Beitian BT-208

Beitian BT-208 High Precision GNSS Antenna User Manual

Model: BT-208

1. Introduction

This manual provides essential information for the proper installation, operation, and maintenance of your Beitian BT-208 High Precision GNSS Antenna. Please read this manual thoroughly before using the product to ensure optimal performance and longevity. This antenna is designed to provide stable and reliable GNSS signals for various positioning applications.

2. Product Overview

The Beitian BT-208 is a high-performance GNSS antenna engineered for precision applications. Its robust design and advanced features contribute to superior signal reception and measurement accuracy.

2.1 Key Features

- **Multi-feed Point Design:** Utilizes a multi-feed point and fully symmetrical antenna structure for a very stable phase center, minimizing measurement errors.
- **High Gain & Low VSWR:** Optimized for high gain and low Voltage Standing Wave Ratio (VSWR), enhancing signal quality.
- **Low Elevation Angle Signal Reception:** Capable of receiving signals effectively even in environments with significant obstructions.
- **Anti-multipath Choke Plate:** Equipped with an anti-multipath choke plate to reduce signal interference.
- **Anti-surge Design:** Incorporates an anti-surge design to suppress strong out-of-band interference signals, ensuring antenna reliability.
- **Durable Construction:** Made from anti-UV PC material, providing IP67 waterproof rating, high temperature resistance, and protection against sunlight and UV exposure for long-term outdoor use.

2.2 Components

The Beitian BT-208 antenna typically includes the main antenna unit and may come with mounting accessories and connection cables depending on the package.

Figure 1: Side view of the Beitian BT-208 GNSS Antenna, showing its dome-shaped white top and black base with a TNC-K connector.

Figure 2: Bottom view of the Beitian BT-208 GNSS Antenna, displaying the TNC-K connector and product label with model number BT-208.

Figure 3: The Beitian BT-208 GNSS Antenna mounted on a stand, connected via a coaxial cable, illustrating a typical setup.

3. Setup

Proper setup is crucial for the optimal performance of your GNSS antenna. Follow these guidelines for installation:

1. **Choose a Mounting Location:** Select a location with a clear, unobstructed view of the sky. Avoid areas near large metal objects, power lines, or other sources of electromagnetic interference that could block or reflect GNSS signals.
2. **Mount the Antenna:** Securely mount the antenna using appropriate hardware (not included unless specified). Ensure the antenna is level and stable. The BT-208 is designed for outdoor use and can withstand various weather conditions due to its IP67 rating.
3. **Connect the Cable:** Connect a compatible coaxial cable with a TNC-K connector to the antenna's port. Ensure the connection is tight to prevent signal loss and moisture ingress.
4. **Route the Cable:** Route the cable to your GNSS receiver, avoiding sharp bends or kinks that could damage the cable. Secure the cable to prevent movement or damage from environmental factors.
5. **Connect to GNSS Receiver:** Connect the other end of the coaxial cable to the appropriate antenna input on your GNSS receiver.

4. Operating Instructions

The Beitian BT-208 is a passive GNSS antenna, meaning it primarily receives signals and does not require active configuration. Its operation is largely dependent on the connected GNSS receiver.

1. **Power On Receiver:** Ensure your GNSS receiver is powered on and properly configured according to its own user manual.
2. **Signal Acquisition:** The antenna will automatically begin receiving GNSS signals once connected to a powered receiver. Allow sufficient time for the receiver to acquire satellite signals and calculate a position fix.
3. **Monitor Performance:** Use your GNSS receiver's interface to monitor signal strength, satellite visibility, and positioning accuracy. Optimal performance is indicated by high signal-to-noise ratios and a sufficient number of tracked satellites.
4. **Environmental Considerations:** While the antenna is robust, extreme weather conditions (e.g., heavy snow accumulation, ice buildup) can temporarily affect signal reception. Ensure the antenna remains clear of obstructions.

5. Maintenance

Regular maintenance helps ensure the long-term reliability and performance of your Beitian BT-208 GNSS Antenna.

- **Cleaning:** Periodically clean the antenna's exterior with a soft, damp cloth to remove dirt, dust, or debris. Avoid using abrasive cleaners or solvents that could damage the anti-UV PC material.
- **Inspection:** Regularly inspect the antenna and its cable for any signs of physical damage, wear, or corrosion. Check the connector for tightness and ensure no moisture has entered.
- **Cable Integrity:** Ensure the coaxial cable is not pinched, cut, or excessively bent. Damaged cables can lead to significant signal loss.
- **Environmental Protection:** Although the antenna is IP67 rated, ensure proper drainage around the mounting area to prevent water pooling.

6. Troubleshooting

If you experience issues with your Beitian BT-208 GNSS Antenna, consider the following troubleshooting steps:

- **No Signal or Poor Signal Quality:**
  - Verify all cable connections are secure and free from damage.
  - Check the antenna's line of sight to the sky for any new obstructions (e.g., trees, buildings, temporary structures).
  - Ensure the GNSS receiver is functioning correctly and its settings are appropriate for the antenna.
  - Test with a different cable if possible, to rule out cable issues.
- **Inaccurate Positioning:**
  - Confirm the antenna is mounted in a location free from multipath interference (reflections from nearby surfaces).
  - Check the receiver's configuration for correct antenna type and offset settings.

    - Allow sufficient time for the receiver to achieve a stable position fix, especially after initial setup or relocation.

- **Physical Damage:**
    - If the antenna or cable shows visible damage, it may need replacement.

If problems persist after attempting these steps, consult your GNSS receiver's manual or contact Beitian customer support.

7. Specifications

Detailed technical specifications for the Beitian BT-208 High Precision GNSS Antenna:

Category	Parameter	Value
Electrical Characteristics	LNA Gain	38 ± 2 dB
	Noise Figure	≤ 2 dB
	In-band Flatness	± 2 dB
	Operating Voltage	3.3 - 12.0 V
	Operating Current	≤ 45 mA
	Differential Propagation Delay	≤ 5 ns
Structural Characteristics	Connector Type	TNC-K
	Antenna Size (Diameter x Height)	Φ154 x 64.2 mm (6.06 x 2.53 inches)
	Weight	420 g (approx. 14.8 oz)
Environmental Conditions	Operating Temperature	-40°C to +85°C (-40°F to +185°F)
	Storage Temperature	-55°C to +85°C (-67°F to +185°F)
General	Antenna Type	Satellite GNSS
	Number of Channels	4
	Impedance	50 Ohms

8. Warranty and Support

For warranty information and technical support, please refer to the documentation provided at the time of purchase or visit the official Beitian website. Keep your proof of purchase for warranty claims.