the settings (ESSID, channel, encryption, IP address, and so on) on all nodes, rather than changing one at a time. This will save you time and ensure that the entire mesh is configured the same way.

The HotView mesh management software provides an easy way to monitor and manage the mesh and your HotPort nodes. Because wireless connections between HotPort nodes are invisible, this software lets you "see" which units are within direct range of each other. The HotView software also provides additional security and optional configuration features. Registered users can download the HotView software and documentation from the Firetide web site: www.firetide.com/support.

1. Be sure all of your HotPort nodes are installed and powered.

2. Connect your workstation's network adapter directly to any one of the HotPort nodes using an Ethernet cable.

3. Turn on your workstation and configure your TCP/IP settings to:

   1. IP address: 192.168.224.10

   2. Subnet mask: 255.255.255.0

   3. Gateway is not used

Refer to your operating system documentation to configure the static address defined in step 3.

Getting Started with HotView Mesh Management Software

You are now ready to check your mesh configuration using the HotView mesh management software. For complete information on HotView mesh management features and more detailed instructions on its operation, install the software from the CD provided in the HotPort package or download the latest HotView User Guide, available at www.firetide.com/support.

The steps below describe how to launch the HotView software under Windows. Your operating system may have a different procedure for launching applications. If necessary, refer to your operating system's documentation for instructions on how to launch applications.

1. Install the HotView mesh management software as described in the HotView User Guide.

2. From the Windows Desktop, click on the Start button.

3. Click on All Programs and select HotView. The Login screen will appear.
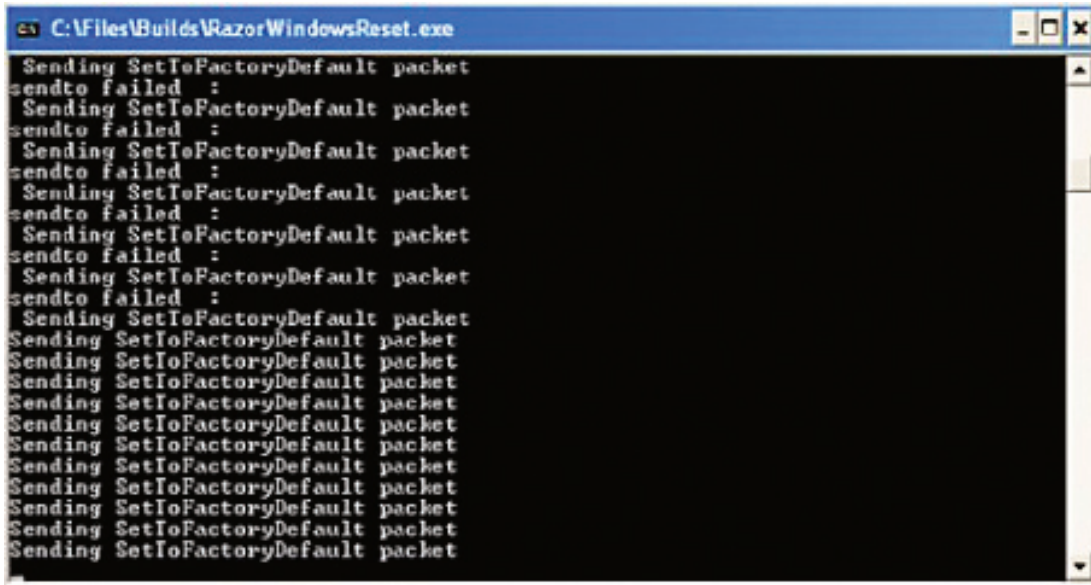
4. Enter the following information to log into the mesh network:

   • Mesh IP address: 192.168.224.150

   • Username: admin

   • Password: firetide

5. Click on Login.

6. Wait for your computer to connect to the mesh. This may take a few seconds to several minutes, depending on how many nodes are in the mesh. You should see a screen with a list of all of the HotPort units on the mesh.

Restoring Default Settings

You can restore your HotPort node to its factory default settings using the provided HotPort 3203 reset application. This application is provided on the CD-ROM disc included in the HotPort package.

Note: *To reset a HotPort to its factory defaults, you must run the reset application within 3 minutes after the HotPort boots up.*

1. Install the reset application on a workstation. If running Windows, install the Windows application (3200factoryreset.exe); if running Linux, install the Linux version of the application (3200factoryreset.bin).

