

D-RTK 2

High Precision GNSS Mobile Station

User Guide

使用说明

使用説明

ユーザーガイド

사용자 가이드

Bedienungsanleitung

Guía de usuario

Guide de l'utilisateur

Guida all'uso

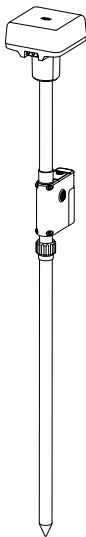
Gebruikershandleiding

Manual do utilizador

Guia do usuário

Руководство пользователя

v2.6 2023.06



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Disclaimer

Thank you for purchasing D-RTK™ 2 High Precision GNSS Mobile Station (hereinafter referred to as the "Product"). Read this disclaimer carefully before using this Product. By using this Product, you hereby agree to this disclaimer and signify that you have read it fully. Please use this Product in strict accordance with the manual and be sure to pay attention to the Warnings. SZ DJI TECHNOLOGY CO., LTD., and its affiliated companies assume no liability for damage(s) or injuries incurred directly or indirectly from using, installing or refitting this Product improperly, including but not limited to using non-designated accessories.

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This disclaimer is produced in various languages. In the event of divergence among different versions, the Chinese version shall prevail when the Product in question is purchased in China, and the English version shall prevail when the Product in question is purchased in any other region.

Warnings

1. To maximize the lifespan of the battery, remove the Intelligent Battery from the D-RTK 2 Mobile Station when not in use.
2. Only use the D-RTK 2 in the corresponding frequency band and in accordance with local laws and regulations.
3. DO NOT bend or fold the cables excessively.
4. Ensure that the D-RTK 2 Mobile Station is perfectly level when mounted and placed.
5. Only operate in an open environment free from radio interference. Turn off nearby devices using the same frequencies as the D-RTK 2 Mobile Station (e.g. radio transceivers).
6. Ensure that the antennas of all the devices used are unobstructed when in use.
7. Only use genuine DJI parts or parts certified by DJI. Unauthorized parts or parts from non-DJI-certified manufacturers may cause the system to malfunction and compromise safety.
8. Ensure that the D-RTK 2 Mobile Station and its components are free from contamination (e.g. water, oil, soil and sand).
9. DO NOT attempt to disassemble any part of the D-RTK 2 Mobile Station that has already been mounted prior to shipping.
10. Handle the sharp ends of the extension rod and tripod with caution.
11. Take necessary measures to protect the D-RTK 2 Mobile Station and batteries from water in rain, snow, and/or thunderstorms. Operate with caution in severe weather conditions.

Introduction

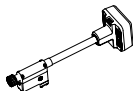
The D-RTK 2 High Precision GNSS Mobile Station is a high-precision satellite signal receiver that supports four global satellite navigation systems: GPS, BEIDOU, GLONASS, and Galileo with 11-band satellite signal* reception. Its built-in OCUSYNC™ transmission links ensure uninterrupted, stable data transmission. The D-RTK 2 Mobile Station can be used as an RTK mobile base station to achieve centimeter-level positioning accuracy of an aircraft equipped with a DJI RTK positioning system (such as DJI INSPIRE™ 3, AGRAS™ T40, T20P, T30, T10, T20, T16, MG-1P RTK, Phantom 4 RTK, P4 Multispectral, MATRICE™ 350 RTK, Matrice 30, Matrice 30T, Matrice 300 RTK, or Matrice 210 RTK V2). Its functions are uncompromised even in environments with strong magnetic interference, for example, near high-voltage power lines or metal structures. The D-RTK 2 Mobile Station can also be used as a handheld mapping device to achieve enhanced precision in point positioning during surveying and mapping, or lofting and other engineering applications.

* Refer to the Specifications for details.

In the Box

D-RTK 2 Body

x1



Extension Rod

x1



Charging Hub (USB-C)

x1



65W Portable Charger*

x1



Intelligent Battery (WB37)

x2



Battery Cover

x1



USB-C Cable

x1



USB-C OTG Cable

x1



Hex Key

x1



* The type and quantity vary depending on the region.

