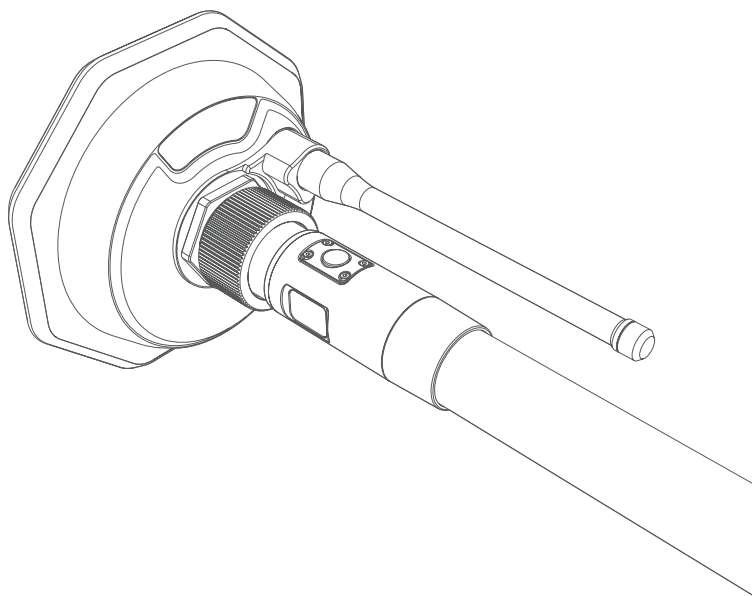




XRTK4 Rover/Portable Station

Quick Start Guide

Version 2.0 **EN**

To Users

Dear user, thank you for choosing XAG products. For safety reasons and the best experience possible, XAG recommends that you read through the Quick Start Guide and Disclaimer in this document before attempting to use the XRTK4 Rover/ Portable station.

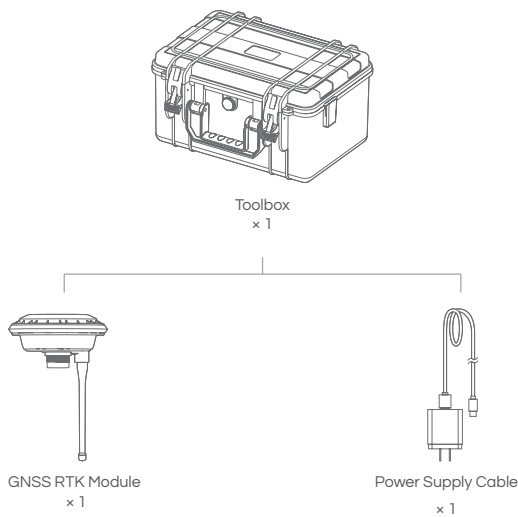
Contact Us

If you have any questions about this document, please contact our Technical Support via email: info@xa.com

List of Items (Rover)

Before unpacking and using the product, please carefully check if it contains all the items listed below. Please contact XAG™ or your dealer if there are any missing items.
The components of the rover are packed in 2 boxes. Please refer to the following for details:

GNSS RTK Module



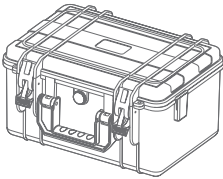
GNSS RTK Battery



List of Items (Portable Station)

Before unpacking and using the product, please carefully check if it contains all the items listed below.
Please contact XAG™ or your dealer if there are any missing items.
The components of the Portable Station are packed in 4 boxes. Please refer to the following for details:

GNSS RTK Module



Toolbox
× 1



GNSS RTK Module
× 1



Power Supply Cable
× 1

GNSS RTK Battery

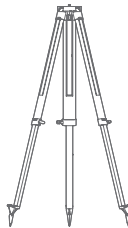


RTK extension rod × 1

GNSS RTK Portable Station Package



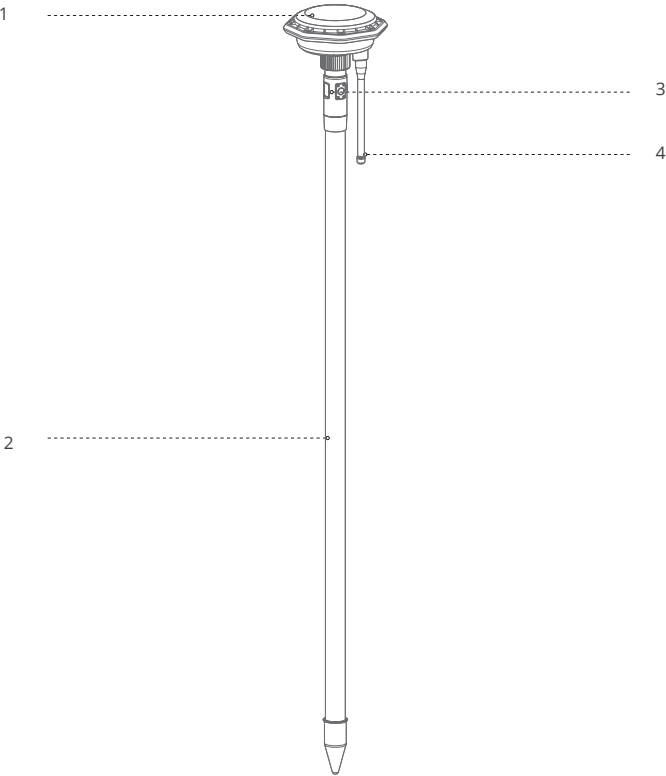
Balance Plate
× 1



Tripod
× 1

Overview - Rover

The XRTK4 Rover is comprised of the RTK Positioning Module and RTK Extension Rod (Battery)

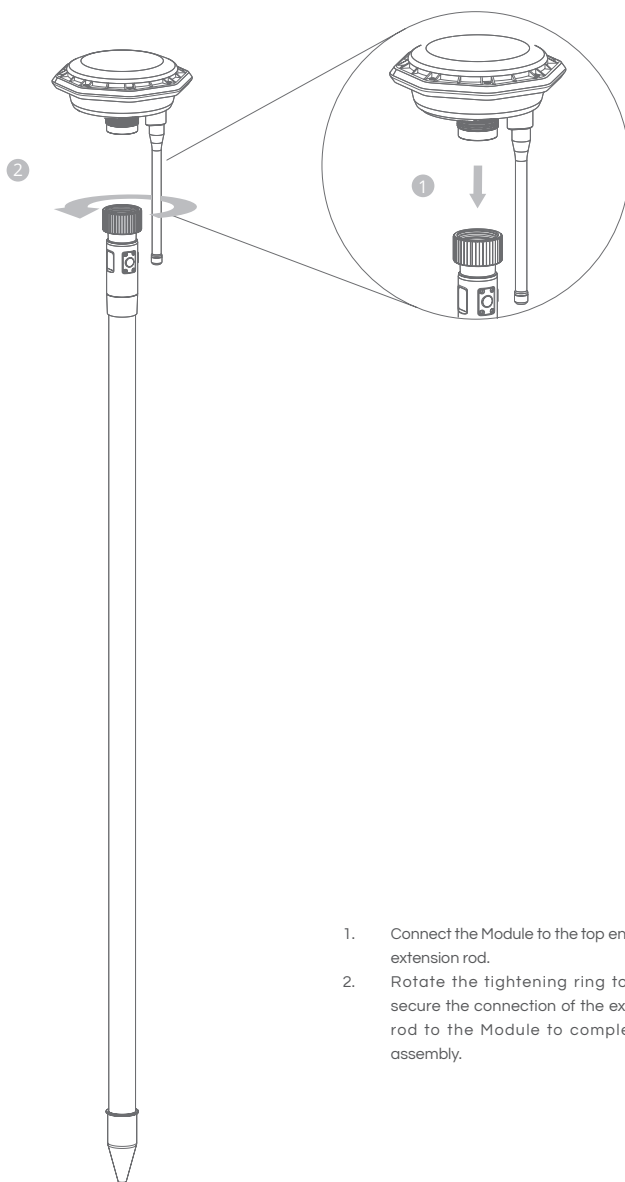


- ① RTK Positioning Module
- ② RTK Extension Rod (Battery)
- ③ RTK Battery Console
including Battery Level Indicators, Power Button, Type-C Charge Port
- ④ Antenna



The XRTK4 Rover and XRTK4 Portable Station are the same in terms of functional definition, despite some differences in structural components.

