

Installing the Broadband Global Area Network (BGAN) Fixed Mount Kit

Product description – BGAN fixed mount kit

Although the BGAN satellite modem terminal is designed for portable use, the BGAN Fixed Mount Kit (HNS part number 3004066-001) allows you to permanently mount the terminal if this option is desired.

The fixed mount kit (Figure 1) consists primarily of a tubular pole mount assembly with mounting brackets on each end. The base bracket attaches to the roof or other structure, and the terminal bracket attaches to the BGAN terminal. Power and network cables are also included.

This document describes how to install the BGAN Fixed Mount Kit. It references the BGAN Terminal User Guide, HNS 3004077-0001, which is provided in PDF format with the terminal on a compact disc (CD).

Step A. Inspecting the parts

Make sure you have all parts listed on the shipment box before beginning the installation; you should have following parts:

1. Fixed Mount assembly
2. Tamper-proof hardware
3. Bits and tool to install tamper-proof hardware
4. 30 m Extension Power Cable
5. Grounding Cable
6. 2-30 m Ethernet/ISDN Cable
7. Level indicator
8. Compass
9. This instruction sheet, HNS 3004090-0001

The fasteners for securing the base bracket to the structure are not provided as part of the mounting kit.

Step B. Using tamper-proof fasteners

You can use the standard fastener hardware provided on the pole brackets or, for improved security of the installation, you can replace the standard fasteners with the provided tamper proof fasteners (Table 1).

To replace the standard fasteners with the tamper-proof fasteners (Table 1) refer to Figure 2 for the terminal bracket and Figure 3 for the base bracket.



Figure 1 - BGAN terminal with fixed mount

Table 1: List of tamper-proof fasteners

Item No.	Description
1	# 1/4-20 in. Penta nut
2	# 1/4-20 x 2.25 in. Penta screw
3	# 1/4-20 x 0.5 in. Penta screw
4	# 1/4-20 x 1.5 in Penta screw
5	# 8-1/4 Penta plus bit
6	# 1/4 Penta socket

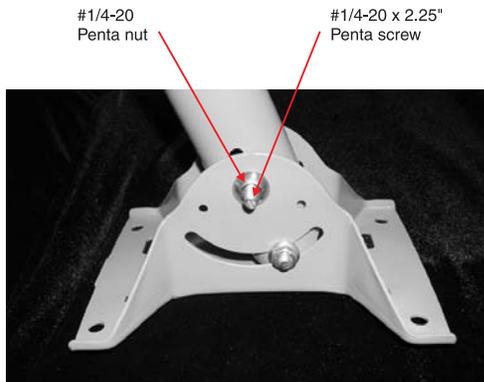


Figure 2 - Base bracket tamper-proof fasteners

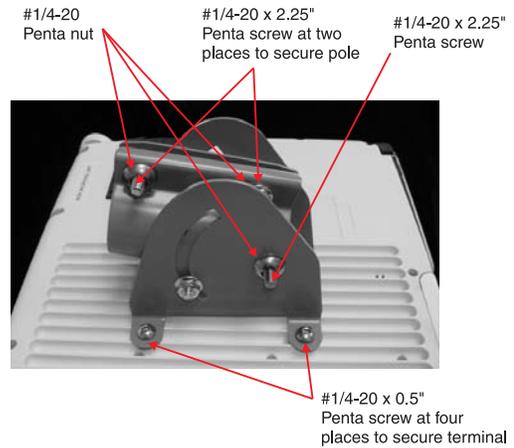


Figure 3 - Terminal bracket tamper-proof fasteners

Step C. Determining where to install the terminal

In order for your terminal to work correctly, it must be installed in a location that provides a clear, unobstructed, line of sight between the terminal and the satellite. Any objects such as building structures or trees may degrade the quality of the satellite to terminal connection. To determine where to install the fixed mount and terminal, you need to determine that you have both a clear unobstructed line of sight to the satellite and that your fixed mount is aimed in the approximate direction to the satellite. A graphic example is provided for you at Figure 4 and a full size worksheet for your use is provide at Figure 10 (page 7). An example of **directional aiming** is provided below

