



Motorola Point-to-Point 600 Series

Wireless Ethernet Bridges



High-Throughput Connectivity Virtually Anywhere

You Shouldn't Need a License to Speed.

With wireless Ethernet bridging, you typically have needed a license to go fast. Because a license reserved a part of the radio spectrum just for you, wireless links encountered less interference, and, as a result, could go farther, faster and with greater reliability.

Motorola changed all that with its unlicensed Point-to-Point (PTP) 600 Series Wireless Ethernet Bridges. Operating in the 5.4 and 5.8 GHz unlicensed bands, these PTP 600 Series solutions combine the speed and reliability of licensed wireless with the flexibility of the unlicensed space, sparing you the delay and expense of applying for a license to set up IP and circuit-switched wireless networks.

In addition, the PTP 600 family of bridges includes the PTP 25600, PTP 45600 and PTP 49600 systems which operate in the 2.5, 4.4 to 4.6 and 4.9 GHz licensed frequencies. PTP 25600 bridges are designed to support a variety of Educational Broadband Service (EBS) applications, while PTP 45600 systems are designed for U.S. Federal and North Atlantic Treaty Organization (NATO) uses. The PTP 49600 is designed to meet the stringent connectivity requirements of public safety communications.

All PTP 600 bridges provide you the capability to establish high-throughput, carrier-grade, spectrally-efficient, low-latency connectivity in challenging environments and severe weather conditions.

Choice and Flexibility

Incorporated into Motorola's Wireless Broadband portfolio, the PTP 600 Series family of solutions includes several models to meet your specific business objectives, application requirements and path conditions:

- **PTP 54600 and PTP 58600 – 5.4 and 5.8 GHz:** With up to 300 Mbps Ethernet data rate and dual built-in antennas, the 5.4 and 5.8 GHz full-speed systems are the perfect choice for non-line-of-sight, long-distance line-of-sight and high-interference environments where high throughput is a major requirement and/or dual T1/E1 capability is needed.

- **PTP 54600 and PTP 58600 – 5.4 and 5.8 GHz Lite:**

The Lite versions of these bridges include all the same award-winning technology of the full-speed versions, but at less cost. They are ideal solutions in situations requiring single T1/E1 capability and/or more speed and bandwidth than is provided by the PTP 300 and PTP 500 Series bridges. With up to 150 Mbps Ethernet data rate, the Lite versions are software upgradeable to 300 Mbps as throughput requirements increase.

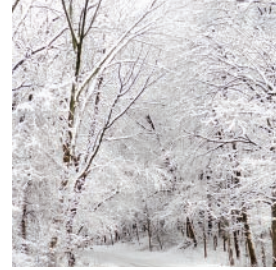
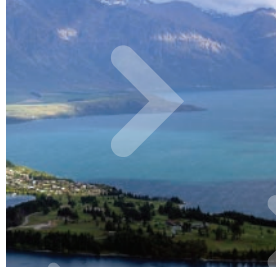
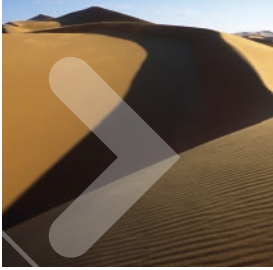
- **PTP 25600 – 2.5 GHz:** With up to 300 Mbps Ethernet data rate, up to 30 miles (50 km) reach and the same robust technology of the unlicensed models, the PTP 25600 systems offer 2.5 GHz license holders a dedicated broadband Internet connection that can enable sophisticated learning applications. (Currently the PTP 25600 models are not available in Canada.)

- **PTP 45600 – 4.5 GHz:** With up to 300 Mbps Ethernet data rate and the same robust technology of the other PTP 600 models, PTP 45600 systems offer U.S. Federal and NATO agencies with 4.4 to 4.6 GHz licenses cost-effective, high-throughput connectivity in virtually any environment. The portable packaging makes them excellent solutions for tactical deployments.