Optional Items

①

Power Adapter Cable



AC Power Adapter



AC Power Cable



②

Tripod

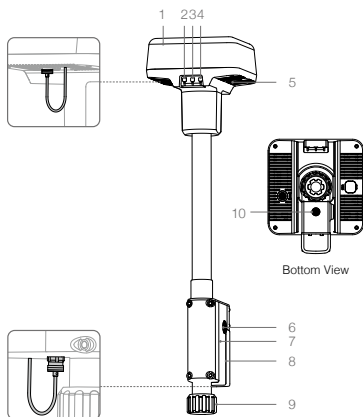


① Use the Power Adapter Cable and AC Power Adapter to connect to the AC power for long-term power supply.

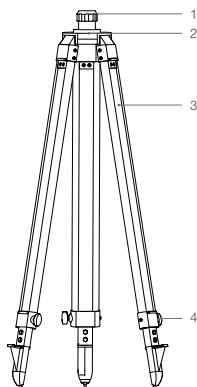
② When using the D-RTK 2 Mobile Station as a mobile base station, use the Tripod to support the D-RTK 2 body.

Overview

D-RTK 2 Body



Tripod



1. Antenna
2. Link Button and Indicator
3. Power Button and Indicator
4. Operating Mode Button and Indicator
5. USB-C Port
6. Rosette Mount
7. Battery Compartment
8. Battery Cover
9. Lock Nut
10. External Power Port*

1. Sleeve
2. Mount Base
3. Retractable Legs
4. Knobs

* Equipped with a protective cover that can be stored when the unit is in use. When not in use, cover the ports to protect the unit from moisture and dust.

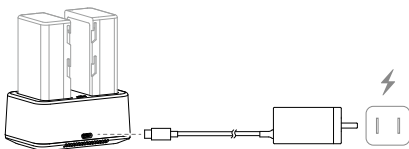
The illustrations in this document may be slightly different from the actual product. Please refer to the actual one.

Preparation

Charging the Battery

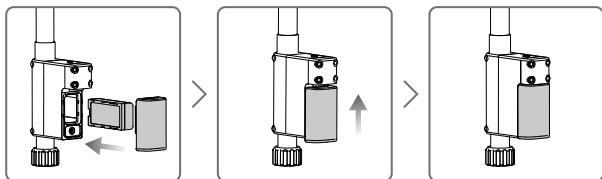
Press the battery level button once to check the battery level. Fully charge the batteries before first-time use.

1. Insert the batteries into the charging hub until there is a click, connect the charger to the power port on the charging hub, and connect the charger to a power outlet (100-240 V, 50/60 Hz).
2. The batteries will be charged in sequence according to the power levels from high to low. The status LEDs will glow solid white after the corresponding battery is fully charged. Remove the battery from the charging hub.



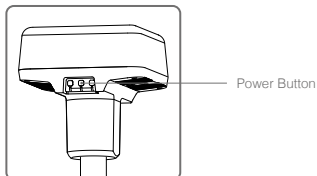
Refer to the WB37 Battery Charging Hub (USB-C) User Guide and the WB37 Intelligent Battery Safety Guidelines for more details.

Mounting the Battery



Powering the D-RTK 2 Mobile Station On/Off

Press and hold the power button to power on/off the D-RTK 2 Mobile Station.



Power Indicator Descriptions

Solid Red	System initializing/error notification
Quick Red Blink	Battery level is less than 20%
Slow Red Blink	Signals from ≤ 5 Satellite received
Solid Yellow	Signals from 6-9 Satellite received
Solid Green	Signals from ≥ 10 Satellite received

Operating Modes

The D-RTK 2 Mobile Station provides five operating modes to use with different products. Follow the instructions below to switch between modes.

