



QUICK START GUIDE

60 GHz cnWave™

System Release 1.0



Accuracy

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Introduction

Thank you for purchasing Cambium Networks 60 GHz cnWave™ platform equipment. This Quick Start Guide provides assistance to operators in acquiring a high-level understanding of the 60 GHz cnWave™ platform hardware, installation methods, initial login procedures, and safety/warranty information.

Product Description

cnWave family overview

Cambium Networks 60 GHz cnWave™ solution provides easy, fast and cost-effective wireless Gigabit connectivity for edge access and/or high-capacity backhaul for edge access solutions at a significantly lower cost than fiber infrastructure. Service providers and enterprises now have access to Gigabit for business and residential connectivity, backhaul for Wi-Fi access. Certified for Facebook Terragraph, 60 GHz cnWave™ Mesh solutions are highly efficient at handling high-density deployments in cities and suburban areas.

Cambium Networks 60 GHz solution consists of Distribution Node (DN) which act as an Access Point (AP) and Client Node (CN) which acts as a cnWave client. cnWave consists of 3 variants, V5000 a dual sector Distribution Node, V3000 and V1000 are Client Nodes.

- 60 GHz cnWave™ V1000 is featured with wide-range, 80 degrees beamforming for easy installation. It is powered by 802.3af PoE and supports up to 2 Gbps for both PTP and PMP configurations.
- 60 GHz cnWave™ V3000 is featured with a 44.5 dBi high-gain antenna with beamforming. The client nodes can support up to 7.2 Gbps with channel bonding for PTP and PMP configurations.
- 60 GHz cnWave™ V5000 is featured with two sectors covering up to 280 degrees with beamforming. A single V5000 can connect up to four other distribution nodes or up to 30 client nodes. V5000 can be used for PTP, PMP and Mesh configurations.



V1000



V3000



V5000

Features

V1000 Client Node (CN)

- Supports modulations BPSK to 16 QAM (MCS1 to MCS12)
- Integrated antenna with beam forming
- 38 dBm EIRP

- Gigabit Ethernet
- 1 Gbps UL/1 Gbps DL throughput
- Powered by passive PoE or 802.3af/at PoE
- IP 66/67

V3000 Client Node (CN)

- Supports modulations BPSK to 16 QAM (MCS1 to MCS12)
- UltraGain antenna with beam forming 60.5 dBm EIRP
- 10 Gigabit Ethernet
- Supports 10G SFP+ or 1G SFP
- 1.8 Gbps UL/1.8 Gbps DL and 3.6 Gbps UL/3.6 Gbps DL with channel bonding throughput
- Gigabit Ethernet Auxiliary Interface
- Powered by passive PoE
- Supports Aux PoE out (802.3af/at PoE)
- IP 66/67

V5000 Distribution Node (DN)

- Supports modulations BPSK to 16QAM (MCS1 to MCS12)
- Dual sector - 280 degree antenna with beam forming
- 38 dBm EIRP
- 10 Gigabit Ethernet
- Supports 10G SFP or 1G SFP
- 1.8 Gbps UL/1.8 Gbps DL and 3.6 Gbps UL/3.6 Gbps DL with channel bonding throughput per sector
- Gigabit Ethernet Auxiliary Interface
- Powered by passive PoE
- Supports Aux PoE out (802.3af/at PoE)
- IP 66/67

Installation and Operation

Cambium Networks recommends professional installation and management of the system to ensure that operation complies with the regulations of the region where the product is installed. Follow the instructions in this *Quick Start Guide*. Further guidance on 60 GHz cnWave™ products installation and operation is available in the product *User Guide*, see links at the end of this document.

The installer must have sufficient skills, knowledge and experience to perform the installation task and is responsible for:

- Familiarity with current applicable national regulations including radio regulations, electrical installation regulations, surge protection regulations and 'working at heights' regulations
- Installation in accordance with Cambium Networks instructions
- Confirming that the equipment settings are compliant with national or regional regulations
- Familiarity with training material available on the Cambium Networks website.

Observe the important instructions below during installation. This sets the equipment in compliance with national regulatory regulations and ensure legal operation.

- Ensure that the 60 GHz cnWave™ equipment is fitted with the latest application software. Software is available from the Cambium Networks Support Centre web site, see links at the end of this document.

Product Safety Information



Warning

To prevent loss of life or physical injury, observe the following safety guidelines. In no event shall Cambium Networks be liable for any injury or damage caused during the installation of the Cambium 60 GHz cnWave™ radio nodes. Ensure that only qualified personnel install 60 GHz cnWave radios.

1. Exercise extreme care when working near power lines and at heights.
2. Always use one of the approved power supply options. Failure to use the Cambium supplied PSUs could result in equipment damage and will invalidate the safety certification and may cause a safety hazard.
3. The cnWave radios must be properly grounded to protect against lightning. It is the user's responsibility to install the equipment in accordance with national regulations. In the USA follow the requirements of the National Electrical code NFPA 70-2005 and 780-2004 Installation of Lightning Protection Systems. In Canada, follow Section 54 of the Canadian Electrical Code. These codes describe correct installation procedures for grounding the outdoor unit, mast, lead-in wire and discharge unit, size of grounding conductors and connection requirements for grounding electrodes. Other regulations may apply in different countries and therefore it is recommended that installation of the outdoor unit be contracted to a professional installer.
4. Always use an appropriately rated and approved AC supply cord-set in accordance with the regulations of the country of use.
5. Before servicing 60 GHz cnWave™ equipment, always switch off the power supply and unplug it from the PSU. Do not disconnect the RJ45 drop cable connectors from the radio while the PSU is connected to the power supply. Always remove the AC or DC input power from the PSU.
6. The main power supply is the primary disconnect device.
7. Safety may be compromised if outdoor rated cables are not used for connections that will be exposed to the outdoor environment.
8. The PSU output voltage may be hazardous in some conditions, for example in wet weather. Do not connect a drop cable tester to the PSU, either directly or via LPUs.
9. Strong Radio Frequency (RF) fields will be present close to the antenna when the transmitter is on. Always turn off the power to the radio before undertaking maintenance activities in front of the antenna.
10. Ensure that personnel are not exposed to unsafe levels of RF energy. The units start to radiate RF energy as soon as they are powered up. Never work in front of the antenna when the radio is powered. Install the radios so as to provide and maintain the minimum separation distances from all persons. For minimum separation distances, see **Separation distances** table in *60 GHz cnWave™ User Guide*.
11. Ensure that the installation meets the requirements defined in **Installation** section in *60 GHz cnWave™ User Guide*.

12. To provide effective protection against lightning induced surges, observe these requirements:
- Grounding conductor runs are as short, straight and smooth as possible, with bends and curves kept to a minimum..
 - Grounding cables must not be installed with drip loops.
 - All bends must have a minimum radius of 200 mm (8 in) and a minimum angle of 90°. A diagonal run is preferable to a bend, even though it does not follow the contour or run parallel to the supporting structure.
 - All bends, curves and connections must be routed towards the grounding electrode system, ground rod, or ground bar.
 - Grounding conductors must be securely fastened.
 - Braided grounding conductors must not be used.
 - Approved bonding techniques must be used for the connection of dissimilar metals.
13. Radios are not designed to survive direct lightning strikes. For this reason they must be installed in Zone B as defined in **Lightning protection zones** section in *60 GHz cnWave™ User Guide*. Mounting in Zone A may put equipment, structures and life at risk.

Hardware Overview

The 60 GHz cnWave™ solution includes three types of wireless nodes:

- V1000 Client Node (CN)
- V3000 Client Node (CN)
- V5000 Distribution Node (DN)

V1000 Client Node

V1000 is an outdoor CN which can be connected to a distribution node wirelessly. V1000 supports Gigabit Ethernet interface and is powered by 802.3af/at PoE compliant power supply or a passive PoE.



Figure 1: V1000 Client Node front and rear views

V3000 Client Node

V3000 is an outdoor CN which can be connected to a DN or another V3000 DN wirelessly. V3000 supports 10 Gigabit Ethernet interface, an 10G SFP+ interface port and a Gigabit Ethernet Aux interface.

V3000 can be powered using 60W passive POE or using a AC/DC PSU through mini adapter (for more information, refer power supply and cable lengths supported in *60 GHz cnWave™ User Guide*). V3000 DN can also power 802.3af/at compliant auxiliary device through Gigabit Aux interface.



Figure 2: V3000 Client Node with and without antenna assembly

V5000 Distribution Node

V5000 is an outdoor DN which can be connected to a multiple V1000 or V3000 CNs wirelessly. V5000 supports 10 Gigabit Ethernet interface, an 10G SFP+ interface port and a Gigabit Ethernet Aux interface.