2. Connect the workstation's network adapter directly to an available Ethernet port on the HotPort using an Ethernet cable. Make sure the HotPort is powered.

3. Start up and run the factory reset application.

HotPort Factory Default Settings

AES encryption: Disabled
WEP encryption: Disabled
Mesh IP address: 192.168.224.150
Ethernet ports: All ports enabled
HotView username: admin
HotView password: firetide
Radio Power = 75% of approved maximum power
ESSID = HOTPORT_MESH
Default radio channel depends on model; refer to the table on page 2.

After a factory reset, you will need to specify the country code for Model 3203 HotPorts. All other mdoels are US-only. Refer to the HotView User Guide for information on using the HotView software to configure your HotPort nodes.

Appendix A
Contacting Firetide

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

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 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. Please keep all original packaging materials in the event they are needed to return the product for servicing.

Sales Assistance
If you need additional HotPort wireless mesh nodes 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 HotPort nodes at your location.

Appendix B
Specifications

Wireless Interface

These tables describes the technical limits of the nodes. Various country restriction may limit available choices. Channels available for use subject to country-specific regulatory approvals.

- Dynamic Frequency Selection (DFS)
- Transmit Power Control (TPC)

Model	Use	Bands
3203	Worldwide	2.4, 5 GHz
3200/PS	US Public Safety	2.4, 4.9, 5 GHz
3600-2400	US only	2.4 GHz
3600-5000	US only	5 GHz

Model	Bands (GHz)	Max TX Power	Sensitivity, dBm
3203	2.400-2.497 DSSS 2.400-2.497 OFDM 4.900-5.000 (J) 5.150-5.250 5.250-5.350 5.725-5.850	100 mW 100 mW 100 mW 50 mW 100 mW 100 mW	1 Mbps: -96; 11 Mbps: -89 6 Mbps: -93; 54 Mbps: -75 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72
3200/PS	2.400-2.484 DSSS 2.400-2.484 OFDM 4.9 (US PS) 5.150-5.250 5.250-5.350 5.725-5.850	100 mW 100 mW 100 mW 50 mW 100 mW 100 mW	1 Mbps: -96; 11 Mbps: -89 6 Mbps: -93; 54 Mbps: -75 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72
3600-2400	2.400-2.484 DSSS 2.400-2.484 OFDM	400 mW	1 Mbps: -96; 11 Mbps: -90 6 Mbps: -93; 54 Mbps: -74
3600-5000	5.150-5.250 5.250-5.350 5.725-5.850	50 mW 250 mW 400 mW	6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72 6 Mbps: -92; 54 Mbps: -72

Mesh Protocol
- Firetide AutoMesh Protocol

Encryption
- 40 bit, 104 bit WEP keys
- 128 bit, 256 bit AES keys

Antennas
- Two detachable 5 dBi omni directional, vertical polarization, dual band antennas, RP-TNC (included for network staging only)
- Single detachable, high gain, spectrumspecific, omni directional and directional antennas available (order separately). See Firetide Antenna Guide.

Network Ports
- Dual 10/100 Mbps Ethernet ports with weatherproof connectors
- IEEE 802.3, 802.3u compliant
- CSMA/CD 10/100 autosense
- Power over Ethernet 802.3af

Enclosure
- Cast aluminum NEMA-4X/IP66 enclosure
- Two antenna connectors (TNC reverse polarity)
- One weatherproof power connector
- Two weatherproof Ethernet connectors
- System indicator LEDs (power, mesh, fault)
- Physical security via lockable mounting bracket
- Weight: 4.85 lbs (2.2 Kg) with sun shield
- Dimensions: 9.84" x 7.80" x 2.69" (25 cm x 19.8 cm x 6.82 cm)

Power
- Input voltage: 16 VDC @ up to 2.2 A
- External power supply: 100-240 VAC, 50/60 Hz
- Power consumption:
- Up to 14 W with no PoE load
- Up to 35 W with PoE load
- Port 1: IEEE 802.3af compliant PoE (PD; accepts power)
- Port 2: IEEE 802.3af compliant PoE (PSE; delivers power)
  Note: you cannot pass PoE through the HotPort to a downstream device.

Regulatory Agency Certifications

Contact your Firetide dealer for product availability and certifications for your country.