- **PTP 49600 – 4.9 GHz:** PTP 49600 bridges deliver the performance, reliability and security that public safety agencies demand to meet their rigorous connectivity requirements, offering Ethernet data rates up to 125 Mbps and the same innovative technologies that are the foundation for the other PTP 600 Series solutions.

All models within the PTP 600 Series family of solutions are available in Integrated and Connectorized versions. The Integrated systems have multiple built-in antennas, while the Connectorized systems can be fitted with separately purchased, external antennas. Over long distances and in extremely adverse environments, including deep non-line-of-sight, the Connectorized solutions let you connect previously inaccessible locations with a higher level of reliability and speed than comparable wireless solutions.

Motorola recommends that regulatory conditions for radio-frequency bands be confirmed prior to system purchase.



Reliable, High-Speed Wireless Ethernet Bridges for Challenging Non-Line-of-Sight and Long-Range Line-of-Sight Environments, Including Those Over Water

In addition, PTP 600 Series systems offer selectable channel sizes and varying data rates to provide even greater flexibility and choice:

Channel Sizes*	Max. Ethernet Data Rate
PTP 45600, 54600 and 58600 Full-Speed Versions	
5 MHz Channel	Up to 41 Mbps
10 MHz Channel	Up to 84 Mbps
15 MHz Channel	Up to 127 Mbps
30 MHz Channel	Up to 300 Mbps
PTP 54600 and 58600 Lite Versions	
10 MHz Channel	Up to 42 Mbps
15 MHz Channel	Up to 63 Mbps
30 MHz Channel	Up to 150 Mbps
PTP 49600 Systems	
5 MHz Channel	Up to 41 Mbps
10 MHz Channel	Up to 84 Mbps
20 MHz Channel	Up to 125 Mbps
PTP 25600 Systems**	
5 MHz Channel	Up to 48 Mbps
10 MHz Channel	Up to 100 Mbps
15 MHz Channel	Up to 151 Mbps
30 MHz Channel ***	Up to 300 Mbps

* Local regulations should be confirmed prior to system purchase.
 ** Currently the PTP 25600 models are not available in Canada.
 *** The 30 MHz channel size is not FCC compliant.

Motorola Wireless Broadband

Motorola's industry-leading portfolio of reliable and cost-effective wireless broadband solutions provide and extend coverage both indoors and outdoors. The Motorola Wireless Broadband portfolio offers high-speed connectivity systems that support data, voice and video communications, enabling a broad range of fixed and mobile applications for public and private networks. With Motorola's innovative software solutions, customers can design, deploy and manage broadband networks, maximizing up-time and reliability while lowering installation costs.

Interference Mitigation

In the event a PTP 600 Series system encounters interference, it automatically applies sophisticated mitigation techniques to vastly increase the likelihood that your wireless communications will get through reliably and accurately:

- Advanced Spectrum Management with *i*-DFS:** *Intelligent* Dynamic Frequency Selection (*i*-DFS) is at the heart of our exceptional spectrum management capabilities. During operation, the PTP 600 bridge samples the band up to 1,200

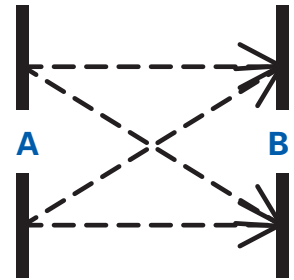
times a second and automatically switches to the clearest channel. A 30-day, time-stamped database alerts you to any interference that exists and provides statistics that help you pinpoint the channels that offer the clearest data paths, creating virtually interference-free performance in the band.

- Adaptive Modulation:** Transmitter and receiver negotiate the highest mutually sustainable data rate – then dynamically “upshift” and “downshift” the rate as conditions change to provide the maximum performance possible within the current power limits.
- Time Division Duplex (TDD) Synchronization:** The PTP 600's TDD capability synchronizes transmit and receive signals and enables efficient frequency reuse, allowing network operators to collocate multiple radios on a rooftop or tower with greatly reduced interference. Each TDD-enabled link requires a Memorylink UltraSync™ GPS-100M synchronization unit to provide the PTP 600 with an accurate timing reference.