V5000 can be powered using 60W passive POE or using a AC/DC PSU through mini adapter (for more information, refer power supply and cable lengths supported in *60 GHz cnWave™ User Guide*). V5000 DN can also power 802.3af/at compliant auxiliary device through Gigabit Aux interface.



Figure 3 : V5000 Distribution Node front and rear views

Radio mounting brackets

V1000 wall and pole mount (C000000L136A and C000000L137A)

The V1000 CN is supplied with a mounting plate and band clamp. The mounting plate can be used for mounting the V1000 on a wall, or it can be used with the band clamp to mount the V1000 on a pole with diameter in the range 40 mm to 77 mm (1.6 inches to 3.03 inches).



Figure 4 : V1000 mounting plate and band clamp

V1000 adjustable pole mount (N000900L022A)

The adjustable pole mount is used to provide elevation adjustment when a V1000 CN is mounted on a pole. The adjustable pole mount works with poles with diameter in the range 40 mm to 77 mm (1.6 inches to 3.03 inches).

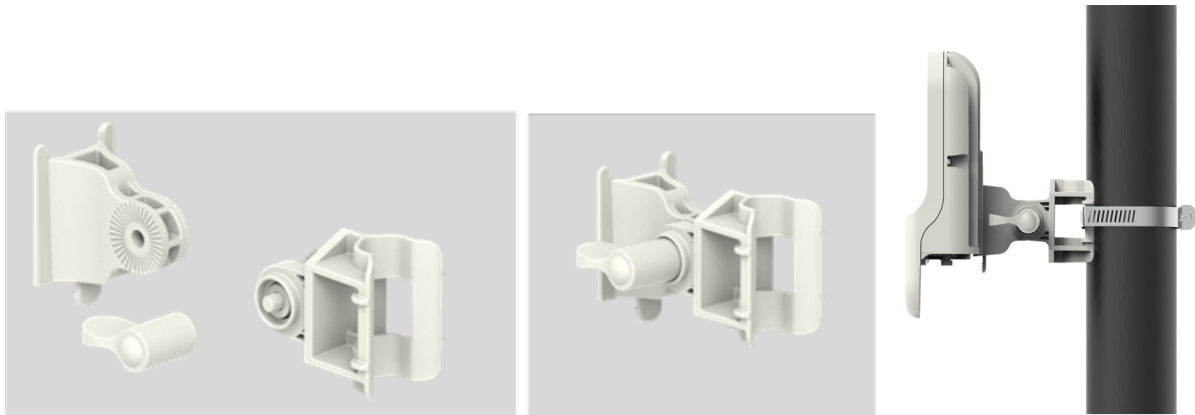


Figure 5 : V1000 adjustable pole mount

V3000 precision bracket (C000000L125A)

The precision bracket ([Precision bracket](#) figure below) is used to mount the V3000 CN on a vertical pole with diameter in the range 25 mm to 80 mm (0.98 inches to 3.14 inches). The precision bracket provides fine adjustment of up to 18° in azimuth and +/-30° in elevation for accurate alignment of the V3000.

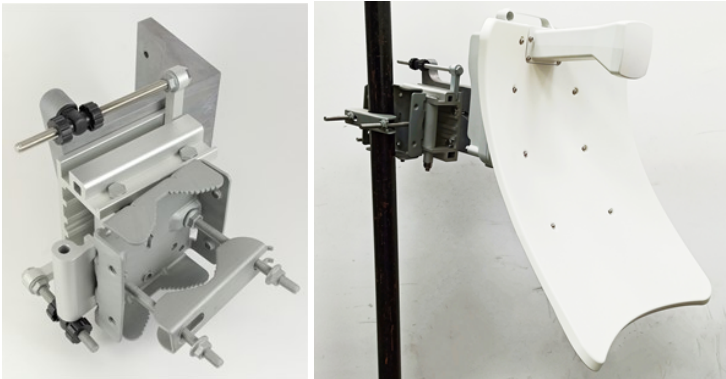


Figure 6 : V3000 precision bracket

For precision bracket components, refer *60 GHz cnWave™ User Guide*.

V3000 tilt bracket (N000045L002A)

The tilt bracket ([Tilt bracket assembly](#) figure below) is used to provide elevation adjustment when a V3000 CN or V5000 DN is mounted on a pole. The tilt bracket works with poles with diameter in the range 25 mm to 80 mm (0.98 inches to 3.14 inches). The tilt bracket Assembly may be used with third-party band clamps to mount the ODU on larger pole with diameter in the range 90 mm to 230 mm (3.54 inches to 9.05 inches).

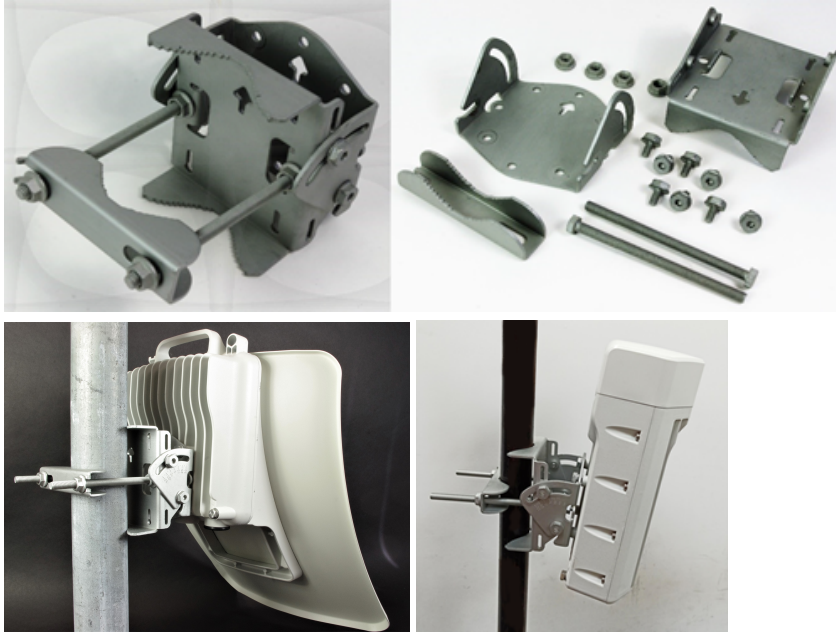


Figure 7 : Tilt bracket assembly

V5000 pole mount (C000000L137A)

The pole mount ([Pole mount](#) figure below) is used to mount a V5000 DN on a vertical pole with diameter in the range 25 mm to 80 mm (0.98 inches to 3.14 inches). It provides coarse azimuth (but not elevation) adjustment.

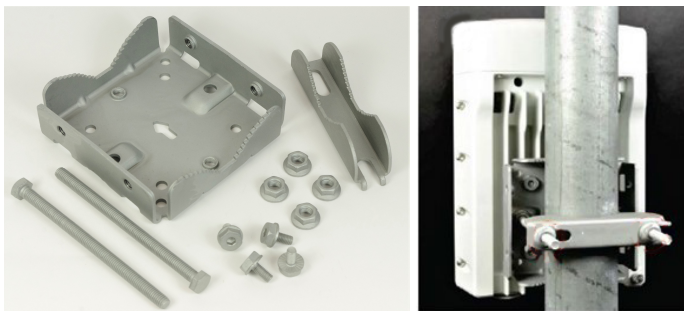


Figure 8 : V5000 pole mount

V5000 wall mount (C000000L136A)

The wall mount ([Wall mount](#) figure below) is used to mount a V5000 DN on a vertical wall. It does not provide azimuth or elevation adjustment. The wall mount requires additional fixing hardware suitable for the type of wall.

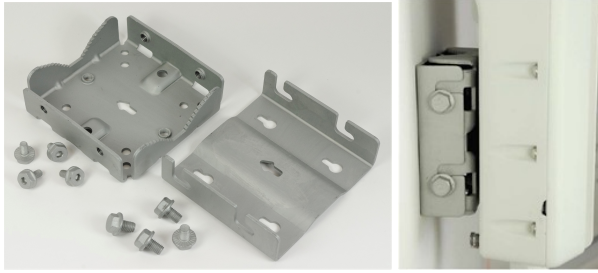


Figure 9 : V5000 wall mount

Radio accessories

Telescope mounting kit for precision brackets (C000000L139A)

An alignment telescope provides the most accurate option for alignment of the precision bracket during installation. The telescope is temporarily mounted on the bracket using the telescope mounting kit for precision brackets.

The telescope mounting kit consists of a mounting plate, a knurled screw and two rubber O-rings.

Order the telescope mounting kit from Cambium Networks.