Inmarsat BGAN coverage

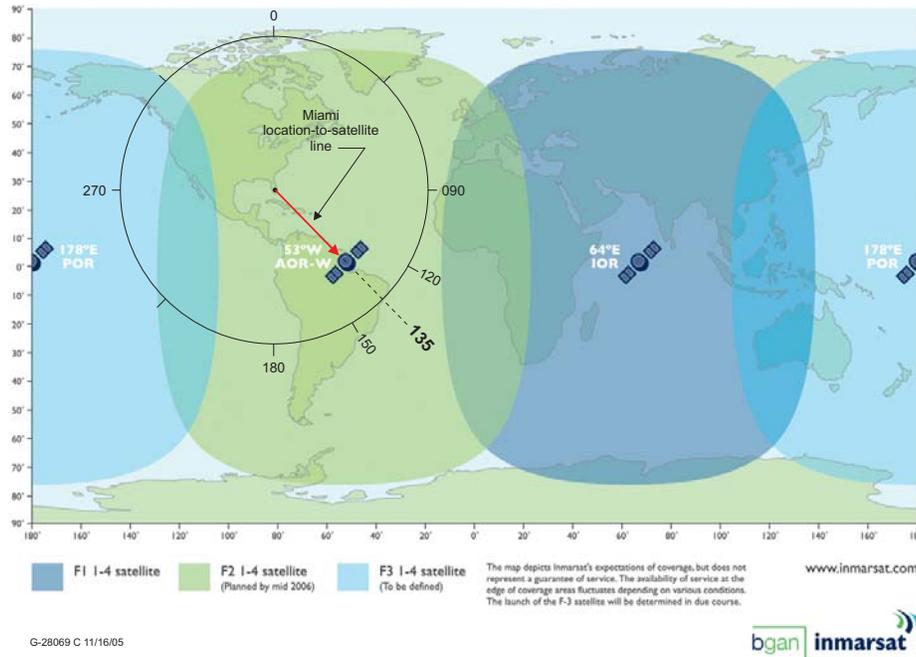


Figure 4 - Inmarsat BGAN coverage map

To determine the direction from your location to the satellite, i.e., directional aiming, follow the steps 1-4 (below).

1. Refer to the Inmarsat BGAN coverage map at Figure 4.
2. Find your geographical location on the map. In our example, the mount installer is located in Miami, Florida, USA.
3. Determine which satellite footprint you are under. Draw a line from your location to the image of the satellite (in the same satellite footprint). The compass direction of your location-to-satellite line determines the gross orientation of the mount. In our example, the mount installer has drawn a line from the Miami location to the satellite. Using a protractor to measure the line direction in degrees, the installer determines that the direction is 135 degrees.
4. Using the full size map (Figure 10, page 7), you may now draw on the map to determine your location-to-satellite direction.
5. Using the compass (provided), align the mount so that it points in the same compass direction that you determined in step 3, above. If the line of sight is clear, i.e., no obstructions, then you may use the location to attach the now aligned mount to the structure.

Step D. Mounting the pole base bracket

You may install the fixed mount on any structurally sound surface; either on a horizontal, or vertical, or a sloped surface, such as a roof or wall.

The pole is shipped attached to the base bracket (Figure 5). Mount the base bracket of this assembly to the structure with the appropriate hardware (not included). Once the base bracket is mounted, perform the following steps:

1. Insert the bubble level (Figure 6) into the end of the pole (pipe) opposite the base bracket. The bubble level fits into a shoulder inside the pole.



Figure 5 - Base bracket

2. Loosen the pole attachment fasteners at the base bracket so the pole can swivel (Figure 5).



Figure 6 - Bubble level

3. Swivel the pole until the end of the pole where the BGAN terminal will be installed is vertical (as shown in Figure 1). Adjust the pipe position until the bubble is centered inside the circles on the top surface of the bubble level as shown in Figure 6.
4. Tighten the pole attachment fasteners on the base bracket (Figure 5).

