

High Precision GNSS Receiver EX30B

User Manual

2026-07-17

Version Revision & Approval Record

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1 Introduction

The EX30B is a lightweight, multi-functional GNSS base station receiver. Integrated into the main unit are a high-precision multi-constellation full-band GNSS positioning module, a data radio transceiver, and a high-capacity built-in battery. It can deliver differential signal coverage within an operating radius of 5 km for grading control systems under networkless field conditions, expanding the applicable working scenarios of the equipment.

Equipped with an integrated 7.4 V / 6500 mAh high-capacity battery, the unit supports up to 10 hours of heavy-duty continuous operation, eliminating concerns over insufficient power supply.

Compact and portable with simple field setup, the receiver can be configured and activated rapidly via dedicated professional software. It lowers the operational skill threshold for on-site operators and substantially improves field working efficiency.

2 Product Description

2.1 Appearance Overview



Figure 2-1 External View of EX30B

A: Differential Indicator Light

B: Power Indicator Light (Power Button)

C: Satellite Indicator Light

D: Radio Antenna Interface

2.2 Power Button Operation

- (1) Power On: When the unit is powered off, short-press the power button for 2 seconds. After one beep sounds, the power indicator flashes and the device turns on.
- (2) Power Off: When the unit is powered on, long-press the power button for 4 seconds. The device will emit four beep alerts; release the button, the indicator turns off and the unit powers down.
- (3) Battery Level Indication: With the device powered off, short-press the power button for 1 second. The indicator flashes twice. Each light segment represents approximately 30% battery capacity. (Two lit segments flashing indicates a remaining power level above 60%.)

2.3 Indicator Light Instructions

- (1) Power Indicator:
 - ① Steady green light during normal operation;
 - ② Flashing red light when battery level is low;
 - ③ Steady red light while charging; steady green light when fully charged;
 - ④ Short press the power button under power-off state to check current battery level.
- (2) Differential Indicator: Flashes when the base station is activated and transmitting differential corrections.
- (3) Satellite Indicator: Flashes when valid positioning is achieved.

2.4 Charging Instructions

- (1) Charging Status: Steady red light while charging; steady green light when fully charged.
- (2) Battery Specification: 7.4 V, 6500 mAh.
- (3) Approximate charging time: 3.5 hours.
- (4) External Power Supply: Supports USB PD 15 V/2 A and DCP 5 V/3 A.

Warning: For your safety and the safety of the instrument, only charge the instrument with the original adapter supplied in the package or certified brand adapters with 3C certification.

2.5 Dimension Specifications



Figure 2-2 Dimensional Drawing of the EX30B

3 Base Station Usage

The EX30B base station can provide differential signal coverage within a 5 km radius for the leveling instrument even without public network access, as shown in Figure 3-1 below. The specific operating procedures are as follows:



Figure 3-1 EX30B Physical View

3.1 Base Station Setup

The user needs to provide a tripod or a fixed mounting base for the base station. The base station should be set up in an open area with an unobstructed view of the sky, away from sources of interference, on a stable and secure base, and at a relatively high elevation.

Important: The base station must not be moved during operation. If the base station is displaced, the coordinate points in the current job will shift as a whole. After the base station is moved, it must be reconfigured via the software.

Depending on whether the tripod or base is removed daily, there are two setup options, each with different rules for using project files:

- (1) Base retention and reuse option: After each day's work, the base station is removed and taken away, while the tripod or concrete fixed base remains in place. The next day, the base station is placed back to its original position and powered on. No reconfiguration is required, and the existing project file can continue to be used until the tripod or base is shifted.
- (2) Full dismantling and rebuild option: After each day's work, both the base station and the tripod are dismantled and removed from the site. Upon returning the next day, the

base station must be set up and reconfigured from scratch. Due to the change in base station coordinates, the coordinate points in the project file created on the previous day will shift and become invalid. A new project file must be created on that day.