1. Press and hold the Operating Mode button for two seconds. The indicator will turn from green to yellow to indicate that the device has entered mode switch status.
2. Press the Operating Mode button once to switch modes. Wait two seconds for the device to enter the corresponding mode. The indicator will turn from yellow to green. Operating modes are indicated by the blinking pattern of the indicator. Refer to the table below.
3. The device will remain in the original mode if there is no further operation within two seconds of entering the mode switch status.

Modes	Name and Compatible Products	Blinking Pattern
Operating Mode 1	Mobile Base Station (T20/T16/MG-1P RTK/Phantom 4 RTK/P4 Multispectral)	Once
Operating Mode 2	Reserved	Twice
Operating Mode 3	Handheld Mapping Device (T20/T16/MG-1P RTK/Phantom 4 RTK)	Three Times
Operating Mode 4	Mobile Base Station (M210 RTK V2)	Four Times
Operating Mode 5	Mobile Base Station (Broadcast Mode, Inspire 3/M350 RTK/M30/M30T/ M300 RTK/T40/T20P/T30/T10)	Five Times

How to Use the D-RTK 2 Mobile Station

The operations are similar when using the D-RTK 2 Mobile Station with different products. Unless otherwise specified, the descriptions below are compatible with all the products working in the corresponding mode.

Connecting to the Remote Controller or Aircraft


Connection Method


The connection method vary depending on the operating mode. See the instructions below.

Operating Mode 1


Using with Agras T20/T16/MG-1P RTK or Phantom 4 RTK Aircraft

The D-RTK 2 Mobile Station must be linked to the remote controller in the app. The following descriptions use the DJI Agras app as an example.

1. Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 1.
2. Power on the remote controller and make sure that the app is launched.
3. In the app, go to Operation View >  > RTK to enable aircraft RTK function. Select the RTK signal source to D-RTK 2 Mobile Station. Then, tap Linking at the bottom. The remote controller status indicator will blink blue and a beeping sound from the remote controller will indicate that the remote controller is being linked.
4. Press the Link button on the D-RTK 2 Mobile Station and the link indicator will blink red and green alternately, indicating that the D-RTK 2 Mobile Station is being linked.

- The linking is successful when the indicator light on the remote controller becomes solid green. The D-RTK 2 link indicator shows the current working status. Refer to the table below for the details.
- The remote controller and aircraft must be relinked after the remote controller is linked with the D-RTK 2 Mobile Station. There are three ways that this can be done:
 - After linking the remote controller with the D-RTK 2 Mobile Station, tap **Link with Aircraft** in the pop-up window to link it with the aircraft. Then press the Link button on the aircraft to finish linking.
 - On the RTK Settings page, tap the  button next to the prompt indicating the aircraft has been disconnected, and then tap **Link with Aircraft** in the pop-up window to link it with the aircraft.
 - Link the remote controller with the aircraft on the RC Settings page. When finished, go to the RTK Settings page and tap **Try to Reconnect** next to the D-RTK 2 Status to reconnect to D-RTK 2. The D-RTK 2 status must indicate **Connection Success** for the RTK functions to work.

Using with P4 Multispectral Aircraft

- Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 1.
- Power on the remote controller and make sure that the DJI GS Pro app is launched.
- Go to Mission Page in DJI GS Pro, tap the  icon or RTK on top of the screen to go to the RTK settings menu, and then select D-RTK 2 as the RTK signal source. Enable the aircraft RTK at the bottom of the menu to ensure the aircraft has access to RTK data.
- Tap Link. The remote controller will start beeping. Then press the link button on the mobile station.
- The linking is successful when the indicator light on the remote controller becomes solid green. The D-RTK 2 link indicator shows the current working status. Refer to the table below for details.



- When the D-RTK 2 Mobile Station has been connected to the remote controller and the aircraft is being controlled by the remote controller, the D-RTK 2 Mobile Station cannot be linked with other remote controllers. If required, link after the aircraft lands and the motors stop.
- One D-RTK 2 Mobile Station can link with up to five remote controllers.

Operating Mode 3

The D-RTK 2 Mobile Station must be linked to the remote controller.

- Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 3.
- Power on the remote controller. Go to Remote Controller Settings in the app, and tap Linking. The status LED blinks blue and the remote controller will beep twice repeatedly, indicating that the remote controller is ready to link.
- Press the Link button on the D-RTK 2 Mobile Station and the link indicator will blink red and green alternately, indicating that the D-RTK 2 Mobile Station is being linked.
- The linking is successful when the indicator light on the remote controller becomes solid green. The D-RTK 2 link indicator shows the current working status. Refer to the table below for details.

Operating Mode 4

The D-RTK 2 Mobile Station must be linked to the M210 RTK V2 aircraft.

- Power on the M210 RTK V2 aircraft and make sure that it is linked to the remote controller.
- Press the Link button on the D-RTK 2 Mobile Station and the link indicator will blink red and green alternately, indicating that the D-RTK 2 Mobile Station is being linked.
- Press the Link button on the aircraft.
- Wait for a few seconds. The linking is successful when the indicator lights on both the aircraft and mobile station become solid green.

Operating Mode 5

When using with the Inspire 3/M350 RTK/M30/M30T/M300 RTK/T40/T20P/T30/T10, the remote controller must join the broadcast network of the D-RTK 2 Mobile Station.

- Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 5.
- Power on the remote controller. Go to RTK Settings in the app, and set the RTK signal source to D-RTK 2 Mobile Station.

- Tap **>** on the right of the D-RTK 2 Mobile Station status display and a search will start automatically. Select the desired RTK base station in the search results and wait for a successful connection.

Link Indicator Descriptions

When the linking process starts, the indicator blinks red and green alternately.

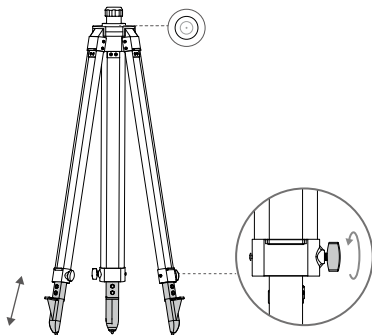
When the linking process is finished, the indicator blinking patterns are as shown below.

Operating Mode 1/3/4	Status
Solid Green	OcuSync signal quality >70%
Quick Green Blink	OcuSync signal quality 35%-70%
Slow Green Blink	OcuSync signal quality ≤ 35%
Solid Red	OcuSync signal quality = 0
Operating Mode 5	Status
Solid Green	Working normally

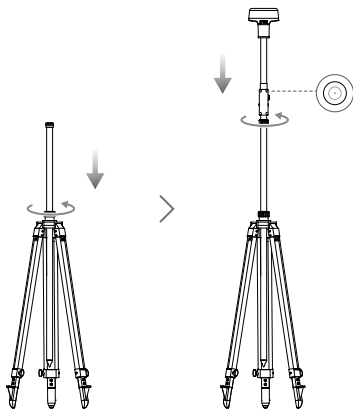
Setup

When used as a mobile base station, choose an open area to set up the D-RTK 2 Mobile Station. Mark the location and align the center of the tripod with the mark to ensure that the D-RTK 2 Mobile Station can be replaced at the same location.

1. Unfold the tripod, stretch the three retractable legs to the desired length, and then tighten each of the three knobs. Ensure that the bubble of the bubble level on the mount base is located within the black circle (viewed from the top of the bubble level vertically) while keeping the tripod secure.



2. Insert the extension rod into the tripod and tighten the sleeve on the tripod. Then attach the D-RTK 2 body onto the extension rod and tighten the lock nut on the D-RTK 2 body. Ensure that the bubble of the bubble level on the D-RTK 2 is located within the black circle (viewed from the top of the bubble level vertically).



- DO NOT change the position or angle of the tripod or the D-RTK 2 Mobile Station after the tripod has been leveled, or else it should be readjusted.
- The setup environment requires a wild field of vision. Ensure that there are no obstructions (trees, buildings) within the zone more than a 15° angle above the horizontal plane of the D-RTK 2 antenna to prevent the GNSS signals from being absorbed or blocked.
- The setup location should be at least 200 m away from high-power radio emission sources (such as television stations, microwave stations, etc.) and at least 50 m away from high-voltage transmission lines to avoid electromagnetic interference to GNSS signals.
- The setup location should be away from large-area waters or objects that strongly interfere with satellite signal reception to reduce multipath effects.