Step E. Mounting the terminal bracket

1. The terminal can be mounted so its light-emitting diodes (LEDs) and control buttons face up—toward the sky, or down—toward the ground. Orient the terminal bracket (Figure 7) so the LEDs will face up or down, depending on how they can be most easily read.
2. Secure the terminal bracket to the terminal with the four provided tamper proof ¼ - 20 x 1/2 in. (12.5-mm) bolts. A special tool with a driver bit is provided (Figure 7).



Figure 7 - Terminal bracket

Step F. Mounting the terminal bracket onto the pole

1. Slide the pole collar of the terminal bracket over the end of the pole. This collar is shown in Figure 7.
2. Leave the pole collar bolts loose to allow for azimuth adjustment during pointing.
3. Check to make sure you can read the LEDs.

Step G. Connecting to a network

The fixed mount kit includes two 30-m RJ-45 cables for Ethernet or integrated services digital network (ISDN) connectivity. You can also use a wireless LAN (WLAN) connection, depending on the distance from the computer and potential interference. For details, see the *BGAN Terminal User Guide*.

Step H. Connecting power

1. Use the provided 30-m extension power cable between the terminal and the AC/DC adapter power provided with the terminal. Connect the adapter to a power outlet.
2. If you install the terminal where temperatures may be extreme, remove the battery to prevent damage. The battery is needed only for portable use.

If you want to use power from a compatible solar panel, refer to the *BGAN Terminal User Guide*.

Step I. Pointing the BGAN terminal

The terminal includes an integrated antenna. For optimum performance, the terminal must be accurately pointed at the satellite. The instructions in this section explain how to mechanically adjust the terminal's elevation angle and azimuth. These adjustments are required for pointing. To point the terminal, refer to the *BGAN Terminal User Guide*. See the information on antenna pointing. The terminal must be powered **ON** for pointing.

To adjust elevation, refer to Figure 8:

1. Loosen the two bolts in the curved slots on the terminal bracket.
2. Read the elevation angle from the elevation scale on the terminal bracket, using the red edge on the pole collar as the angle indicator. View this edge through the curved slot on the terminal bracket.
3. Pivot the terminal on the pole to obtain the desired elevation angle.

Loosen these fasteners to adjust elevation

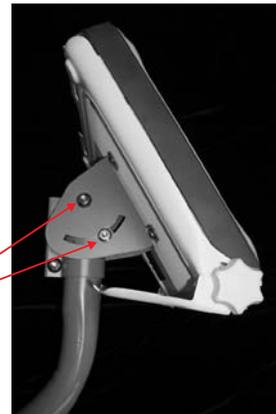


Figure 8 - Adjusting elevation



Loosen these fasteners to adjust azimuth

Figure 9 - Adjusting azimuth

To adjust azimuth, refer to Figure 9:

1. Loosen the two bolts on the pole collar.
2. Move the terminal to either side, in small increments, as necessary.

When you have maximized the signal quality, as instructed in the *User Guide*:

1. Tighten the two bolts in the curved slots on the terminal bracket to lock down the elevation adjustment.

Be careful not to change the terminal's orientation while tightening the bolts.

