



# *Motorola Point-to-Point 500 Series*

Wireless Ethernet Bridges



**MOTO**<sup>4</sup>**WI**

# High-Performance Connectivity Virtually Anywhere

## Establish Robust, High-Speed Links to Challenging Locations

Operating in the 5.4 and 5.8 GHz unlicensed bands at data rates up to 105 Mbps, the Motorola wi4 Fixed Point-to-Point (PTP) 500 Series Wireless Ethernet Bridges are designed to reliably transport your data, voice and video communications in virtually any environment – non-line-of-sight, high-interference and long-range line-of-sight paths, over water and open terrain, even in extreme weather conditions. Through Motorola's unique combination of technologies, PTP 500 solutions greatly enhance link performance in a variety of applications, including building-to-building connectivity, voice-over-IP, video surveillance, telemedicine, disaster recovery, emergency services and high-speed backhaul.

## More Range to Anywhere

PTP 500 Series links have class-leading sensitivity and power output, which enable the links to go farther than comparable systems – up to 155 miles (250 km). Plus, Motorola combines MIMO, *i*-OFDM and our advanced signal-processing algorithms to create four simultaneous channels between pairs of transceivers at each end of the link, without losing spectrum efficiency.

## Choice and Flexibility

PTP 500 Series bridges are available in several models to meet your individual requirements:

- **5.4 and 5.8 GHz Integrated:** With up to 105 Mbps Ethernet data rate and dual built-in antennas, the 5.4 and 5.8 GHz Integrated systems are the perfect choice for obstructed and high-interference environments where high throughput is a major requirement.
- **5.4 and 5.8 GHz Connectorized:** The PTP 500 Series Connectorized models combine all the innovative technology found in the Integrated versions with the high-gain advantage of external antennas. Over long distances and in extremely adverse environments, including deep non-line-of-sight, these solutions let you connect over greater distance and at a higher level of reliability and speed than comparable wireless bridges.

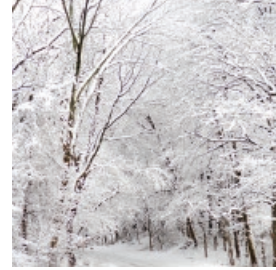
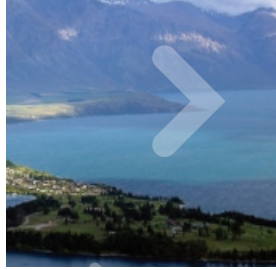
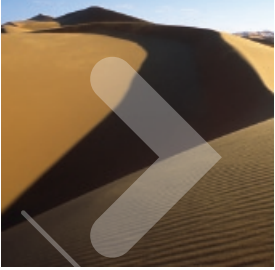
## MOTOwi4™

The wi4 Fixed PTP 500 Series bridges can operate as stand-alone systems or integrate easily with other systems in Motorola's MOTOwi4 portfolio of wireless broadband solutions that create, complement and complete IP networks. Delivering IP coverage to virtually all spaces, the MOTOwi4 portfolio includes wi4 Fixed, wi4 Mesh, wi4 Indoor and wi4 WiMAX solutions for high-speed connectivity over private and public networks.

## Exceptional Technology – Exceptional Throughput

PTP 500 Series solutions employ a unique combination of technologies that together enable the robustness and high performance of your links even in challenging conditions:

- **Multiple-Input Multiple-Output (MIMO):** The radio radiates multiple beams from the antenna – the effect of which significantly protects against fading and increases the probability of making a successful connection.
- **Intelligent Orthogonal Frequency Division Multiplexing (*i*-OFDM):** In addition to MIMO transmitting the data twice, *i*-OFDM sends transmissions over multiple frequencies, or sub-carriers, enabling high spectral efficiency, high resistance to multi-path interference and fading, and instant fade recovery.
- **Adaptive Modulation:** The transmitter and receiver negotiate the highest mutually sustainable data rate – then dynamically “upshift” and “downshift” the rate as RF conditions change to provide the maximum throughput possible for the radio path.
- **Advanced Spectrum Management with Intelligent Dynamic Frequency Selection (*i*-DFS):** At power-up and throughout operation, the radio samples the band up to 400 times a second and automatically switches to the clearest channel. The 30-day, time-stamped database alerts the network operator to any interference that does exist and provides statistics to help analyze these patterns. This Advanced Spectrum Management capability creates virtually interference-free performance in the band.



## High-Availability Wireless Ethernet Bridges for Obstructed and High-Interference Environments As Well As Long-Range Line-of-Sight Links, Including Those Over Water

- **Best-In-Class Radios:** Motorola's PTP radios offer the highest system gain in their class through the use of high-sensitivity antennas that provide greatly improved signal reception.

