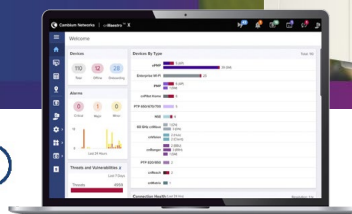


ePMP Force 400 Series

Force 400 Series Quick Look

- Industry's first point-to-point solution based on 802.11ax, delivering up to Gbps capacity
- High-capacity enterprise access
- Low-cost WISP backhaul
- Wi-Fi hotspot backhaul
- GPON last mile



Force 425 and Force 400C

Cambium Networks' ePMP™ Force 425 and Force 400C point-to-point (PTP) solutions deliver up to 1 Gbps throughput at a breakthrough price, based on the latest 802.11ax standards. The Force 400 Series is the ideal solution for service providers looking to deliver high-capacity access services to enterprise and residential customers. It also serves as a low-cost backhaul for MicroPOPs and outdoor Wi-Fi access points that require lots of capacity at moderate range without the overhead of licensed microwave. With an integrated SFP port and optional GPON ONU module, the Force 425 makes a great fiber extension to reach places where fiber cannot.

The Force 425 pushes this capacity farther than ever with an integrated 25 dBi dish (and even farther with the optional 28 dBi range extender). The optional range extender is ordered separately and can be assembled and attached in the field to add additional link budget and fade margin. This is for challenging links or to move to higher capacity, where needed, and higher modulations can be achieved.

For even longer-range applications, the Force 400C is a connectorized option with two RP-SMA RF interfaces for use with larger parabolic dishes or horn antennas.

Leveraging the latest technology from the 802.11ax standard and Cambium's proprietary ePTP mode, the Force 425/400C delivers high spectral efficiency with features such as 1024 QAM, 80 MHz channels, a highly efficient frame structure and the proven ePTP air interface. The Force 400 Series delivers Gbps performance with less than 5 ms latency.

The Force 400 series has enterprise-grade security with 128-bit AES over-the-air encryption (256-bit AES where export rules allow), secure management interfaces with roles-based authentication, and standards-based device authentication including RADIUS support.

Force 425/400C is built for the real world with an IP67/68 ruggedization, simplified mounting scheme and Cambium's three-year hardware warranty.

Plan and manage your Force 425/400C deployments with Cambium Networks LINKPlanner and cnMaestro™ Management.

ePMP Force 400 Series

Spectrum (Force 400C/Force 425)

Channel Width MHz	20 40 80
Proprietary Physical Layer	802.11ax, 2x2 MIMO/OFDM
Channel Spacing	Configurable in 5 MHz increments
Frequency Range	Wide-band operation 4910–6135 MHz (Note: Country-dependent based on local regulations. Support of 5870 to 6135 MHz coming in a future software upgrade.)
MAC Layer (Media Access Control)	Cambium Proprietary
Ethernet Interface	100/1000 BaseT, compatible with Cambium PoE & Standard PoE pinouts; SFP/SFP+
Protocols Used	IPv4/IPv6 (dual management stack), UDP, TCP, ICMP, SNMPv2c, NTP, STP, IGMP, SSH
Network Management	IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks' cnMaestro
VLAN	802.1Q with 802.1p priority

Performance (Force 400C/Force 425)

ARQ	Yes
Maximum Capacity	1 Gbps
Latency	<5 ms
Nominal Receive Sensitivity (w/FEC) @20 MHz Channel	MCS 0 = -93 dBm to MCS 11 (1024 QAM-5/6) = -63 dBm (per chain)
Nominal Receive Sensitivity (w/FEC) @40 MHz Channel	MCS 0 = -90 dBm to MCS 11 (1024 QAM-5/6) = -60 dBm (per chain)
Nominal Receive Sensitivity (w/FEC) @80 MHz Channel	MCS 0 = -87 dBm to MCS 11 (1024 QAM-5/6) = -57 dBm (per chain)
Modulation Levels (Adaptive)	MCS 0 (BPSK) to MCS 11 (1024 QAM-5/6)
Transmit Power Range	+3 to +28 dBm (combined, to regional EIRP limit) (1 dB interval)
Maximum Distance	In PTP application deployments, the maximum distance supported is 32 km (19.9 mi)