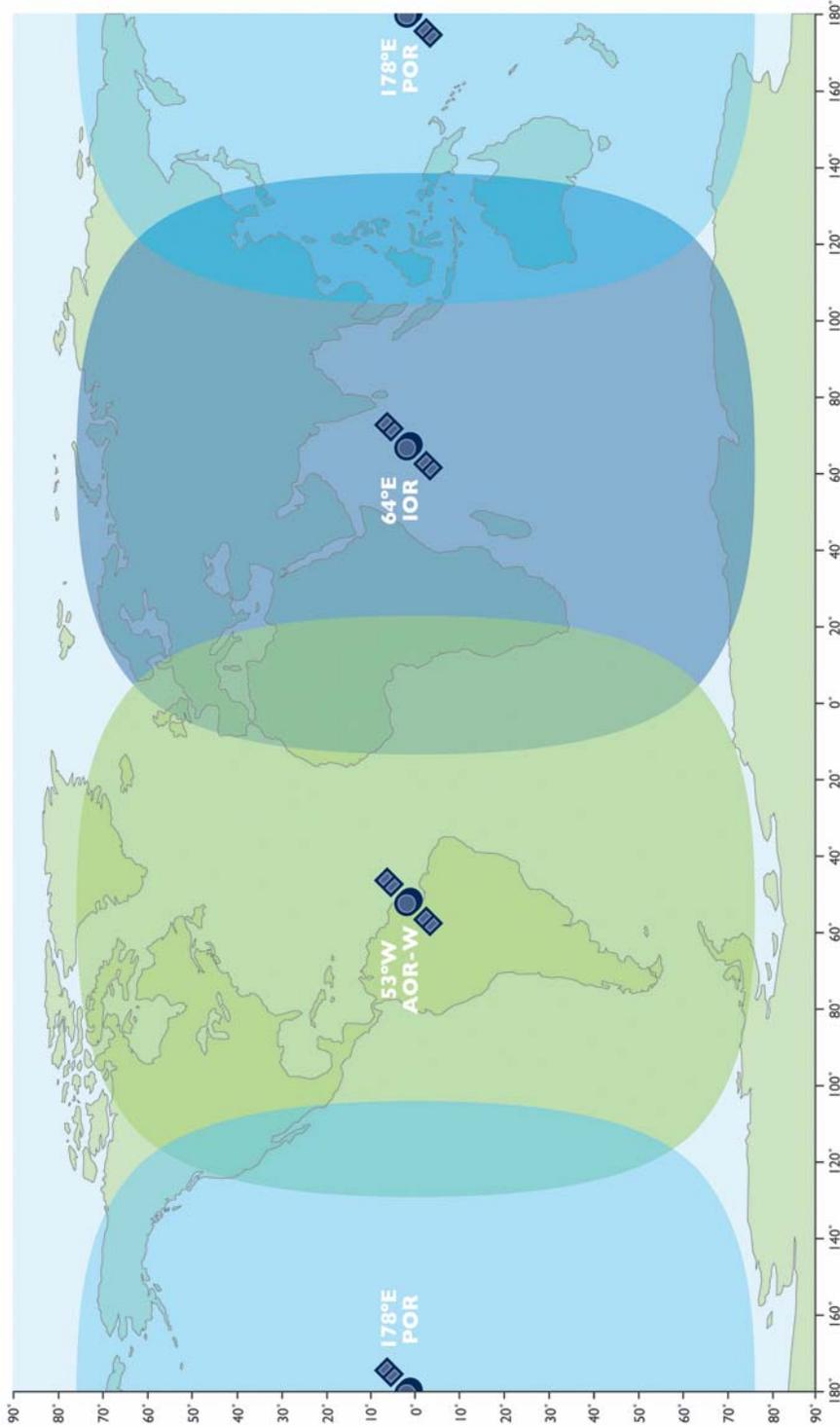
2. Tighten the two bolts on the pole collar to lock down the azimuth adjustment.
3. Make sure all other fasteners on both brackets are tight.

Step J. Automode

If you mount the terminal where access may be difficult (for example, mounted high on a wall), you may want the terminal to recover automatically when power is restored after a power outage. To permit this, set the following automatic modes *after* you have installed and pointed the terminal. (For details, see the information on *automatic mode* in the *User Guide*.)

- Enable *Auto "on" mode* so the terminal turns on automatically when power is restored after an outage.
- Enable *LED off mode* so the LEDs do not light when the terminal is powered on.
- Enable *Antenna pointing bypass mode* so the terminal does not need to be re-pointed after power is applied.
- Enable *Automatic context activation* so the terminal automatically connects to the BGAN system.
- If the subscriber interface module (SIM) personal identification number (PIN) entry is enabled, you will need to enter the PIN from the man machine interface (MMI) after a power change. You can then enable or disable the user SIM PIN entry from the MMI. Refer to the user guide.

Inmarsat BGAN coverage



www.inmarsat.com

The map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions. The launch of the F-3 satellite will be determined in due course.

F3 I-4 satellite
(To be defined)

F2 I-4 satellite
(Planned by mid 2006)

F1 I-4 satellite



Figure 10 - My location to satellite worksheet

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