3.2 Base Station Configuration

After placing the base station on the tripod, install the radio antenna, firmly insert the waterproof plug into the charging port, and press and hold the power button to power on. Base station configuration can be performed in two modes: simultaneous configuration with the leveling instrument, or separate configuration.

(1) Simultaneous configuration of base station and leveling instrument:

- ① Connect to the leveling instrument via Bluetooth: Press and hold the power button on the leveling instrument to power it on. Open the APP and tap Bluetooth, as shown in Figure 3-2. This enters the Device Management screen, as shown in Figure 3-3. Tap Connect next to the corresponding SN number. The leveling instrument SN is printed on the device label.
- ② Connect to the base station via Bluetooth: Tap Bluetooth again. This time, as shown in Figure 3-4, switch to the BASE tab, then tap Connect next to the corresponding SN number. The base station SN is printed on the device label.

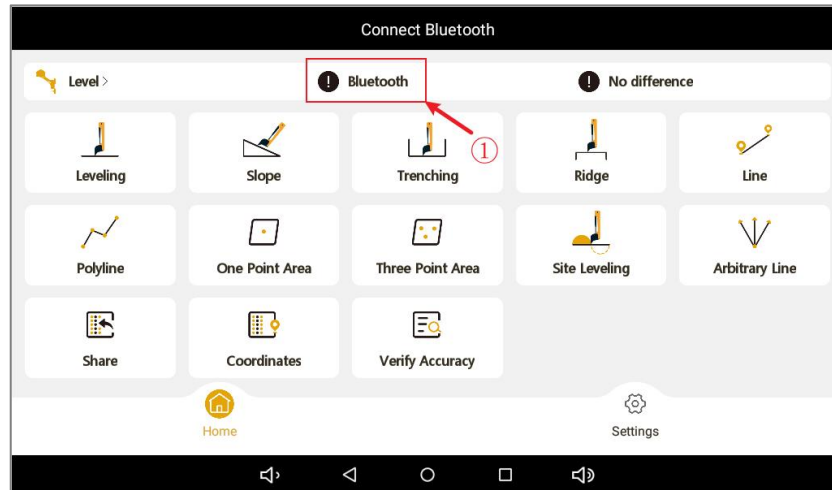


Figure 3-2

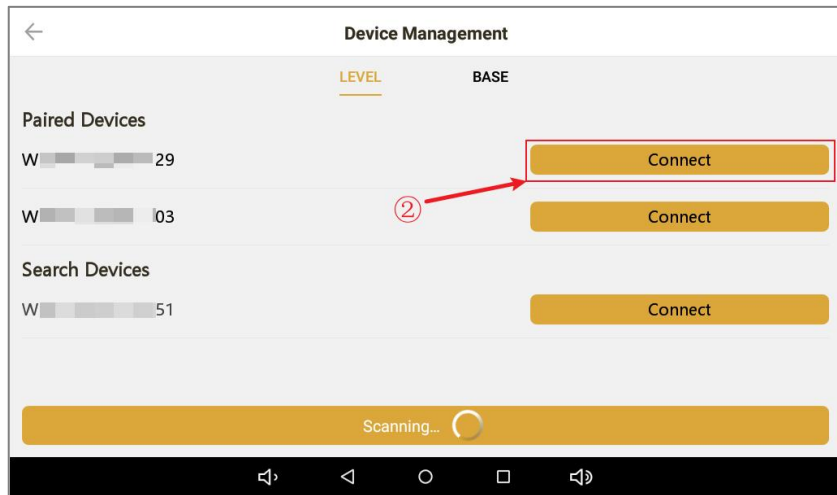


Figure 3-3

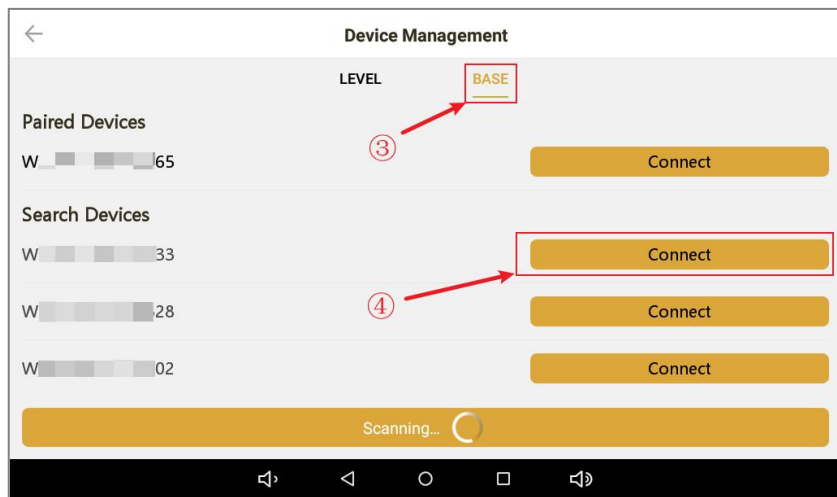


Figure 3-4

- ③ Start the base station: Tap the Base Station interface, as shown in Figure 3-5, to enter the 'Base Station Config' screen, as shown in Figure 3-6. Then tap 'Work Mode'.

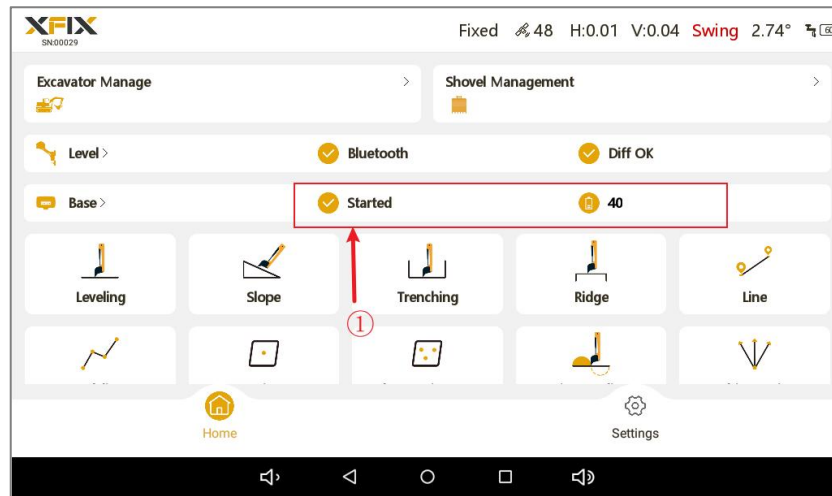


Figure 3-5

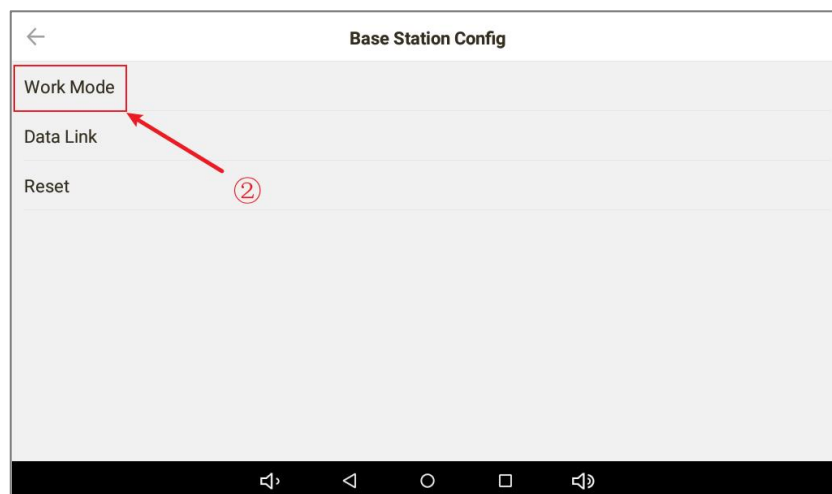


Figure 3-6

- ④ Navigate to 'Mode Configuration', as shown in Figure 3-7. Tap 'Apply' at the bottom. The base station will acquire the current coordinates. Wait for approximately 1 minute for the base station to complete startup, as shown in Figure 3-8. After the base station starts successfully, 'Configuration Successful' will appear, as shown in Figure 3-9.

