

# POINT-TO- MULTIPOINT (PMP) ACCESSORIES GUIDE

THIS ACCESSORIES GUIDE IS DESIGNED TO HELP YOU WORK OUT THE DETAILS OF TAILORING YOUR PMP DISTRIBUTION AND ACCESS NETWORK TO MEET THE NEEDS OF USERS.

ALL INFORMATION PROVIDED IN THIS GUIDE IS SUBJECT TO CHANGE AS SOLUTIONS EVOLVE.

Cambium Networks' PMP solutions provide enterprises and government agencies with consistently reliable data, voice and video applications so they can do their job effectively and efficiently. The portfolio offers high-speed backhaul, distribution and access networks that support data, voice and video communications, enabling a broad range of fixed and mobile applications for public and private systems. With Cambium's innovative software solutions, you can design, deploy and manage a wireless network, maximizing uptime and reliability while lowering installation costs.

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## ACCESS POINT (AP) ACCESSORIES

Cambium Networks' industry leading wireless broadband expertise helps to substantially reduce the effects of interference for Point-to-Multipoint wireless access and distribution networks in both licensed and unlicensed frequencies. The Access Point (AP) distributes network or Internet services in a sector for as many as 200 subscribers. A variety of accessories are available to work with the APs including the Cluster Management Modules, Universal GPS (UGPS) and power supplies.



**FIGURE 1.** The CMM3

### CLUSTER MANAGEMENT MODULE (CMM)

The CMM provides Global Positioning System (GPS) synchronization to the AP and all associated Subscriber Modules (SMs). The CMMmicro or CMM4 provides power, GPS timing and networking connections for an AP cluster. The CMM can be equipped with an internal switch, or purchased without a switch so that the network operator can install the switch of their choice. One CMM can communicate with a variety of different AP modules located at the same tower. If the CMM is also connected to a Point-to-Point (PTP) module, then the CMM is the central point of connectivity for the entire site. The CMM can connect as many as eight collocated modules and an Ethernet feed.

### CMM3 (CMMmicro)

The Cluster Management Module 3 (CMM3), also known as the CMMmicro, allows network operators to reduce the time and labor cost of system installation and maintenance in AP Clusters. This management module reduces cabling between system modules and provides reliable network synchronization. There is only one cable going from the CMM3 to each module carrying the Ethernet connection, synchronization pulse and GPS data.



**FIGURE 2.** The CMM4 Includes 14 Port Ethernet Switch, GPS Antenna and Cables

### CMM4

Designed to deliver consistent and reliable wireless broadband service, the PMP system gracefully scales to support large deployments. The cluster management module is the heart of the system's synchronization capability which allows network operators to re-use frequencies and add capacity while ensuring consistency in the quality of service to customers. As a result, subscribers can experience carrier-grade service even those at the outer edge of the network.

### CMM4 WITHOUT SWITCH

This CMM includes all of the functionality listed above but there is no switch. This provides the network operator the flexibility to use the switch of their choice with the power and synchronization capabilities of the CMM4.



**FIGURE 3.** The Rack-Mounted Cluster Management Module 4

### RACK-MOUNTED CLUSTER MANAGEMENT MODULE 4

The cluster management module (CMM) is the heart of the Cambium system's synchronization capability, which allows network operators to reuse frequencies and add capacity while ensuring consistency in the quality of service to customers. For operators who prefer indoor CMM mounting, Cambium offers the Rack-Mounted Cluster Management Module 4. The unit is designed to be mounted onto a standard 19-inch telecommunications rack and to allow the Cambium CMM4 to be collocated with other telecommunications equipment.



**FIGURE 4.** The Universal GPS (UGPS)

### UNIVERSAL GPS (UGPS)

The UGPS provides network synchronization for smaller networks where a CMM may not be cost effective. The UGPS provides synchronization for one or two modules so that even remote areas at the edge of the network can operate with synchronization for improved performance. The UGPS works with all Cambium PMP radios. The UGPS has a small footprint and is easy to deploy.

### POWER SUPPLIES

The Cambium PMP system is typically installed on outside infrastructure platforms with the AP centrally located on radio towers and roof top locations. Power is delivered to these devices either through a Power over Ethernet (PoE) standalone supply, or through the CMM via the data cable.

See the compatibility matrix at the back of this document for supplies that are compatible with specific radio models.

CAMBIUM PMP ACCESS POINT/CMM POWER SUPPLY MATRIX		
AP MODEL NUMBER	STANDALONE POWER SUPPLIES	CMM POWER SUPPLIES
Cambium PMP 100	30 VDC	ACPS120WA
Cambium PMP 320	56 VDC	SGPN4076 or SGPN4075
Cambium PMP 400 (5.4 GHz)	30 VDC	ACPS120WA
Cambium PMP 400 (4.9 GHz)	56 VDC	SGPN4076 or SGPN4075
Cambium PMP 430	56 VDC	SGPN4076 or SGPN4075
Cambium PTP 100	30 VDC	ACPS120WA
Cambium PTP 200 (5.4GHz)	30 VDC	ACPS120WA
Cambium PTP 200 (4.9GHz)	56 VDC	SGPN4076 or SGPN4075
Cambium PTP 230	30 VDC	ACPS120WA

Recommended standalone power supplies for 30V APs are ACPSSW-20A and ACPSSW-21A. These are infrastructure grade supplies that have shielded cable connections and better RF immunity to outside interference.