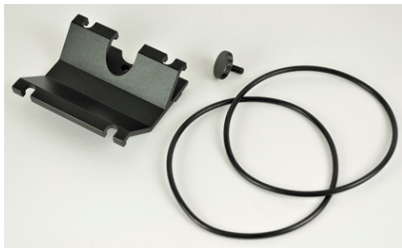


Figure 10 : Telescope mounting kit

Order a suitable telescope from a specialist supplier specifying the following:

- Right angle, erecting, 9x50 mm alignment scope with 5° field of view



Figure 11 : Typical alignment telescope

Radio external interfaces

V1000 CN



Figure 12 : External interfaces for V1000 CN

Table 1: External interfaces V1000 CN

Port name	Connector	Interface	Description
PSU	RJ45	PoE input	Standard 802.3af/at PoE
		100/1000 BASE-T Ethernet	Data and management

V3000 CN



Figure 13 : External interfaces for V3000 CN

Table 2 : External interfaces V3000 CN

Port name	Connector	Interface	Description
SFP+	SFP	10G BASE-SR/10G BASE-LR/1G Base-SX using optional SFP+/SFP optical or copper module SFP-1G-SX / SFP-1G-LX using optional SFP optical or copper module	Data and management

Port name	Connector	Interface	Description
PSU	RJ45	PoE input	Passive PoE
		100m/1000m/2.5G BASE-T/5G BASE-T/ 10G BASE-T Ethernet	Data and management
AUX	RJ45	PoE output	Standard IEEE 802.3af/at
		100/1000 BASE-T Ethernet	Data and management

V5000 DN

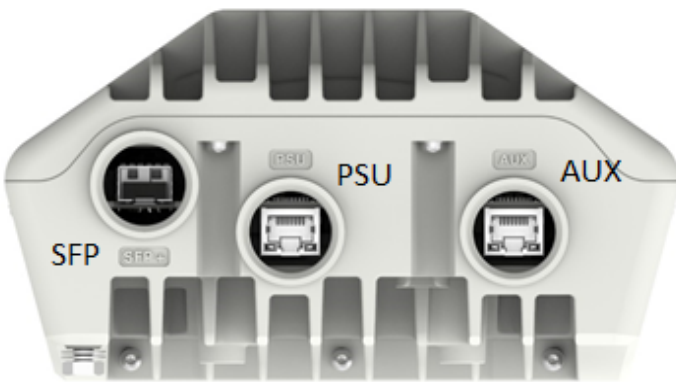


Figure 14 : External interfaces for V5000 DN

Table 3 :External interfaces V5000 DN

Port name	Connector	Interface	Description
SFP+	SFP	10G BASE-SR/10G BASE-LR/1G Base-SX using optional SFP+/SFP optical or copper module	Data and management
		SFP-1G-SX / SFP-1G-LX using optional SFP optical or copper module	
PSU	RJ45	PoE input	Passive PoE
		100m/1000m/2.5G BASE-T/5G BASE-T/ 10G BASE-T Ethernet	Data and management
AUX	RJ45	PoE output	Standard IEEE 802.3af/at
		100/1000 BASE-T Ethernet	Data and management

**Note**

For all valid partnumbers, refer *60 GHz cnWave™ User Guide*.

60 GHz cnWave™ radios and mounting bracket option

Installing the cnWave radios

To install the radio, use the following procedure and guidelines:

1. [Typical installation](#)
2. [Attach ground cables to the radio](#)
3. [Mounting the ODU on the mast or wall](#)

Typical installation

V1000

[V1000 typical installation](#) figure shows typical installation of cnWave CN on a mast and powered through PoE Power Injector.

1. Use recommended grounding and Surge Suppressor connections.
2. Use recommended cables for interfacing ODU (refer powering options and cable length restrictions section in *60 GHz cnWave™ User Guide*).
3. Always install ODU 0.5 meters below the tip of the pole.

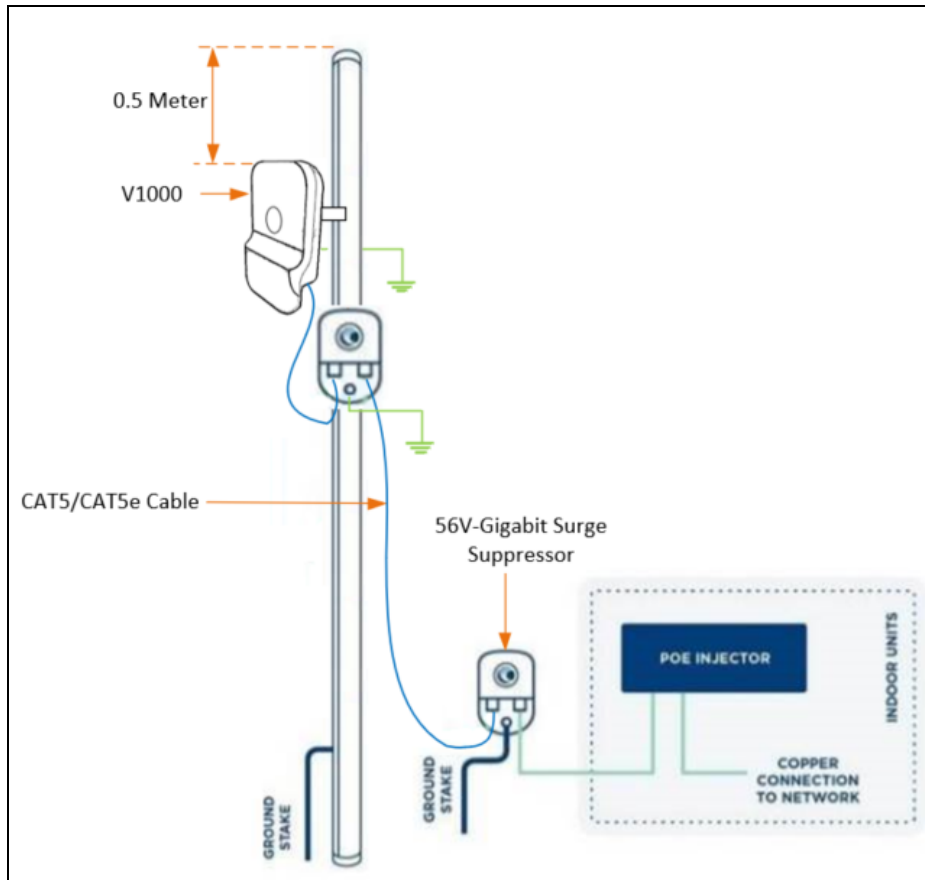


Figure 15 : V1000 typical installation

The image before describes the one the installation options. For other installation options, refer *60 GHz cnWave™ User Guide*.

V3000

[V3000 typical installation](#) figure shows typical installation of cnWave DN on a mast and powered through outdoor AC/DC PSU.

1. Use recommended grounding and LPU connections.
2. Use recommended cables for interfacing ODU (refer powering options and cable length restrictions section in *60 GHz cnWave™ User Guide*).
3. Always install ODU 0.5 meters below the tip of the pole.

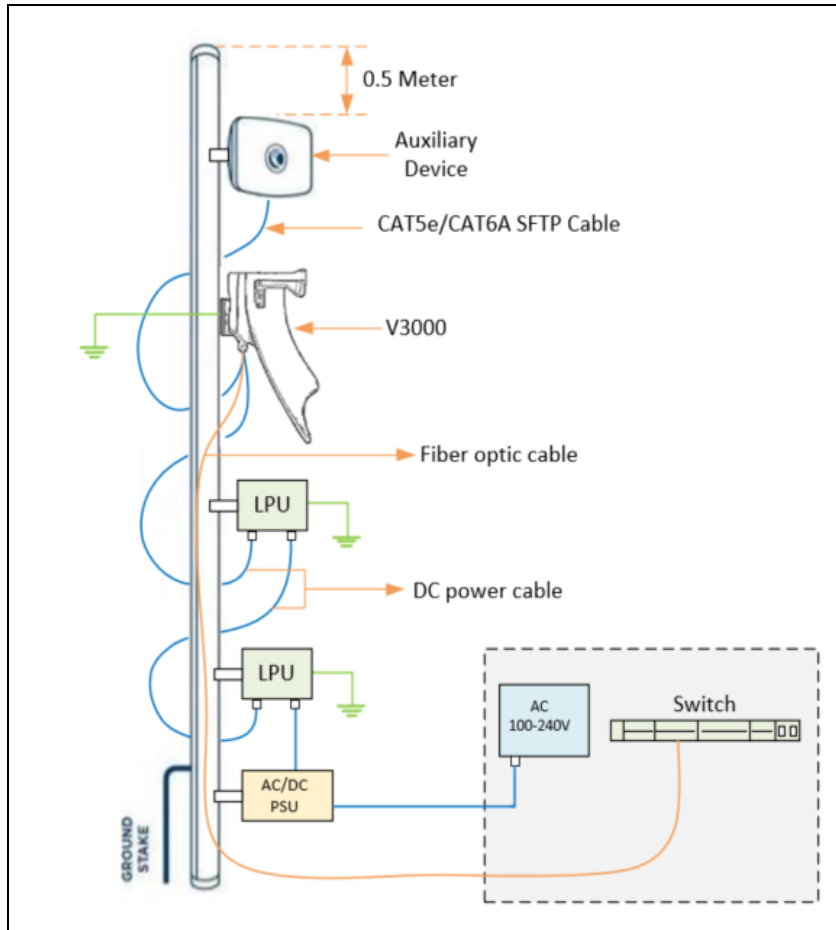


Figure 16 : V3000 typical installation

The image before describes the one the installation options. For other installation options, refer *60 GHz cnWave™ User Guide*.

