



MOTOROLA WIRELESS BROADBAND

Motorola Point-to-Point 500 Series

Wireless Ethernet Bridges



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 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 wide variety of applications, including:

- Building-to-building and campus connectivity
- High-speed wireless backhaul
- Single-hop, long-range line-of-sight links
- T1/E1 leased-line replacement
- Extending video surveillance beyond the constraints of a wired network
- Cost-effective network redundancy
- Rapid deployment for disaster recovery, emergency services and special events
- Connectivity for bandwidth-intensive applications such as Voice-over-IP, multimedia, telemedicine and distance learning

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. These powerful technologies work together to provide carrier-class wireless connectivity for your applications.

Choice and Flexibility

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

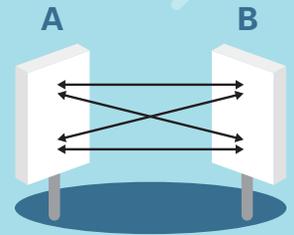
- **5.4 and 5.8 GHz Integrated:** With up to 105 Mbps Ethernet data rate and dual built-in antennas, the 5.4 and 5.8 GHz Integrated systems are the perfect choice for obstructed and high-interference environments where high throughput is a major requirement and/or T1/E1 capability is needed.

- **5.4 and 5.8 GHz Integrated Lite:** Designed to provide the same high-performance capabilities, but at less cost, the PTP 500 Series Lite provides up to 52 Mbps Ethernet data rates and all the same robust technology of the full-speed models. The Lite model offers an excellent option where budgets are tight, yet high throughput and reliability are key factors to support your requirements. Plus, the PTP 500 Lite is software upgradeable to 105 Mbps as throughput needs increase.

- **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 distances and at a higher level of reliability and speed than comparable wireless bridges.

- **5.4 and 5.8 GHz Connectorized Lite:** With all the functionality and reach of the Connectorized models, these solutions can be fitted with external antennas and deliver up to 52 Mbps in extremely challenging environments, but at less cost. Then as throughput requirements increase, you can easily upgrade from 52 to 105 Mbps.

All PTP 500 Series bridges offer selectable channel sizes and varying data rates to provide even greater flexibility to configure the solution that best serves your specific business applications, local regulatory requirements and path conditions.



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

| Channel Sizes* for Full Models | Max. Ethernet Data Rate |
|---|----------------------------|
| 5 MHz Channel | Up to 35 Mbps |
| 10 MHz Channel | Up to 70 Mbps |
| 15 MHz Channel | Up to 105 Mbps |
| Channel Sizes* for Lite Models | Max. Ethernet Data Rate |
| 5 MHz Channel | Up to 17 Mbps |
| 10 MHz Channel | Up to 35 Mbps |
| 15 MHz Channel | Up to 52 Mbps |
| * Local regulations should be confirmed prior to system purchase. | |



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

Motorola Wireless Broadband

PTP 500 Series bridges can operate as stand-alone systems or integrate easily with other systems in Motorola's comprehensive portfolio of reliable and cost-effective wireless broadband solutions that, together with our WLAN solutions, provide and extend coverage both indoors and outdoors. The Motorola Wireless Broadband portfolio offers high-speed Point-to-Point, Point-to-Multipoint, Mesh, Wi-Fi and WiMAX networks that support data, voice and video communications, enabling a broad range of fixed and mobile applications for public and private systems. With Motorola's innovative software solutions, customers can design, deploy and manage a broadband network, maximizing up-time and reliability while lowering installation costs.

Exceptional Technology – Exceptional Throughput

All 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 radio frequency (RF) conditions change to provide the maximum throughput possible for the radio path.

- **Advanced Spectrum Management with Intelligent Dynamic Frequency Selection (i-DFS):** 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 capability creates virtually interference-free performance in the band.
- **Best-In-Class Radios:** Motorola's PTP radios offer the highest system gain in their class through the use of high-transmit power and sensitive receivers.

Leased Line Replacement

Each PTP 500 bridge is equipped with a T1/E1 port that allows you to replace or supplement a leased line circuit. Replacing leased lines with PTP 500 links eliminates recurring fees, extends access and backhaul communications to locations where wired lines are not available and, at the same time, supports transition to an IP-based network. Because T1/E1 capability is enabled through the PTP 500 Power Indoor Unit (PIDU Plus) via a simple splitter cable, installation is fast and easy, requiring no costly and hazardous tower climb.

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. While the lightning protection built into the PTP 500 radio contains all the protection required at the top of the tower or wall, 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.

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.



Integrated



Connectorized

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

Additional Information

For more information on Motorola's PTP 500 Series bridges, refer to the PTP 54500 and 58500 Specification Sheet. 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.

Reassuring, Robust Security

With Motorola's unique software, each PTP 500 wireless bridge will communicate only with its user-configured 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-bit 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 LINKPlanner, you can accurately 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. In addition, the PTP LINKPlanner allows you to plan and optimize multiple PTP links simultaneously and provides a comprehensive overview of your entire network via Google™ Earth. PTP LINKPlanner is a system-design tool that is available as a stand-alone tool or as part of the Motorola One Point Wireless Suite

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 as well as Motorola's One Point Wireless Suite. The One Point Suite offers a set of powerful tools that allow you to cost-effectively design, monitor and manage all aspects of a Motorola wireless communications network from the earliest stages through ongoing operations.

Productivity Payoff

Typically, Motorola PTP 500 Series solutions are 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 recurring costs saved by replacing a leased line
- 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.

Enterprises: PTP 500 solutions support leased-line replacement and high-bandwidth enterprise communications 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 between buildings, 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.



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