

# cnPulse™ Sync Generator



TDD Synchronization is critical for deploying dense scalable wireless networks, whether in a PTP or PMP topology. One typical source for synchronization is the GPS satellite signal which carries a precise one pulse per second (1PPS) clock. Using this clock, PMP and PTP networks can synchronize the start and stop time of all transmissions. By synchronizing the transmit and receive signals, each AP or Access Point isn't transmitting while its neighbor is receiving, thereby reducing self-interference, increasing spectral efficiency and enabling much more dense network deployments.

cnPulse is the latest GPS synchronization generation device designed specifically for Cambium Networks PMP and PTP radios. The cnPulse module is IP67 (weather proof and supports a wide temperature range for rugged environments). The GPS receiver is highly reliable and supports both GPS and GNSS signals. cnPulse gets its power from the ODU AUX port in mode 1 or from the CAT-5 drop cable in mode 2 so no external power supply is required. There are no configuration or software settings required.

cnPulse can be deployed in two alternative ways as shown in the table below. Note that a single cnPulse can provide synchronization to two AP's by leveraging mode 1 on the first ODU and mode 2 on the second ODU.

## SPECIFICATIONS

<b>MODEL NUMBER</b>	C000000L066A
<b>cnPULSE OPERATION</b>	
Mode 1: AUX Serial mode (uses cnPulse port 1)	cnPulse derives power input from the radio or CMM port and returns the 1PPS signal and satellite statistics on port 1. Typically used on CMM5, cnReach and the AUX ports on PMP 450i, PMP450m or PTP 450i
Mode 2: CambiumSYNC In-line mode (uses cnPulse port 2 and port 3)	cnPulse is deployed in-line with the radio's CAT-5 drop cable. cnPulse receives power (and data) from the ODU's PoE power injector on port 3. cnPulse port 2 then outputs PoE+Data+CambiumSYNC to the main input on a radio. Typically used on PTP 550.
<b>COMPATIBILITY</b>	
CambiumSYNC mode	PMP 450i, PTP 450i, PMP 450m, PTP 550, ePMP 2000, ePMP 3000
Aux Serial mode	CMM5, PMP 450m, PMP 450i, PTP 450i
<b>INTEGRATED ANTENNA</b>	
	GPS L1, 1575.42MHz GLONASS L1, 1598.0625-1605.375MHz
<b>RECEIVER</b>	
Tracking Channels	33 tracking/ 99 acquisition-channel GPS +GLONASS receiver
Update Rate	1 Hz (NMEA)
Timing Accuracy	±20ns RMS
Position Accuracy	3 meter

## SPECIFICATIONS

<b>DATA INTERFACE</b>	
Communication Standard	NMEA – 0183
Interface technology	1 PPS, Tx GPS Location Data (Serial 8/N/1 9600 bps)
<b>ACQUISITION - COLD START</b>	
	35 seconds (typical under open clear sky)
<b>SENSITIVITY</b>	
Acquisition	-148 dBm
Tracking	-165 dBm
<b>INPUT VOLTAGE</b>	
	4.5V to 6.0 VDC at AUX Port (port 1) 44-59 VDC on PoE Input Port (port 3)
<b>MAXIMUM POWER CONSUMPTION</b>	
	0.3W Avg (0.5W Max @ 6V Aux) 2.4W Avg. (4W Max @ 59V Poe)
<b>ELECTRICAL INTERFACE</b>	
Port 1: AUX PORT	RJ-45 8-pin shielded; AUX output
Port 2: PoE + CambiumSYNC ODU	RJ-45 8-pin shielded; PoE + CambiumSYNC + Data output
Port 3: PoE+ CambiumSYNC PIDU	RJ-45 8-pin shielded; PoE + Data Input
<b>ENVIRONMENTAL</b>	
Temperature	-40C to +85C (-40F to +185F)
Humidity	0% to 95% humidity, non-condensing
Water/Dust Ingress	IP67
<b>SIZE/WEIGHT</b>	
Dimensions	16.8 cm x 9 cm x 10 cm (LxWxH) (6.6" x 3.5" x 4")
Weight	0.42 kg (15 ounces)
<b>MOUNTING</b>	
	cnPulse ships with a right angle bracket for pole mount applications.
<b>CABLING</b> <i>(not included)</i>	
CMM5 to cnPulse	Optional: N000000L125A cnPulse to CMM5 20m shielded cable (8-pin RJ-45 to 6-pin RJ-12)
AUX port to cnPulse	Recommend to use an 8-pin shielded straight through CAT5 cable
Radio to cnPulse	Recommend to use an 8-pin shielded straight through CAT5 cable
PoE injector to cnPulse	Recommend to use an 8-pin shielded straight-through CAT5 cable
cnReach to cnPulse	Refer to cnReach user guide for pinout.