V5000

[V5000 typical installation](#) figure shows typical installation of cnWave DN on a mast and powered through outdoor AC/DC PSU.

1. Use recommended grounding and LPU connections.
2. Use recommended cables for interfacing ODU (refer powering options and cable length restrictions section in *60 GHz cnWave™ User Guide*).
3. Always install ODU 0.5 meters below the tip of the pole.

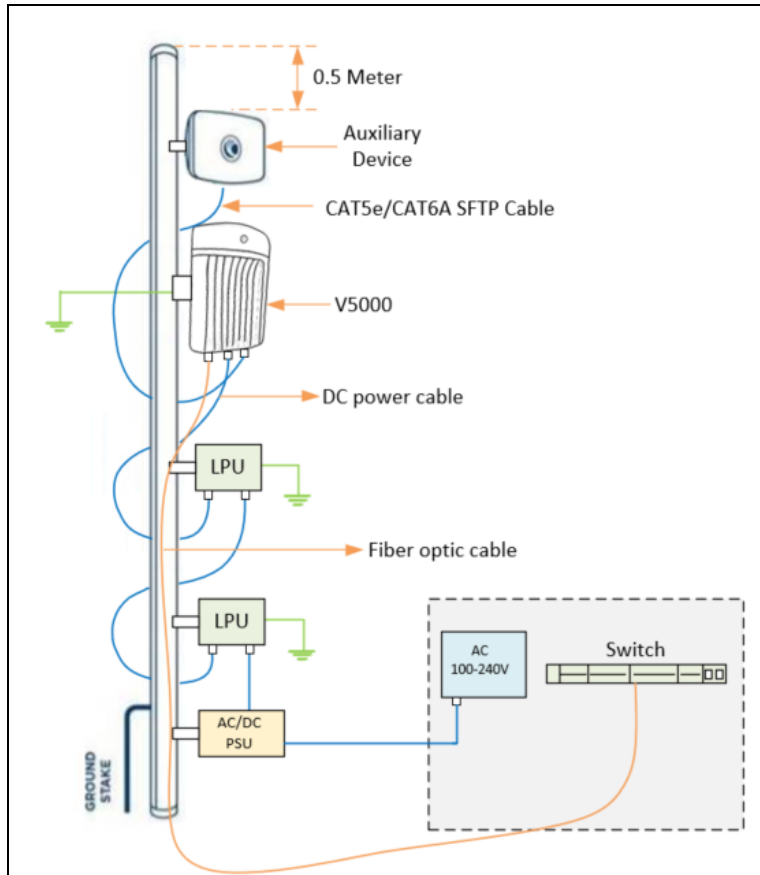
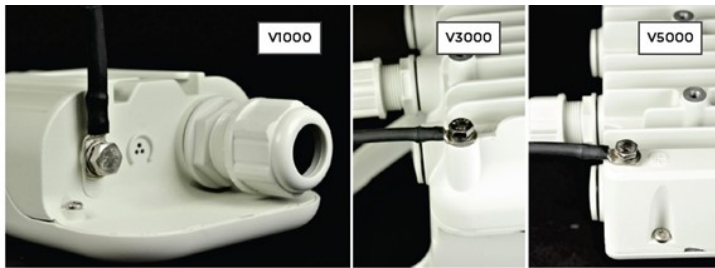


Figure 17 : V5000 typical installation

The image before describes the one the installation options. For other installation options, refer *60 GHz cnWave™ User Guide*.

Attach ground cables to the radio

1. Fasten the ground cable to the radio grounding point using the M6 lug.



2. Tighten the ODU grounding bolt to a torque of 5 Nm (3.9 lb ft).

Mounting the ODU on the mast or wall

Mounting bracket options

The 60 GHz cnWave™ series supports eight mounting bracket options. Select the optimum mounting bracket arrangement based on the ODU type and the choice of wall or pole mounting. The wall mount plate for V1000 is included with the ODU. Order the remaining brackets separately.

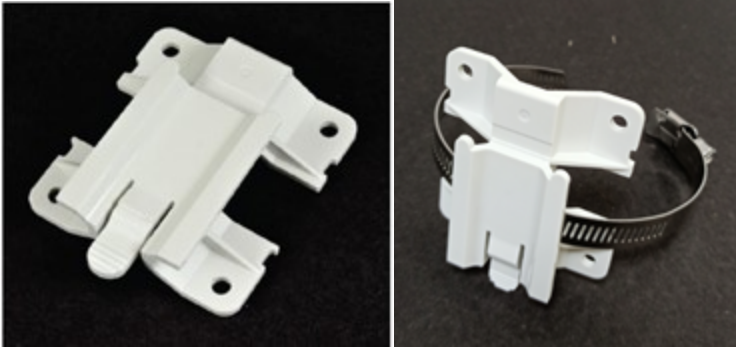
Select the most appropriate bracket mounting arrangement from the options listed in the section **Mounting bracket options** in *60 GHz cnWave™ User Guide*. Refer to individual procedures below for each of the options:

- [V1000 pole mount](#)
- [V1000 adjustable pole mount](#)
- [V1000 wall mount](#)
- [V3000 precision bracket](#)
- [V3000 tilt bracket assembly](#)
- [V3000 tilt bracket assembly with band clamps](#)
- [V5000 pole mount bracket](#)
- [V5000 wall mount bracket](#)

V1000 pole mount

Follow the below instructions to mount V1000 to the pole:

1. Insert the hose clamps through mounting plate and clamp to the pole by applying 3.0 Nm torque.



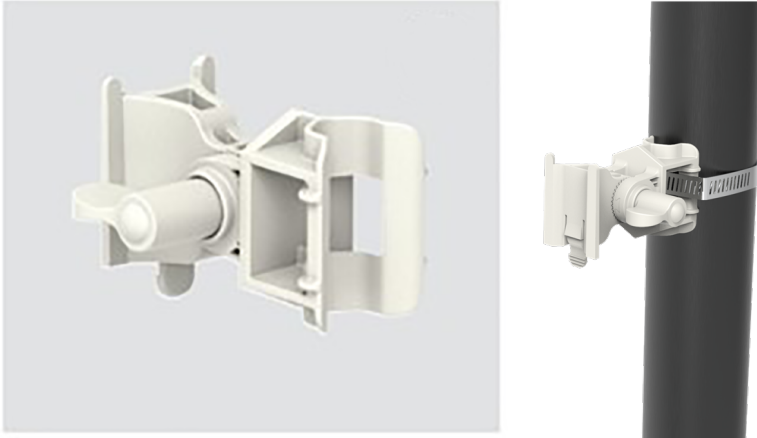
2. Insert the radio into the mounting plate on the pole.



V1000 adjustable pole mount

Follow the below instructions to mount V1000 to the adjustable pole:

1. Insert the hose clamps through adjustable pole mount bracket and clamp to the pole by applying 3.0 Nm torque.



2. Insert the radio into the adjustable pole mount bracket on the pole.



V1000 wall mount

Follow the below instructions to mount V1000 to the wall:

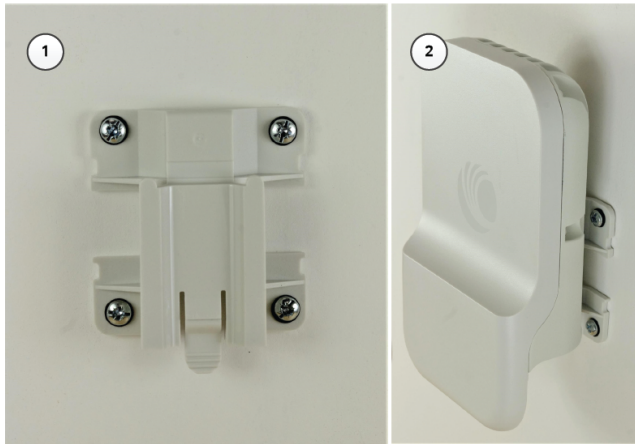
1. Fix the mounting plate (supplied with the V1000 ODU) securely to a vertical wall, using suitable fixings.