Very High Throughput

With 256 QAM modulation, PTP 600 systems deliver a faster data stream using less of the available band. Multiple transceivers at each end of the link allow you to send two parallel data streams at once. The transceivers can also send redundant streams, offering greater range than comparable solutions, especially over water or in non-line-of-sight conditions.

More Range to Anywhere: PTP 600 links have class-leading sensitivity and power output, which enable the links to go farther, regardless of conditions. Plus, Motorola combines Multiple-Input Multiple-Output (MIMO), *intelligent* Orthogonal Frequency Division Multiplexing (*i*-OFDM) and its advanced signal-processing algorithms to create four simultaneous channels between pairs of transceivers at each end of the link, without losing spectrum efficiency. In non-adverse environments, each pair of transceivers can operate in parallel, in effect doubling throughput.



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



Typically, a PTP 600 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 600 Series Bridges, refer to the PTP 600 Series Specifications and Fact Sheets, as well as the PTP 25600, PTP 45600 and PTP 49600 Data and Specifications Sheets.



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GPS WB PTP 600 BR 120608

More Ways to Use the Band: The PTP 600's innovative architecture combines an abundance of Ethernet and circuit-switched options. Whether your infrastructure is based on Ethernet over copper or multimode fiber... 10/100/1000 Base T or 1000 Base SX... or even T1/E1 ports that bundle circuit-switched connectivity with IP service, you can connect with a PTP 600 solution.

Effective Spectrum Utilization: PTP 600 Series bridges monitor all available channels and dynamically select those over which they can sustain both the highest data rate and the most reliable availability. This means the bridges are very likely to find a clear channel without operator intervention, even in a crowded space, allowing the transmitter and receiver to automatically use the frequency with the highest throughput. Also, you can manually lock the frequency (in either direction) and restrict each link to specified frequencies.

Reassuring, Robust Security

With Motorola's unique software, each wireless bridge will communicate only with its user-configured counterpart at the opposite end of the link. 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 or 256-bit AES encryption (optional).

End-to-End System Management

Easy to use and deploy, PTP 600 systems 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.

Productivity Payoff

Motorola PTP 600 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-intensive applications such as multimedia and Voice-over-IP

- The impact of reducing or eliminating the recurring costs associated with leased T1/E1 lines
- The ability to backhaul more local loops using a single link
- The capabilities to expand video surveillance beyond the constraints of a wired network

Put PTP 600 Bridges to Work for You

Service Providers: With multi-level security, the ability to connect T1/E1 ports for bundled connectivity and high-speed backhaul capability, PTP 600 systems support sophisticated convergent and multimedia applications, supplying services to large, wide-spread customer bases.

Enterprises: PTP 600 solutions support high-bandwidth enterprise applications in environments where wired networks are too expensive or impossible to implement, while efficiently using the frequency spectrum to reduce interference and boost performance for business-critical applications.

Vertical Markets: Whether migrating from an analog to a digital network, linking networks between buildings or deploying video surveillance, PTP 600 Series bridges offer high-throughput and reliability for multiple applications in a variety of markets, including government, utilities, transportation, healthcare and education.

2.5 License Holders:

For educational agencies with a 2.5 GHz license, PTP 25600 bridges can support a variety of learning applications such as instant access to research, online work assignments, media-rich content and presentations, online testing and performance tracking, virtual field trips, and individual tutoring and mentoring.

4.4 to 4.6 GHz License Holders:

U.S. Federal and NATO agencies with 4.4 to 4.6 GHz licenses can deploy PTP 45600 systems for uses such as battlefield communications, video surveillance, border security, tactical operations and traffic backhaul.

4.9 GHz License Holders:

PTP 49600 systems enable public safety officials to cost-effectively backhaul traffic from 4.9 GHz hot spots and command centers, Motorola ASTRO® 25 systems, Canopy® point-to-multipoint and Motorola Mesh nodes.