

4.1 Base Station Outdoor Installation (BRU)

This section describes the procedures for installing a 26 GHz, 39 GHz, and a 10 GHz Base Radio Unit (BRU).

A BRU Installation Kit is included with the BRU. The BRU Installation Kit contains connectors for LMR coax cable, self-amalgamating tape, an extra jam nut for the grounding/lightning protection lug, and a short 1.5m length of LMR240 cable as explained below.

The location, height, elevation angle and azimuth direction of the BRU to be installed is determined by the network configuration you have selected. Table **Error! No text of specified style in document.-1** shows the operating range for the BRU.

Table **Error! No text of specified style in document.-1** BRU Operating Environmental Specifications

Type	Item	Specifications	
Environmental Characteristics	Storage temperature	-40°C to +70°C	
	Operating temperature	-35°C to +55°C	
	Wind loading	Operational	145 km/hr
		Survival	200 km/hr
	Altitude	0 m to 4500 m	

The 26 GHz and 39 GHz BRU antenna is vertically polarized. To preserve the correct polarization, mount the BRU with the same orientation as shown in the installation figures. The BRU will not function properly if the polarization is not correct. For proper polarization the BRU must be within 3° of vertical.

The 10 GHz BRU can be ordered either vertically polarized or horizontally polarized.

4.1.1 Wind Loading

For the pole mount, the coordinate origin is set in the centerline of the pole, located on middle of the two bolts in Z axis (not the base of the mounting bracket).

The appendix contains a complete Wind Load analysis report for the BRUs.

4.1.2 Mounting the 26 GHz or 39 GHz BRU

Mount the BRU on a support pole (2 to 4.5 in or 50 to 114 mm in diameter). The only tool required to mount the BRU is a 17mm wrench. An Installation Kit is provided with the unit.

One or more BRUs may be mounted on the same pole.

Use the following procedure to mounting the BRU on the pole:

1. Refer to Figure **Error! No text of specified style in document.-1** and use the instructions supplied with the Pole Mounting Kit to assemble the pole mount prior to installing it on pole.
2. Orient the mounting plate so that it is at the appropriate height and 90 degrees from the pointing direction of the BRU (so the BRU points in the correct direction when mounted) and secure it (do not over tighten). When using the M10 nuts, start the nut and screw it down close to its final position. Then place a drop of anti-seize compound on each bolt, making sure to cover the thread near the final nut position when the nut is tightened.

Figure **Error! No text of specified style in document.-1** Installing the BRU Pole Mount

3. Install the BRU onto the Mounting Plate as follows (see Figure **Error! No text of specified style in document.-2**):
 - a) Insert the two studs with the o-ring, flat washer, lock washer and hex nut through the clearance holes on the mounting plate.
 - b) Slide the BRU to the left until the Rotation Pin on the BRU/BRU Mounting Bracket assembly aligns with the Pilot Hole of the Mounting Plate and the two studs are in the elevation adjustment slots.
 - c) Push the BRU/BRU Mounting Bracket assembly flush against the mounting plate so that the Rotation Pin is in the Pilot Hole. Loosely tighten the nuts on the two bolts, as shown in Figure **Error! No text of specified style in document.-2** and
 - d) Figure **Error! No text of specified style in document.-3**.
 - e) Adjust the elevation of the BRU. Tighten the two nuts on the BRU to secure it at the proper elevation. Attach lightning protection using the grounding lug on the bottom center of the BRU as appropriate.

The Pole Mount has ± 15 degree elevation rotation for the BRU.

Figure **Error! No text of specified style in document.**-2 Installing the BRU onto Mounting Plate (Rear View)

Figure **Error! No text of specified style in document.**-3 Installed BRU on Mounting Plate (Rear View)

Figure **Error! No text of specified style in document.**-4 Installed 26 GHz or 39 GHz BRU (Front View)

4.1.3 Connecting the BRU Coaxial Cable

Use the following procedure for connecting the coaxial cable to the BRU.

1. Install the right-angle TNC-TNC adapter onto the coaxial connector. **Ensure that the connector is dry and free of corrosion.** Even a small amount of corrosion or dampness can cause signal degradation.
2. Connect the coaxial cable to the TNC connector on the BRU. When an LMR400 coaxial cable is used, a one meter section of LMR240 coaxial cable with a male TNC and female N-type connector is required.
3. Wrap the connector and the junction between the TNC and the N-type junction with self-amalgamating weather proof tape (MOX-TAPE part number 620-.75, Fujipoly™ part number Flat-STV-20-.75, or equivalent).
4. Tie wrap the cable to the pole, **leaving a minimum 18 inch service loop with a 6 inch drop.** This loop will be longer for LMR400 cable; be sure to observe the minimum bend radius given earlier in this chapter. Be sure the loop points down so that water drains away from the connector. Figure **Error! No text of specified style in document.**-5 shows the coaxial cable service loop for the BRU.
5. Multiple BRUs may be installed on a single pole. Allow 0.5 meter separation between BRUs on the pole. The RF radiation path expands outward from its point of origin - be sure that one BRU does not block another's radiation path.

Figure **Error! No text of specified style in document.**-5 Coaxial Cable Service Loop for Multiple BRUs