PTP 700
with High-Capacity Multipoint

PTP 700 Connectorized + Integrated

PTP 700 Connectorized

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 deploying in first-responder tactical situations, over water to oil platforms, 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 flexiblity and overall project sustainability.

ONE RADIO – MULTIPLE MISSIONS

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

- Single radio covers 4.4 GHz to 5.875 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 Multi Point (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

SPECIFICATIONS

RADIO TECHNOLOGY

Model	PTP 700
Rf Bands	Wide-band operation 4.4 to 5.875 GHz in a single SKU, support bands including: • NATO Band IV / NTIA Compliant (4.4 GHz to 4.99 GHz) • 4.9 GHz Public Safety Band • 5.1/5.2/5.4/5.8 GHz FCC/ETSI
Configuration	1+0, 1+1 HSB; 2+0 (require external switch)
Channel Sizes	5, 10, 15, 20, 30, 40, and 45 MHz channels
Spectral Efficiency	10 bps/Hz maximum
Channel Selection	By Dynamic Spectrum OptimizationTM (DSO) or manual intervention Automatic selection on start-up and continual self-optimization to avoid interference
Maximum Transmit Power	Up to 29 dBm
System Gain	Up to 169 dB with Integrated antenna
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	Integrated Flat panel: 23 dBi Connectorized: operate with a selection of separately-purchased single and dual polarity antennas through 2 x N-type female connectors
Range	Up to 155 miles (250 km)
Security	128/256-bit AES Encryption (optional) HTTPS and SNMPv3 , User authentication and RADIUS support Identity-based user accounts Configurable password rules Event logging and management; optional logging via syslog Disaster recovery and vulnerability management FIPS-197 compliant FIPS 140-2 Level 2

ETHERNET BRIDGING

Protocol	IEEE 802.3
Latency	1-3 ms one direction
QoS	Extensive QoS supporting up to 8 Queues (PTP mode) and 4 Queues (HCMP mode)
Packet Classification	Layer 2 and Layer 3 IEEE 802.1p, MPLS, Ethernet priority
Packet Performance	Line rate (>850K packets per second)
Timing Transport	Synchronous Ethernet; IEEE 1588v2
Frame Support	PTP Mode: Jumbo frame up to 9600 bytes, HCMP Mode: 2000 bytes per frame
Flexible I/O	2 x Gigabit Ethernet copper ports: • Gigabit Port 1: Data + PoE power input • Gigabit Port 2: 802.3at PoE output port • 1 x SFP port: single-mode fiber, multi-mode fiber or copper Gigabit Ethernet options available
T1/E1 TDM Support	8 x T1/E1 TDM (Network Indoor Unit (NIDU)), G.823-compliant timing DC power input (compatible with AC+DC Power Injector output)

MANAGEMENT

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/TLS3 SNMP v1, v2c and v3, MIB-II and proprietary PTP MIB Online spectrum analyzer (no impact on payload traffic or network operation
Installation	Built-in audio and graphical assistance for link optimization

SPECIFICATIONS

HIGH CAPACITY MULTIPOINT

Remote Modules Master	Up to 8 Nodes							
Channel Bandwidth	20 MHz and 40 MHz							
Data Capacity Per Remote Module In 1:1 Symmetry	Number of Remote Module @ 40 MHz	2	3	4	5	6	7	8
	Mbps	162	106	80	66	56	46	42

Spectral Efficiency In Hcmp	8 bps/Hz Max
Line Rate Packet Per Second	850K pps
Latency In Hcmp Mode	2 to 4 ms one way(typically)
Antenna Options	4.4-5.875 GHz 90 degree sector (15 dBi gain) 4.4-5.875 GHz 36 degree sector (16 dBi gain)

PHYSICAL

Dimensions	Connectorized + Integrated Outdoor Unit (ODU): Width 371mm (14.6"), Height 429mm (16.9"), Depth 96mm (3.8") Outdoor Unit (ODU): Width 204mm (8.0"), Height 318mm (12.5"), Depth 90mm (3.5")
Weight	Connectorized + Integrated ODU: 5.3 kg (11.7 lbs) including bracket Outdoor Unit (ODU): 3.1 kg (6.8 lbs) including bracket
Operating Temperature	-40° to +140° F (-40° to +60° C)
Dust- Water Intrusion Protection	IP66 and IP67
Shock, Vibration, Temperature	MIL-STD-810G
Wind Speed Survival	200 mph (322 kph)
Power Supply	AC + DC power injector: -40° to 140° F (-40° to +60° C); 70 W; 90-240 VAC, 50/60 Hz
Power Consumption	Dimensions: Width 250mm (9.75"), Height 40mm (1.5"), Depth 80mm (3.0") 35 W maximum (up to 70 W with 802.3at device on auxiliary port)