ePMP Force 400 Series

Physical

	Force 400C	Force 425
Connectors	1 x RJ-45, 1 x SFP, 2 x RP-SMA	1 x RJ-45, 1 x SFP
Surge Suppression*	1 joule integrated	1 Joule Integrated
Environmental	IP67 including metal housing	IP67/68 including metal housing
Temperature	-30°C to 55°C (-22°F to 131°F)	-30°C to 55°C (-22°F to 131°F)
Weight	1.3 kg (2.9 lb)	4.8 kg (10.6 lbs.)
Wind Survival	180 km/h (112 mph)	180 km/hour (112 mph)
Dimensions (H x W x D)	256 mm x 125 mm x 46 mm (10.1 in x 4.9 in x 1.8 in)	470 mm diameter x 285 mm depth (18.5 in diameter x 11.2 in depth)
Pole Diameter Range**	Center: 3.1 cm to 7.6 cm (1.25 in to 3.0 in)	Center: 3.1 cm to 7.6 cm (1.25 in to 3.0 in)
Power Consumption	28W	28W
Input Voltage	802.3at or passive PoE 44-59 V	802.3at or passive PoE 44-59 V
Included Power Supply	100-230VAC ,56V, 30W, PoE adaptor	100-230VAC ,56V, 30W, PoE adaptor

*Optional 56V surge suppressor available: Part # C000000L033A

**Longer bolts are needed for pole diameter greater than 55 mm

Security (Force 400C/Force 425)

Encryption	128-bit over-the-air encryption (256-bit AES where export rules allow - ROADMAP feature)
------------	--

Certifications

	Force 400C	Force 425
FCC Regulatory Part Number	C058940P122A	C058940P102A
FCC ID*	Z8H89FT0062	Z8H89FT0062
ETSI/ROW Regulatory Part Number	C050940P021A	C050940P001A
Industry Canada Cert*	109W-0062	109W-0062
CE	EN 301 893 V2.1.1 (5.4 GHz), EN 302 502 V2.1.1 (5.8 GHz)*	EN 301 893 V2.1.1 (5.4 GHz), EN 302 502 V2.1.1 (5.8 GHz)*

*Certifications are a place holder until official grant is given

ePMP Force 400 Series

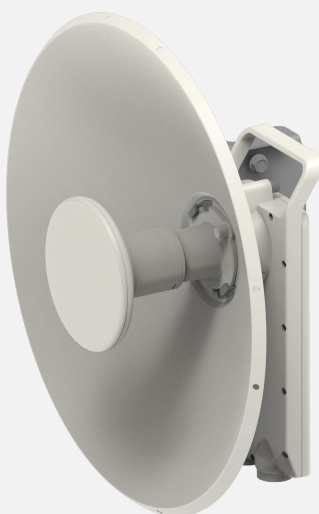
Antenna Specifications

	Force 425	Force 400C
Frequency Range	4910–6135 MHz	4910–6135 MHz
Antenna Type	Dish/Optional Extender	Optional dish/dish extender
Peak Gain	25 dBi/28 dBi with optional Extender	25 dBi/28 dBi
3 dB Beamwidth Azimuth	7°/ 6° With Extender	With Optional Dish 7°/ 6° With Extender
3 dB Beamwidth Elevation	7°/ 6° With Extender	With Optional Dish 7°/ 6° With Extender
Front-To-Back Isolation	>38 dB	With Optional Dish >38 dB
Cross Polarization	>11 dB	With Optional Dish >11 dB