Mode Configuration

Work Mode: Base Station

Station Name: W5 300039

Start Mode: Start with current position coordinates

Ion: 3941 Degrees

lat: 007 Degrees

Measure Point Ellipsoid Height: 91.46 m

☐ Advanced Options

Apply

Figure 3-7

Mode Configuration

Work Mode: Base Station

Station Name: W5 300039

Start Mode: Start with current position coordinates

Ion: 3941 Degrees

lat: 007 Degrees

Measure Point Ellipsoid Height: 91.46 m

☐ Advanced Options

Apply

Configure base station startup coordinates

Configuration completed, waiting for the base station to start...

Close

Figure 3-8

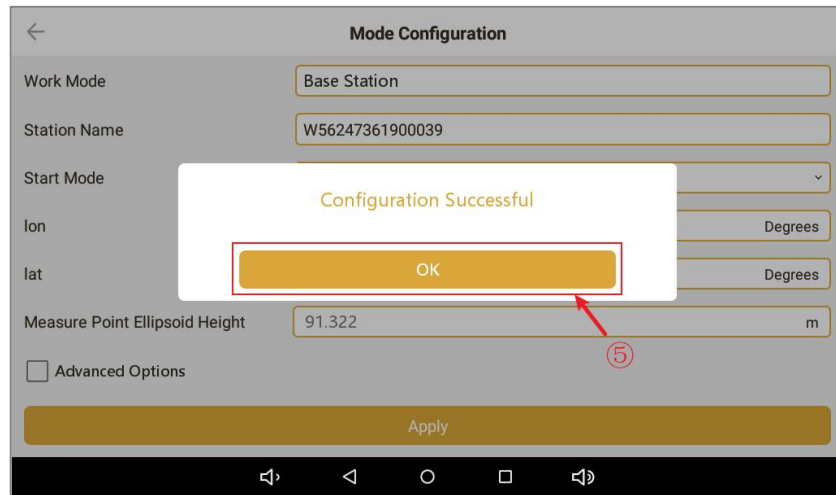


Figure 3-9

- ⑤ Configure the radio: Tap 'Data Link', as shown in Figure 3-10, to enter the 'Data Link' screen, then tap 'Apply' at the bottom, as shown in Figure 3-11. In the pop-up window 'Config success, Is it applied to leveling equipment?', tap 'Confirm', as shown in Figure 3-12.