Note

Fixing hardware is not supplied with the V1000.

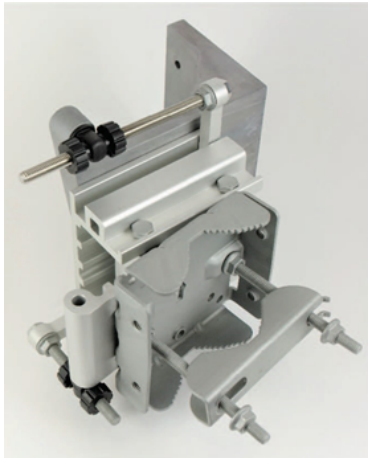
2. Slide the V1000 ODU onto the mounting plate from above, ensuring that the spring clip in the mounting plate clicks into place on the radio.



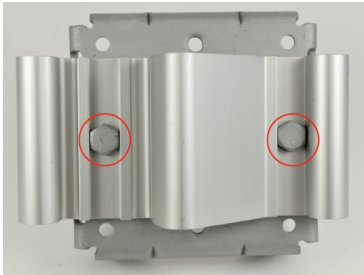
V3000 precision bracket

The precision bracket is used to mount the cnWave V3000 CN on a vertical pole, providing fine adjustment up to 18° in azimuth and $\pm 30^\circ$ in elevation for accurate alignment of the V3000. The precision bracket is compatible with pole diameters in the range 25 mm to 80 mm (1.0 inches to 3.1 inches).

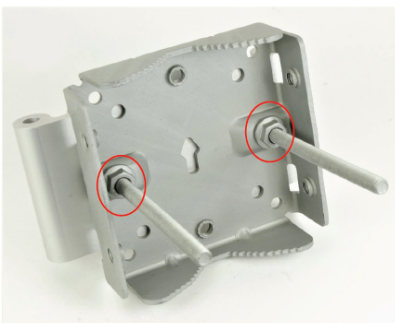
These instructions illustrate the procedure for assembling and using the precision bracket. We also illustrate the mounting of the optional alignment telescope. Refer *60 GHz cnWave™ User Guide* for further information.



1. Insert two of the long (120 mm) screws through the azimuth arm and the bracket body. The screws locate in the slots in the azimuth arm.

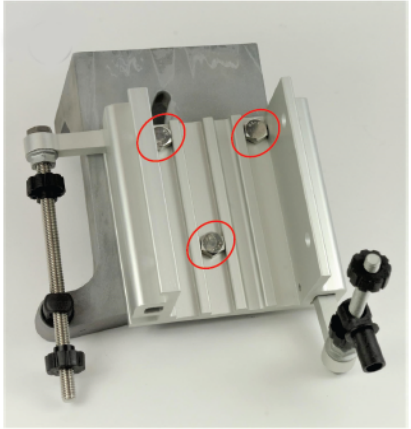


2. Fit two flanged M8 nuts to the long screws on the back of the bracket. Tighten using a 13 mm spanner.

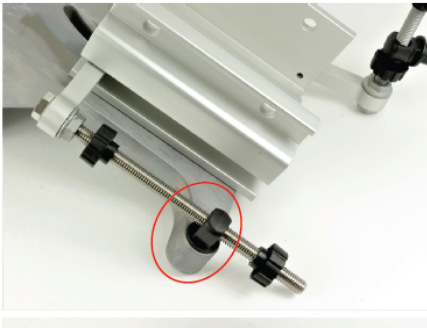


3. Insert the three medium length (40 mm) M8 screws through the bracket base and the V3000

mount. The screws locate in the slots in the bracket base.



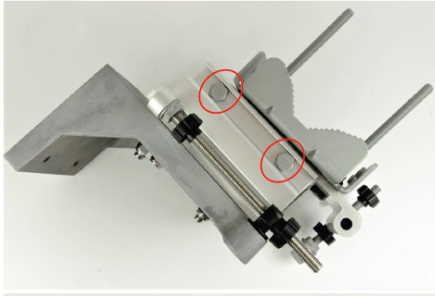
Ensure that the pivot pin in the elevation adjuster is located in the circular hole in the V3000 mount.



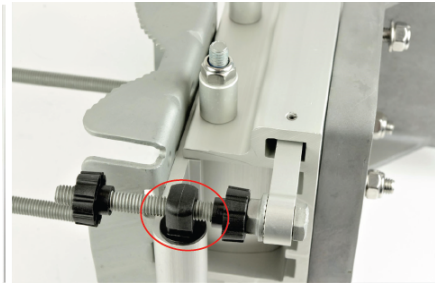
4. Fit plain washers and M8 Nyloc nuts to the screws on the back of the bracket base. Tighten using a 13 mm spanner.



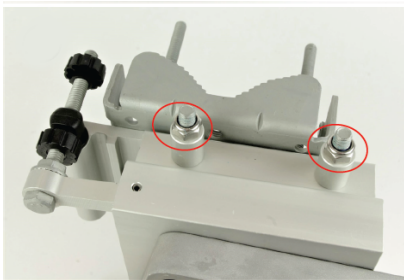
5. Insert the two remaining long (120 mm) M8 screws through the bracket body and the azimuth arm. The screws locate in the slots in the bracket body.



Ensure that the pivot pin in the azimuth adjuster is located in the circular hole in the bracket body.



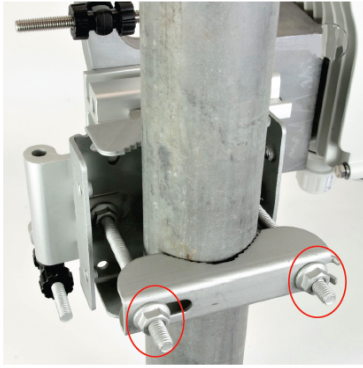
6. Fit three sets of spacers, plain washers and M8 Nyloc nuts to the screws on the underside of the bracket base. Tighten using a 13 mm spanner.



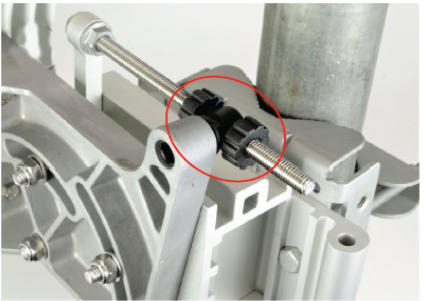
7. Attach the V3000 mount to the radio using the four short M6 bolts. Tighten the four bolts to a torque setting of 5.0 Nm (3.7 lb ft) using a 13 mm spanner or socket.



8. Attach the precision bracket to the pole using the clamp and the remaining flanged nuts. Adjust azimuth approximately and tighten the nuts to 10 Nm (7.4 lbft) using a 13 mm spanner.



9. Align the antenna elevation using the fine elevation adjuster.



10. Align the antenna azimuth using the fine azimuth adjuster.

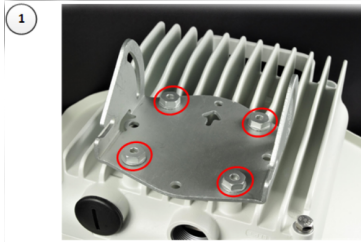


11. Lock the antenna alignment by tightening the five nyloc nuts (see [step 5](#) and [step 8](#)) to 10 Nm (7.4 lbft) using a 13 mm spanner or socket.

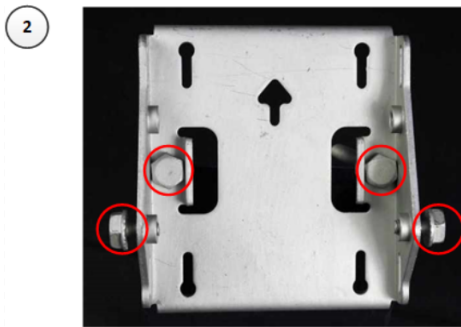


V3000 tilt bracket assembly

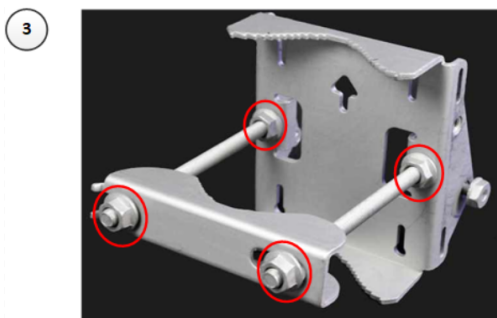
1. Fix the mounting plate of the tilt bracket to the back of the radio using four of the short bolts, ensuring that the arrow in the plate points towards the top of the radio. Tighten the four bolts to a torque setting of 5.0 Nm (3.7 lb ft) using a 13 mm spanner or socket.



