Instruction Manual for BP3 Base Station （BP3使用说明）

1. Product Overview

The BP3 Portable GNSS Base Station is a high-performance, multi-functional portable base station suitable for long-term continuous operation. The device is based on a full-system, full-frequency RTK module and supports 4G, Bluetooth, and LoRa/FSK data transmission links;



Can be used as:

- CORS Network Base Station
- Data Transmission Differential Base Station (LoRa / FSK)
- Dynamic base station dedicated to UAV return
- IMU Fusion Positioning / Tilt Measurement Base Station (Optional)
- PPK/Static PPP Measurement Equipment (Optional)

BP3 is equipped with an automatic coordinate calibration system, which solves the problem of coordinate drift caused by the daily non-fixed installation position of the base station, ensuring long-term consistency of measurement coordinates.

2. Product Use

1. CORS Base Station or Portable Data Transmission Base Station
2. Dynamic Base Station for Automatic Return of Unmanned Aerial Vehicles
3. Integrated positioning or tilt measurement base station (customizable) equipped with IMU
4. PPK or static PPP measurement (customizable)

3. Software Functions

1. RTCM Data Upload
    - Upload via 4G
    - Supports NTRIP / MQTT protocols
2. Data Transmission Differential Broadcast
    - Built-in LoRa or FSK data transmission module
    - Independent offline use, suitable for field measurements and unmanned aerial vehicle (UAV) systems
3. Optional Rover Station mode
    - Supports IMU fusion positioning
    - Supports tilt compensation (custom feature)

4. Interface Display and Interaction

Status	Description	Operation
Undetermined	No Signal	Wait or adjust the antenna to ensure no obstruction
Single Point	Insufficient satellites or not yet converged	Wait or adjust the antenna to ensure no obstruction

Fixed	Coordinates have been successfully calibrated	Can operate normally

5. Usage Method

1. Base Station Installation Steps

- Install and secure the device using a tripod
- Install the data transmission antenna (if data transmission differential is required)
- Wait for positioning/calibration to complete after power-on

2. Three main working modes

① Data Transmission Differential Base Station (LoRa / FSK)

- The receiver does not require a network
- Suitable for field operations, UAV return, and engineering work

② MQTT Network Base Station

- Upload RTCM via 4G
- Client RTK subscribes via MQTT
- Low latency, high stability

③ NTRIP Network Base Station

- can serve as Caster, Client
- Compatible with various RTK receivers

6. Status Description and Hints

Status	**Description**	**Operation**
Undetermined	No Signal	Wait or adjust the antenna to ensure no obstruction
Single Point	Insufficient satellites or not	Wait or adjust the antenna to ensure

	yet converged	no obstruction
Fixed	Coordinates have been successfully calibrated	Can operate normally

VII. Safety Instructions

1. When setting up outdoors, ensure that the tripod is stable
2. Do not use in areas with strong radiation or high voltage
3. Avoid long-term exposure to rain, even though the device is IP65
4. Users are prohibited from disassembling the device
5. If an internal battery is selected, the battery level should be regularly checked to prevent the lithium battery from starving.

8. Hardware Specifications

GNSS性能	
定位系统	全系统 全频点
卫星频点	BDS： B1I、BIC、B2I、B2a、B2b、B3I GPS： LIC/A、LIC、L2、L5 GALILEO： E1、E5a、E5b、E6 GLONASS： G1、G2 QZSS： LIC/A、LIC、L2、L5 NavIC： L5 SBAS： LIC/A
RTK精度	平面：0.7cm+1ppm 高程：2cm+1ppm
首次定位用时	冷启动:<30s
RTK初始化时间	<5s
RTK初始化可靠性	>99.9%
数传性能	
工作频率	410.125MHz-493.125MHz
最大发射功率	22dbm
阻塞功率（dbm）	10dbm
发射长度	240 byte
接收灵敏度	-147dbm
物理规格	
尺寸（mm）	157X157X97
重量	976g
显示	1.54inch，彩色高亮TFT-LCD
支撑杆螺纹	5/8-11
外部接口	航空连接器，TNC射频连接器，Type-C接口
防护等级	IP65
4G	
频段	LET-FDD：B1/B3/B5/B8 LET-TDD：B34/B38/B39/B40/B41
蓝牙	
发射功率	5 dBm

频段	2.402 - 2.480 GHz
电源	
外部供电	9-36V