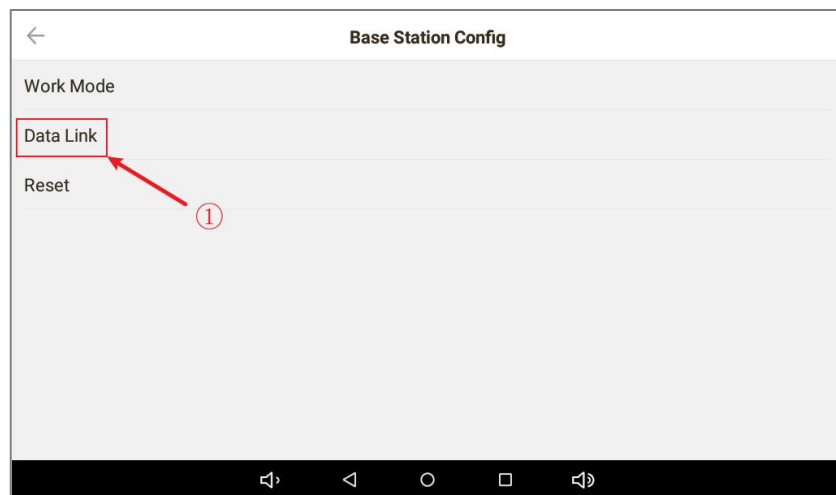


Figure 3-10

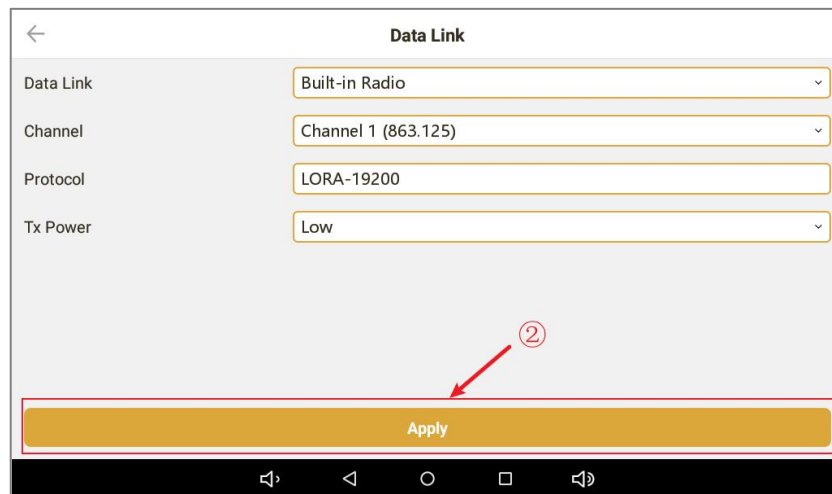


Figure 3-11

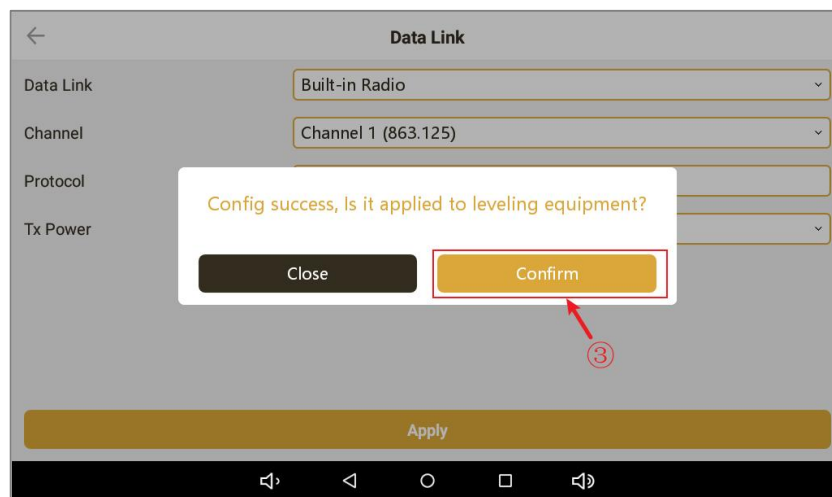


Figure 3-12

(2) Separate configuration of base station and leveling instrument:

- ① Configure the base station independently: Follow steps 2 through 4 in the simultaneous configuration section (1) of this subsection, with reference to Figure 3-3 through 3-12.
- ② Configure the leveling instrument independently: Perform step 1 in the simultaneous configuration section (1) to connect to the leveling instrument via Bluetooth. Return to the Home screen, tap the differential setting item 'No Difference', as shown in Figure 3-13, then tap 'Difference Source' and select 'Built-in Radio'. Choose the radio channel that matches the base station, then tap 'Apply' as shown in Figure 3-11. The leveling instrument configuration is now complete.