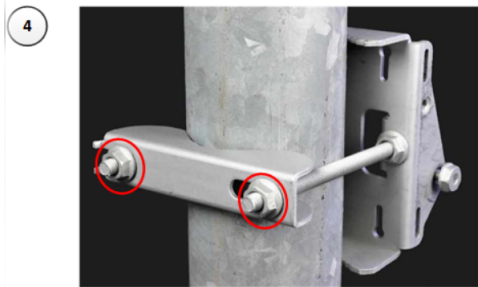
2. Fit the two long bolts through the bracket body so that the bolt heads engage in the slots as shown. Fit two of the short bolts into the side of the bracket body but do not tighten.



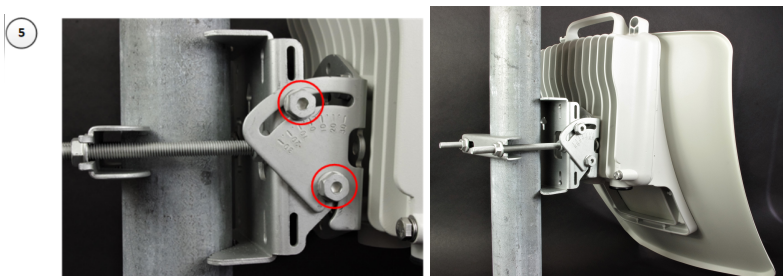
3. Thread two of the nuts to the long bolts and tighten against the bracket body using a 13 mm spanner. Fit the bracket strap and thread the remaining nuts onto the long bolts.



4. Fix the assembled bracket body to the pole, adjust the azimuth angle, and tighten the nuts to a torque setting of 10.0 Nm (7.4 lb ft) using a 13 mm spanner, ensuring that the arrow in the body is pointing upwards.



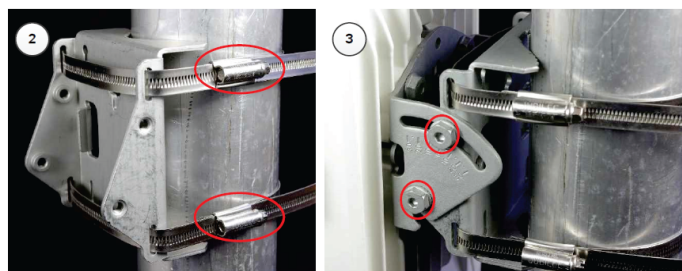
5. Fit the mounting plate to the bracket body by positioning the open- ended slots over the short bolts. Insert the remaining short bolts through the longer curved slots into the threaded holes in the bracket body. Adjust the elevation angle and tighten the bolts to a torque setting of 5.0 Nm (3.7 lb ft) using a 13 mm spanner or socket.



V3000 tilt bracket assembly with band clamps

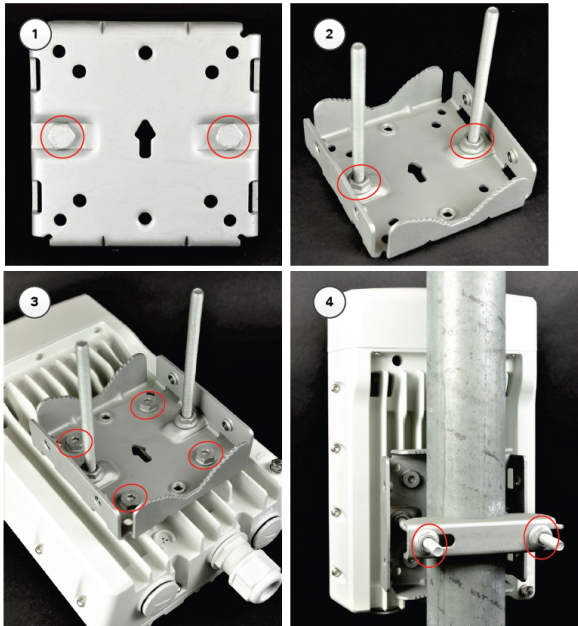
Follow the below instructions to assemble the Tile bracket with band clamps:

1. Follow step 1 of the [V3000/V5000 tilt bracket assembly](#) procedure.
2. Feed the band clamps through the slots in the bracket body. Secure the bracket body to the pole using band clamps (not supplied by Cambium), ensuring that the arrow in the body is pointing upwards. Adjust the azimuth angle, and tighten the band clamps to a torque setting of 6.0 Nm (4.5 lb ft).
3. Fix the mounting plate to the bracket body with four of the short bolts, using a 13 mm spanner or socket. Adjust the elevation angle, and tighten the bolts to a torque setting of 5.0 Nm (3.7 lb ft).



V5000 pole mount bracket

1. Pass the long screws through the bracket body. The screws locate in the recess in the bracket.
2. Fit two flanged nuts to the long screws on the back of the bracket. Tighten using a 13 mm spanner.
3. Fix the bracket to the back of the radio using the four short M6 bolts, ensuring that the arrow in the plate points towards the top of the radio. Tighten the four bolts to a torque setting of 5.0 Nm (3.7 lb ft) using a 13 mm spanner or socket.
4. Attach the pole-mount bracket to the pole using the clamp and the remaining flanged nuts. Adjust azimuth and tighten the nuts to 10 Nm (7.4 lbft) using a 13 mm spanner.



V5000 wall mount bracket

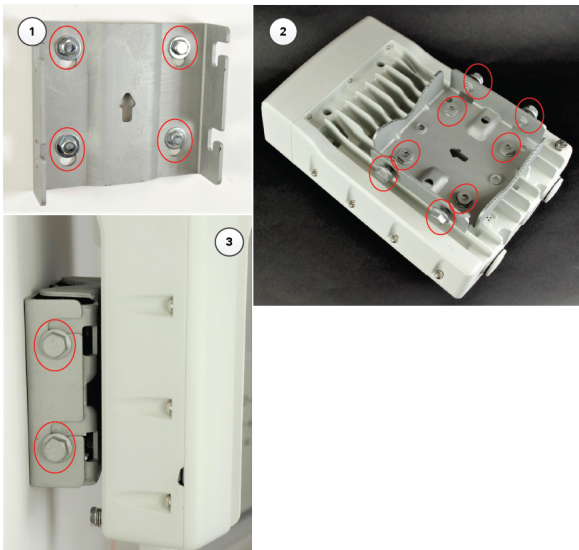
1. Install the mounting plate of the wall mount bracket securely on a vertical wall, using suitable fixings.



Note

Fixing hardware is not supplied with the wall mount bracket.

2. Fix the bracket body to the back of the radio using the four short M6 bolts, ensuring that the arrow in the plate points towards the top of the radio. Tighten the four bolts to a torque setting of 5.0 Nm (3.7 lb ft) using a 13 mm spanner or socket.
3. Insert the four short M8 bolts into the sides of the bracket body.
4. Fit the bracket body to the mounting plate by positioning the short bolts into the open-ended slots. Tighten the bolts to a torque setting of 5.0 Nm (3.7 lb ft) using a 13 mm spanner or socket.



Precision bracket alignment telescope

1. Attach the telescope mounted to the V3000 radio using the knurled screw.
2. Attach the telescope by looping the two elastic O-rings over the ears of the mount, ensure that the telescope is located securely in the mount.



3. If a telescope with a smaller body is used, shorten the O-rings by twisting.

Connecting 60 GHz cnWave™ Products

Connect to the PSU port of the radio

Using Power over Ethernet (PoE)

1. Disassemble the gland and thread each part onto the cable (the rubber bung is split). Assemble the spring clip and the rubber bung.



2. Fit the parts into the body and lightly screw on the gland nut (do not tighten it).



3. Connect the RJ45 plug into the main PSU port of the ODU.

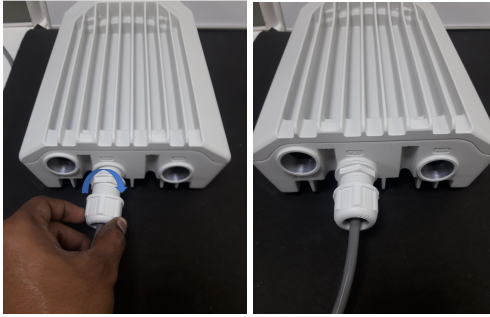


4. Rotate the gland clockwise to tightly fit the gland on the PSU port.



Warning

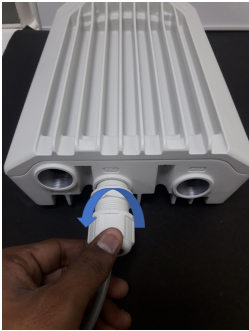
Ensure the cable clamp is not attached/ tightened at this stage, this could cause damage to the RJ45 or PCB.