## SUBSCRIBER MODULE (SM) ACCESSORIES

The SM is the CPE installed at the customer location. Figure 5 shows a typical installation.

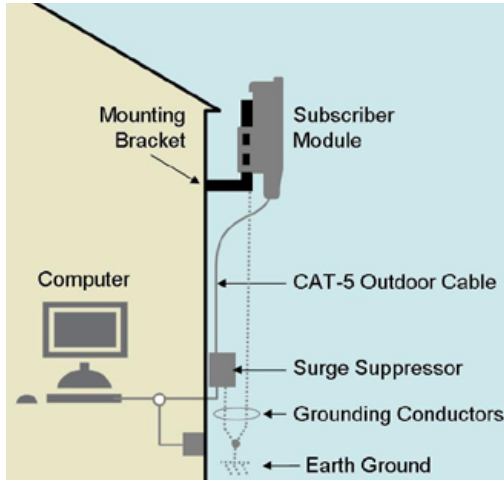


FIGURE 5. A Typical Cambium SM Installation

- The SM can be mounted directly or via bracket to an outdoor face of the premises
- The SM is Powered over Ethernet (PoE) via CAT-5 cable
- The CAT-5 cable is routed to the interior via a surge suppressor
- Inside the premises, the CAT-5 cable connects to the end-user device via a wall-mounted DC power adaptor
- The DC power adaptor requires standard 90-264 VAC, 50/60 Hz input
- For multi-user implementation the SM may be connected to an Ethernet switch

### POWER SUPPLIES

The PMP system is typically installed on outside infrastructure platforms with AP centrally located on radio towers and roof top locations. Customer premise equipment (CPE) or SMs are located outdoors on business or residential buildings. SMs are powered over Ethernet (POE) and have indoor power supplies.

#### CAMBIUM PMP SUBSCRIBER MODULE POWER SUPPLY MATRIX

SM MODEL NUMBER	STANDALONE POWER SUPPLIES
Cambium PMP 100	30 VDC
Cambium PMP 320	56 VDC - PoE
Cambium PMP 400 (5.4 GHz)	30 VDC
Cambium PMP 400 (4.9 GHz)	56 VDC
Cambium PMP 430	30 VDC
Cambium PTP 100	30 VDC
Cambium PTP 200 (5.4GHz)	30 VDC
Cambium PTP 200 (4.9GHz)	56 VDC
Cambium PTP 230	30 VDC

See the compatibility matrix shown in the back of this document for supplies that are compatible with specific radio models.



**FIGURE 6.** Surge Suppressor

## **SURGE SUPPRESSOR**

The 200SSB or 600SSD Surge Suppressor provides a path to ground (Protective Earth) that protects connected radio equipment from near-miss lightning strikes. The 200SSB is used for DC connections and used only with CMM3 and CMM4 DC lines. The 600SSD is compatible with all Cambium PMP models.

## **MOUNTING KITS**

There are two types of mounting kits available for the Cambium PMP Subscriber Modules – the SMMB1 and the SMMB2.

### **SMMB1**

The SMMB1A provides a mounting solution for standard radio deployments and is compatible with all Cambium PMP 100 Series and Cambium PMP 430 Subscriber Modules.

### **SMMB2**

The SMMB2A provides a heavy-duty mounting solution for radio deployments. The SMMB2 is compatible with all Cambium PMP radios, and recommended for all Cambium PMP 400, Cambium PMP 320 Access Points and Cambium PMP 430 Access Points.



**FIGURE 7.** The SMMB1 Mounting Bracket



**FIGURE 8.** The SMMB2 Mounting Bracket



**FIGURE 9.** The LENS Passive Module

## EXTENDING COVERAGE RANGE EXTENSION

### LENS

The LENS passive module enables service providers to provide reliable data, video and VoIP services in areas that could not previously be reached due to range limitations. By increasing the range and focusing the antenna beam, the LENS allows service providers the ability to reach more subscribers and results in a reduction of external RF noise. The LENS easily mounts directly onto existing Cambium PMP 100 and Cambium PMP 430 Series SMs and requires no additional mounting hardware.

- Adds 9-10 dB of gain to signal at 5 GHz for Cambium PMP 100
- Adds 6 dB of gain to signal at 5 GHz for Cambium PMP 430
- Compresses beam to 18 degrees azimuth and elevation

### PASSIVE REFLECTOR

The 27RD Passive Reflector Dish mounts at the Cambium PMP subscriber module and extends the range of a module by focusing the beam into a narrower angle. The internal patch antenna of the module illuminates the 27RD from an offset position. The module support tube provides the proper angle for this offset.