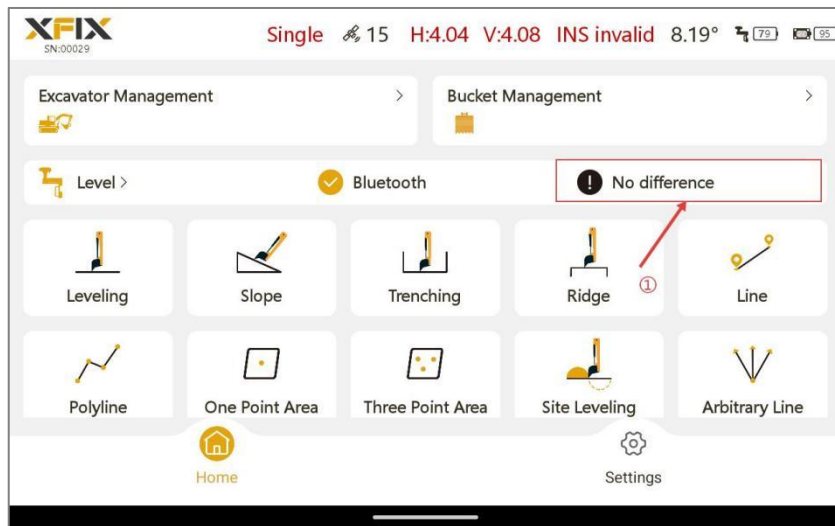


Figure 3-13

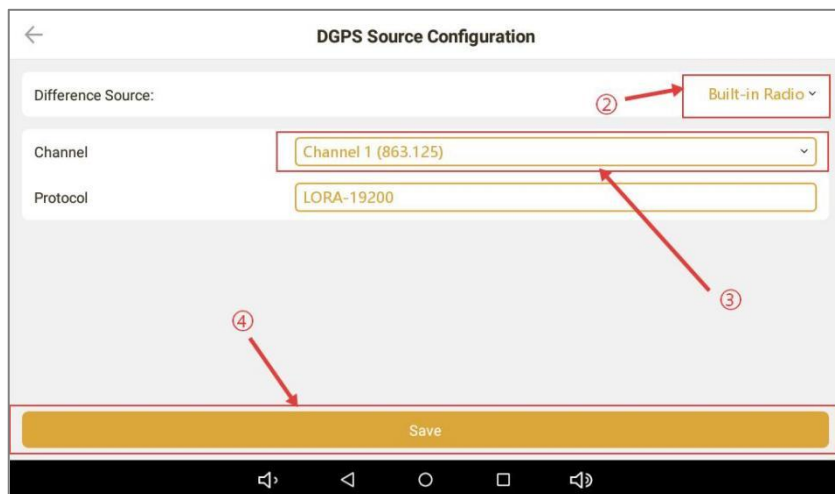


Figure 3-14

- ③ When you see 'Fixed' displayed in the information bar above the leveling instrument, it means the base station is working normally.

3.3 Daily Use

- (1) Scenario where the tripod or base has not been moved: After each day's work, remove only the base station for charging, leaving the tripod and fixed base in place. The next day, place the base station back, power it on, and start working directly—no reconfiguration is required. Existing project points remain unchanged and can continue to be used.
- (2) Scenario where the tripod or base is completely removed: After each day's work, remove both the base station and the tripod from the site. The next day, set up the base station again. After powering on the base station and ensuring it is stable, repeat step ③ 'Start the base station' in section 3.2 Base Station Configuration above. Once configured, the base station must not be moved. Because the base station position has changed, the coordinate points in the project will shift accordingly. The project created before the base station was moved can no longer be used, and a new project must be created.

For COMMUNICATION TERMINAL:

Federal Communications Commission (FCC) Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications made to this device not expressly approved by

may void the FCC authorization to operate this device.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

RF exposure statement:

The transmitter must not be colocated or operated in conjunction with any other antenna or transmitter. This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a Minimum distance of 20cm between the radiator and any part of your body.