PTP700
with High-Capacity Multipoint

National defense, border security, industrial communications and critical infrastructure operators have experienced massive growth in bandwidth demands for reliable and secure broadband connectivity and backhaul.

Whether in first-responder or forward-deployment tactical situations, in urban canyons to video cameras and hot-spots or along remote stretches of national borders for defense and situational awareness, the requirements for high-speed connectivity intersect with constraints on available spectrum, line of sight and non-line of sight topologies, IT/Enterprise integration, cyber-security threat prevention and harsh environmental conditions.

The dynamic nature and complexity of these missions means that spectrum managers, network operators and implementation managers need flexibility and adaptability while staying within the constraints of program budgets. The long-term total cost of ownership and sustainability of any solution comes under increasing scrutiny.

With the PTP 700, Cambium Networks breaks new ground in mission flexibility and overall project sustainability.

ONE RADIO – MANY MISSIONS

- Single radio covers 4.4 GHz to 5.9 GHz compatible with NTIA Redbook / NATO Band IV and FCC/ETSI requirements
- Single radio can be deployed with integrated panel antenna or larger gain dishes using N-type connectors.
- High-Capacity Multipoint (HCMP) or Point-to-Point (PTP) architectures in same hardware
- Dynamic Spectrum Optimization™ (DSO)
- FIPS 140-2 NIST Validated
- Ruggedized to MIL-STD-810G
- Supports IPv6, SyncE, 1588v2

RADIO TECHNOLOGY	
MODEL	PTP 700
RF BANDS1	Wide-band operation 4.400 GHz to 5.925 GHz in a single SKU Supported bands include the following: - NATO Band IV / NTIA Compliant (4.40 GHz to 4.99 GHz) - 4.9 GHz Public Safety Band - 5.1/5.2/5.4/5.8 GHz FCC, 5 GHz ETSI
CHANNEL SIZES1	5, 10, 15, 20, 30, 40, and 45 MHz channels (20 MHz channels with HCMP)
SPECTRAL EFFICIENCY	10 bps/Hz maximum
CHANNEL SELECTION	By Dynamic Spectrum Optimization™ (DSO) or manual intervention; automatic selection on start-up and continual self-optimization to avoid interference
MAXIMUM TRANSMIT POWER1	28 dBm at BPSK; 23 dBm at 256 QAM
SYSTEM GAIN1	Integrated: Up to 161 dB with 20 MHz channel and integrated 21 dBi antenna; varies with modulation mode, channel size and spectrum Connectorized: Varies with modulation mode and antenna type Use Cambium Networks LINKPlanner to determine expected capacity and availability for a given deployment.
RECEIVER SENSITIVITY	-97 dBm with 5 MHz channel
MODULATION / ERROR CORRECTION	Fast Preemptive Adaptive Modulation featuring 13 modulation / FEC coding levels ranging from BPSK to 256 QAM dual payload MIMO
DUPLEX SCHEME	Time Division Duplex (TDD) Adaptive or fixed transmit/receive duty cycles. Split frequency operation allows separate transmit and receive frequencies where allowed by regulation. Optional TDD synchronization using PTP-SYNC Module
ANTENNA	Connectorized+Integrated: 21 dBi flat panel or external antenna via 2 x N-type connectors Connectorized: Can operate with a variety of single- and dual-polarity antennas through 2 x N-type female connectors
RANGE	Up to 124 miles (200 km)
SECURITY	128/256-bit AES Encryption (optional) HTTPS and SNMPv32 Identity-based user accounts; Configurable password rules; User authentication and RADIUS support Event logging and management; optional logging via syslog FIPS-197 compliant FIPS 140-2 Level 2 validated
DEPLOYMENT TOPOLOGIES:	
	Supported deployment topologies: 1+0; 1+1; 2+0 (1+1 and 2+0 require external equipment)
ETHERNET BRIDGING	
PROTOCOL	IEEE 802.3
USER DATA THROUGHPUT	Dynamically variable up to 450 Mbps Maximum conditions : 2x2, 45 MHz channel1 , 256 QAM
LATENCY	1 – 3 ms one-direction latency
QoS	8 Queues
PACKET CLASSIFICATION	Layer 2 and Layer 3 IEEE 802.1p, MPLS, Ethernet priority
PACKET PERFORMANCE	Line rate (>850K packets per second)
TIMING TRANSPORT (optional)	Synchronous Ethernet; IEEE 1588v2 (optional)
FRAME SUPPORT	Jumbo frames up to 9600 bytes (PTP Mode); 2000 bytes (HCMP Mode)
FLEXIBLE I/O	2 x Gigabit Ethernet copper ports: RJ-45 Port 1: Data + PoE power input; RJ-45Port 2: 802.3at PoE output port 1 x SFP port (single-mode fiber, multi-mode fiber, and copper Gigabit Ethernet options available)
T1/E1 TDM SUPPORT (optional)	8 x T1/E1 TDM (Network Indoor Unit (NIDU)) G.823/G.824compliant timing (PTP Mode only)
T1/E1 LATENCY (one way)	1 to 3 ms typical depending on range, bandwidth, modulation mode and number of T1/E1 ports; accurate T1/E1 latency figures can be determined for any given configuration using the Cambium PTP