Usage

The available operating modes vary depending on the products used with the D-RTK 2 Mobile Station. Select the corresponding operating mode according to the product in use and follow the instructions below.

Instructions

Operating Mode 1/4

1. Lift the extension rod in the tripod to adjust the D-RTK 2 Mobile Station to the desired height and tighten the sleeve.
2. Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 1 or 4.
3. Power on the remote controller and aircraft and make sure that the app is launched.
4. In the app, go to RTK Settings to enable aircraft RTK function. Set the RTK signal source to D-RTK 2 Mobile Station and view the Status display to check the connection. When using a P4 Multispectral aircraft, tap Connect to establish a connection with the base station.
5. Wait for the system to start searching for satellites. Start the motors when the RTK icon displays FIX or the status of both the aircraft's orientation and positioning in the status table in RTK settings show FIX.



During flight, if the D-RTK 2 Mobile Station is moved or it is powered off, the aircraft RTK will switch to GNSS mode and will not enter the RTK FIX status again. Restart the D-RTK 2 Mobile Station after flight and wait for it to enter the RTK FIX status.

Operating Mode 3

1. Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 3.
2. Power on the remote controller and make sure that the app is launched. Check the home screen to make sure the handheld mapping device is connected.
3. In RTK Settings, select the RTK signal source for the handheld mapping device. Make sure that the D-RTK 2 Mobile Station used as a handheld mapping device is connected to another D-RTK 2 Mobile Station used as a base station or a Network RTK server.
4. Set the planning method to handheld RTK for operation planning.

Operating Mode 5

1. Power on the D-RTK 2 Mobile Station, wait until system initialization is completed, and enter Operating Mode 5.
2. Make sure that the remote controller is connected to the broadcast network of the D-RTK 2 Mobile Station.
3. Wait for the system to start searching for satellites. Start the motors when the status of both the aircraft's orientation and positioning in the status table in RTK settings show FIX.

Advanced Settings

Operating Mode 1/3/4

1. Go to the bottom of RTK Settings and tap Advanced Settings.
2. The settings vary depending on the product used with the D-RTK 2 Mobile Station. Settings include managing the list of linked remote controllers and viewing and editing the device name.
3. Input measured coordinates and altitude* to set them to the D-RTK 2 Mobile Station when using as a base station.

Operating Mode 5

1. Go to the bottom of RTK Settings and tap Advanced Settings. Input the administrator password to enter configuration. The default password is 123456.
2. Edit the name of the mobile station and change the password.
3. Input measured coordinates and altitude* to set them to the D-RTK 2 Mobile Station when using as a base station.
4. The password can be reset by following the instructions below. Press and hold the Link button on the mobile station for three seconds, and then press the Operating Mode button once. The Operating Mode Indicator turns from red to green, indicating that the password has been reset successfully.

* If coordinates input into the app are more than 50 m (for Operating Mode 1) or 15 m (for Operating Mode 4 or 5) away from the actual coordinates of the D-RTK 2 Mobile Station, they will not be imported.

If the D-RTK 2 Mobile Station is restarted after input coordinates are successfully set, these coordinates will be used only if the difference between the actual coordinates and the set coordinates is less than 5 m. Otherwise, the actual positioning coordinates will be used.