- Adds 25 dB of gain to signal at 5 GHz for Cambium PMP 100
- Adds 15 dB of gain to signal at 5 GHz for Cambium PMP 430
- Compresses beam to 6 degrees azimuth and elevation



**FIGURE 10.** The 27RD Passive Reflector

## COMPATIBILITY MATRIX

MODEL NUMBER	DESCRIPTION	CAMBIUM NETWORKS			
		PTP 100	PTP 200 (5.4 GHz)	PTP 200 (4.9 GHz)	PTP 230
<b>ACCESSORY CATEGORY: POWER SUPPLY</b>					
ACPS120WA	120W 30VDC AT 60C 100-240VAC EL5	●	●		●
ACPS120W-02A	120W 30VDC AT 60C 100-240VAC EL5	●	●		●
ACPSSW-09B	13.6W, 29.5V,100-240VAC/50-60HZ	●	●		●
ACPSSW-10B	13.6W,29.5V,100-240VAC/50-60HZ+ARG	●	●		●
ACPSSW-11B	13.6W,29.5V,100-240VAC/50-60HZ+AUS	●	●		●
ACPSSW-12C	13.6W,29.5V,100-240/50-60+FXD CHINA	●	●		●
ACPSSW-13B	13.6W,29.5V,100-240/50-60+FIXED US	●	●		●
ACPSSW-14A	13.6W,29.5V,100-240VAC/50-60HZ+BRAZ	●	●		●
SGPN4075	Rack Mount, CMM4 POWER Supply, 56VDC			●	
SGPN4076	LXR1740-6M1 52.6 VDC, CMM4 Power Supply			●	
SGPN4078A	Power Dsign - PoE supply for PMP320 CPE				
ACPSSW-15A	25W, 56V, 100-240VAC/50-60HZ			●	
ACPSSW-16A	25W, 56V, 100-240VAC/50-60HZ +C8 AC			●	
ACPSSW-20A	20W, 29.5V, 100-240VAC/50-60HZ	●	●		●
ACPSSW-21A	20W, 29.5V, 100-240VAC/50-60HZ +C8 AC	●	●		●
30010227001	POWER INJECTOR, 29.5V	●	●		●
30010228001	POWER INJECTOR, 56V			●	
30010253001	POWER INJECTOR, 56V POE				
<b>ACCESSORY CATEGORY: ALIGNMENT TOOLS</b>					
ACATHS-01A	Alignment Tool Headset	●	●	●	●



## COMPATIBILITY MATRIX

MODEL NUMBER	DESCRIPTION	CAMBIUM NETWORKS								
		PMP 100 (AP & SM)	PMP 320 AP	PMP 320 CPE	PMP 400 (5.4 GHz)	PMP 400 (4.9 GHz)	PMP 430 AP	PMP 430 SM	CMM3	CMM4
<b>ACCESSORY CATEGORY: POWER SUPPLY</b>										
ACPS120WA	120W 30VDC AT 60C 100-240VAC EL5	●			●			●	●	●
ACPS120W-02A	120W 30VDC AT 60C 100-240VAC EL5	●			●			●	●	●
ACPSSW-09B	13.6W, 29.5V,100-240VAC/ 50-60HZ	●			●			●		
ACPSSW-10B	13.6W,29.5V,100-240VAC/ 50-60HZ+ARG	●			●			●		
ACPSSW-11B	13.6W,29.5V,100-240VAC/ 50-60HZ+AUS	●			●			●		
ACPSSW-12C	13.6W,29.5V,100-240/ 50-60+FXD CHINA	●			●			●		
ACPSSW-13B	13.6W,29.5V,100-240/ 50-60+FIXED US	●			●			●		
ACPSSW-14A	13.6W,29.5V,100-240VAC/ 50-60HZ+BRAZ	●			●			●		
SGPN4075	Rack Mount, CMM4 POWER Supply, 56VDC									●
SGPN4076	LXR1740-6M1 52.6 VDC, CMM4 Power Supply									●
SGPN4078A	Power Dsign - PoE supply for PMP320 CPE			●						
ACPSSW-15A	25W, 56V, 100-240VAC/ 50-60HZ		●			●	●			
ACPSSW-16A	25W, 56V, 100-240VAC/ 50-60HZ +C8 AC		●			●	●			
ACPSSW-20A	20W, 29.5V, 100-240VAC/ 50-60HZ	●			●			●		
ACPSSW-21A	20W, 29.5V, 100-240VAC/ 50-60HZ +C8 AC	●			●			●		
30010227001	POWER INJECTOR, 29.5V	●			●			●	●	●
30010228001	POWER INJECTOR, 56V		●			●	●			●
30010253001	POWER INJECTOR, 56V POE			●						
<b>ACCESSORY CATEGORY: ALIGNMENT TOOLS</b>										
ACATHS-01A	Alignment Tool Headset	●		●	●	●		●		

## ABOUT CAMBIUM NETWORKS

Cambium Networks provides world-class wireless broadband and microwave solutions and services for customers around the world. Our products are deployed in thousands of networks in over 150 countries, with its innovative technologies providing reliable, secure, cost-effective connectivity that's easy to deploy and proven to deliver outstanding metrics. Our ecosystem of partners, development engineers, and support teams work together to design and deliver innovative, forward-looking solutions that provide data, voice and video connectivity when and where it is needed.