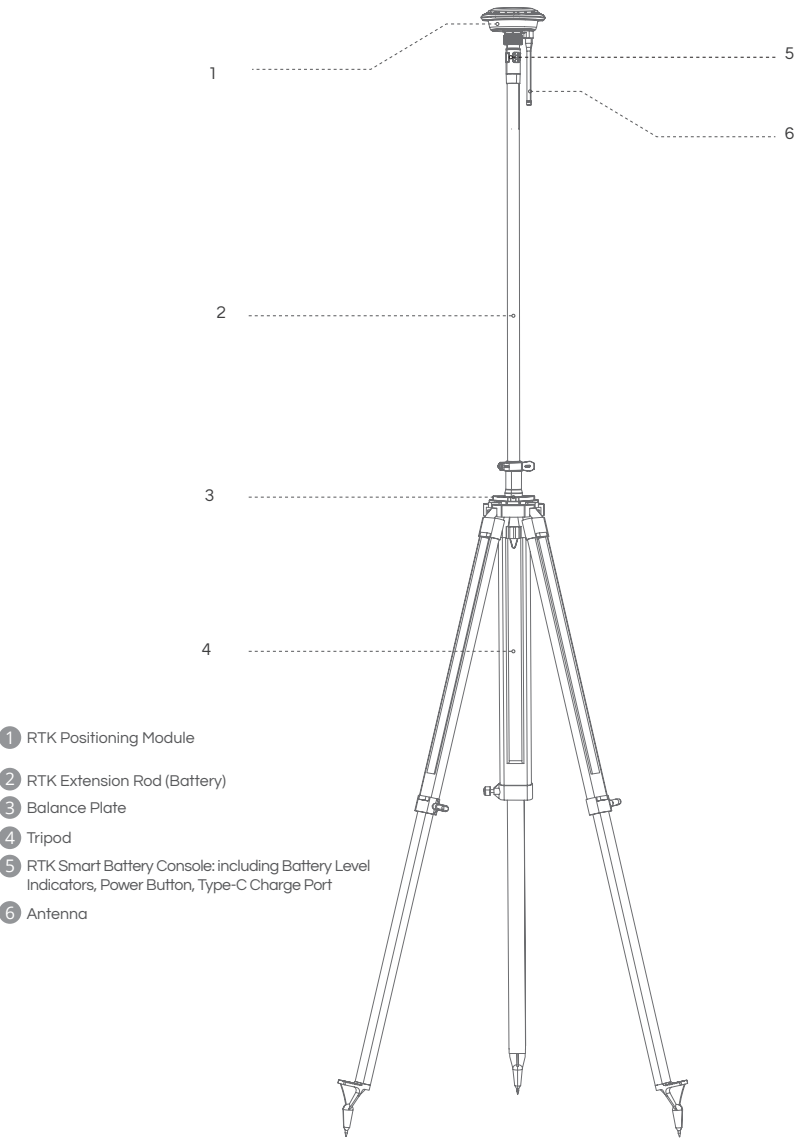
Assembling the Rover



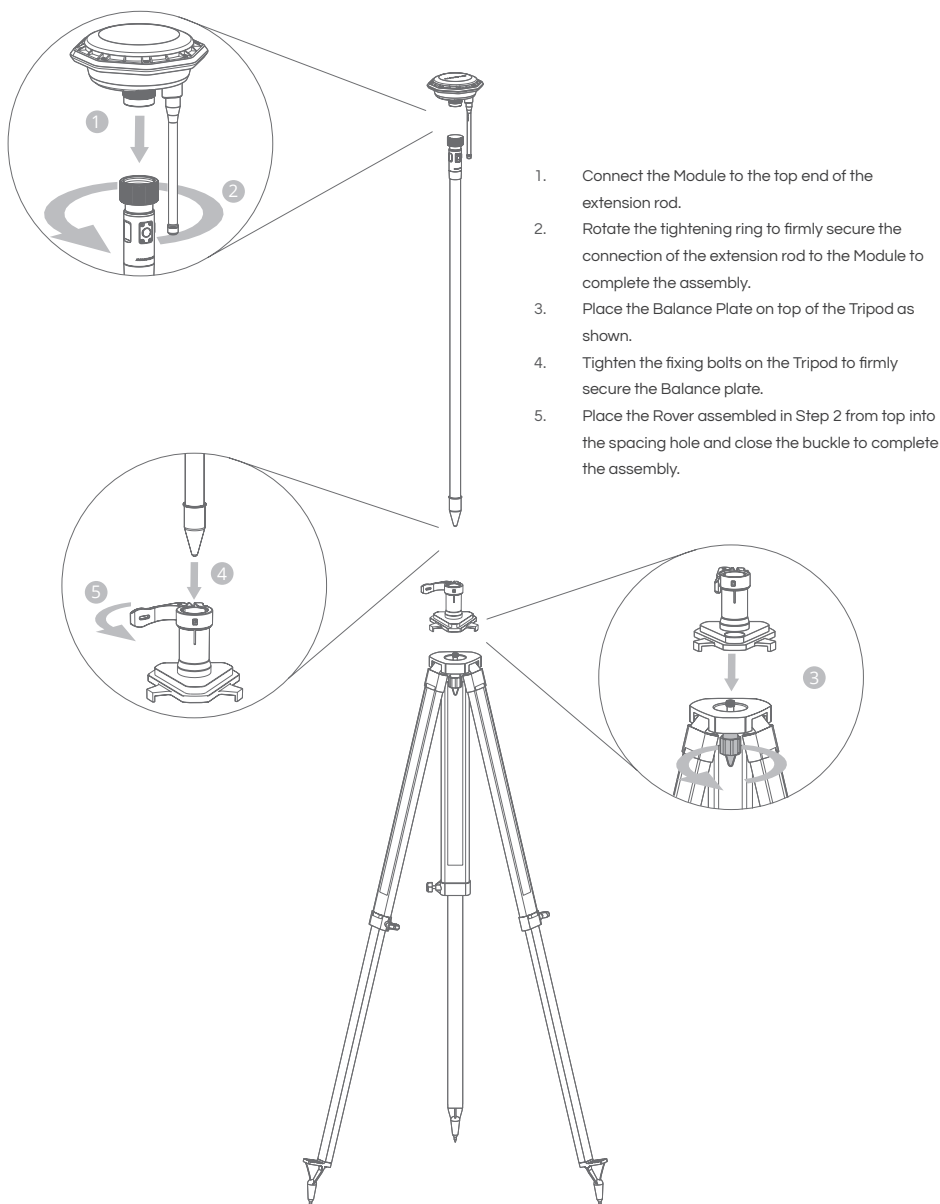
1. Connect the Module to the top end of the extension rod.
2. Rotate the tightening ring to firmly secure the connection of the extension rod to the Module to complete the assembly.

Overview - Portable Station

The XRTK4 Portable Station is comprised of the RTK Positioning Module, RTK Extension Rod, Base Plate, and Tripod.

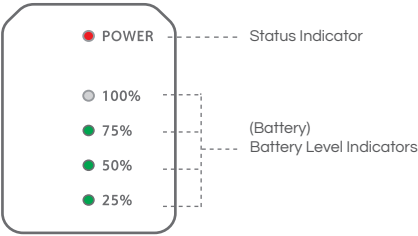


Assembling the Portable Station



RTK Battery Console

The RTK extension rod has a built-in 7500mAh/14.4V lithium battery. The pole is integrated with a battery level/status display panel (see right figure), a power button, and a Type-C charge port. The functions of the button/indicator lights are defined as follows:



• Battery ON/OFF

The RTK Module will be powered ON/OFF after 2 long presses. To power ON/OFF, press and hold the power button for at least 1 second, and release the button after all battery level indicator lights flash simultaneously, then press and hold the button for at least 1 second again until the status indicator is ON/OFF. This indicates that the battery has been powered ON or OFF successfully.