Force 400C



Force 425



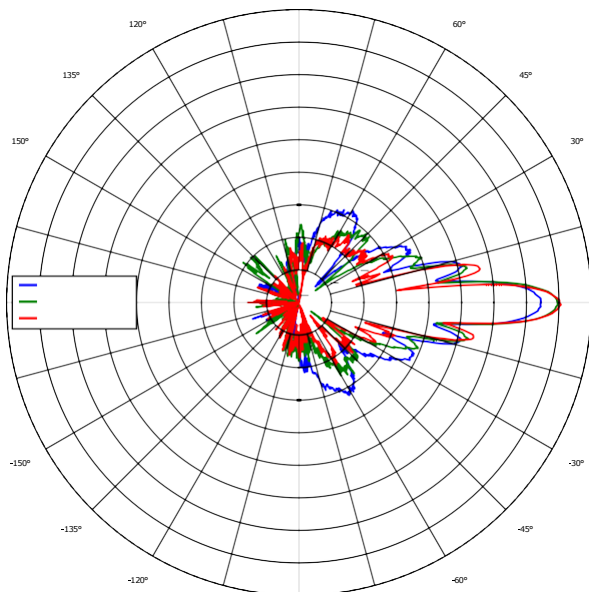
Force 425 with
Range Extender



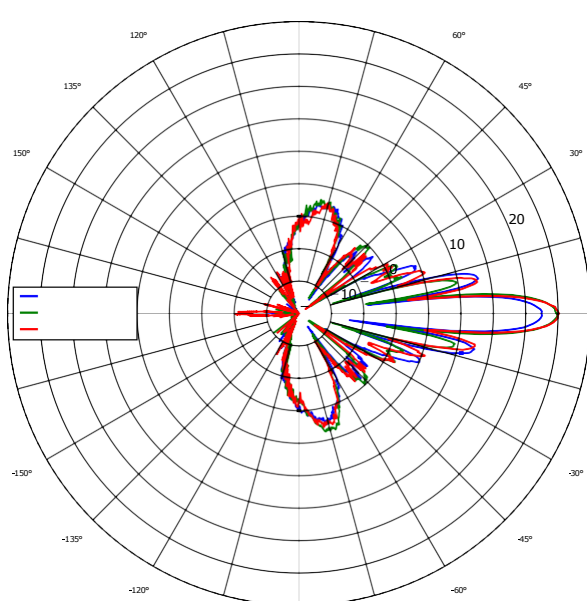
ePMP Force 400 Series

Force 425 Antenna Patterns

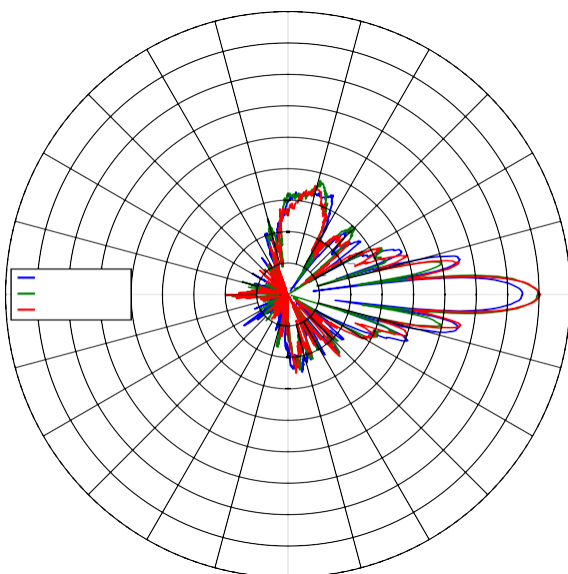
Azimuth, Horizontal



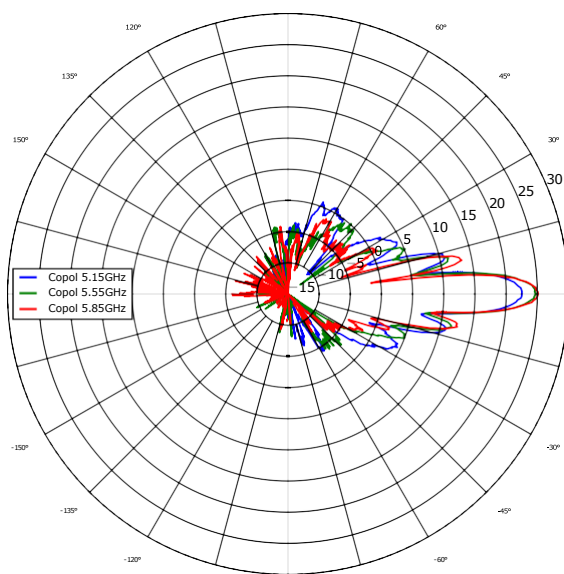
Azimuth, Vertical



Elevation, Horizontal



Elevation, Vertical



ePMP Force 400 Series

Force 400C Ordering Information

C050940C021D	ePMP 5 GHz Force 400C (ROW) (no cord)
C050940C121D	ePMP 5 GHz Force 400C (ROW) (US cord)
C058940C124D	ePMP 5 GHz Force 400C (IC) (Canada/US cord)
C050940C221D	ePMP 5 GHz Force 400C (ROW) (EU cord)
C050940C223D	ePMP 5 GHz Force 400C (EU) (EU cord)
C050940C321D	ePMP 5 GHz Force 400C (ROW) (UK cord)
C050940C323D	ePMP 5 GHz Force 400C (EU) (UK cord)
C050940C421D	ePMP 5 GHz Force 400C (ROW) (India cord)
C050940C422D	ePMP 5 GHz Force 400C (India) (India Cord)
C050940C521D	ePMP 5 GHz Force 400C (ROW) (China cord)
C050940C621D	ePMP 5 GHz Force 400C (ROW) (Brazil cord)
C050940C721D	ePMP 5 GHz Force 400C (ROW) (Argentina cord)
C050940C821D	ePMP 5 GHz Force 400C (ROW) (ANZ cord)
C050940C921D	ePMP 5 GHz Force 400C (ROW) (South Africa cord)
C050940CZ21D	ePMP 5 GHz Force 400C (ROW) (No PSU)
C058940C122D	ePMP 5 GHz Force 400C (FCC) (US Cord)

Force 425 Ordering Information

C050940M001D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (no cord) - Priced per radio
C050940M101D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (US cord) - Priced per radio
C058940M104D	ePMP 5 GHz Force 425 SM 2-pack packaging (IC) (Canada/US cord) - Priced per radio
C050940M201D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (EU cord) - Priced per radio
C050940M203D	ePMP 5 GHz Force 425 SM 2-pack packaging (EU) (EU cord) - Priced per radio
C050940M301D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (UK cord) - Priced per radio
C050940M303D	ePMP 5 GHz Force 425 SM 2-pack packaging (EU) (UK cord) - Priced per radio
C050940M401D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (India cord) - Priced per radio