5. Tighten the gland (cap or nut), this must be done last. Otherwise it may damage the RJ45 or PCB.

Disconnect the drop cable to the radio

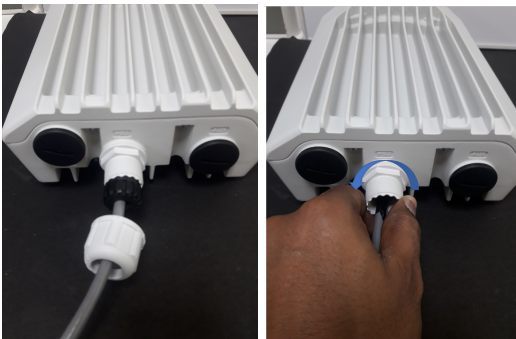
1. Loosen and remove cable clamp by rotating anti-clockwise from the PSU port.



Warning

Loosen the cable clamp completely and then unscrew the gland. Not releasing the cable may cause damage to the RJ45 socket and/or PCB.

2. Remove the gland.



3. Press tab on RJ45 plug to remove the cable from PSU port.

4. Remove the latch of the RJ45 plug to remove the cable from PSU port.



Installing the PSU

Install one of the following types of PSU:

- [Installing the 60W DC power injector](#)
- [Installing the AC/DC PSU](#)
- [Installing the V1000 power injector](#)



Warning

Always use an appropriately rated and approved AC supply cord-set in accordance with the regulations of the country of use.



Attention

As the V5000/3000 60W DC Power Injector and V1000 15 W power injector are not water proof, locate it away from sources of moisture, either in the equipment building or in a ventilated moisture-proof enclosure. Do not locate the PSU in a position where it may exceed its temperature rating.



Attention

Plug only recommended Cambium 60 GHz cnWave™ PSU into the PSU port of the ODU. (for recommended partnumbers, refer *60 GHz cnWave™ User Guide*). Plugging any other unsupported device into PSU port of the ODU may damage the ODU and device.

Installing the 60W DC power injector

1. Connect the Input side of DC power Injector to AC power line.

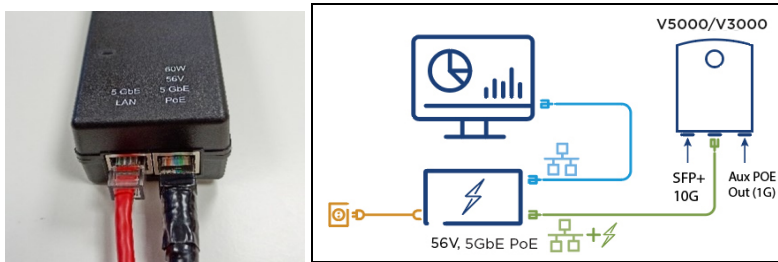
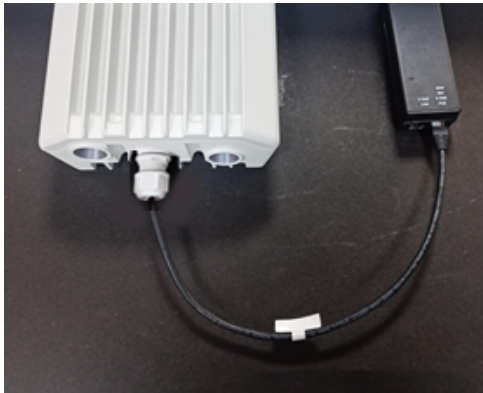


Figure 1: 60W DC power injector

2. Connect 5 Gbe LAN port of the power injector to network equipment.
3. Connect 60 W 56V 5 GbE PoE port of the power injector to ODU drop cable.



Installing the AC/DC PSU

1. Connect input side of the AC/DC PSU to AC power line.
2. Connect output side of DC PSU to ODU through cable joiner and DC mini adapter. Refer *60 GHz cnWave™ User Guide* for connecting, installing Cable joiner and Mini adapter.



Figure 2 : AC/DC PSU



Figure 3 : Cable joiner



Figure 4 : DC to RJ45 plug, Mini adaptor

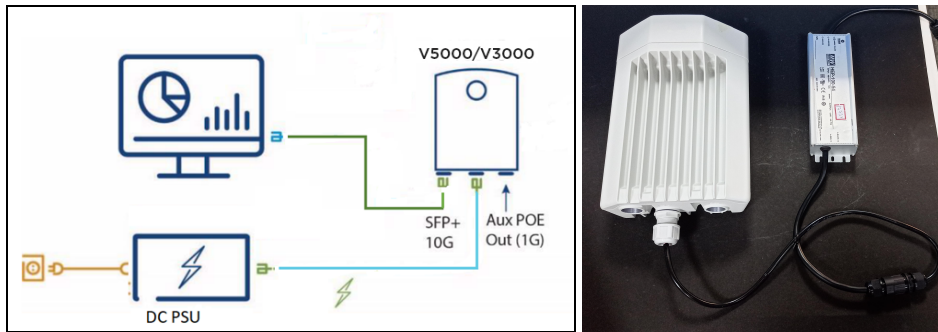


Figure 5 : AC/DC powering diagram

For detailed assembly of cable joiner and mini adapter to ODU PSU port, refer *60 GHz cnWave™ User Guide*.

Installing the V1000 power injector

1. Connect the 56V Gigabit Data + power port to ODU and Gigabit Data port to the network equipment.



Figure 6 : V1000 power injector

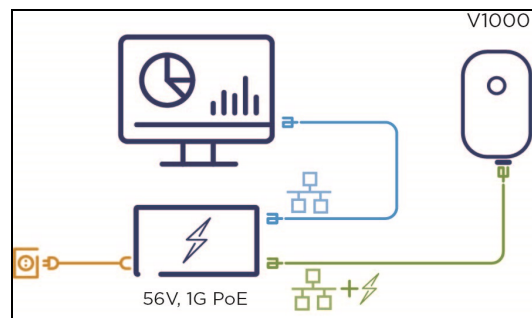


Figure 7 : V1000 powering diagram



Connecting to the SFP+ optical module or SFP+ to copper module to ODU

When ODU is powered through AC/DC PSU, an optical or copper Cat6A Ethernet interface can be connected to the SFP port of the ODU for data interface.

Adapt the installation procedures in this section as appropriate for SFP interfaces, noting the following differences from a PSU interface.

Connecting to the SFP+ optical module to ODU

Fitting the long cable gland

Optical SFP interface: Disassemble the long cable gland and thread its components over the LC connector at the ODU end as shown below.

Copper Cat6a SFP interface: Disassemble the cable gland and thread its components over the RJ45 connector at the ODU end.

1. Disassemble the long cable gland used for optical SFP interface.



Disassemble the long cable gland used for copper SFP interface.



2. Thread each part onto the cable (the rubber bung is split).



3. Fit the parts into the body and lightly screw on the gland nut (do not tighten it).

Optical



Copper



Inserting the SFP module

To insert the SFP module into the ODU, follow the below steps:

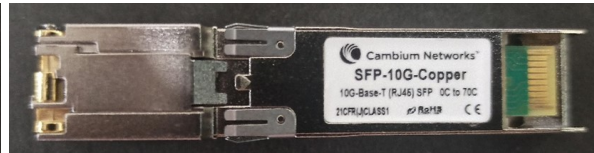
1. Remove the blanking plug from the SFP port of the ODU.



Optical SFP+ module



Copper SFP module



2. Insert the SFP module into the SFP receptacle with the label on bottom.

Optical



Copper



3. Push the module home until it clicks into place.

Optical



Copper



4. Rotate the latch to the locked position.

Optical



Copper



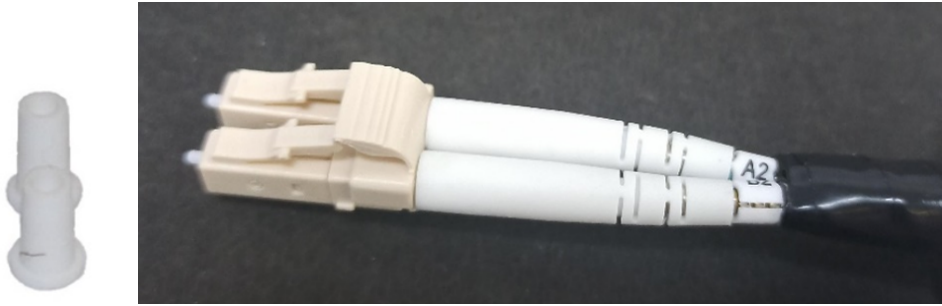
Connecting the cable



Attention

The Fiber optic cable assembly is very delicate. To avoid damage, handle it with extreme care. Ensure that the fiber optic cable does not twist during assembly, especially when fitting and tightening the weatherproofing gland. Do not insert the power over Ethernet drop cable from the PSU into the copper SFP module, as this will damage the module.