ENVIRONMENTAL & REGULATORY

Protection and Saftey	UL60950-1 and -22; IEC60950-1 and -22; EN60950-1 and -22; CSA-C22.2 No. 60950-1; CSA-C22 No. 60950-22-7; CB approval for Global
Radio	EN 302 502; EN 301 893; EN 302 625; Eire ComReg 02/71R1, UK Approval to IR2007
EMC	Europe – EN 301 489-1 and -17; FCC Part 15B Class B

SPECIFICATIONS

RECEIVER SENSITIVTY AND TRANSMIT POWER dBm @ 4.7 GHz Channel Size								TRANSMIT POWER (dBm)
Modulation Mode	5 MHz	10 MHz	15 MHz	20 MHz	30 MHz	40 MHz	45 MHz	
BPSK 0.63 Single	-93.5	-92.0	-90.2	-89.0	-87.2	-86.0	-85.5	28.0
QPSK 0.63 Single	-90.0	-88.5	-86.7	-85.5	-83.7	-82.5	-82.0	27.0
QPSK 0.87 Dual	-86.0	-84.5	-82.7	-81.5	-79.7	-78.5	-77.9	26.0
16QAM 0.63 Single	-84.1	-82.6	-80.8	-79.5	-77.8	-76.5	-76.0	25.0
16QAM 0.63 Dual	-81.0	-79.5	-77.8	-76.5	-74.8	-73.5	-73.0	25.0
16QAM 0.87 Single	-79.4	-77.9	-76.1	-74.8	-73.1	-71.8	-71.3	24.0
16QAM 0.87 Dual	-76.3	-74.8	-73.0	-71.8	-70.0	-68.8	-68.3	24.0
64QAM 0.75 Single	-76.4	-74.9	-73.1	-71.9	-70.1	-68.9	-68.4	23.0
64QAM 0.75 Dual	-73.3	-71.8	-70.0	-68.8	-67.0	-65.8	-65.3	23.0
64QAM 0.92 Single	-72.6	-71.1	-69.4	-68.1	-66.3	-65.1	-64.6	23.0
64QAM 0.92 Dual	-69.4	-67.9	-66.1	-64.8	-63.1	-61.8	-61.3	23.0
256QAM 0.81 Single	-69.4	-67.9	-66.1	-64.8	-63.1	-61.8	-61.3	23.0
256QAM 0.81 Dual	-65.8	-64.3	-62.5	-61.3	-59.5	-58.3	-57.8	23.0

THROUGHPUT (Mbps @ 5 km) Channel Size							
Modulation Mode	5 MHz	10 MHz	15 MHz	20 MHz	30 MHz	40 MHz	45 MHz
BPSK 0.63 Single	2.3	4.8	7.2	9.6	14.5	19.8	21.7
QPSK 0.63 Single	4.7	9.6	14.5	19.2	29.1	39.7	43.5
QPSK 0.87 Single	6.5	13.4	20.2	26.8	40.5	55.2	60.5
16QAM 0.63 Single	9.3	19.3	29.0	38.5	58.1	79.4	87.0
16QAM 0.87 Single	12.9	26.8	40.3	53.5	80.9	110.4	121.0
64QAM 0.75 Single	16.6	34.5	51.8	68.8	103.9	141.9	155.5
64QAM 0.92 Single	20.4	42.2	63.4	84.2	127.2	173.7	190.3
256QAM 0.81 Single	24.2	50.0	75.3	99.9	151.0	206.1	225.9
16QAM 0.63 Dual	18.6	38.5	58.0	77.0	116.3	158.7	173.9
16QAM 0.87 Dual	25.9	53.6	80.7	107.1	161.7	220.8	241.9
64QAM 0.75 Dual	33.3	68.9	103.7	137.6	207.9	283.8	311.0
64QAM 0.92 Dual	40.7	84.2	126.9	168.4	254.4	347.3	380.6
256QAM 0.81 Dual	48.4	100.1	150.6	199.9	301.9	412.2	451.7