Specifications

HIGH CAPACITY MULTIPOINT			
REMOTE MODULES PER MASTER	Up to 4 (8 in future)		
CHANNEL BANDWIDTHS	20 MHz (40 MHz future)		
MAX CAPACITY PER REMOTE MODULE	# of RM's	20 MHz channel	40 MHz channel (future)
	PTP Mode (One)	200 Mbps	400 Mbps
	HCMP – 2 Nodes	80 Mbps	180 Mbps
	HCMP – 3 Nodes	53 Mbps	120 Mbps
	HCMP – 4 Nodes	40 Mbps	90 Mbps
	HCMP – 8 Nodes	20 Mbps	45 Mbps
SPECTRAL EFFICIENCY IN HCMP	8 bps/Hz maximum		
LINE RATE PACKETS PER SECOND	850K pps		
LATENCY IN HCMP MODE	2 to 7 ms one-way		
ETHERNET INTERFACES	Up to three Gigabit Ethernet Ports		
ANTENNA OPTIONS	4 GHz 60/90 degree sector (16 dBi gain) 5 GHz 60/90 degree sector (18 dBi gain)		

MANAGEMENT & INSTALLATION	
LED INDICATORS	Power status, Ethernet link status, and activity on Extended Range PoE supply
NETWORK MANAGEMENT	In-band and out-of-band management (OOBM)
SYSTEM MANAGEMENT	IPv6/IPv4 dual-stack management support Web access via browser using HTTP or HTTPS/TLS2 SNMP v1, v2c and v3, MIB-II and proprietary PTP MIB Cambium Wireless Manager, WM 4.0/SP4 or higher (optional) In-band On-line spectrum analyzer (no impact on payload traffic or network operation)
INSTALLATION	Built-in audio and graphical assistance for link optimization
CONNECTION	Distance between outdoor unit and primary network connection: up to 330 feet (100 meters) using Power-over-Gigabit Ethernet; longer distances up to 984 feet (300 meters) can be achieved using fiber interface
PHYSICAL	
DIMENSIONS	Connectorized+Integrated Outdoor Unit (ODU) Width 371 mm (14.6"), Height 429 mm (16.9"), Depth 96 mm (3.8") Connectorized ODU: Width 204 mm (8.0"), Height 318 mm (12.5"), Depth 90 mm (3.5")
WEIGHT	Connectorized+Integrated ODU: 5.3 kg (11.7 lbs.) including bracket Connectorized ODU: 3.1 kg (6.8 lbs.) including bracket
OPERATING TEMPERATURE	-40° to +140° F (-40° to +60° C), including solar radiation
SHOCK, VIBRATION, TEMPERATURE,	MIL-STD-810G
DUST-WATER INTRUSION PROTECTION	IP66 and IP67
WIND SPEED SURVIVAL	200 mph (322 km/h)
POWER SUPPLY	AC + DC power injector: -40° to 140° F (-40° to +60° C); 70 W; 90-240 VAC, 50/60 Hz or 48 VDC Dimensions: Width 250 mm (9.75"), Height 40 mm (1.5"), Depth 80 mm (3.0")
POWER CONSUMPTION	35 W maximum (up to 70 W with 802.3at device on auxiliary port)
ENVIRONMENTAL & REGULATORY	
PROTECTION AND SAFETY	UL60950-1 and -22; IEC60950-1 and -22; EN60950-1; CSA-C22.2 No. 60950-1; CSA-C22 No. 60950-22-7; CB approval for Global
RADIO	4.9 GHz: FCC Part 90Y, RSS-111 5.x GHz: FCC Part 15, sub-parts 15C and 15E; RSS 210 Issue 8; EN 302 502; EN 301 893 Eire ComReg 02/71R1, UK Approval to IR2007
EMC	Europe – EN 301 489-1 and -4

[1] *Regulatory conditions for RF bands should be confirmed prior to system purchase. All bands use the same hardware. Individual bands, channel widths, transmit power, antenna gain and EIRP vary based on local regulatory approvals and region code licenses.*

[2] *Web access via HTTPS/TLS is available on AES-enabled radios.*

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