• Checking Battery Level (Green)

When the battery is ON, see the battery level indicators for the battery level. When the battery is OFF, press the power button once to display the battery level. Battery levels are indicated as follows:

Battery Level LED					Battery Level
1 LIGHT FLASH					0%-10%
1 GREEN LIGHT ON					10% -25%
2 GREEN LIGHT ON					25% -50%
3 GREEN LIGHT ON					50% -75%
4 GREEN LIGHT ON					75%-100%

• Checking Battery Status (Red Power Indicator)

Once the battery is ON, its status will be displayed on the console. Battery statuses are defined as follows:

Battery Level LED		Status
RED LIGHT ON		Normal
RED QUICK FLASH		PCB Overheated
REDSLOW FLASH		PCB Low Temperature
RED DOUBLE FLASH		Battery Malfunction. Please contact customer/technical support.

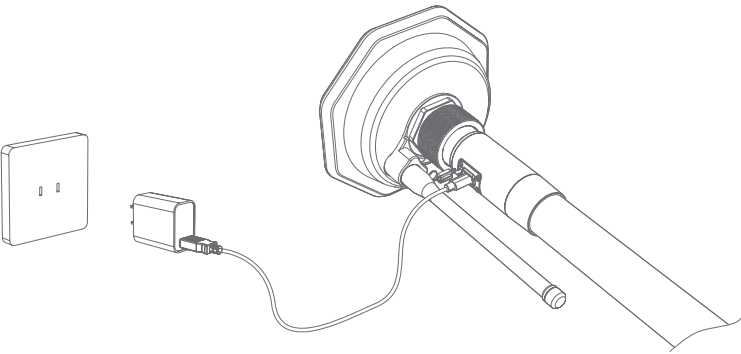
•Charging the RTK Extension rod

The battery can be charged when it is either ON* or OFF. During the battery charging, the battery level indicators corresponding to the current battery level will be on, while the remaining lights will flash in series, indicating that the battery is being charged. After charging is completed, all battery level indicators will be on.

Warning The battery must be charged with the charging devices designated by XAG. The user shall bear the responsibility for all the consequences caused by the use of the charging devices not designated by XAG.

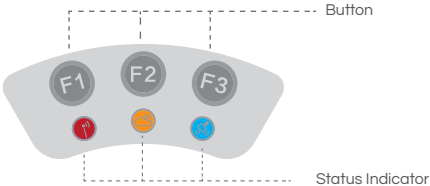
*Charging while the RTK is turned on may result in slow charging or power loss. It is recommended to charge when the RTK is powered off.

Charge via the Type-C port.



Console of the RTK Positioning Module

The Console of RTK Positioning Module is composed of three function buttons and three corresponding indicator lights in different colors (see right figure). The functions of the button/indicator lights are defined as follows:



• Checking Operation Status

Status LED		Warning/Alert	Status
RED LIGHT ON			Normal
RED SLOW FLASH			WLAN initializing (about 30 seconds)
RED QUICK FLASH		Beep	Voltage is low (< 12.5V) (Immediate charging required; when the voltage is higher than 13.5V, the red light will return to Normal and the alert stops).

• Checking Network Status

Status LED		Status
YELLOW SINGLE FLASH		Not connected
YELLOW DOUBLE FLASH		Connected
YELLOW LIGHT ON		Connected, but no available fixed station nearby (Automatic switch to 24-hour self capturing mode).

• Checking Positioning Status

Status LED		Status
BLUE LIGHT OFF		Not connected
BLUE LIGHT ON		RTK
BLUE SINGLE FLASH		Single
BLUE DOUBLE FLASH		Float
BLUE TRIPLE FLASH		Fix

• Checking/Setting Operating Mode

Press F1 to check the Operating mode.
Press and hold F1 for 3 seconds to start mode setting. Press F1 to switch modes, and press twice to confirm the desired operating mode. Each operating mode is indicated as follows:

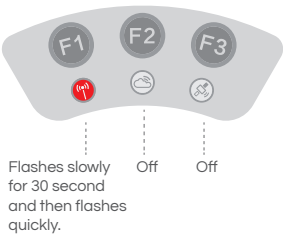
Status LED		Operating Mode
RED SINGLE FLASH		Rover mode
RED DOUBLE FLASH		Portable Station mode
RED TRIPLE FLASH		Fixed Station mode

• Buzzer Alert

- ▶ Coordinates Different: The buzzer sends an alert when the difference between the coordinates manually entered and the actual coordinates is more than 8 meters.
- ▶ Low Voltage: The buzzer sends an alert when the battery voltage is lower than 12.5V. Immediate charging required; when the voltage is higher than 13.5V, the red light will return to Normal and the alert stops

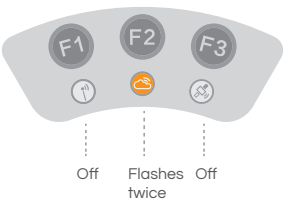
• Activating BOOT Mode

1. When the module is OFF, press and hold F3 to power on*.
2. If the buzzer beeps for three times, then the red light flashes slowly for 30 seconds (WLAN initializing) before flashing quickly, and the remaining indicators are off (see figure on right), it means BOOT mode is activated. Otherwise, BOOT mode is not activated.



• Activating WLAN Pairing Mode

1. When the RTK Module is assembled with the extension rod, turn on the device and wait until the red light (corresponding to F1) is on.
2. Open XAG APP (XAG AGRI / XGEOMATICS).
3. Select "Device" and "Add Device".
4. Wait for the instructions from the APP
5. Press and hold F2 for at least 3 seconds and release after hearing a beep. This indicate that the RTK Module is ready to be paired.
6. Wait for the APP to search and find the RTK Module, then select the corresponding module to pair.
(If the red and blue lights are off and yellow light flashes twice, it means the RTK Module has started pairing.)
7. Once the module is successfully paired, the module will automatically exit the pairing mode and start normal operation.



• Reset

Press F2 and F3 at the same time when powered on and release after hearing a beep. After around 8 seconds, the Mushroom Head automatically restarts and the factory default settings are restored.

• Setting up Portable Station

1. **Select Location**
Select solid and flat ground with open space above. There should be no obstacles over the elevation angle of 15° for continuous tracking and observation of the satellite and high quality satellite signals.
2. **Assemble the RTK Station**
Erect the Tripod and align as per the operation standard for the RTK Station. Assemble the RTK Station and power on the device.
3. **RTK Module Settings**
After the RTK Module is paired, click “Base Settings”, set the RTK device as a Portable Station, and select the methods to obtain coordinates. Ways to obtain coordinates include low-precision capturing, highprecision capturing, and manual input.
 - i. **Low-precision Capturing**
Click Low-precision Capturing, and the device starts capturing coordinates automatically. After the signal becomes stable, the RTK Moduel will be automatically set as a Portable station. There may be a margin of error between the coordinates captured with low precision and the actual coordinates.
 - ii. **High-precision Capturing**
High-precision Capturing performs differential positioning with the RTCM signals from a fixed base station that has been set up to obtain accurate coordinates.
How to operate:
Click High-precision Capturing (base assistance), and the base searches for fixed bases station within 70 km via network signals. Select a desirable fixed station as your supporting station and click OK. When the parameter “Positioning” on home page displays FIX, the station is set up.
 - iii. **Manual Input**
This mode is suitable for the setup of a second base. To set up a second base at the fixed point that has been surveyed before, input the coordinates captured during the first setup into the device, and the device will automatically generate and broadcast RTCM data.
How to operate:
Click Manual Input and enter the exact coordinates into the pop-up window;
Click OK and when the parameter “Positioning” on home page displays FIX, the station is set up.

* Turn on: refers to the smart battery, see page 10 for details.