1. Remove the LC connector dust caps from the ODU end (optical cable only).



2. Plug the connector into the SFP module, ensuring that it snaps home.

Optical



Copper



Fitting the gland

1. Fit the gland body to the SFP port and tighten it to a torque of 5.5 Nm (4.3 lb ft).



2. Fit the gland nut and tighten until the rubber seal closes on the cable. Do not over-tighten the gland nut, as there is a risk of damage to its internal components.



3. Fit the gland nut to the rubber seal on the gland body and tighten it to a torque of 5.5 Nm (4.3 lb ft).



Removing the cable and SFP module

Do not attempt to remove the module without disconnecting the cable, otherwise the locking mechanism in the ODU will be damaged.

1. Remove the cable connector by pressing its release tab before pulling it out.

Optical



Copper



2. Pull the bale clasp (latch) to the unlocked position. Extract the module by using a screwdriver.

Optical



Copper



Configuration

Configuring the management PC

1. Select **Properties** for the Ethernet port. In Windows 7/Windows 10 this is found in **Control Panel > Network and Internet > Network Connections > Local Area Connection**.
2. Select **Internet Protocol (TCP/IP)**.
3. Click **Properties**.
4. Enter an IP address that is valid for the **169.254.X.X** network, avoiding **169.254.0.0** and **169.254.1.1**

(e.g. 169.254.1.3).

5. Enter a subnet mask of 255.255.0.0. Leave the default gateway blank.

Connecting to the PC and powering up

1. Check that the ODU is connected to the power supply (AC/DC according to configuration, refer *60 GHz cnWave™ User Guide*).
2. Connect the PC Ethernet port to the LAN port of the PSU or AUX port (according to device configuration, refer *60 GHz cnWave™ User Guide*).
3. Open a web browser and type: **169.254.1.1**.

When prompted, enter **admin/admin** to login to the GUI and complete the configuration.

For complete configuration, refer *60 GHz cnWave™ User Guide*.

Accessories Partnumbers

Partnumber	Description
C600500A004A	60GHz cnWave V5000 Distribution Node
C600500A005A	60GHz cnWave V5000 Distribution Node - Israel Only
C600500C024A	60GHz cnWave V3000 Client Node Radio only
C600500C025A	60GHz cnWave V3000 Client Node Radio Only – Israel Only
C600500D001A	60GHz cnWave V3000 Client Node Antenna Assembly
C600500C001A	60GHz cnWave V1000 Client Node with US cord
C600500C003A	60GHz cnWave V1000 Client Node with EU cord
C600500C004A	60GHz cnWave V1000 Client Node with UK Cord
C600500C008A	60GHz cnWave V1000 Client Node with ANZ Cord
C600500C009A	60GHz cnWave V1000 Client Node with Brazil Cord
C600500C010A	60GHz cnWave V1000 Client Node with Argentina Cord
C600500C011A	60GHz cnWave V1000 Client Node with China Cord
C600500C012A	60GHz cnWave V1000 Client Node with South Africa Cord
C600500C013A	60GHz cnWave V1000 Client Node with India Cord
C600500C014A	60GHz cnWave V1000 Client Node with no Cord
C600500C016A	60GHz cnWave V1000 Client Node with Israel cord - Israel Only
C000000L137A	Universal Pole Mount Bracket for 1" - 3" diameter poles
C000000L136A	Universal Wall Mount Bracket
C000000L184A	DC to RJ45 Plug Power Adapter
C000000L124A	Cable Gland, Long, M25, Qty 5
N000000L178A	Outdoor AC/DC PSU, 60W, 54VDC
N000000L179A	Outdoor AC/DC PSU, 100W, 54VDC
N000000L180A	Waterproof PSU Cable Joiner 14-16 AWG
N000000L142A	PoE, 60W, 56V, 5GbE DC Injector, Indoor, Energy Level 6 Supply
N000065L001C	AC power Injector 56V, 60W
C000065L002C	AC+DC Enhanced Power Injector 58V
N000900L011A	CABLE, UL POWER SUPPLY CORD SET, 720mm, AUS/NZ
N000900L012A	CABLE, UL POWER SUPPLY CORD SET, INDIA
N000900L013A	CABLE, UL POWER SUPPLY CORD SET, ARGENTINA

Partnumber	Description
N000900L015A	CABLE, UL POWER SUPPLY CORD SET, CHINA
N000900L031A	CABLE, UL POWER SUPPLY CORD SET, 720mm, US
N000900L032A	CABLE, UL POWER SUPPLY CORD SET, 720mm, EU
N000900L033A	CABLE, UL POWER SUPPLY CORD SET, 720mm, UK
N000900L034A	CABLE, UL POWER SUPPLY CORD SET, 720mm, Brazil
N000900L037A	CABLE, UL POWER SUPPLY CORD SET, 720mm, Israel
N000065L003A	US Line Cord Fig 8
N000065L004A	UK Line Cord Fig 8
N000065L005A	EU Line Cord Fig 8
N000065L006A	Australia Line Cord Fig 8
N000000L155A	CAT6A Outdoor Cable, 100m
N000082L172B	CAT6A Outdoor Cable, 305m
N000082L174B	RJ45 Connector for CAT6A Cable, Qty 10
SFP-10G-SR	10G SFP+ MMF SR Transceiver, 850nm. -40C to 85C
SFP-10G-LR	10G SFP+ SMF LR Transceiver, 1310nm. -40C to 85C
N000082L215A	Optical CABLE,MM, 1m
N000082L191A	Optical CABLE,MM, 2.2m
N000082L192A	Optical CABLE,MM, 10m
N000082L193A	Optical CABLE,MM, 20m
N000082L194A	Optical CABLE,MM, 30m
N000082L195A	Optical CABLE,MM, 50m
N000082L196A	Optical CABLE,MM, 80m
N000082L197A	Optical CABLE,MM, 100m
N000082L198A	Optical CABLE,MM, 150m
N000082L199A	Optical CABLE,MM, 200m
N000082L200A	Optical CABLE,MM, 300m
N000082L186A	Optical CABLE,SM, 2.2m
N000082L187A	Optical CABLE,SM, 10m
N000082L188A	Optical CABLE,SM, 20m
N000082L139A	Optical CABLE,SM, 30m

Partnumber	Description
N000082L140A	Optical CABLE,SM, 50m
N000082L141A	Optical CABLE,SM, 80m
N000082L142A	Optical CABLE,SM, 100m
N000082L143A	Optical CABLE,SM, 150m
N000082L189A	Optical CABLE,SM, 200m
N000082L190A	Optical CABLE,SM, 300m
C000000L033A	Gigabit Surge Suppressor (56V), 10/100/1000 BaseT
N000082L173A	Grounding Kit for CAT5E F/UTP 8mm and Cat6A Cable
C000000L138A	Grounding Cable, 0.6m with M6 ring to M6 ring
C000000L123A	Cable Gland for 6-9mm cable, M25, Qty 10
C000000L176A	Cable Gland for 4-6mm cable, M25, Qty 10
C000000L125A	cnWave Precision Mounting Bracket
N000045L002A	Tilt Bracket Assembly
C000000L139A	Telescope mounting kit
N000900L017A	PoE, 15.4W, 56V, GbE DC Injector, Indoor, Energy Level 6 Supply, accepts C6 connector
N000900L022A	Adjustable Pole Bracket

Glossary

Term	Definition
ACM	Adaptive Coding and Modulation
CN	Client Node
DN	Distribution Node
E2E Controller	End to End Controller
PoP	Point of Presence
LPU	Lighting Protection Unit
SFP	Small Form-factor Pluggable

Cambium Networks

Cambium Networks provides professional grade fixed wireless broadband and microwave solutions for customers around the world. Our solutions are deployed in thousands of networks in over 153 countries, with our innovative technologies providing reliable, secure, cost-effective connectivity that's easy to deploy and proven to deliver outstanding performance.

Our award-winning Point to Point (PTP) radio solutions operate in licensed, unlicensed and defined use frequency bands including specific FIPS 140-2 solutions for the U.S. Federal market. Ruggedized for 99.999% availability, our PTP solutions have an impeccable track record for delivering reliable high-speed backhaul connectivity even in the most challenging non-line-of-sight RF environments.

Our flexible Point-to-Multipoint (PMP) solutions operate in the licensed, unlicensed and federal frequency bands, providing reliable, secure, cost effective access networks. With more than three million modules deployed in networks around the world, our PMP access network solutions prove themselves day-in and day-out in residential access, leased line replacement, video surveillance and smart grid infrastructure applications.

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Support website	https://support.cambiumnetworks.com
Main website	http://www.cambiumnetworks.com
Sales enquiries	solutions@cambiumnetworks.com
Support enquiries	https://support.cambiumnetworks.com
Telephone number list	http://www.cambiumnetworks.com/contact-us/
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