### Integrated Lightning Protection

PTP 500 Series bridges provide built-in lightning protection capability, eliminating the need to deploy an external lightning protection device on a tower or wall adjacent to the radio. The lightning protection built into the PTP 500 radio contains all the protection required at the top of the tower or wall. In addition, an external PTP Lightning Protection Unit (PTP-LPU) is required near the base of the tower or wall at the cable entrance point leading to the network. Motorola's PTP 500 LPU End Kit contains one lightning protection unit for use as the external unit to be positioned near the base of the tower or wall.

Together the lightning protection capability built into the PTP 500 radio and the external PTP-LPU offer exceptional protection from the harmful effects of lightning. However, 100% protection is neither implied nor possible.

### Reassuring, Robust Security

With Motorola's unique software, each PTP 500 wireless bridge will communicate only with its matched counterpart at the other end of the link – and with no other. In addition, communications are encoded using a unique scrambling mechanism to secure over-the-air transmissions. Another layer of security can be applied with FIPS-197 compliant 128- and 256-bit AES encryption (optional).

### Determine PTP Link Performance Prior To Purchase

Proper link planning is crucial to determine how a PTP 500 system will perform in your specific path conditions. With Motorola's PTP Link Planner, you can project link performance and throughput prior to purchase based on the characteristics of geography, distance, antenna height, transmit power and other factors specific to your desired path.

Plus, the PTP Link Planner allows you to plan and optimize multiple PTP links simultaneously and provides a comprehensive overview of your entire network via Google™ Earth.

### End-to-End System Management

PTP 500 Series bridges contain embedded web servers to manage a link either locally or remotely and are designed to easily integrate with web- or SNMP-based management systems and the Canopy® Prizm system. A WiMAX Management Information Block (MIB) is also provided to facilitate end-to-end management of a WiMAX network.

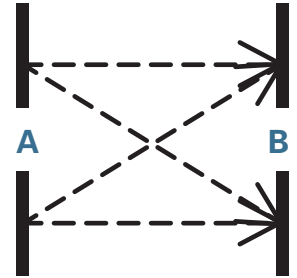
### Productivity Payoff

Typically, the PTP 500 system's performance means more productive users, less interference, lower cost of ownership and fewer connection points. In fact, Motorola PTP 500 Series solutions are often the lower-cost option when you consider:

- The business impact from being able to connect in an area already saturated with RF or in environments that were previously inaccessible
- The capabilities to support more bandwidth-sensitive applications, such as multimedia or voice-over-IP
- The ability to backhaul more local loops using a single link
- The capabilities to expand video surveillance applications beyond the constraints of a wired network
- The impact of having higher reliability and speed without having to pay licensed spectrum fees

### Put PTP 500 Bridges to Work for You

**Service Providers:** With high throughput, up to 99.999% availability and multi-level security, PTP 500 systems can offer highly reliable backhaul communications and support sophisticated convergent, multimedia applications, supplying services to large, wide-spread customer bases.



Data from A to B – or B to A – is sent on four channels, significantly increasing the likelihood that data will get through.



Integrated



Connectorized

**Enterprises:** PTP 500 solutions support high-bandwidth enterprise applications in environments where wired networks are too expensive or impossible to implement, while resisting interference and boosting performance for business-critical applications.

**Vertical Markets:** Whether linking separate networks within a building, linking networks in a campus environment, setting up communications for a temporary event or deploying video surveillance, PTP 500 Series bridges offer high-throughput and reliability for multiple applications in a variety of markets, including government, transportation, hospitality, healthcare and education.

### Additional Information

For more information on Motorola's PTP 500 Series bridges, refer to the PTP 500 Series Specification and Fact Sheets. For information on Motorola's warranties for these PTP products, refer to the PTP Extended Warranty Data Sheet. To learn more about Motorola's PTP Lightning Protection Unit, reference the PTP-LPU Data and Specification Sheets.

### Authorization Note

The 5.4 GHz version of this device has not been authorized as required by the rules of the Federal Communications Commission (FCC). That device is not, and may not be, offered for sale or lease, or sold or leased in the United States, until authorization is obtained. That device also is not authorized as required by Industry Canada (IC) and may not be offered for sale or sold in Canada until authorization is obtained.

**Typically, a PTP 500 system's performance means more productive users, less interference, lower cost of ownership and fewer connection points.**



**MOTOROLA**

Motorola, Inc.  
1303 E. Algonquin Road  
Schaumburg, Illinois 60196  
U.S.A.  
[www.motorola.com/ptp](http://www.motorola.com/ptp)

MOTOROLA and the Stylized M Logo are registered in the U.S. Patent and Trademark Office. All other product or service names are the property of their respective owners.  
© Motorola, Inc. 2008. All rights reserved.

GPS WB PTP 500 BR 032708