Appendix

Specifications

GNSS Receiver	GNSS Frequency	Simultaneously receive: GPS: L1, L2, L5; BeiDou: B1, B2, B3 GLONASS: F1, F2; Galileo: E1, E5A, E5B
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GNSS Receiver	Positioning Accuracy	<p>Single Point Horizontal: 1.5 m (RMS) Vertical: 3.0 m (RMS)</p> <p>RTK Horizontal: 1 cm + 1 ppm (RMS) Vertical: 2 cm + 1 ppm (RMS) 1 ppm: For every 1 km increase in distance, the accuracy will be 1 mm less. For example, the horizontal accuracy is 1.1 cm when the receiving end is 1 km away from the base station.</p>
	Positioning Update Rate	1 Hz, 2 Hz, 5 Hz, 10 Hz and 20 Hz
	Cold Start	< 45 s
	Hot Start	< 10 s
	Recapture Time	< 1 s
	Initialization Reliability	> 99.9%
	Differential Data Format	RTCM 2.x/3.x
Communication and Data Storage	Data Link	OcuSync, LAN, 4G, Wi-Fi
	Operating Frequency	2.4000-2.4835 GHz, 5.725-5.850 GHz
	EIRP	<p>OcuSync 2.4 GHz SRRC/CE/MIC/KCC: < 20 dBm FCC/NCC: < 26 dBm 5.8 GHz SRRC/NCC/FCC: < 26 dBm; CE: < 14 dBm</p> <p>Wi-Fi 2.4 GHz SRRC/CE/MIC/KCC: < 20 dBm FCC/NCC: < 22 dBm 5.8 GHz SRRC/NCC/FCC: < 22 dBm</p>
		<p>Operating Mode 1/3 SRRC/NCC/FCC/MIC/KCC/CE: 2 km (Unobstructed and free of interference, when the D-RTK 2 Mobile Station is used as a base station and the distance from the D-RTK 2 antenna to the bottom of the tripod is 1.8 m, when the difference in height between the remote controller and D-RTK 2 is less than 2 m, and when the remote controller is 1.2 m from ground level)</p> <p>Operating Mode 4 Between the aircraft and mobile station: NCC/FCC: 7 km; SRRC/MIC/KCC/CE: 5 km Between the remote controller and mobile station: 200 m (Unobstructed and free of interference at a flying altitude of about 120 m, when the distance from the D-RTK 2 antenna to the bottom of the tripod is 1.8 m, and when the remote controller is 1.2 m from ground level)</p> <p>Operating Mode 5 NCC/FCC: 12 km; SRRC/MIC/KCC/CE: 6 km (Unobstructed and free of interference, when the distance from the D-RTK 2 antenna to the bottom of the tripod is 1.8 m)</p>
	OcuSync Communication Distance	
	Memory Capacity	16 GB

IMU	Features	Built-in high-precision 6-axis accelerometer D-RTK 2 movement monitoring Sloping measurements Electronic bubble level
Electrical Characteristics	Power Consumption	12 W
	Power Supply	16.5 to 58.8VDC
	Battery	Type: Lithium-ion battery Capacity: 4920 mAh Energy: 37.3 WH
	Run Time	WB37 battery: > 2 h
Physical Characteristics	Dimensions (D-RTK 2 body with extension rod)	168 mm × 168 mm × 1800 mm
	IP Rating	IP65
Operating Temperature		-4° to 131° F (-20° to 55° C)

Updating the Firmware

Update the D-RTK 2 firmware in the DJI Assistant 2 software or the app*. The following instructions use the DJI Assistant 2 software for example.

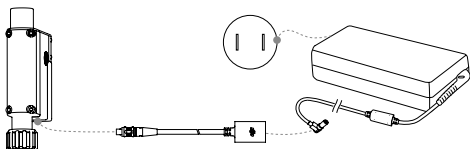
1. Turn on the D-RTK 2 Mobile Station.
2. Connect the D-RTK 2 Mobile Station to the computer via the USB-C cable.
3. Launch DJI Assistant 2 and login with a DJI account.
4. Click D-RTK 2 and then click the firmware update tag.
5. Select the desired firmware version.
6. DJI Assistant 2 will download and update the firmware automatically.

* An app version that supports firmware update is required.

Accessories Usage

Power Adapter Cable

Connect the Power Adapter Cable to the external power port, then connect the Power Adapter to a power outlet (100-240V, 50/60Hz) with the AC power cable.



This content is subject to change.

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