C050940M402D	ePMP 5 GHz Force 425 SM 2-pack packaging (India) (India Cord) - Priced per radio
C050940M501D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (China cord) - Priced per radio
C050940M601D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (Brazil cord) - Priced per radio
C050940M701D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (Argentina cord) - Priced per radio
C050940M801D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (ANZ cord) - Priced per radio
C050940M901D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (South Africa cord) - Priced per radio
C050940MZ01D	ePMP 5 GHz Force 425 SM 2-pack packaging (ROW) (No PSU) - Priced per radio
C058940M102D	ePMP 5 GHz Force 425 SM 2-pack packaging (FCC) (US Cord) - Priced per radio

ePMP Force 400 Series

Force 400 Series Spares Ordering Information

C050940F001D	ePMP 5 GHz Force 425 Spare Radio Only (ROW)
C058940F104D	ePMP 5 GHz Force 425 Spare Radio Only (IC)
C050940F203D	ePMP 5 GHz Force 425 Spare Radio Only (EU)
C050940F402D	ePMP 5 GHz Force 425 Spare Radio Only (India)
C058940F102D	ePMP 5 GHz Force 425 Spare Radio Only (FCC)
C050940M100D	ePMP 5 GHz Force 425 Spare Dish 2-Pack, priced per unit
N000900L061A	ePMP Force 400 Spares Kit

Extended Warranty Options

Each Force 400 Series radio comes standard with 3-year warranty on hardware.

EW-E1EPF400-WW	ePMP Force 400 Extended Warranty, 1 Additional Year
EW-E2EPF400-WW	ePMP Force 400 Extended Warranty, 2 Additional Years
EW-E1EPF425-WW	ePMP Force 425 Extended Warranty, 1 Additional Year
EW-E2EPF425-WW	ePMP Force 425 Extended Warranty, 2 Additional Years

ABOUT CAMBIUM NETWORKS

Cambium Networks enables service providers, enterprises, industrial organizations, and governments to deliver exceptional digital experiences and device connectivity with compelling economics. Our ONE Network platform simplifies management of Cambium Networks' wired and wireless broadband and network edge technologies. Our customers can focus more resources on managing their business rather than the network. We make connectivity that just works.

cambiumnetworks.com