Technical Specifications

RTK Positioning Module for Agricultural Use

Model: XRTK4
Dimensions: Diameter × Height: 154×83.6 mm (machine)
Diameter × Height: 154×1230 mm (machine + battery)
Weight: 1.5 Kg (machine)
Port/Panel: Button × 3, Positioning Indicator × 1
Networking Indicator × 1, Power Indicator × 1
Protection Grade: IP65
Operating Temperature: -20° - 65° C
Storage Temperature: -40° - 85° C
Relative Humidity: 100%, condensation

• GNSS Performance & Specifications

Compatible motherboard: K726
Signal tracking
BDS: B1, B2
GPS: L1, L2, L2C
GLONASS: L1, L2
RTK positioning precision
Horizontal: ±10mm+1ppm (RMS)
Vertical: ±15mm+1ppm (RMS)
Initialization time: Typical <10 seconds
Initialization reliability: >99.9%
Data update rate: Maximum 20 Hz (raw data)
Maximum 20 Hz (positioning data)

• Communication Interface

1 CAN port;
3 mobile communication modules (2G/3G/4G);
1 dedicated 2.4GHz/5.8GHz WLAN.

• Communication Performance

Mobile communication network
Communication modules: 2G/3G/4G
Protocols: GSM, CDMA2000/EVDO, WCDMA, TD-SCDMA, LTE-FDD, LTE-TDD

Dedicated 2.4GHz/5.8GHz WLAN
Protocol supported: Xlink Communication Protocol
Transmission performance
Frequency range: 2.400-2.4835GHz/5.735-5.835GHz
Channel spacing: 20 MHz
Frequency error/ frequency stability: ±10 ppm
Communication mode: Full duplex
Communication protocol: Transparent
Forward error correction: FEC
Data rate: 6Mbps
Modulation: OFDM
Emission performance
RF output power: No more than 1W, subject to regional SRRC/FCC/CE standards
Reception performance
Decoding sensitivity: -90dbm

• External Hardware Interface

Battery terminal × 1
SIM card slot × 3

• External Software Interface

The communication interface between ACB1 CommBack and the machine complies with the RTK Base Data Protocol v3.1.6 of XAG RTK Product Command Protocol. The communication interface between the machine and the CORS server complies with the Networked Transport of RTCM via Internet Protocol (Ntrip).

RTK Smart Battery

Model: B4100
Dimensions: Diameter × Height: 45×1166 mm
Capacity: 7500mAh 99Wh
Input: 12.0 V/1 A (Type-C port)
Output: 14.4V/1A
Operating temperature: -10° - 45° C
Port/Panel: Power Button × 1, Type-C Port × 1
Battery Level/Status Display Panel × 1

Disclaimer

1. Please read this document carefully before using this product. This Disclaimer has an important impact on the safe use of the product and your legitimate rights and interests. The use of the product shall be deemed as you have known, understood, acknowledged, and accepted all terms and contents of this document.
2. This product is not a toy, and is not suitable for people under the age of 18. Please keep this product away from the reach of children, and be very careful when operating in the presence of children.
3. Please install and use this product as guided by the "Product Manual/Operation Manual". Do not modify or disassemble the product without authorization. All losses caused by the user's unauthorized modification or disassembly of this product shall be borne by the user, while XAG does not assume any corresponding legal responsibility.
4. To the maximum extent permitted by law, XAG shall not be liable for any losses caused by users' failure to use the product in accordance with this document and the "Product Manual/Operation Manual".
5. To the maximum extent permitted by law, XAG's liability or amount under any circumstances to you for all damages, losses, and litigation arising therefrom will not exceed the amount paid to XAG by you for the purchase of the product.
6. In any case, the purchaser or user shall comply with relevant laws and regulations of the country and region where the product is used. XAG does not assume any liability arising from violation of relevant laws and regulations by the purchaser or user.
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8. To the extent permitted by law, XAG has the final right to interpret and modify the above terms. XAG has the right to update, modify, or terminate these terms through its official website, the "Product Manual/Operation Manual", online APP and other means without prior notice.

Warning

Users are required to read the complete "Product Manual" and be familiar with the product operations before using the product. Otherwise, it may cause serious injury to yourself or others, or cause product damage and property loss. Strong safety awareness is required to operate this product. Do not use the parts that are not provided or suggested by XAG. Please strictly follow the instructions of XAG to install and use the product.

Visit our website (www.xa.com/en) for more information



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MAKE AGRICULTURE SMARTER

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