Environmental Specifi cations
- Operating temperature: -20º C to +55ºC
- Storage temperature: -40º C to +80º C
- Humidity (non-condensing): 5% to 95%
- Storage humidity (non-condensing): 5% to 95%

Mesh Management Software
- HotView mesh management software (bundled)
- HotView Pro™ mesh management software (optional)

Warranty
- One year limited warranty (see warranty card for details)

Included Accessories
- Lockable bracket for pole and wall mounting
- External power transformer (indoor rated) with 10m DC power cable
- Removable sun shield
- One weatherized Ethernet transition cable with watertight RJ-45 coupling
- Staging antennas, 1 pair

Optional Accessories
- Weatherized Ethernet transition cable with watertight RJ-45 coupling
- Weatherized outdoor power supply kit
- Luminaire photcell socket power tap for use with weatherized power supply unit)

Appendix C
Countries of Operation

USA - All Models
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for 4.9 GHz operation by licensed Public Safety agencies, per FCC regulations.
- Approved for operation on the 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.825 GHz bands in OFDM mode.

Canada - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation on the 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.825 GHz bands in OFDM mode.

Japan - HotPort 3203 only
- Approved for operation in the 2.400-2.497 GHz band in DSSS and OFDM modes.
- Approved for operation in the 5.150-5.250 GHz band in OFDM mode.

Korea - HotPort 3203 only
- Approved for operation in the 2.400-2.483 GHz band in DSSS and OFDM modes.
- Approved for operation in the 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.825 GHz bands in OFDM mode.

New Zealand - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.825 GHz bands in OFDM mode.

Australia - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.850 GHz bands in OFDM mode.

Singapore - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.850 GHz bands in OFDM mode.

China - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.725-5.850 GHz band in OFDM mode.

Hong Kong - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.850 GHz bands in OFDM mode.

India - HotPort 3203 only
- Approved for operation in the 2.400-2.484 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.725-5.850 GHz bands in OFDM mode.

UK - HotPort 3203 only
- Approved for operation in the 2.400-2.4835 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.400-5.700 GHz bands in OFDM mode.

France - HotPort 3203 only
- Approved for operation in the 2.400-2.4835 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz and 5.250-5.350 GHz bands in OFDM mode.

Germany - HotPort 3203 only
- Approved for operation in the 2.400-2.4835 GHz band in DSSS and OFDM modes.
- Approved for operation in 5.150-5.250 GHz, 5.250-5.350 GHz, and 5.400-5.700 GHz bands in OFDM mode.

Appendix D
Regulatory Notices

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.

FCC Part 15 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.

FCC Part 90 Note

This equipment has been tested pursuant to FCC Part 90, DSRC-C mask certification, and is approved for use in the US on Public Safety bands by licensed Public Safety agencies.

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 45 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.

Public Safety Band

Pursuant to Part 90.1215, use of antennas with gain greater than 9 dBi and up to 26 dBi in the 4.940 – 4.990 GHz Public Safety band is permissible without reduction of TX output power. The antenna shall have a directional gain pattern in order to meet the requirement of point to point and point to multi-point operation.

3600-5000 Antenna Notice

FCC rules limit the level of TX power for the 5 GHz band depending on the frequency of operation. The Hotport product has been tested and designed to comply with these rules. As such, the correct antenna gain must be used on each product. The end user must use the approved antenna models v. band as specified below:

5.26 – 5.32 GHz	C037-510585 / 5.0 dBi Firetide
	HG5808U / 8 dBi Hyperlink

Important:
Antennas with gain > 8 dBi may not be used in the 5.26 – 5.32 GHz band

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Use of antennas with > 8 dBi gain will result in the effective isotropic radiated power (EIRP) limit to be exceeded. Doing this is a direct violation of FCC rules and is not permitted.

In the 5.745 to 5.805 GHz band, these antennas are approved:

C037-510585 / 5.0 dBi Firetide
HG5808U / 8 dBi Hyperlink
R380.700.205 / 10 dBi Radiall
1GP-51812 / 10 dBi Firetide
WISP4959018MBV / 16dBi Maxrad (directional)
MA0528-19AN / 19 dBi RFS (directional)

The Firetide-approved 16 and 19 dBi directional antennas may be used in the 5.745 – 5.805 GHz band only if the Hotport product is configured as a point to point link. As with any radio product, the installer should always position and select an antenna which minimizes potential interference to surrounding users.

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